PhD THESES OF EARTH SCIENCES IN BRAZILIAN REGIONS

This listing with ABSTRACTS refers to an inventory of PhD and MSc theses performed in brazilian regions available at the Institute of Earth Sciences of the University of Basília site (http://www.unb.br/ig/).

It is divided in two files to turn faster the download:
1- PhD Theses-this file: (http://www.unb.br/ig/posg/tesesBrasil_english.pdf);
2- MSc Theses (http://www.unb.br/ig/posg/tesesBrasil_mest_english.pdf)

The order of presentation is by year and into year by name of author.

To retrieve any subject or locality of interest, the Acrobat presents the resource of location using the binocular ikon.

Suggestions are welcome. Email: manfredo@unb.br

Camargo,W.G.R. 1944. About the genesis of a molibdenite deposit in Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1981 **1944** *Date of presentation:*

William Gerson Rolim de Camargo *Advisor(s):* Gama,R.R.S.

Committee:

Subject of thesis:

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

In Rio Grande do Sul, Brazil, in the place named Vacacaí, (São Gabriel district), occurs a mineral deposit of molybdenite. The occurrence of this mineral and others of paragenetic origin is located somewhat in the contact area between the Algonquian granite and the schists of the same period, (Porongos series). The main purpose of this paper was the study og the history of the region, the genesis and the paragenesis of the minerals and some correlated phenomena. Special attention was given to the geological and petrographical features of the region, whose rocks consist predominantly of epi-meso-metamorphic schists, granite, andesite and relies of Devonian (?) arkoses (Camaquan series). The alkaline granite wich is intruded in the schists was responsible for the effects of contact and "lit-part-lit" metamorphism wich follows the structure of the schists. Feldspathization and sericitization are common in the contact zone. The molybdenite masses are related to few deep-seated high temperature quartz veins which are enclosed in the feldspathizied schists. The ore minerals are molybdenite, chalcopyrite, pyrite, gold, hornite, copper and magnetite. The gangue is mainly quartz, fluorite, epidot, calcite, limonite and malachite occur locally. The viens, certainly formed at considerable depths, and classified as hipo-mesothermal veins, according to the Lindgren's classification, are connected to the granitic intrusion. Molybdenite occurs either in veins or disseminated in the country-rock. The writer is of the opinion that the fluorin had played an important part regarding to the precipitation of molybdenite, which should be present as a volatile constituent - Mo'F IND.6' - in the granitic magma. Finally the authoor concludes that the first mineral to be formed was molybdenite, which was succeeded by others

Franco,R.R. 1944. Tin belt of Rio Grande do Sul. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2069 **1944** *Date of presentation:*

Rui Ribeiro Franco *Advisor(s):* Gama,R.R.S.

Committee:

Subject of thesis: Economic Geology

State: RS *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Mendes,J.C. 1944. Triassic lamellibranchia of Rio Claro (São Paulo state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2070 **1944** *Date of presentation:*

Josué Camargo Mendes *Advisor(s):* Moraes,L.J.

Committee:

Subject of thesis: Palaeontology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Freitas,R.O. 1947. Geology and petrology of São Sebastião Island (São Paulo state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 244 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1041 **1947** *Date of presentation:*

Ruy Ozorio de Freitas *Advisor(s):* Caster,K.E.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Petri,S. 1948. Contribution to the study of the Devonian in Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 125 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1141 **1948** *Date of presentation:*

Setembrino Petri *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Stratigraphy

State: PR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Amaral,S.E. 1954. Geology and petrology of drill holes performed at Amazonas river mouth. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 92 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1044 **1954** *Date of presentation:*

Sergio Estanislau do Amaral *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Ellert,R. 1958. Contribution to the geology of the Poços de Caldas alkaline massif. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2053 **1958** *Date of presentation:*

Reinholt Ellert *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Delaney,P.J. 1962. Physiography and geology of the surface of the Rio Grande do Sul state coastal plain. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2029 **1962** *Date of presentation:*

Patrik John V Delaney *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Coastal and Sedimentary Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Melcher,G.C. 1962. Jacupiranga carbonatite, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 59 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1043 **1962** *Date of presentation:*

Geraldo Conrado Melcher *Advisor(s):* Leinz,V.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Campos,J.E.S. 1963. Contribution to the study of the ionizing radiation influence on the colour of the tourmaline. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2076 **1963** *Date of presentation:*

Joao Ernesto de Souza Campos *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Penalva,F. 1963. Geology of the Itatiaia region (Southeast of Brazil) : morfology and tectonics. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 66p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1614 **1963** *Date of presentation:*

Faustino Penalva *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Ribeiro Filho,E. 1963. Itatiaia and Passa Quatro alkaline massifs (Southeast Brazil): contribution to geology and petrology. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 58 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1042 **1963** *Date of presentation:*

Evaristo Ribeiro Filho *Advisor(s):* Leinz,V.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

RJ

SP

Abstract

Moniz,A.C. 1964. Mineralogical study of clays from the Poços de Caldas alkaline massif. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 109 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1048 **1964** *Date of presentation:*

Antonio Carlos Moniz *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

SP

Abstract

Rocha-Campos,A.C. 1964. Contribution to the stratigraphy of the Taió region, Santa Catarina state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2077 **1964** *Date of presentation:*

Antonio Carlos Rocha-Campos *Advisor(s):* Mendes,J.C.

Committee:

Subject of thesis: Stratigraphy

State: SC *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Davino,A. 1965. Geological and geophysical studies of Serra de Araçoiaba range and neighbourhoods, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2025 **1965** *Date of presentation:*

André Davino *Advisor(s):* Kollert,R.

Committee:

Subject of thesis: Geophysics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Ellert,N. 1966. Investigation of aquifer beds by geoelectric methods in São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2050 **1966** *Date of presentation:*

Nelson Ellert *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Damasceno,E.C. 1967. Geology of the Paqueiro mine. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2022 **1967** *Date of presentation:*

Eduardo Camilher Damasceno *Advisor(s):* Melcher,G.C.

Committee:

Subject of thesis: Economic Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Fúlfaro,V.J. 1967. Contribution to the geology of the Angatuba region, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2080 **1967** *Date of presentation:*

Vicente José Fulfaro *Advisor(s):* Petri,S.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Gomes,C.B. 1967. Petrology of Itapirapuã alkaline massif, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 156 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1040 **1967** *Date of presentation:*

Celso de Barros Gomes *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis: Geochemistry and Petrology

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* 24 40 's - 49 15 'W

Abstract

Landim,P.M.B. 1967. Passa Dois group in the Rio Corumbataí basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2079 **1967** *Date of presentation:*

Paulo Milton Barbosa Landim *Advisor(s):* Mendes,J.C.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Melfi,A.J. 1967. Weathering of granites and diabases in the Campinas municipality and neighbourhood. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2078 **1967** *Date of presentation:*

Adolpho José Melfi *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Valarelli,J.V. 1967. The manganese ore from Serra do Navio, Amapá state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1980 **1967** *Date of presentation:*

José Vicente Valarelli *Advisor(s):* Camargo,W.G.R.

Committee:

Subject of thesis: Economic Geology

State: AP *1/1,000,000 sheet:* NA22 *Centroid of the area:* ' - 'W

Abstract

Barbour,A.P. 1968. Texture, softening and distribution of phosphorous in the Itabira iron ore, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1937 **1968** *Date of presentation:*

Aledir Paganelli Barbour *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Geochemistry

State: MG *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Cordani,U.G. 1968. Age of volcanism in the South Atlantic Ocean. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 75 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1034 **1968** *Date of presentation:*

Umberto G. Cordani *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis: Geochemistry and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Girardi,V.A.V. 1969. Petrology of the metamorphic rocks from Morretes-Antonina region, PR state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 131 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1231 **1969** *Date of presentation:*

Vicente Antônio V. Girardi *Advisor(s):* Coutinho,J.M.V. Franco,R.R.

Committee:

Subject of thesis: Geochemistry and Petrology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Mau,H. 1969. Volcanism and plutonism in the Caçapava-Lavras region - Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2088 **1969** *Date of presentation:*

Henry Mau *Advisor(s):* Leinz,V.

Committee:

Subject of thesis:

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Rocha-Leite,C. 1969. Mineralogy and crystallography of diamond from the "Triânglo Mineiro region, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1978 **1969** *Date of presentation:*

Cirano Rocha-Leite *Advisor(s):* Camargo,W.G.R.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

Ruegg,N.R. 1969. Geochemical, mineralogical and petrographic aspects of basaltic rocks from the Paraná basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2087 **1969** *Date of presentation:*

Nabor Ricardo Ruegg *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis: Geochemistry

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Arruda,M.R. 1971. Mineralogy of the Santa Blandina copper mine, Itapeva, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 180 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1045 **1971** *Date of presentation:*

Moacyr Rabelo de Arruda *Advisor(s):* Camargo,W.G.R.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Born,H. 1971. Alkaline complex of Juquiá. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1960 **1971** *Date of presentation:*

Helmut Born *Advisor(s):* Melcher,G.C.

Committee:

Subject of thesis: Petrology

State: SP *1/1,000,000 sheet:* SG23 *Centroid of the area:* ' - 'W

Abstract

Farjallat,J.E.S. 1971. Experimental studies on the degradation of basaltic rocks. Basalts from the Capivara dump, Rio Paranapanema river. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2095 **1971** *Date of presentation:*

Jose Eduardo Siqueira Farjallat *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Figueiredo Filho,P.M. 1971. Contribution to the stratigraphy of the Passa Dois group in the Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2094 **1971** *Date of presentation:*

Paulo Miranda de Figueiredo Filho *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Stratigraphy

State: RS *1/1,000,000 sheet:* SI22 *Centroid of the area:* ' - 'W

Abstract

Mello,A.A. 1971. Geology and petrology of Fazenda Nova region, Pernambuco state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 98 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1049 **1971** *Date of presentation:*

Aroldo A. de Mello *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis:

State: PE *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Regali,M.S.P. 1971. Palinology of cenozoic sediments from the Amazonas river mouth. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2091 **1971** *Date of presentation:*

Marilia da Silva Pares Regali *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeoecology

State: *1/1,000,000 sheet:* SA22 *Centroid of the area:* ' - 'W

Abstract

Svisero,D.P. 1971. Mineralogy of the fiamond from high Araguaia region. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1979 **1971** *Date of presentation:*

Darcy Pedro Svisero *Advisor(s):* Camargo,W.G.R.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Tinoco,I.M. 1971. Foraminíferos e a passagem entre o cretáceo e o terciário em Pernambuco. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2092 **1971** *Date of presentation:*

Ivan de Medeiros Tinoco *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeoecology

State: PE *1/1,000,000 sheet:* SC25 *Centroid of the area:* ' - 'W

Abstract

Bettencourt,J.S. 1972. Camaquã copper mine, Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1955 **1972** *Date of presentation:*

Jorge Silva Bettencourt *Advisor(s):* Melcher,G.C.

Committee:

Subject of thesis: Economic Geology

State: RS *1/1,000,000 sheet:* sh22 *Centroid of the area:* ' - 'W

Abstract

Carvalho,R.G. 1972. Devonian brachipooda of the Amazonas basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1991 **1972** *Date of presentation:*

Ronaldo Gama de Carvalho *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Costa,N.M.M. 1972. Chitinozoa of the Cachoeira do Vira-Mundo falls, Pará state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2013 **1972** *Date of presentation:*

Norma Maria Melo da Costa *Advisor(s):* Mendes,J.C.

Committee:

Subject of thesis: Palaeontology

State: PA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Duarte,L. 1972. Florule of the Pirabas formation, Pará state, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2039 **1972** *Date of presentation:*

Lélia Duarte *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeontology

State: PA *1/1,000,000 sheet:* SA23 *Centroid of the area:* ' - 'W

Abstract

Francesconi,R. 1972. Pegmatites from the São João del Rey region, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2098 **1972** *Date of presentation:*

Ricardo Francesconi *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Frangipani,A. 1972. Contribution to the hydrogeologoc studies of the Verde and Jacaré rivers basins, Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2102 **1972** *Date of presentation:*

Alcides Frangipani *Advisor(s):* Freitas,R.O.

Committee:

Subject of thesis: Hydrogeology

State: BA *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Fuck,R.A. 1972. Geology of the Tunas alkaline massif, Paraná state, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 82 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1032 **1972** *Date of presentation:*

Reinhardt Adolfo Fuck *Advisor(s):* Coutinho,J.M.V.

Committee:

Subject of thesis: Petrology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Hypolito,R. 1972. Experimental study of diabase weathering. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2108 **1972** *Date of presentation:*

Raphael Hypolito *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Geochemistry

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Kawashita,K. 1972. Rb-Sr method in sedimentary rocks: application to the Paraná and Amazonas basins. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2103 **1972** *Date of presentation:*

Koji Kawashita *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Mattoso,S.Q. 1972. Hydrogeology of the region of sedimentary phosphatic rock (phosphorite type) in Olinda, Pernambuco state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2097 **1972** *Date of presentation:*

Sylvio de Queirós Mattoso *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Hydrogeology

State: PE *1/1,000,000 sheet:* SC25 *Centroid of the area:* ' - 'W

Abstract

Millan,J.H. 1972. Carboniferous macroflorule of Monte Mor, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2105 **1972** *Date of presentation:*

José Henrique Millan *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeontology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Oliveira,M.A.F. 1972. Geology and petrology of the São José do Rio Pardo region, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 127 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1047 **1972** *Date of presentation:*

Marcos Aurélio Farias de Oliveira *Advisor(s):* Coutinho,J.M.V.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Pinto,I.D. 1972. Carboniferous corallia from Amazônia. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2099 **1972** *Date of presentation:*

Irajá Damiani Pinto *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Rösler,O. 1972. Flora from the Rio Bonito formation in the Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2101 **1972** *Date of presentation:*

Oscar Rösler *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeontology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Santos,R.S. 1972. Pisces from the Marizal formation, Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2100 **1972** *Date of presentation:*

Rubens da Silva Santos *Advisor(s):* Mendes,J. C.

Committee:

Subject of thesis: Palaeontology

State: BA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Souto,P.G. 1972. Geology and petrography of Potiraguá area, Bahia state, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 65 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1033 **1972** *Date of presentation:*

Paulo Ganem Souto *Advisor(s):* Coutinho,J.M.V.

Committee:

Subject of thesis:

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Szikszay,M. 1972. Geochemical aspects of Paraná basin rivers. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2106 **1972** *Date of presentation:*

Maria Szikszay *Advisor(s):* Leinz,V.

Committee:

Subject of thesis: Geochemistry

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Beurlen,H. 1973. Lead-zinc-fluorite occurrence in the Neoproterozoic Bambuí group in Minas Gerais state, Central Brazil. PhD Thesis. University of Ruprecht-Karls Universität Heidelberg, 160 pg.

Ruprecht-Karls Universität Heidelberg *Reference:*

DataBase Ref.: 743 **1973** *Date of presentation:*

Hartmut Beurlen *Advisor(s):* Amstutz,G.C. Müller,G.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

The mapping of three lead-fluorite occurrences in the carbonate rocks of the Precambrian Bambuí Group near Montalvânia, Minas Gerais, Brazil, displays a rigid stratigraphic and facies control. The mineralization lies at the top of a basal, pure carbonate sequence covered by a terrigenous marly sequence and a lateral transition from an intra- to supratidal elevated zone – "haute fond" – to a shallow basin facies. The rocks of the basal sequence were dolomitized and silicified withi the supratidal facies zone. Studies of fifteen additional occurrences of the Bambuí Group in the northwestern part of Minas Gerais showed the same pattern; namely, these occurrences are controlled by the vertical transition from a pure carbonate to a marly sequence to the top. Most of them are related to dolomitic and/or silicified host rocks.
Synsedimentary-diagenetic and/or synsedimentary-intraclastic ore textures could be observed in all occurrences. Syn- or postsedimentary intrusions and extrusions are absent or unknown in the Bambuí Group. Also absent are lead-zinc occurrences in the formations that cover and underlay the Bambuí Group. Thus, in accordance with the rigid stratigraphic and facies control of the mineralization, a syn-endogenetic origin for the lead-zinc occurrences is indicated.
The syngenetic ore paragenesis essentially presents a bimetallic character. Most of occurrences consist of galena, sphalerite, and fluorite, whereas the "Joel" mine shows the association willemite-fluorite, as a product of syngenetic oxidation process. Supergene-epigenetic processes promoted a silver and copper enrichment in the occurrences and sometimes a new silicification. In addition to the great variety of supergene minerals described by other authors, the following species belonging to this paragenesis could be distinguished: jalpaite, stromeyerite, silver-bearing, blue-remaining covellite, cinnabar, iodirite, gallium-bearing cotunnite, laurionite, rathite and grenockite.

Formoso,M.L.L. 1973. Geology of Capivarita, RS quadrangle: Capivarita anorthosite. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 226 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1035 **1973** *Date of presentation:*

Milton Luiz Laquintinie Formoso *Advisor(s):* Franco,R.R.

Committee:

Subject of thesis: Geochemistry and Petrology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Torquato,J.R.F. 1974. Geology of southwestern of Moçamedes and its relationships to the Angola tectonic evolution. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2110 **1974** *Date of presentation:* 16/8/1974

Joaquim Raul F. Torquato *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Thomaz Filho,A. 1976. Potencialities of Rb-Sr method for the datation of muddy sedimentary rocks. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 128 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1525 **1976** *Date of presentation:*

Antonio Thomaz Filho *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bernardes-de-Oliveira,M.E.C. 1977. Eogondwanic tafoflora of the Irapuá Bed, Rio Bonito formation (Tubarão group), SC state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1946 **1977** *Date of presentation:* 13/5/1977

Mary Elizabeth Cerruti Bernardes-de-Oliveira *Advisor(s):* Mendes,J.C.

Committee:

Subject of thesis: Petrology

State: SC *1/1,000,000 sheet:* SI22 *Centroid of the area:* ' - 'W

Abstract

Corrêa da Silva,Z.C. 1977. Observations on the Tubarão group in Rio Grande do Sul, with special emphasis on the stratigraphy of the Itaraté formation. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 300 **1977** *Date of presentation:*

Zuleika Carreta Corrêa da Silva *Advisor(s):* Figueiredo Filho,P.M. Andreis,R.R.

Committee:

Subject of thesis: Stratigraphy

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

This thesis includes a discussion on the stratigraphy of the Tubarão Group in Rio Grande do Sul State, on the basis of a detailed study of two main areas of its occurrence: Mariana Pimentel-Cerro do Roque and Coxilha do Tabuleiro Quadrangle.
In those two areas the group is subdivided into two formations, Itararé and Rio Bonito. The former includes two facies in Rio Grande do Sul: Mariana Pimentel (new name) and Budó (redefined). These units are contemporaneous and essentially clastic. The Rio Bonito Formation is the only representative of the Guatá Subgroup occurring in the studied areas.
A revision of the palaeontological content of both facies indicates that the Mariana Pimentel facies contains the genera Paracalamites, Glossopteris, Gangamopteris, Buriadia, Gink-gophyllum, Samaropsis, Cornucarpus, Noeggerathiopsis and cfr. Nephrosis. Fossils of the Budó facies are mono and triaxonic spicules, scolecodonts, fish scales and teeth, Orbiculoidea, Langella, Aviculopecten, Paracalamites, Glossopteris, Gangamopteris, Noeggerathiopsis, Botryochiopsis and Chiropteris.
The paleaofloristic assemblages point out to an Early Permian (Sakmarian) age for the Itararé Formation; the age of the Rio Bonito Formation is suggested to be younger, perhaps Artinskian.
The depositional environment of the Budó facies is believed to be shallow marine, whereas it is proposed here a lacustrine environment for the Mariana Pimentel facies. The Rio Bonito Formation includes mainly fluviatile deposits.

Gama Jr,E.G. 1977. Depositional systems and sedimentation model of the Campos and Emborê formations, Campos basin, Rio de Janeiro, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2115 **1977** *Date of presentation:* 22/7/1977

Ercílio Gonzaga da Gama Júnior *Advisor(s):*

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Purper,I. 1977. Cenozoic ostracoda of the occidental Amazonia. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 301 **1977** *Date of presentation:*

Ivone Purper *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present thesis consists of a study on the Cenozoic Ostracoda of the Occidental Amazonia based on three drill cores and one outcrop.
Six new genera and nine new species are described and their significance to paleoecology and stratigraphy discussed. Nearly all the ostracodes studied were new forms, thus confirming previous studies based on mollusks suggesting the fauna to be endemic.
Thanatocoenosis has taken place, as evidenced by the presence of reworked material consisting of typically brackishwaterostracodes associated with freshwater forms as well as by the associated presence of Mesozoic and Cenozoic forms. The latter are represented by genera such as Bisulcocypris and Cypridea, Upper Jurassic to Lower Cretaceous forms, together with Cenozoic ostracodes, among which there are some forms probably belonging to an age as late as Pliocene.
The name Pebas Formation is maintained instead of Solimões, even for those beds in the Brazilian side.

Sá,J.H.S. 1977. Litiniferous pegmatites of the Itinga-Araçuaí region, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2056 **1977** *Date of presentation:*

José Haroldo da Silva Sá *Advisor(s):* Ellert,R.

Committee:

Subject of thesis: Mineralogy and Economic Geology

State: MG *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Villwock,J.A. 1977. Aspects of the sedimentation in the northeastern part of the Lagoa dos Patos: Lagoa do Casamento and Saco do Cocuruto, RS, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 302 **1977** *Date of presentation:*

Jorge Alberto Villwock *Advisor(s):* Martins,L.R.S.

Committee:

Subject of thesis: Marine Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Lagoa dos Patos had its formation conditioned by the develop-ment of a multiple sandy barrier, under the influence of eustatic oscillations occurred during the Quaternary.
Geomorphologic aspects of the lagoonal margin of this barrier indicate the existence of at least four transgressive and regressive cycles. The accompanying sedimentary pro-cesses caused the compartmentation of the lagoon through the growth of sandy spits, a mechanism which gave origin to the Lagoa do Casamento and Saco do Cocuruto.
The bottom sediments of these lagoonal bodies are sandy and siltic. The sandy facies occur on the marginal and shallow parts, having their textural characteristics influenced by the kind of material derived from the source area, as well as by the nature, intensity and the time related to the action of the sedimentary agents. The siltic facies occupy the central and deeper positions. Sandy - siltic and siltic - sandy facies lay over the surface of the intermediary zones.
Quaternary terrains of the lagoonal margin, reworked during the transgressive cycles, constitute the main source of the lagoonal sediments. The Lagoa dos Patos waters, when entering the Lagoa do Casamento, bring into suspension a part of the siltic material originated from the highlands that border the Coastal Province.
Main agents involved in the sedimentation processes are the wind, waves and lagoonal currents. The water circulation is also influenced by the fluvial systems acting on the region.
The sedimentation is processed within an environment of shallow and fresh waters, lightly acidic, oxidizing at the margins and weakly reducing on the central parts. The benthonic biologic activity is scarse and related to a small fauna of mollusks.
The geomorphological evolution of the area controlled the major aspects of sedimentation in the lagoonal body.
Attempts to environmental characterization based on granulometric analyses evidenced that the methods of Folk & Ward (1957), Passega & Byranjee (1969) e Doeglas (1968) are efectively useful for the description and interpretation of present sedimentary environments, provided that the physical parameters are known. However, their usage as the only criteria for paleoenvironmental determination introduces a bias, since sedimentation on a coastal province is polycyclic and promoted by several defined environments which are moveable in time and space. Very often, the fast reworking of materials deposited under high energy environments is unable of erasing the textural characteristics inherited from the precedent cycle. The larger part of sediments of sandy facies from the lagoonal bottom exhibit properties similar to those deposited in beach and eolian environments.

Haralyi,N.L.E. 1978. Gravimetric chart of the west of Minas Gerais state, southeast of Goiás state and north of São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2023 **1978** *Date of presentation:*

Nicolau Ladislau Ervin Haralyi *Advisor(s):* Davino,A.

Committee:

Subject of thesis: Geophysics

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

GO

SP

Abstract

This thesis concerns with the elaboration of the Bouguer Gravity Chart in a 23 1/2 square degrees located in the central-meridional region of Brazil. The major units evolved in the area are the NE part of the Paraná Basin, a small part of the SE border of São Francisco cratonic area and the remaining crystalline basement, including the Central Transbrazilian Arch. It covers also part of the Brazilian Geodynamic Project's area. Some tectonic structures as like the Goiania flexure and larg fault zones could be delimitated and finally some light has been added to the history of the tectonic evolution of the area

Lima,M.R. 1978. Palinology of the Santana formation (Cretaceous of the northeastern of Brasil). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2119 **1978** *Date of presentation:*

Murilo Rodolfo de Lima *Advisor(s):* Rösler,O.

Committee:

Subject of thesis: Palaeoecology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Urdininea,J.S.A. 1978. Geochemical and environmental aspects of the limestones from the Pirabas formation - Pará state. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 303 **1978** *Date of presentation:*

Jaime Simon Almaraz Urdininea *Advisor(s):* Formoso,M.L.L.

Committee:

Subject of thesis: Geochemistry

State: PA *1/1,000,000 sheet:* SA23 *Centroid of the area:* ' - 'W

Abstract

In this thesis are studied various characteristics of the limestones of the Miocenic Formation Pirabas that outcrop in the State of Pará, aiming at characterizing the environment of the sedimentation.
Through a previous appraisal of the stratigraphy of the Tertiary sediments in the region, several stratigraphic maps were developed in order to identify the various tectonic units present, and to define that one responsible for the calcareous sedimentation that has been called Bragantina Shelf.
The petrographic study of eighty five samples of limestone, based on the textural and mineralogical composition, has permitted to reconignize the lithological varieties of these sediments; micritic limestones, dolomicritic limestones and micritic (peletal/squeletal/detritic) limestones. The sedimentological characterization of these rocks by using statistical parameters has led to correlate such parameters with the Bissell & Chilingard's classification and to define the probable energitical levels of the Pirabas sea waters as weakly agitated and calm.
The clay-minerals identified through 471 diffractograms of X-rays and by eventually employing absorption spectrography by infrared rays are the following: kaolinite, illite, ferriferous smectite (nontronite), aluminous smectite (?) and in-terestratified: I(10-14M), I(10-14M). It was observed the relation between the qualitative and quantitative distributions of these clay-minerals and the lithologies with which they are associated. To the first two clay-minerals is assigned a detritical origin, the kaolinite depicting the sialitical process of intense pluviosity in the source areas. The aluminous smectites (?) and the interstratified I(10-14M) are believed to be a new formation in marine and brackish environment of shallow waters. The nontronite and the interstratified I(10-14M) are considered as resulting from diagenesis.
The mineralogy of the carbonates, also studied through 491 difractograms of X-rays, with a register speed of 2° 20/min, in six granulometric intervals, has allowed to identify the following minerals: calcite- -with-low-magnesium, aragonite, dolo-

mite-with-low-magnesium. The format-ion of calcite-with-low-magnesium is attributed to the paramorphical substitution of the aragonite and of the calcite-with-high-magnesium, and the low content of aragonite in the samples is interpreted as a consequence of the preservation of this mineral under the specifically local lithological conditions. The dolomite is always considered as of secundary origin. The low content of magnesium in the calcite and dolimite areas is interpreted as resulting from the low salinity of the Pirabas Sea waters.
The aplication of "Trend Surface" regression analysis to the three chemical varieties of the limestones composition: calcium oxide insoluble fractions and magnesium oxide, demonstrates a relation of the distribution in area between the two first varieties and the paleogeography of the basin. The magnesium oxid, however, does not obey to the model of such analyses; the more pronounced oscillations present themselves in samples from present littoral areas, being these oscillations minor in continental areas.
The study of distribution in an assemblage of seventeen minor elements and traces in samples of fossil carbonaceous shells, limestones, calciferous shales, insoluble fractions of the calciferous rocks and fractionclay has allowed to regonize the "marine chemiofacies" and the "continental chemiofacies" of the source areas, characterized respectively by the two following groups of elements (1) Sr, B. Cu, V and Ni, (2) Zr, Cr, and Ti. The content variations of B/Ga in the clay and insoluble fractions and of Sr in limestones indicate physicochemical variations in the waters of Pirabas Sea, likely related to salinity changes.
The isotopic ratios O18/O16 and C13/C12 determined in twelve samples of calcareous rocks and thirteen samples of fossils permitted to found a temperature interval of the Pirabas Sea waters between 25 and 30°C (77 86°F), besides revealing the salinity changes befalling in the trans-gression-regression cycle responsible by the sedimentation of these limestones.
A cadastre of the limestone outcrops of Pirabas Formation, Pará State, is shown in the appendix.

Fiori,A.P. 1979. Geology of the Pouso Alegre - Machado region: structural analysis of overprinted foldings. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2126 **1979** *Date of presentation:* 30/11/1979

Alberto Pio Fiori *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Tectonic and Structural Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Lima,O.A.L. 1979. Study of the use of natural underground reservoirs for the water storing in an experimental area of the semi-arid region of the Brazilian Northeastern. PhD Thesis; Instituto de Geociências, University of Bahia, Salvador; pp

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 1531 **1979** *Date of presentation:* 27/3/1979

Olivar Antônio Lima de Lima *Advisor(s):* Dias,C.A.

Committee:

Subject of thesis: Geophysics

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

A sandstone unit of the Sergi Formation in the region of Cocorobó-Bahia was selected as an experimental area for an appraisal of the feasilibity of artificial injection of water in porous and permeable lithologies subutilized as aquifers by the natural conditions in the semi-arid sedimentary region of the Brazilian Northeast. Geological mapping of the region showed that these sandstones occur intercalated with argillaceous lithologies in a block-faulted structure. Many faults are impermeable due to silicification along the planes of rupture allowing a delimitation of a rock body not excessively large but sufficient for determination of a regional hydraulic behavior. The three-dimensional geometrical contours of the formation were delineated using AFMAG (audio-frequency magnetic method), electrical methods and seismic refraction. The AFMAG measurements yielded a very good delineation of the fault systems of the area. Electrical soundings and seismic profiling defined the geometry of the reservoir at depth, gave information about its boundaries and the hydrological properties. The hydrodynamic properties of the sandstones determined in laboratory tests and in the field served to specify with sufficient precision the average hydraulic parameters of injection and storage of water in the area studied, as given by K = 2.5 x 10-3 cm/s and ne = 29%, respectively for the hydraulic conductivity and the coefficient of storage. Approximate analytical solutions of the differential equations of the flow of fluids in porous media were obtained for the injection of water into wells in free or confined aquifers underlain inclined impermeable substrata. The free aquifer solution applied to the Cocorobó reservoir permitted to determine the water table evolution as a function of time, and to estimate the injection rate and the volume of water injected after a given period of time. The results presented suggest the viability of the subterranean storage of water by injection in undersaturated reservoirs under the conditions existing in the semi-arid sedimentary environment of the Brazilian Northeast.

Maranhão,R. 1979. Economic geology of Currais Novos region-RN state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1993 **1979** *Date of presentation:*

Ricardo Maranhão *Advisor(s):* Cassedanne,J.P. Melcher,G.C.

Committee:

Subject of thesis: Economic Geology

State: RN *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Seignemartin,C.L. 1979. Geology of urban areas: The example of Ribeirão Preto, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2127 **1979** *Date of presentation:*

Claudio Lisias Seignemartin *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Souza,J.V. 1979. Geology and genesis of the proto-ore and ore of the Aracoiaba - Pacajus manganesiferous province, Ceará state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2125 **1979** *Date of presentation:* 16/4/1979

José Vitorino de Souza *Advisor(s):* Ribeiro Filho,E.

Committee:

Subject of thesis: Economic Geology

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Duarte,U. 1980. Environmental geology of the São Pedro area, SP state: underground waters vector. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2042 **1980** *Date of presentation:* 11/4/1980

Uriel Duarte *Advisor(s):* Ellert,R.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Carvalho,H.S. 1981. Method for the determination of geothermal flow with application to the petroleum sedimentary basins of the Recôncavo Baiano (Brazil) and Sumatra (Indonesia). PhD Thesis; Instituto de Geociências, University of Bahia, Salvador; pp

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 1534 **1981** *Date of presentation:* 29/5/1981

Humberto S. Carvalho *Advisor(s):* Vacquier,V.

Committee:

Subject of thesis: Geophysics

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

In this thesis a method of determining heat flow in petroliferous sedimentary basins has been proposed. The temperature gradient is determined from bottom hole temperatures and corresponding depths gotten from well logs. Also, the lithology of the geologic column of the well is determined from the well logs using the Spontaneous Potential trace. Knowing the lithology of the well and the measured thermal conductivity of representative rocks of the geologic section, which are available at the oil companies warehouses, the effective thermal conductivity of the geologic column of the well is determined. Based on the unsteady heat conduction, a method for measuring thermal conductivity of rocks has been proposed in this thesis. This new method has an advantage over other ones because no special sample preparation is needed and the thermal conductivity value can be obtained in no more than 3 minutes. Thermal conductivity values obtained by this method agree very well when compared with those obtained by the conventional method of divided bar. The reproducibility of the measurements is better than 5%. Heat flow in the Reconcavo and Central Sumatra basins were determined using the methods described above. In the Reconcavo basin the temperature gradients were determined from 918 temperature - depth data from six oil fields. The effective thermal conductivity of the rock column was calculated from measurements on 81 specimens of the geologic section and inspection of 81 well logs. the average heat flow for this basin is 1.10 ± 0.17 microcalories/ cm2.sec. In the Central Sumatra basin heat flow was determined from thermal gradients obtained from the extrapolated oil well bottom hole formation temperature and the temperature of 26.7oC at the surface. The effective thermal conductivity of the whole rock column, by which the gradient is multiplied to get the heat flow was calculated from measurements on 273 specimens of the geologic section and inspection of 92 well logs. The heat flow for this basin is 3.27 ± 0.92 microcalories/cm2.sec. The gradient and the heat flow vary inversely with the depth of the wells, most of which bottom in the pre-Tertiary basement. Using the gradients from the SEAPEX Geothermal Gradient Map and assuming a conductivity of 5 milicalories/oC.cm.sec., the heat flow in the North and South Sumatra basins, Sunda Strait and West Java is 2.5 microcalories/cm2.sec., while in Java east, 110oE longitude, it drops to 1.9 microcalories/cm2.sec. Since subduction off Sumatra dates back at least to the Cretaceous, compression of the Asian plate against the Benioff zone is preventing the opening of a back-arc basin. This does not preclude the possibility of occasional periods of crustal tension corresponding perhaps to episodes of transgression which allow magma rise into the rocks underlying the basin.

Hartmann,L.A. 1981. Petrogenesis of the Luiz Alves granulites and ultramafites (SC). PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 304 **1981** *Date of presentation:*

Leo Afraneo Hartmann *Advisor(s):* Formoso,M.L.L.

Committee:

Subject of thesis: Geochemistry

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The Luiz Alves region is underlain by granulitic rocks, predominantly quartzo-feldspathic and mafic gneisses, and in smaller amounts ultramafites, anorthosites and quartzites, besides small basic dikes. Hypersthene is regionally present in the gneisses and ultramafites herein studied. These rocks are slightly foliated and present granoblastic to granulitic texture. The gneisses show major - and minor - element compositions typical of medium-pressure granulites; basic to intermediate gneisses predominate. These granulites are impoverished in lithophile elements, particularly SiO2, K2O, Rb and U. The ultramafites have a basic composition. The gneisses and ultramafites were probably submitted to anatexis, turning it more difficult to identify the pre-metamorphic rock-types; a sedimentary origin for the major part of the rock-pile is favored. The granulite-facies metamorphism occurred 2.7 b.y. ago, during the Jequié Cycle. Lower ages obtained in Pièn are probably due to Rb metassomatism during granite emplacement 600 my ago.

Jost,H. 1981. Geology and metallogeny of the Santana da Boa Vista Region, Southern Brazil. PhD Thesis - University of Georgia, Georgia, USA; pp

regional geology, stratigraphy, structural geology, metallogeny, Late Precambrian, Southern Brazil

University of Georgia, Athens, Georgia, USA *Reference:*

DataBase Ref.: 1607 **1981** *Date of presentation:*

Hardy Jost *Advisor(s):* Allard,T.

Committee:

Subject of thesis:

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The geology and mineral deposits of the Santana da Boa Vista region, State of Rio Grande do Sul, Southern Brazil are described and discussed.
Metamorphic units are distributed into two major structures: the Santana Dome and the Cerro da Árvore nappe Complex. The suprastructure of the dome and the nappe are grouped under the Porongos Metamorphic Suite.
The Santana Dome has an ensialic core, or basement of gneisses in the upper amphibolite to granulite (?) facies, which are here termed the Encantadas Gneisses (2,036 M.y.). The gneisses are overlain through a transposed unconformity by a 4,000 to 5,000 m thick sequence of northeast to northwest-trending low-grade (greenschist facies) metasediments of the Cerro dos Madeiras Group (Braziliano Orogeny, 650 to 450 M.y.). The Group is subdivided into the lower Arroio dos Neves Formation (metarkoses and quartzites), the middle Arroio Olaria Formation (rhythmic quartzites, schists, and metarkoses), and the upper Irapuazinho Formation (schists and marbles). The Cerro dos Madeiras Group is interpreted as a sedimentary wedge deposited on a Late Precambrian Atlantic-type continental margin. A Barrovian type metamorphism affected the unit during orogenesis.
The Cerro da Árvore Complex is a fragment of a westerly transported, overturned nappe bounded on the lower side by extensive mylonite zones. It consists of a complex sequence of high Al203, high K20 metandesites, metadacites and fine-grained metatufs. Volcanic and pyroclastic rocks are interlayered with pelitic schists, graphite schists, and rare quartzites and marbles. The Cerro da Árvore Complex comprises five informal stratigraphic units. It is interpreted to have been formed in an island arc environment, which developed during the closing of the Late Precambrian proto-South Atlantic Ocean. Metamorphic grade in the complex ranges from the chlorite zone (greenschist facies) to the staurolite zone (lower amphibolite facies). The assemblage andalusite-staurolite-muscovite-quartz indicates a Buchans type metamorphism. Structural evidence suggests that the westerly transport of the nappe took place when the Santana Dome already existed as a structural height.
There are two categories of granitic rocks. Coarse-grained granites, alaskites, and quartz-syenites comprise the Encruzilhada Complex. A fine-grained porphyritic quartz-monzonite (Campinas Stock) intrudes and alters the Encruzilhada Complex granitic rocks and the schists of the Cerro da Árvore Complex. Intrusion of the stock was controlled by transcurrent faults, which form pronounced topographic lineaments. The absolute age of the granitic rocks has not been determined. However, the granites of the Encruzilhada Complex may have been emplaced during the synorogenic phase of the Brasiliano Orogeny (650 to 450 M.y.), whereas the Campinas Stock is younger.
Younger units that cover the area consist of the following (oldest to youngest): (1) a tilted, allochtonous set of slices (4,000 m thick) of gray, petromictic clastics of the Arroio dos Nobres Formation (Late Precambrian conglomerates, sandstones, graywackes, and siltstones); (2) a 300 m thick sequence of red fluviatile conglomerates, sandstones, and siltstones of the Early Paleozoic Guaritas Formation, (3) a 100 m thick sequence of red fluviatile sandstones, siltstones, shales, and fossiliferous mudstones, locally capped with basalt flows, of the Caneleiras Formation (Early to Middle Mesozoic); and, (4) quaternary alluvium.
Three folding events occur in the Encantadas Gneisses. The first set of folds are suggested to be related to peak metamorphism whereas the second and third generations of folds are postulated to have been formed during the uplift of the Santana Dome. The later are not accompanied by metamorphic reactions. The Cerro dos Madeiras Group underwent two major deformations. The first corresponds to peak metamorphism and development of a metamorphic foliation, which has lately been folded to conform the Santana Dome. Metamorphic reactions are lacking in the second deformation event of the Cerro dos Madeiras Group. Four deformation events took place in the Cerro da Árvore Complex, more or less accompanied by metamorphic reactions. Based on microstructural and mesoscopic evidence it can be shown that the acme of metamorphism (second folding event) predates the formation of the nappe, which is related to a third folding event. The last major folding of the Cerro da Árvore Complex resulted from drag folding due to transcurrent displacement along the contact between the Encruzilhada and the Cerro da Árvore Complexes. An additional deformation of the Encantadas Gneisses and the Cerro dos Madeiras Group in the Santana Dome area is time-related to the displacement of the nappe onto the dome.
In decreasing age, major faults comprise: (1) north-south to northeast-trending and easterly dipping major thrusts and reverse faults; (2) northeast- to north-trending steep transcurrent lineaments; (3) northwest strike-slip faults; and (4) north-east trending, vertical, newly opened or reactivated older fault systems. The intensity, width, and length of cataclastic deformation and metamorphism decreases with the age of the fault Systems. Joint systems are in general oriented with respect to the major compression axes of the area.
Three mineral deposits occur in the area. Sedimentary iron and iron-manganese deposits form small massive pods in the Cerro dos Madeiras Group. Volcanogenic and volcano-sedimentary Cu-Fe-Pb-As sulfide occurrences have been recently discovered in the Cerro da Árvore nappe Complex. Low-grade Sn-W mineralization in greisens comprise the Encruzilhada tin mining district.
The author concludes that the area evolved in five major stages as follows: (1) the Pre-Orogenic Stage is postulated to correspond to the opening of the proto-South Atlantic Ocean during the Late Precambrian with the development of a passive continental margin, and deposition of the Cerro dos Madeiras Group on an ensialic basement (Encantadas Gneisses); (2) the Orogenic Stage is represented by the formation of an Island Arc against the continental wedge, due to consuption, deformation of the passive margin accompanied by metamorphism; pilling up, deformation and metamorphism, and westerly gravity gliding of volcanic and volcano-sedimentary sequences from the rears of the island arc; and, beginning of molasse deposition; (3) the Late Orogenic Stage took place under general uplift, large-scale transcurrent faulting, and peralkaline magmatism, and, (4) the Post Orogenic Stage is represented by faulting, peraluminous intrusions, and later molasse sedimentation; and, (5) the Epicratonic Stage is represented by the transgression of Triassic fluviatile sediments, normal faulting, flood basalts, and intrusion of basic and alkaline dikes, followed by Late Mesozoic to Cenozoic erosion.

Machado,A.J. 1981. Foraminifera from the superficial and subsuperficial sediments (Plioholocene) of the continental margin of Maranhão state. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 305 **1981** *Date of presentation:*

Altair de Jesus Machado *Advisor(s):* Tinoco,I.M.

Committee:

Subject of thesis: Palaeontology

State: MA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

One hundred eight species of foraminifera were identified in thirty five samples of superficial bottom sediments and in fourty five samples from two cores collected between Salinópolis and the Piauí/Ceará border, on the North-Northeastern Brazilian Continental Margins. Out of one hundred eight species, twenty three are of planktonic forms.
These sediment samples and cores were obtained during two oceanographic cruises: the "Geomar VIII", which sampled the continental shelf and the continental slope and the "North-Northeastern I", which was restricted to the continental shelf areas.
Studies on samples from core G-008 gave a biostratigraphic zonation with 40cm representing the Holocene deposition, 660cm representing Wisconsian sediments and 20cm representing the X zone, based on the characteristics of the planktonic forms Globorotalia menardii s.l. and Pulleniatia obliqueloculata.
Seven shelf sedimentary facies were distinguished.
The rate of the Holocene sedimentation on the G-008 core in water depth of 2,216m is of 3.6cm/1,000 years and the rate of the Wisconsian sedimentation is of 16.5cm/1,000 years.

Ornellas,L.P. 1981. Ostracoda and their meaning for the interpretation of cenozoic events in the Pelotas basin, RS - Transgressions, regressions, palaeoecology and biostratigraphy. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 306 **1981** *Date of presentation:*

Lília Pinto de Ornellas *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present thesis consists of the systematic and paleoecological study of the Post-Miocene ostracodes from seven drillings of Petróleo Brasileiro S.A. (Petrobrás) from the Pelotas Basin, RS, Brazil.
Seventeen genera have been identified and systematically described, presenting a total of twenty-six species, being two new genera and eighteen new species.
The analysis of this faunula provided paleoecological data permitting to recognize and correlate the paleoenvironment of seven intervals, through different associations of ostracodes. It also permitted to determine several fluctuations of the sea level that could have occurred through the Upper Cenozoic as well as to establish four zones: Bradleya delicatula, Cyprideis posteroinflata, Coquimba atlantica and Argenticytheretta levipunctata.

Araújo,D.C.F. 1982. Study of the Pareiasauroidea material (Reptilia, Anapsida, Cotylosauria, Procolophonia) from the late Permian of Rio Grande do Sul state, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 312 **1982** *Date of presentation:*

Dina Celeste Fernandes Araújo *Advisor(s):* Couto,C.P.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis deals mainly with the osteological description of cranial and postcranial materials of a new species of Pareiasaudoidea, Pareiasaurus americanus n. sp.
These materials were collected in outcrops (km 204 and km 204+600m) along the Bagé-Aceguá Highway (BR-153), Rio Grande do Sul State, Brazil, made up of sediments belonging to the upper Armada facies of the Estrada Nova Formation, as defined by Figueiredo Fº (1972).
Skull, scapula-coracoid and right humerus (km 204 outcrop) were designated as the holotype of the new species; associated with a pelvis of a young specimen of the same outcrop, plus postcranial materials (an almost complete axial skeleton, pelvis, dermal scutes and segments of the right anterior and posterior limbs) of the km 204+600m outcrop, it cons-titutes the hypodigm.
The osteological study of the material reveals that P. americanus presents clear affinities with the forms occurring in the Daptocephalus Zone of the Lower Beaufort Series, Karroo System, Africa. In terms of chronocorrelation, this suggests that the relationships of the Armada facies with the Estrada Nova Formation should be revised.
Paleobiogeographical considerations are also presented in this study. Dispersal routes are discussed, particularly the ones in reference to the paleotetrapods of the Paraná and Karroo Basins during the Permian.
A new schema for the phylo-genetic derivation of the pareiasaurs is here presented. It differs in some aspects from Boonstra's (1932c) approach to the subject. As a result of this new schema, an alternative taxonomic arrangement is also proposed for this group of fossil reptiles.

Becker,R.D. 1982. Distribution of cenozoic sediments in the metropolitan region of Curitiba and their relation to the regional geologic and morphologic structure. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 309 **1982** *Date of presentation:*

Rosemari Dora Becker *Advisor(s):* Formoso,M.L.L. Bigarella,J.J.

Committee:

Subject of thesis: Stratigraphy

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The present contribution is a tentative to integrate the geologic, geomorphologic and sedimentologic features related to the Cenozoic formations from the Curitiba Metropolitan Region. Office, laboratory and field studies allowed new approaches and interpretations concerning the relationship between the geologic structures and the erosive and sedimentary problems.
The morphology of the terrain comprises erosive and sedimentary levels. These features were surveyed concerning the origin of the forms and the role they played in the development of the stratigraphic sequence.
The sedimentological analysis characterized the sedimentary types. The integration of the available data permitted the establishment of correlations between the geologic and geomorphologic features.
The morphology changed accord-ing to the geologic structures and the drainage system pattern. There were recognized in the oriental part of the State of Paraná three main erosion surfaces referred as the pediplanes Pd3, Pd2 and Pd1. Inset in the latter there are two pediment levels: P2 and P1. Below the P1 there are gravel terraces and flood plain terraces. All these levels are polygenetic in nature and related to climatic changes.
The alternation of two main groups of climatic conditions was represented by semiaridity and humidity episodes. These episodes were responsible for the development of the succession of topographic forms and for the deposition of several sedimentary sequences represented by the Guabirotuba, Tinguis and Boqueirão Formations, as well as by the depositon of the alluvial flat deposits and the colluvium-alluvium ramps.
The climatic alternations caused changes in the hydrodynamic and morphodynamic processes, which originated respectively the lateral degradation and the vertical dissection of the terrain.
The source area for the Cenozoic sediments was located around the Curitiba Basin and comprised terrains of different lithologies, which are represented by the crystalline basement, by the Setuva and Açungui groups and by the Camarinha and Guaratubinha Formations.
The Cenozoic sequences are made up of several sedimentary units separated by erosive unconformities visualized through the stratigraphic and geomorphologic approaches. The former paleoclimates from the time of deposition were interpreted from the mineralogic analysis and from the examination of the sedimentary structures and textures.
Pediplanes and pediments were originated from processes causing the lateral degradation of the terrain during semiarid times. At the same time, sedimentary sequences were deposited in the basins of a dissected landscape. These climatic episodes were of a

cyclic nature.
In the Curitiba Basin more than a paleoclimatic event happened being responsible for the sedimentary succession. The Guabirotuba Formation was deposited in a desertic environment during the time of the development of the pediplane Pd2, probablyduring the Lower Pliocene. The temperature at this time possibly was somewhat cooler than the present one. The Tinguis Formation was separated from the upper part of the Guabirotuba Fm., and correlated with the development of the pediplane Pd1 and the pediments P2 and P1. The sediments of the Tinguis Fm. represent the reworking of the Guabirotuba sediments. The Boqueirão Fm. was deposited during the Upper Pleistocene in a braided stream environment. Both the Tinguis and Boqueirão Formations were deposited under semiarid conditions.
In Curitiba Basin the mean diameter of the sediments depends of the energy of the environment. Most of the samples of the Guabirotuba and Tinguis Formations, and most of those from the alluvial flat deposits are very poorly sorted, showing that the transport agent was unable to sort the sediment. The Boqueirão Fm. sediments are better sorted, due to transport by a braided stream system.

Lima e Cunha,M.C. 1982. Biogeochemistry in mineral prospection: The application of the method to a coppermineralized area in Rio Grande do Sul. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 310 **1982** *Date of presentation:*

Maria do Carmo Lima e Cunha *Advisor(s):* Formoso,M.L.L.

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH21 *Centroid of the area:* ' - 'W

Abstract

The results of the application of biogeochemical prospecting are presented and discussed. The studied area, Santa Ivone Farm, Bagé, Rio Grande do Sul, is constituted of sedimentites and migmatites cut by pyrite, chalcopyrite, galena, and silver-bearing quartz veins. The native species Schinus lentiscifolius and Schinus dependens (regionally known as "aroeiras") were analyzed for Cu, Ni, V, Cr, Co, Pb and Zr through optical spectrography of ashes from leaves and twigs.
The data were statistically treated in order to determine background and threshold values. The plant density of occurrence, distribution and mechanisms of mineral constituents absorption from the soil are discussed for deduction of the possible relatioships between element concentration in the soil and in the plants.
The biogeochemical results indicate that, particularly for copper, there is a strong dependency of the data on the sampled species and organs, leading to the choice of S. lentiscifolius leaves as the most representative sampling media.
It is suggested that S. lentiscifolius is tolerant to high, though limited, copper concentration in the soils of the studied area. The correlation between the copper content in soil and in plant is found to be significant only when anomalous soils occur, indicating that the element absorption by the plant increases with the element concentration in solutions within the soils.
The author concludes that the biogeochemical method is efficient even in detailed work and in subtropical areas, where erosive agents normally remove the alteration cover. As compared to soil geochemistry, biogeochemistry also reveals the position of subsurface mineralization, and as a result of vertical and lateral extent of the plant radicular system, biogeochemical prospecting expands the volume meaning of each sample, resulting more representative, particularly where soils are less developed and/or transported.

Mello,E.Z.V. 1982. Study of the Fazenda Jurema fluorite, barite and heavy metals occcurrence, Barra da Estiva, Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2054 **1982** *Date of presentation:* 1/12/1982

Everaldo Zeferino Vieira de Mello *Advisor(s):* Ellert,R.

Committee:

Subject of thesis:

State: BA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Menegotto,E. 1982. Weathering alteration of ultrabasic rocks under a subtropical climate: Mineralogical and geochemical evolution of some ultrabasic massifs of Rio Grande do Sul - Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 308 **1982** *Date of presentation:*

Egydio Menegotto *Advisor(s):* Formoso,M.L.L. Trescases,J.J.

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The purpose of this thesis is to study the weathering of three Pre-Cambrian ultrabasic massifs which occur in Rio Grande do Sul, Brazil. Such massifs comprise mainly the following rock-types: harzburgitic plagioclase (Pedras Pretas), clinopyroxene-hornblende peridotite (Passo do Ivo), meta-dunite and meta-peridotites (Cerro Mantiqueiras). Metamorphism (amphibolitization and chloritization) and serpentinization affected these rocks in varying proportions.
The environment in which the weathering occurs is characterized by a subtropical climate, with well-defined thermal seasons and a mean annual rainfall of 1,350mm, spread throughout the year. The topography is characterized by hills with gentle slopes, some flat-lying surfaces and rare abrupt scarps. The soil is thin, formed by Lithosoils with small portions of Cambisoils and Brunizem. The vegetation is scarce.
Minerals of lowest stability are weathered (olivine, microcrystalline serpentine, pyroxenes and carbonate) in the first stages. In the saprolite facies, the total weathering of anthophylite, fibrous serpentine of the mesh cords, phlogopite and plagioclase occurs, besides being completed the transformation of clinochlore into secundary chlorite. The other amphiboles (cummingtonite, hornblende, trenolite and actinolite), the serpentine of veins, the talc and the spinels (chromite, magnetite and pleonaste) are scarcely weathered, therefore being abundant in the soil.
The weathering products of the mafic silicates are nontronite and amorphous materials. The weathering of plagioclase forms kaolinite and montmorillonite. The amorphous complex is ferric, whenever plagioclase is absent from the rocks and silicic-aluminous-ferric when it is present. The crystallization of the amorphous materials in the soil forms crystalline oxides and hydroxides of Fe, Mn and Al (mainly goethite), structured as oölites.
The soils originated from ultrabasic rocks are smectitic and with Mg++ as the main exchangeable cation, whereas the soils formed by other rocks, in the same area, are kaolinitic with Ca++ as the exchangeable cation. The smectite of these soils is nontronite when plagioclase is absent from the rocks; if there is plagioclase, intermediate terms in a series between aluminous nontronite and ferric montmorilonite, or a mixture of both, will occur.
The geochemical evolution is characterized by the loss ofsoluble elements and the fixing of the residual ones. As a function of the lost amount, calculated through the proportions in the different facies of the residual solid phase, the elements show the following mobility scale:

Mg > Ca > (Na, K) > Si > (Cu, Cr, Ni, Co, V, Mn, Fe) > (Al, Ti, Zr)

The majority of the residual elements are concentrated at the foothills and lower plain surfaces by the colluvial migration of the larger particles (oölites, residual minerals). Some elements are concentrated at the flat-lying surfaces, when the soil is deep, by adsorption onto clay minerals or into organic compounds. Thus, special care must be taken so that prospection work in soils does not lead to erroneous results.
The water of the sources in the ultrabasic areas is magnesian and bicarbonated, with considerable proportions of Si, Na and K. The composition of this water is in agreement with the loss of elements observed in the residual solid phase. However, the mobility of Ca, Na and K is exaggerated, because they are mainly contained in the silicates that weather in the saprolite facies. The kind of weathering, indicated by the composition of the groundwater, is in agreement with the mineralogical products. This kind of weathering can be called ferrisilicification and it may be associated with some ferruginization periods.
The physico-chemical study confirms the tendency to the hydrolisis of the silicates, except for chlorite, that can be a supergene product. This study also shows that groundwater is in equilibrium with the aluminous nontronite, what explains the formation and the preservation of this mineral, and also confirms the absence of silicifications under the present conditions.

Mussa,D. 1982. Permian lignitefofloras of the Paraná basin, Brazil (São Paulo and Santa Catarina states). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2136 **1982** *Date of presentation:*

Diana Mussa *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis: Palaeontology and Stratigraphy

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

SC

Abstract

Popp,J.H. 1982. Facies, environments and coals of the Rio Bonito formation in southern Paraná state: A stratigraphical analysis. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 311 **1982** *Date of presentation:*

José Henrique Popp *Advisor(s):* Corrêa da Silva,Z.C. Soares,P.C.

Committee:

Subject of thesis: Stratigraphy

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The results obtained through stratigraphic analysis on a regional scale, in the Rio Bonito Formation (Lower Permian of the Paraná Basin) are presented herein. The survey was performed over an area of about 3,000 km², in the southern region of the State of Paraná.
The main purpose of the research was to analyze the faciologic and depositional parameters of the coal-bearing deposit and the possibility of its economic exploitation.
About 90 well logs and several field sections were studied.
The interpretation of the sedimentary environment was made through the formats (curve shapes) of gamma rays and resistivity logs related to the physical properties of the facies, supplemented by lithologic control from outcrop description and samples from strategically located wells.
The lower member of Rio Bonito Formation (Triunfo Member) was originated in a deltaic province prograding over prodeltaic siltstones of an epicontinental shallow sea.
The upper part of this member is of a retrogradacional nature, being covered by transgressive marine deposits of the Paraguaçu Member.
In the interdistributary bay of the Triunfo Member deltaic plains several peat swamps and marches were formed.
Owing to high clastic influx and low subsidence rate, the peat accumulation was thin, being preserved as coal beds thinner then 50cm with a high ash content.

Rodrigues,M.A.C. 1982. Paleoenvironmental interpretation of the postevaporitic sequence of the southern part of the Espírito Santo basin - ES - Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 307 **1982** *Date of presentation:*

Maria Antonieta da Conceição Rodrigues *Advisor(s):* Andreis,R.R. Mendes,J.C.

Committee:

Subject of thesis: Marine Geology

State: ES *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The post-evaporitic sequence of the southern part of Espírito Santo Basin, one of the most typical basins of the Brazilian eastern coast, is studied here.
The material of three drilling cores (1-ESS-5, 1-ESS-22 and 1-ESS-23) kindly lent by Petróleo Brasileiro S.A. - PETROBRAS was studied.
The data obtained from the three drillings were integrated into columnar profiles, for a better visualization of the results.
Lithostratigraphic units were characterized, after the lithologic description of the studied sections was accomplished.
Eleven biozones, based on foraminifera, were recognized. One of them is related to the Upper Cretaceous; the remaining ones to the Tertiary.
Palaeoenvironments were established for the lithofaciologic units, according to the most diagnostic features of the studied lithofacies, such as granulometry, sedimentary structures, colours and distribution of the microfossils.

Almeida Filho,R. 1983. Orbital remote sensing applied to mineral prospection in the Goiás and Rondônia tin provinces: A methodological contribution. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1895 **1983** *Date of presentation:*

Raimundo Almeida Filho *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Remote Sensing

State: GO *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

RO

Abstract

Candia,M.A.F. 1983. Petrology of Mangabal I and Mangabal II mafic-ultramafic complexes, Sanclerlandia, Goiás state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 400 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1230 **1983** *Date of presentation:*

Maria Angela F.Candia *Advisor(s):* Girardi,V.A.V.

Committee:

Subject of thesis: Geochemistry and Petrology

State: GO *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

Carneiro,C.D.R. 1983. Structural analysis of the São Roque group in the strip of land between Pico do Jaraguá peak and the Serra dos Cristais chain, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1986 **1983** *Date of presentation:*

Celso Dal Ré Carneiro *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Structural analysis of the São Roque Group in an area of 376 km2 between the Pico do Jaraguá (Municipality of São Paulo) and the Serra dos Cristais (Municipality of Jundiaí) has permitted the reconstruction of three phases of folding as determined from characteristics of fold styles and the nature of axial-plane foliations. These phases of folding are linked to metamorphic and magmatic phenomena. Microstrutural studies have shown the relationship between deformation and metamorphism.
In the studied area, stratigraphic reconstruction of the São Roque Group is limited by the paucity of data on stratigraphic younging and a lack of clarity as to the data on the first phase of folding. Nevertheless, it is possible to recognize four main lithostratigraphic units, informally designated (from apparent base upwards) as follows:
1) impure metapsamites, with intercalations of polymitic metaconglomerates, metavolcanics (some of which were discovered during this study), phyllites and quartzites;
2) metapelites, represented by phyllites and schists of diverse types, with many intercalations of metarenites. Unit 2 grades laterally and vertically into the following two units:
3) metamarls and probable metatuffs, represented by calc-silicate rocks, with subordinate limestones and dolomites;
4) rhythmic metapsamites, made up of alternating meta-arenite, meta-arkose and phyllites, with narrow zones of microconglomeratic metarenites.
The metamorphic rocks of the area were affected by three phases of folding that generated interference patterns observable in both outcrops and maps.
The F1 phase was accompanied by the formation of axial-plane slaty cleavage or schistosity related to tight folds and was followed by the regional metamorphic peak under post-kinematic conditions. During this peak porphyroblasts of opaque minerals, garnet, staurolite and sillimanite developed. This main metamorphic event continued, at least for the staurolite, into the beginning of the second folding episode. The F2 phase generated a persistent crenulation cleavage, both microscopic and of the zonal type, in the axial-plane position of tight folds. Differentiated banding and some recrystalization of biotite around opaque minerals occurred during this phase. The third phase of folding, F3, created more widely spaced crenulation cleavage not of the zonal type so common in the previous F2 phase. The phase F3, which was more intense in the southern part of the studied area, generated large folds and undulations in regional structures.

Granitic intrusions are subdivided into three groups. The bodies formed prior to F2 tectonism are represented by the granites of Francisco Morato and Tico-Tico. Gnaissified pegmatites and folded pegmatitic veins are common in the regions surrounding these bodies. The Cantareira and Itaqui batholiths and the Itaim and Taipas stocks are considered as synchronous to contemporaneous with to tarditectonic events of F2 and the sintectonic events to F3. The tourmaline-bearing granites of Perus and associated pegmatites correspond to post-tectonic intrusions and were followed by faulting in narrow zones.

Coimbra,A.M. 1983. Sedimentologic and geochemist study of the permo-triassic of the Maranhão basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1883 **1983** *Date of presentation:*

Armando Márcio Coimbra *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cottas,L.R. 1983. Geological-geotechnical studies applied to the urban planning of Rio Claro-SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2017 **1983** *Date of presentation:*

Luiz Roberto Cottas *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Engineering geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Kihara,Y. 1983. The mineralogic study of brazilian volant ashes: origin, characteristics and quality. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2141 **1983** *Date of presentation:* 19/10/1983

Yushiro Kihara *Advisor(s):* Coutinho,J.M.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Krause,L. 1983. Osteology of the appendicular skeleton of the macroteiid lizards macroteiídeos (Sauria, Scincomorpha, Teiidae). PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 314 **1983** *Date of presentation:*

Lígia Krause *Advisor(s):* Barberena,M.C.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A comparative osteological account on the appendicular skeleton of the macroteiid lizards (Ameiva, Callopistes, Cnemidophorus, Crocodilurus, Dicrodon, Dracaena, Kentropyx, Teius and Tupinambis) is presented here.
Structural modifications, as shown by the osteological study, are comparatively analyzed according to their functional implications, particularly in reference to the locomotor habitus.
Osteological study of the scapula did not show the presence of a true fenestra. However, the fenestral area is indicated by a thinner ossification. More significant modifications were observed in the foot of the macroteiids and can be functionally related to

the locomotion in different environments.
Intramembral and limb-trunk ratios indicate slow to vary fast quadrupedal walking habitus. Bipedalism, however, can eventually occur associated with high speed.
A brief review of the pa-leontologic record of saurians is presented, allowing some inferences on their dispersal routes, as compared to the present geographic distribution.

Maciel Filho,C.L. 1983. Study of the geochemical process of obstruction of dam filter. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1907 **1983** *Date of presentation:* 1/6/1983

Carlos Leite Maciel Filho *Advisor(s):* Amaral,S.E.

Committee:

Subject of thesis: Engineering geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Madureira Filho,J.B. 1983. Physical determination of the molecular composition of garnets. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1867 **1983** *Date of presentation:*

José Barbosa Madureira Filho *Advisor(s):* Camargo,W.G.R.

Committee:

Subject of thesis: Geomology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Martins,I.L.R. 1983. Sedimentary model of the Rio Grande cone. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 313 **1983** *Date of presentation:*

Inês Leonida da Rosa Martins *Advisor(s):* Martins,L.R.S.

Committee:

Subject of thesis: Marine Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The main object of this thesis was the study the sedimentary model of the Rio Grande Cone, located at the Continental Margin of the State of Rio Grande do Sul (Brazil).
Twenty-three cores collected in the region, amounting to 134 meters, were analyzed in respect to textural, mineralogical and depositional properties.
Aspects related to the regional geology, the stratigraphy of the Pelotas Basin, the evolution of the South Atlantic Continental Margin, the oceanic currents and the physical properties of water masses were studied and revised in order to offer a better understanding of the area studied.
The more prominent depositional processes usually at work on the continental slope were analyzed together with the results obtained through the study of the cone sediments.
The Rio Grande do Sul Cone is a deep sea feature of typical sedimentary origin which began to be formed in the Upper Miocene, produced by the accumulation of predominantly pelitic terrigenous material from the drainage of the La Plata River and the highlands of Rio Grande do Sul.
This typical progradational sedimentary sequence was submitted to downslope gravitacional movements (turbidity currents and other movements) and modelling through geostrophic contour currents which are responsible for the conturite beds occurring in all sedimentary cones.
The relationship between the studied depocenter, the drainage responsible for its main sediment supply and the existing dynamics in the sea during the Wisconsin offered strong evidence for the identification of the Quaternary paleogeographic evolution of the South Atlantic Continental Margin.
On the other hand, the physiography and the sedimentary evolution of this area produced a slope sedimentation extremely rich in organic matter.
The present study offers new elements to identify older sedimentary sequences.

Paradella,W.R. 1983. Discrimination of lithologic unities in the low rio Curaçá valley (Bahia), through enhancement by digital processing of MSS-Landsat 3 data. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1901 **1983** *Date of presentation:*

Waldir Renato Paradella *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Remote Sensing

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Silva,R.B.G. 1983. Hyrogeochemical and isotopic study of the underground waters of the Botucatu aquifer in the São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2140 **1983** *Date of presentation:*

Rosa Beatriz Gouvea da Silva *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Ulbrich,M.N.C. 1983. Mineralogical and petrological aspects of the nefeline syenites of the Poços de Caldas alkaline massif, MG-SP states. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1809 **1983** *Date of presentation:*

Mabel Norma Costas Ulbrich *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Antezana Paniagua,R.D. 1984. Dispersion of suficial waves in teh south american patform. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1913 **1984** *Date of presentation:*

Remy David Antezana Paniagua *Advisor(s):* Sadowski,G.R.

Committee:

Subject of thesis: Brazilian Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Batista,J.J. 1984. Characterization of the precambrian geologic-evolutive processes in the São Fidelis region, northern of the Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1940 **1984** *Date of presentation:*

Job Jesus Batista *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Brandt Neto,M. 1984. Bauru group in the centre-northern region of São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2142 **1984** *Date of presentation:* 27/4/1984

Max Brandt Neto *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Stratigraphy

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Burjack,M.I.A. 1984. Characterization of the dispersed organic matter within the sediments of the Irati formation, upper Permian of Paraná basin. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 317 **1984** *Date of presentation:*

Maria Iêda de Almeida Burjack *Advisor(s):* Corrêa da Silva,Z.C.

Committee:

Subject of thesis: Stratigraphy

State: SC *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

RS

Abstract

This thesis deals with the analysis and discussion of the organic matter dispersed within the sediments of the Irati Formation (Upper Permian of Paraná Basin). The data are related to the samples collected in fourteen boreholes from the southern States of Santa Catarina and Rio Grande do Sul. The samples contain, in addition to the Irati Formation, sediments from the top of Palermo Formation and from the middle and lower parts of Serra Alta Formation.
The palynological analysis showed a rich assemblage dominated by striated pollen grains, also containing algal remains and spore grains. In addition to a generic emend and a new combination, three new species are formally proposed: Lueckisporites inflatus, Staurosaccites quadrilobatus and Staurosaccites quadrangularis. Furthermore, there is presented a correlation attempt between micro and macroflora, based on bibliographic data.
The vertical distribution of palynomorphs found in the Irati Formation, through the Permian sediments of Paraná Basin, has made possible the suggestion of a biozonation system, consisting of an assemblage-zone called Lueckisporites-Staurosaccites

Assemblage-Zone subdivided into two subzones: Marsupipollenites-Weylandites Assemblage-Subzone (lower position) and Colpisaccites-Falcisporites Assemblage-subzone (upper position).
Relative datings enableb to deduce a Kazanian/Tatarian age for the assemblage-zone which includes the sediments of the Palermo Formation and the Serrinha Member. In reference to the lower assemblage-subzone, which is related to the Palermo Formation sediments and possibly to the basal part of the Irati Formation, an Upper Kazanian age is suggested; as to the upper assemblage-subzone, which incloses the sedimentar sequence between the middle part of Irati Formation and the Serrinha Member, an antiquity related to the Tatarian age can be attributed.
The organoclast analysis under transmitted light has shown the presence of different organic facies. The levels and layers of oil shales are characterized as presenting a sapropelic organic facies, related to the kerogen Type I; vitro-inertinitic organic facies, related to the kerogen Type IIIB or Type IV, are found in the other lithologies (except Lime-stones).
The organopetrographic studies, made under white and ultraviolet light, mainly because of the great abundance of alginite B, allowed the classification of the levels and layers of oil shales as lamosite. The thermal alteration index and the vitrinite reflectance point out to an immature petroleum source rock or within the diagenetic stage. This maturation stage is equivalent to lignite/sub-bi-tuminous coal, according to the coal rank classification.
All the analyzed data made evident a paleoenvironment composed of fresh or brackish water for the deposition of the analyzed lithologies. The genus Botryococcus has contributed decisively to the accumulation of the organic matter.
Finally, in the form of complementary data, the results achieved through the geochemical and fluorometrical analyses are presented.

Chang,M.R.C. 1984. Environmental and stratigraphic analysis of the Itararé sugroup (PC) in the southwestern region of São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2001 **1984** *Date of presentation:*

Maria Rita Caetano Chang *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Stratigraphy

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Liu,C.C. 1984. Structural analysis of lineations in remote sensing images: application to the Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1898 **1984** *Date of presentation:* 20/8/1984

Chan Chiang Liu *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Remote Sensing

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Lorscheitter,M.L. 1984. Palynology of quaternary sediments from the Rio Grande cone, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 316 **1984** *Date of presentation:*

Maria Luísa Lorscheitter *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* *Centroid of the area:* 33 33 's - 48 28 'W

Abstract

A palynological analysis of a South Atlantic sedimentary core, situated in the Continental Rise of Rio Grande do Sul, Brazil, in the latitude 33°33'S and longitude 48°28'W was accomplished. This core (T15), 7.50m long, was collected at a 3,200m depth of the water lamina, in the Rio Grande Cone area, during the GEOMAR VII mission. This mission was carried out by the Navy Geology and Geophysics Program (Board of Hydrography and Navigation of the Navy Ministry).
It was made a qualitative and quantitative analysis of the pollinic material contained in 19 samples, collected from the bottom to the top of the core.
The research was divided into two parts. The first one involved a taxonomic study of the pollinic content. The second one was an analysis of the sea level oscillations, lacustrine conditions and floristic changesin the adjoining Coastal Plain, as well as a

paleoambiental and paleoclimatic evaluation.
In the taxonomic section 80 pollinic components, found in the various samples, were described and illustrated: fungi (3), chlorophytes (3), pirhophytes (2); histrichospherids (2), bryophytes (2), pteridophytes (14), gymnosperms (4), angyosperms (50), besides scolecodonts, foraminifera resistant to the chemical treatment, and undetermined fragments of vegetal tissue.
Sea level oscillations were initially detected through percentual relations between marine organisms and pollen and spores. CaCO3 variations were employed as an additional datum. Thus, the Early Würm, the Würmian Interstadial, the Late Würm and the Holocene were made clear.
Subsequently, an analysis of the Coastal Plain lacustrine conditions, by means of the relations between the pollen and spores of terricolous vegetals, and of fresh water elements was developed. The results provided evidences of humid and dry etapes.
Finally, floristic changes through the percentual relations among the different pollinic elements of the adjoining continental flora were studied. The changes displayed by the sea level oscillations, by the flora and the different lacustrine conditions in the distinct phases of the Glacial Würm and of the Holocene, served as the basis for paleoenvironmental interpretations.
Based on this information, a paleoclimatic reconstruction of Rio Grande do Sul Coastal Plain and probably of Uruguay and also Buenos Aires Province (Argentina), during the last Pleistocene glacial stage was tried.

Machado,R. 1984. Geologic evolutio, structural and metamorphic analysis of the Vassouras and Paracambi regoion, occidental portion of the Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2016 **1984** *Date of presentation:*

Rômulo Machado *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Martins,J.M.G.F. 1984. Palaeoecology and biostratigraphy (Foraminiferida) of the Pirabas formation, Pará state. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 315 **1984** *Date of presentation:*

Jane Maria Garrafielo Fernandes Martins *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: PA *1/1,000,000 sheet:* SA23 *Centroid of the area:* ' - 'W

Abstract

The present thesis studies the benthonic and planktonic foraminifera from the Miocene Pirabas Formation (Maury, 1925). The study was based on four drilling cores made in northeastern Pará State, Brazil.
Eighty seven taxa are identified and described.
Paleoecologic parameters related to the faunistic trend and the taxonomic composition allowed the characterization of the paleoenvironment as shallow marine and of normal salinity.
The individual analysis of each drilling core, taking into account the generic composition and the diversity of foraminifera, showed alterations in the faunistic assemblage probably due to small fluctuations of the sea level.
From the base to the top of the C-9 drill, three biofacies were individualized, related to shelf, marginal marine and shelf environments,respectively. In the AB-2 drill, two biofacies were recognized. The base was attributed to a shelf environment and the top to a marginal marine one. In the SB-1 drill, from the base to the top, three biofacies were characterized corresponding to shelf, marginal marine and shelf environments.
Based on the planktonic assemblage, the deposition of Pirabas Formation was attributed to Early Miocene, and correlated to the bioestratigraphic N4 Zone of Blow (1969) and the Globorotalia kugleri Zone proposed for the Brazilian Continental Shelf.
Younger Miocene strata were detected and correlated to the N5 Zone of Blow (op. cit.), according to the presence of Globigeniroides quadrilobatus altiaperturus Bolli.
Several taxa cited and described originally for the Pirabas Formation are here summarized.

Ragonha,E.W. 1984. Taxonomy of isolated teeth and quills of Xenacanthodii (Chondrichthyes, Elasmobranchii) of the Corumbataí formation: chronologic and palaeoenvironmental considerations. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2143 **1984** *Date of presentation:* 12/11/1984

Evaldo Wehmuth Ragonha *Advisor(s):* Santos,R.S.

Committee:

Subject of thesis: Palaeoecology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Rolim,J.L. 1984. Study of the clastic and carbonatic sequence of the Tonã ridge, Macururé, Bahia state. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 318 **1984** *Date of presentation:*

José Lins Rolim *Advisor(s):* Bossi,G.E. Brito Neves,B.B.

Committee:

Subject of thesis: Stratigraphy

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

A systematic analysis of the clastic and carbonatic sequence of the Tonã Ridge (Macururé municipality - Bahia State), a part of the uppermost cover of the North Tucano Basin, was made with the purpose of solving a few stratigraphic problems of the continental Cretaceous of northeastern Brazil. Accordingly, field and laboratory investigations were made, as well as the consultation to the pertinent bibliography.
The first phase consisted of the field reconnaissance, geological mapping, survey of the gravimetric and magnetometric anomalies, sampling, elaboration of detailed stratigraphic sections and measurement of paleocurrent structures.
Conventional studies on sedimentology, petrography, geochemistryand interpretation of sedimentary structures permitted us to rationally interpret the tectono-sedimentary and paleogeographic features which determined the depositional environment as well as a new lithostratigraphical concept in reference to the Marizal Formation.
The nature of the contacts, associated with its properties or lithologic attributes, allowed to rise this unit to the category of a group, comprising two well defined lithosomes: 1) a lower detritic sequence, possibly with one or more formations; 2) a carbonatic sequence, defined as Serra do Tonã Formation, making up the last depositional Early Cretaceous record locally preserved.

Ruberti,E. 1984. Petrology of the Banhadão alkaline massif, PR state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1819 **1984** *Date of presentation:* 25/6/1984

Excelso Ruberti *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Santiago,M.M.F. 1984. Salinization mechanisms in semi-arid regions: Studymof the Pereira de Miranda and Caxitore dams, Ceará state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2146 **1984** *Date of presentation:*

Maria Marlúcia Freitas Santiago *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: CE *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,A. B. 1984. Morphostructural, hydrogeologic and hydrochemical analysis in the study of the Jaiba karstic aquifer, northern of Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1906 **1984** *Date of presentation:* 15/8/1984

Adelbani Braz da Silva *Advisor(s):* Amaral,S.E.

Committee:

Subject of thesis: Hydrogeology

State: MG *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Soares,R.M.C. 1984. Tratamento de dados químicos e petrográficos de rochas alcalinas do Brasil meridional. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2144 **1984** *Date of presentation:*

Rosa Maria Cotrim Soares *Advisor(s):* Levi,F.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Würdig,N.L. 1984. Ostracoda of the Tramandaí lagoonal system, RS, Brazil: Systematics, ecology and palaeoecological subsidies. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 319 **1984** *Date of presentation:*

Norma Luiza Würdig *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Twenty-seven species of ostracodes, including two new genera and five new species are described from the Lagoonal System of Tramandaí, in the State of Rio Grande do Sul, Brazil.
Ecological data on the lakes and lagoons, such as physico-chemical parameters, morphometric characteristics, vegetal communities and factorswhich control their dynamics are presented.
The overall influence of the data on the distribution and abundance of the ostracode fauna is discussed.
Results of laboratory tests of ostracode tolerance to salinity and conductivity are presented.

Basei,M.A.S. 1985. Dom Feliciano belt in Santa Catarina state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1094 **1985** *Date of presentation:*

Miguel Ângelo Stipp Basei *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Montalvão,R.M.G. 1985. Geotectonic evolution of Crixas, Guarinos, Pilar de Goiás - Hidrolina granitoid-greenstone belt terrains, Goiás state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 372 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1097 **1985** *Date of presentation:* 18/6/1986

Raimundo Montenegro Garcia de Montalvão *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Poncano,W.L. 1985. Actual sedimentation applied to ports of Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2151 **1985** *Date of presentation:*

Waldir Lopes Poncano *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Popp,M.T.B. 1985. Revision of the Calmoniid trilobites and the faunistic communities of Ponta Grossa formation, Devonian of Paraná basin. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 320 **1985** *Date of presentation:*

Marlene Terezinha Barcellos Popp *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: PR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The distribution of Devonian trilobites along the Ponta Grossa Formation in the State of Paraná as well as their relations to other South America faunas are the main concern of this thesis.
The recognition of the Malvinocafrica Province in South Africa and in the Malvinas Islands is also established, together with the suggestion for a Brazilian Province or a Paraná Subprovince and also for an Amazonian Province or Subprovince.
For this aim, studies were performed concerning the revision of trilobites described and determined by Clarke (1913), such as: Calmonia signifer, C. subseciva, Pennaia pauliana and Metacryphaeus australis. Some new forms are herein described, as follows: Calmonia paranaensis n.sp., Jaguaraivaspis salamunii n.g., n.sp., Metacryphaeus sedori n.sp., M. granulata n.sp. and Parabainella brasiliensis n.g., n.sp., all of them belonging to the subfamily Calmoniinae.
For the first time, mention is made about the subfamily Acastavinae, represented by Brunaspis sandominguensis n.g., n.sp., as well as to the subfamily Acastinae, represented by Paranacaste pontagrossensis n.g., n.sp.
It was also possible to perform an analysis on the paleoenvironmental variation of the Ponta Grossa Formation, based on the

recognition of Brachiopoda and associated lithologies.
A transgressive-regressive cycle is identified with the maximum transgression corresponding to the Tibagi Member, which allows twice the record of the same paleoecological conditions: the first one in the Jaguariaíva Member, and the second in the São Domingos Member.

Silva,F.B.R. 1985. Cambi-soils of the central portion of the Mantiqueira structural province and their relationships with the lato-soils : alteration and pedogenesis. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2149 **1985** *Date of presentation:*

Fernando Barreto Rodrigues e Silva *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Pedology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Teixeira,W. 1985. Geotectonic evolution of the São Francisco Craton meridional part based in geochronologic interpretations. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 207 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1037 **1985** *Date of presentation:* 1/7/1985

Wilson Teixeira *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Anjos,C.E. 1986. Tectonics of the Paraná basin border and of its basement in the Itajaí-Lajes region - Santa Catarina state: An approach with Landsat photographic images and radar mosaics. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 160 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1250 **1986** *Date of presentation:* 3/11/1986

Célio Eustáquio dos Anjos *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Bello,R.M.S. 1986. Surubim copper deposit, Vale do Curaçá valley, BA state : mineralogy, petrography and petrogenesis. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1942 **1986** *Date of presentation:* 7/10/1986

Rosa Maria da Silveira Bello *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Botelho,M.A.B. 1986. Seismic modelling in the Recôncavo basin using the ray tracing technique. PhD Thesis; Instituto de Geociências, University of Bahia, Salvador; pp

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 1533 **1986** *Date of presentation:* 10/4/1986

Marco A. B. Botelho *Advisor(s):* Hubral,P.H.W.

Committee:

Subject of thesis: Geophysics

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

A great problem in reflection seismology with complex geology is data quality and the fact that structures presented by the time section often do not match with the reality of subsurface geology. These seemingly false structures are due to errors inherent in current processing techniques, such as the incorrect determination of stacking velocities or the application of an erroneous velocity field in migration. Such techniques work in media with little lateral variation; but traps, which are the final prospection goal, often occur in complex areas.

The Recâncavo Basin's origin and evolution is associated with the tectonic separation of the South America and African plates. The basin shows many structures that are ill-defined in time sections. Direct modeling using well-log data is an important tool to help seismic interpretation. The asymptotic ray theory is used to perform the modeling of the investigated structures. This technique, up till now, have been used only to investigate theorectical models or in seismology, and gives an excellent combination of dynamic and kinematic information, which are necessary in interpretation.

In this work real geological situations with faults, conglomeratic of high velocity overlying faults and big isolated sandstone bodies enclosed in shale are modelled. Studying these inhomogeneous models helps to better our understanding of the structural geometry. In the original geological interpretation of the Falhas de Pedras, a discordance at the fault's edge was interpreted as having 500 m width. The seismic modeling indicates that this discordance may not be a geological phenomenon but an artifact of the time section, and even if the discordance does exist it has a maximum width of only 250 m.

Also an apparent change in reflector dip caused by the variation of the velocity field above, and the reflector is shown to be planar. It is shown that the original geological model cannot explain the observed seismic time data and a theoretically better well location is proposed for a dry hole which modeling shows to have been drilled too far down dip.

The seismic section of the conglomeratic bodies and a underlying fault shows an apparent reversal of the footwall block to become the hangingwall block. This reversal of movement is caused by high p-wave propagation velocity ($pprox$ 5,000 m/s) in the conglomerates. It is also demonstrated that the thickness variation of the conglomeratic bodies is not great enough to cause the apparent dip of the underlying reflector on the stacked seismic section, if the real attitude of this reflector was horizontal.

To complement and compare the results, the Finite Difference technique was used to produce forward modeling, migration and inverse modeling. Both the simulation of wavefront propagation in the forward modeling, and the depth migration by the Reverse Time Migration technique (RTM), use the full acoustic wave equation. This equation is solved through finite difference operators of second order approximation in time and fourth order approximation in space.

The inverse procedure that uses the RTM is based on successive migrations, where the velocity model is compared with the migration result and modified until these two coincide. The application of RTM on stacked seismic sections with a variable velocity field, and also the use of interactive migration on real and synthetic data, using the above mentioned finite difference technique is documented for the first time in this thesis.

Guerra,A.M. 1986. Karstification processes and hydrogeology of the Bambuí group in the Irecê region-Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2154 **1986** *Date of presentation:* 7/5/1986

Ari Medeiros Guerra *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: BA *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Litwinski,N. 1986. Tectono-thermal evolution of the northeastern Minas Gerais and sourhern Bahia region. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1891 **1986** *Date of presentation:* 26/8/1986

Newton Litwinski *Advisor(s):* Almeida,F.F.M.

Committee:

Subject of thesis: Stratigraphy

State: MG *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

BA SE24

Abstract

Maniakas,S. 1986. Geophysical studies integrated to geology of the low Capivari river hydrographic basin - SP state (Itararé subgroup and associated intrusives). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2048 **1986** *Date of presentation:* 22/12/1986

Sérgio Maniakas *Advisor(s):* Ellert,N.

Committee:

Subject of thesis: Geophysics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Mattos,J.T. 1986. Caracterization of the geologic structural behaviour in the Furnas dam region (MG state) with remote sensing data. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2155 **1986** *Date of presentation:* 10/6/1986

Juércio Tavares de Mattos *Advisor(s):* Penalva,F.

Committee:

Subject of thesis: Remote Sensing

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Meneses,P.R. 1986. Evaluation and selection of channels of the Landsat-5 Thematic Mapper sensor for the discrimination of carbonatic rocks of the Bambuí group as an aid to the semi-detail mapping. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 233 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1318 **1986** *Date of presentation:* 6/11/1986

Paulo Roberto Meneses *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Remote Sensing

State: BA *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Motoki,A. 1986. Geology and petrologyof the Ilha de Vitória alkaline massif, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1817 **1986** *Date of presentation:* 19/5/1986

Akihisa Motoki *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Santos,A.R. 1986. Study on the fracturing tectonics in the Quadrilátero Ferrífero region and in parts of the migmatitic-granulític comples of Minas Gerais state, based on remote sensing. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1857 **1986** *Date of presentation:* 27/11/1986

Athos Ribeiro dos Santos *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Scheibe,L.F. 1986. Geology and petrology of the Lages alkaline disctrict, SC state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 224 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1818 **1986** *Date of presentation:* 15/8/1986

Luiz Fernando Scheibe *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Soliani Jr,E. 1986. The geochronological data of Sul-riograndense shield and their geotectonic implications. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 239 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1095 **1986** *Date of presentation:* 18/12/1986

Enio Soliani Júnior *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Suslick,S.B. 1986. Quantification of minerla potentiality based on geochemical data in applied study to Itaquaquecetuba, Piracaia, Igarata, Camanducaia and Monteiro Lobato quadrangles. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 303 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1227 **1986** *Date of presentation:* 6/5/1986

Saul Barisnik Suslick *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Toledo,M.C.M. 1986. Weathering of the Salobo copper mineralized rocks, 3rd, Carajás range; alteration mechanisms of the primary minerals and location of copper in the secondary products. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2158 **1986** *Date of presentation:* 26/9/1986

Maria Cristina Toledo Motta de Toledo *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis:

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

Crepani,E. 1987. Fracture analysis using low spatial resolution photographic images: A contribution to the study of the Chapada do Araripe plateau evolution- NE of Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 139 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1244 **1987** *Date of presentation:* 21/12/1987

Edison Crepani *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis:

State: PE *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Egydio-Silva,M. 1987. Rio Preto folding system and its relations to the São Francisco Kraton. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1832 **1987** *Date of presentation:* 4/9/1987

Marcos Egydio da Silva *Advisor(s):* Trompette,R.R.

Committee:

Subject of thesis: Geotectonics

State: PI *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

BA

Abstract

Ferigolo,J. 1987. Vertebrate comparative palaeopathology: Lagoa Santa man, Cabeçuda Sambaqui man and pleistocene mammals. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 324 **1987** *Date of presentation:*

Jorge Ferigolo *Advisor(s):* Barberena,M.C.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis comprehends a proposal for a new comparative and interdisciplinary approach on Palaeopathology. Pathologies present in Man and in Pleistocenic mammals of the Orders Edentata, Notoungulata, Litopterna and Artiodactyla are comparatively described and discussed. The diseases detected were: dentary, mainly periapical lesions related to the exposition of the pulpar cavity; degenerative ones, like osteoarthritis; nutritionary, represented by the Park-Harris lines; traumatic and neoformations (external auditory canal "osteomas"). Vertebral column alterations related to the neotenic characters of Man and other mammals were also detected. For some alterations such as intervertebral osteophytes and bridges a new interpretation in adaptative terms is suggested, in contradistinction to the usual ones. In the comparisons between the two human populations (Lagoa Santa Man, and Sambaqui de Cabeçuda Man), some significant differences were found, such as those in the nutritionary, neoformative and osteoarthritic diseases. The nutritionary differences are related to better nutritionary conditions in the Sambaqui de Cabeçuda Man, a coastal population. The other differences were probably related to life conditions and habits. Whereas in the human material the old age manifestations prevailed along with a great number of dental lesions, osteo-arthritis largely predominated in the palaeomastozoological material. In this material dental pathologies were very rare, except for the enamel hypoplasias found in the toxodontids (Order Notoungulata). Some diseases were described for the first time for a palaeomastozoological material, as for example the Scheuermann Disease, the "Schmorl hernia", osteochondritis dissecans, and the enamel hypoplasias. Anomalies and infections were very rare in the total material examined. It is proposed in this work to deepen the palaeopathological studies to avoid mistakes in Palaeontology, and to obtain a better understanding concerning some life habits. At the same time, Comparative Anatomy, Evolutionary Theories and Comparative Palaeopathology should be brought nearer for a better understanding of the lesions nature.

França,A.B. 1987. Stratigraphy, Depositional Environment, and Reservoir Analysis of the Itararé Group (Permo-Carboniferous), Paraná Basin, Brazil. PhD Thesis, University of Cincinnati, Department of Geology / USA; pg

University of Cincinnati, Department of Geology *Reference:*

DataBase Ref.: 240 **1987** *Date of presentation:* 12/5/1987

Almério Barros França *Advisor(s):* Potter,P.E.

Committee: Paul Edwin Potter - DG/Univ_Cinc
Wayne Arthur Pryor -
David L. Meyer -

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Present work is a stratigraphic, reservoir, and environmental analysis of the Itararé Group (Permo-Carboniferous) using the well data of the Paraná Basin which covers about 1,000,000 km2 in Brazil alone. More than three thousand kilometers of cross sections were analysed, over 100 wells were studied, nearly 400 meters of cores were described, and 95 thin sections were analysed.
A stratigraphic subdivision of the subsurface is proposed for the Itararé Group and three new formations and four new members are proposed. The lowermost formation is called the Lagoa Azul , which is subdivided into the Cuiabá Paulista Member, composed mostly of sandstones; and the Tarabai Member, composed predominantly of siltstones and pebbly mudstones. The new middle unit is the Campo Mourão Formation, composed mostly of sandstones and pebbly mudstones, and the new uppermost unit is the Taciba Formation. The Taciba Formation is subdivided into the Rio Ivaí Member, composed of sandstones; the Chapéu do Sol Member composed of pebbly mudstones; and the Rio do Sul Member composed mostly of shales.
This new stratigraphic subdivision is necessary because only in the central part of the basin is the sedimentation most continuous and unconformities are less likely. Furthermore, the new stratigraphic nomenclature facilitates subsurface exploration and subsurface mapping as well.
Well logs show that the Itararé Group has three major depositional cycles termed lower, middle, and upper, which correspond broadly to the three new formations. Each cycle is composed of a sandy basal section and an upper 'shaly' section. It is likely that the cycles are response to climatic and sea level changes, Pebbly mudstones present in the 'shaly' sections of the cycles were probably deposited by glaciers, whereas fossiliferous shales containing dropstones were deposited in a cold sea during a major transgression.
Three major ice lobes seem to have entered the Paraná Basin during the Pemo-Carboniferous. One lobe came from the east, apparently an extension of the Kaokoveld Lobe from Africa. Two lobes came from west - the Santa Catarina Lobe and the Mato Grosso Lobe, apparently linked to glaciation in the Assuncion Arch.
The sandy section of the depositional cycles were probably deposited by braided rivers on outwash plains or as alluvial fans, deltas, and turbidites. These sandstones comprise the reservoirs rocks in the Itararé Group.
There are two sandstones types in the Itararé Group, one is clay-rich with no porosity, and the other has little or no clay. The latter has secondary porosity mostly due to dissolution of early siderite cement. Dissolution is probably contemporaneous with or later than the Gondwana break-up (Jurassic-Cretacwous), when the Paraná Basin had its hottest period associated with great igneous activity. This event may have accelerated thermomaturation of organic matter, releasing organic acids and carbon dioxide which were responsible for most of the corrosive solutions that percolated through sandstones, leaching carbonate minerals and other unstable constituents to form the secondary porosity.

Gonçalves,A.R.L. 1987. Environmental geology of São Carlos area. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2049 **1987** *Date of presentation:* 23/4/1987

Adail Ricardo Leister Gonçalves *Advisor(s):* Ellert,N.

Committee:

Subject of thesis: Environmental Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

José,C. 1987. Correlation between hydrodinamics and geoelectrics parameters of Bauru group sediments in the Alto Rio Turvo river basin - SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2047 **1987** *Date of presentation:* 14/12/1987

Clóvis José *Advisor(s):* Ellert,N.

Committee:

Subject of thesis: Stratigraphy

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Leipnitz,I.I. 1987. Foraminifera from the brazilian continental margin, from the mouth of amazonas river to orange cape: taxonomy, ecology and faciology. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 323 **1987** *Date of presentation:*

Itamar Ivo Leipnitz *Advisor(s):* Villwock,J.A.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present study deals with planktonic and benthonic foraminiferal fauna obtained from recent sediments of the Northern Brazilian Margin, between the mouth of the Amazon River and the Orange Cape, by means of the Oceanographic Operation Geomar II and III.
Two methods were used to characterize the fauna: the Drooger & Kaaschieter and Schott. A supplementary methodology, here characterized as "Special Fauna", was applyed to both Geomar Operations; it is a selective process by which specimens larger than 2mm are picked up from the sediments for studies of benthic biology.
Two hundred taxa were identified; 16 planktonic and 184 benthonic, forming 94 genera and 12 superfamilies. Through a quali--quantitative analysis it was possible to observe that in the substract of the Amazonic Facies there is a fauna of restrict species. As the substract is being enriched by sand, there is an increase in the number of taxa. In the sediments of the Sandy Facies there is a fauna rich in species.
The presence of encrusting taxa in this substract contradicts the idea of the existence of a movable substract and suggests its characterization as a relict sand. In the substract of the Biodetrital Facies the fauna is quali-quantitatively rich enough. In the substract of the Slope Facies it was observed a great number of planktonic forms, the benthonic assemblage being dominated by 4 species.
From the benthonic assemblage only Amphistegina lessonii D'Orbigny, 1826 and Spiroplectammina floridana (Cushman), 1922 were constantly present in the sediments; other 14 species were additional and the reming 168 occasional.
The constant presence of Amphistegina lessonii D'Orbigny, 1826 and Spiroplectammina floridana (Cushman), 1922 and the disappearance of Archaias angulatus (Fichtel et Moll), 1778 and Peneroplis spp. suggest that the Subprovince of Northeastern Brazil admits two distinct areas.
Taking into consideration the two methods above mentioned, the values found for determining frequency, constancy, dominance, abundance and specific diversity are the same. It is suggested, however, the use of additional data concerning the benthonic population.

Macedo,A.B. 1987. Lithogeochemical prospection in the Perau mine, Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1936 **1987** *Date of presentation:* 28/4/1987

Arlei Benedito Macedo *Advisor(s):* Barbour,A.P.

Committee:

Subject of thesis: Geochemistry

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Mendes,J.M.B. 1987. Geophysical techniques applied to maping and monitoring of pollution and contamination of underground waters. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2051 **1987** *Date of presentation:* 18/12/1987

José Milton Benetti Mendes *Advisor(s):* Ellert,N.

Committee:

Subject of thesis: Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Quadros,R. 1987. Paleontology of the Lingulida, Strophomenida, Spiriferida, Terebratulida devonian brachiopods from Serra de Atimã and its surroundings, Mato Grosso, Brazil. PhD Thesis, Instituto de

Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 322 **1987** *Date of presentation:*

Raquel Quadros *Advisor(s):* Pinto,I.D.

Committee:

Subject of thesis: Palaeontology

State: MT *1/1,000,000 sheet:* SD21 *Centroid of the area:* ' - 'W

Abstract

The outcrops of the Devonian sequence in the Atimã mountain and adjacent area in Chapada dos Guimarães municipality, State of Mato Grosso, Brazil, comprise the Furnas and Ponta Grossa Formations. The base and the top are characterized by a local unconformity. In this area five new outcrops were discovered; the fossiliferous levels of these outcrops are situated mostly at the base of the Ponta Grossa Formation.
A found fossil fauna comprises brachiopods, pelecypods, gastropods, tentaculits, trilobites, fragments of echinoderms and fossils traces; there is a predominance of brachiopods represented by Lingulida, Strophomenida, Spiriferida and Terebratulida making a total number of twelve genera, ten species and two forms with no denomination.
From the total fauna of brachiopods, Craniops trombetana (Clarke, 1889), Australostrophia mesembria (Clarke, 1913), Notiochonetes falklandica (Morris e Scharpe, 1846), Coelospira sp. Hall, 1894, Australospirifer iheringi (Kayser, 1900), Derbyina whitiorum Clarke, 1913, Podolela sp. Kozlowski, 1929 e Schuchertella sp. are registered for the first time in the State of Mato Grosso. One emend for the genus Derbyina is proposed; a new species of Chonostrophiidae is described for the Ponta Grossa Formation, Chonostrophia andina.
Most of these taxa include specimens of strongly malvinocafric characteristics, so that the study of brachiopods permitted to re-established that faunistic affinity.
An older age for these Devonian deposits with a macrofauna of invertebrates is suggested for the first time. The fauna of brachiopods indicates a Late Siegenian - Early Emsian stage.

Veneziani,P. 1987. Analysis of movements of the ruptil and ruptil-ductil tectonics through the interpretation of remote sensing productso in the Espinhaco Meridional region (MG state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1855 **1987** *Date of presentation:* 22/6/1987

Paulo Veneziani *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* Se23 *Centroid of the area:* ' - 'W

Abstract

Artur,A.C. 1988. Polycyclic evolution of the infrastructure of the southern potion of the Minas Gerais state and adjacent regions of the São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1920 **1988** *Date of presentation:* 20/5/1988

Antonio Carlos Artur *Advisor(s):* Kawashita,K.

Committee:

Subject of thesis: Brazilian Geology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

SP

Abstract

Barbosa,M.P. 1988. Study of genetic relationship between geological features in the Espinhaço Meridional region and neighbourhood (MG state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1856 **1988** *Date of presentation:* 26/9/1988

Marx Prestes Barbosa *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* Se23 *Centroid of the area:* ' - 'W

Abstract

Callegaro,V.L.M. 1988. Diatomaceae from the Águas Claras peat, coastal plain of Rio Grande do Sul: Taxonomy, ecological aspects and palaeolimnological subsidies. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 325 **1988** *Date of presentation:*

Vera Lúcia Maróstica Callegaro *Advisor(s):* Sanguinetti,Y.T.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

This thesis aims at examining the diatom flora from Águas Claras peat, located in the Coastal Plain of the State of Rio Grande do Sul.
The study of the horizontal distribution was based on the analysis of surface samples from six points along the bog. The vertical distribution resulted from the analysis of 20 samples from a continuous one-meter-deep profile comprising the peat layer.
A total number of 54 specific and infra-specific taxa resulted from this study; these taxa are grouped in 5 families and 11 genera. Naviculaceae accounted for 54.5% of the genera listed. The genera with the highest number of species and varieties were Eunotia and Pinnularia. Eleven of the identified taxa are new citations for the State of Rio Grande do Sul.
The analysis of the information content (I) showed two associations in the superficial layers: A1 and A2. The Jaccard index indicated 33.7% similarity among the species of the A1, and 27.8% of the A2 association points. The ecological preferences of the abounding species in A1 and A2 associations characterize the existence of a lentic, oligohaline, acid and oligotrophic environment. The separation of A1 and A2 groups seems to be influenced by pH fluctuations in the environment, probably due to the lateral variations of the vegetable distribution.
The qualitative and quantitative analysis of the diatoms present in the sedimentary sequence studied showed some association alterations from the bottom to the top. The evolution of the sedimentation environment was evidenced in the frequence variations of Eunotia lineolata Hustedt var. lineolata: the higher frequency values pertain to shallower water, lower pH and higher temperature.
The ecological conditions recorded in the study of diatoms in Águas Claras suggest regional climatic variations with some water level fluctuations; they also show a typical lentic, acid, fresh water environment in accordance with the genesis of the peat.

Clemente,C.A. 1988. Alterations and soils developped on acidic volcanic rocks of the Serra Geral formation in the Guarapuava and Palmas plateaus, center-southern region of the Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2010 **1988** *Date of presentation:* 29/7/1988

Celso Augusto Clemente *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Pedology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

This work presents geochemical, mineralogical and structural data on alteration and soils developed from porphyritic rhyodacites and rhyolites from that region the State of Paraná, with special emphasis on the mineralogical evolution of plagioclases, pyroxenes and vitric material. The quantitative and qualitative chemical determination, the Scanning Eletronic Microprobe Analysis of thin sections and altered rock fragments in association with the normal mineralogical analysis led to the following interpretations and conclusions: - the phenocrysts from the porphyritic rhyodacite have a sequence of evolution that is general similar to the alteration of the basic volcanic rocks; - the biggest plagioclase alters directly to gibbsite, and the smallest goes through an amorphous phase and then results in gibbsite or gibbsite + kaolinite; - The main characteristic of the alteration of pyroxene is the formation of a porous structure (box-work) due to the accumulation of goethite in clevages and fractures which are later filled with imported Al that crystalizes in macro and microcrystalin gibbsite; - Evolution of the vitric matrix is as follows: vitric matrix - gels - gibbsite + Kaolinite; - evolution of rhyolite is characterized by the presence of quartz + smectite; - Alitization is the main soil forming process

Gonçalves,N.M.M. 1988. Mineralogic and structural transformations related to the hydrothermal and intemperic alteration of basic volcanic rocks of the setentrional Paraná basin (Ribeirão Preto region -SP state, Brazil). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1988 **1988** *Date of presentation:* 25/3/1988

Neide Maria Malusa Gonçalves *Advisor(s):* Chauvel,A.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Guerra-Sommer,M. 1988. Epidermic patterns of the glossopteris flora in the Faxinal coalfield (Rio Bonito formation, Kungurian, RS): Taxonomical, biostratigraphical, palaeoecological and palaeogeographical implications. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 327 **1988** *Date of presentation:*

Margot Guerra-Sommer *Advisor(s):*

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

This thesis presents an analysis of the oryctocenosis proceeding from "Tonstein" associated to a coal layer in Faxinal Coalfield (Rio Bonito Formation, State of Rio Grande do Sul, Brazil).
The taphocenosis, preserved as coalified compression, is primarily composed of foliar organs. There is a predominance of Glossopteridales corresponding to the species Glossopteris brasiliensis n. sp., Glossopteris similis-intermittens n. sp., Glossopteris papillosa n. sp., and Glossopteris rio-grandensis n.sp. There are very few isolated reproductive structures of the species Plumsteadia sennes Rigby and seeds described as Platycardia sp. Leaves of Cordaitanthales are very important elements, belonging to a single species, Rufloria gondwanensis n. sp. Fragments of sterile fronds, characterized as PTERIDOPHYLLA (sensu Boureau & Doubinger, 1975), corresponding exclusively to Sphenopteridales (Sphenopteris cf. Sph. ischanovensis, Sphenopteris sp.), are very seldom represented.
As a result of numerical taxonomy, the possibility of the existence of two large groupings for the Glossopteridales examined was assumed.
Geochemical analyses (Total Organic Carbon, Rockeval Pyrolysis, Organic Petrography, Soxllet Extraction, Liquid Chromatography, Gaseous Chromatrography of Paraffins, Esteranes and Trepanes, Carbon Isotopes) were made on the carbonified material originating from the Glossopteridales, for a preliminary geochemical characterization of the group.
Paleobotanic data indicate that the Rio Bonito Formation in Rio Grande do Sul seems to comprise different biostratigraphic intervals. The basal paleofloristic associations would have been deposited coetaneously with those of the Itararé Group and are compositionally very similar to the flora found in this unit. The depositional interval of these associations would correspond to the Artinskian. Yet the association found in the Faxinal Coalfield would have been deposited on a younger interval, corresponding to

the Kungurian. The interval corresponding to the totality of the Rio Bonito Formation in Rio Grande do Sul would be Artinskian-Kungurian in age.
A likely correlation of the Taphoflora analyzed in this research with the Argentinean Glossopteris Zone (Sauce Grande and Islas Malvinas Basins) is indicated. However, the total content of the Rio Bonito Formation in Rio Grande do Sul also suggests significant correlations with the Gangamopteris Zone (Paganzo Basin). Safe correlations with taphofloras of other Gondwanic provinces cannot be established.
The evidence that the Cordaitanthales found in the association are related, because of their epidermic patterns, to Rufloria Meyen, the typical Angara form, led to some hypotheses. Migration is considered to be the most plausible reason for the presence of this form in the association. This hypothesis is supported by paleographic maps (Smith et al., 1981) which show, in the Permian, a continental alignment that would render migration possible.
Hypoautochthonous deposition in a body of very calm water derived from a mesophilous environment, cor-responding to forests developed in swamps, is assumed for the association. The sculpturing of the epidermic tissues, especially of the Glossopteridales, contrastively suggests adaptations to xeromorphic conditions which are different from the ones indicated by other parameters. Several causes are suggested for the evidences, based on studies on present day flora, mainly related to character-istics of soil composition, which can be responsible for xeromorphic features in plants.
The parameters obtained in the epidermic analysis associated with the compositional data on oryctocenosis and evidences of the relation plant-insect suggest a temperate paleoclimate with one mild cyclical period. The indication of the interaction plant-insect, given by the presence of damaged leaf margins, seems to suggest an already specialized feeding habit, herbivorous, for specific groups of insects in the Kungurian, and adaptation to weather severity, perhaps through diapause.

Marques-Toigo,M.M. 1988. Late paleozoic palynology, biostratigraphy and palaeoecology of the Paraná basin in Rio Grande do Sul and Santa Catarina states, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 326 **1988** *Date of presentation:*

Marleni Marques-Toigo *Advisor(s):*

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W
SC

Abstract

In the present thesis the microflora contained in the Late Paleozoic sediments from the Paraná Basin is described and analyzed. The Sporopollinic associations obtained from drill samples and from outcrops of the main coalfields in the State of Rio Grande do Sul and southern part of Santa Catarina State were identified.
The sedimentary sequence taken into consideration comprises the following lithostratigraphic units: Itararé Group, Guatá Group (Rio Bonito and Palermo Formations) and Passa Dois Group (Irati Formation).
The palynological content here studied is represented by Triletes and Monoletes spores, related to PTERIDOPHYTA, Monosaccites, Disaccites and Striatiti pollen grains belonging to GYMNOSPERMAE, besides ALGAE (Botryococus braunii), Incertae sedis forms probably related to ALGAE and marine microfossils (ACRITARCHA).
Based on the vertical and lateral distributions of Monosaccites, Disaccites and Striatiti pollen grains and the relative abundance of the identified taxa, a biostratigraphic zonation is here proposed.
The palynobiostratigraphic system includes two Interval Zones, here denominated Cannanoropollis korbaensis Zone and Lueckisporites virrkkiae Zone. The former is subdivided into three Interval Subzones: Protohaploxypinus goraiensis, Caheniasaccites ovatus and Hamiapollenites karrooensis.
Previous papers on the palyno-stratigraphy of the Paraná Basin (Neopaleozoic) were taken into consideration to offer this new interpret-ation both of the biostratigraphy and paleoecology of this gondwanic sequence.
An age corresponding to the Early Permian (Sakmarian/Kungurian) to Late Permian (Kazanian/Tatarian) interval was attributed to the microflora, by comparison to other sporopollinic associations from the Paraná Basin as well as from other Gondwana regions.
Different types of paleoenvironments were identified: lacustrine, lacustrine/paludal and marine.
The paleoenvironments were determined by the analysis of the floristic associations, the relationship between the macro and microflora, the preferential habitats of the vegetation which originated the spores and pollen grains as well as of the presence of marine palaeo-microplankton.

Moreira,A.H.P. 1988. Leucite, sanidine and sanidinic glass at 930 C - 1030 C and 2kb: Rb, Ca, Sr e Ba partition coeficients between these phases and KCl hydrothermal solution. Geologic applications. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2176 **1988** *Date of presentation:*

Ana Helena Pacheco Moreira *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Santos,P.R. 1988. Facies and paleogeographic evolution of the Itararé subgroup/Aquidauana group (Neopaleozic) in the Paraná basin, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2172 **1988** *Date of presentation:* 2/2/1988

Paulo Roberto dos Santos *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Sigolo,J.B. 1988. Bauxitic lateritic formations of the Passa-Quatro alkaline massif MG state, - its micromorphologic, geochemical evolution and the implications for the relief. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1962 **1988** *Date of presentation:* 24/6/1988

Joel Barbujiani Sigolo *Advisor(s):* Boulangé,B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

SP

RJ

Abstract

Sundaram,D. 1988. Palinology of the Itararé subgroup (Neopaleozoic), in the Paraná basin in the São Paulo state, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2173 **1988** *Date of presentation:* 4/2/1988

Dharani Sundaram *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Tassinari,C.C.G. 1988. Age of the rocks and metamorphic events in the southeastern portion of the São Paulo state and its crustal evolution. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1847 **1988** *Date of presentation:* 27/7/1988

Colombo Celso Gaeta Tassinari *Advisor(s):* Kawashita,K.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Teixeira,J.A. 1988. Conceptual model for the use and protection of hydric resources at the Recife-João Pessoa coastal strip. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2182 **1988** *Date of presentation:*

José Antonio Teixeira *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: PE *1/1,000,000 sheet:* SB25 *Centroid of the area:* ' - 'W

PB

Abstract

Tessler,M.G. 1988. Quaternary sedimentary dynamics in the southern of São Paulo state litoral. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2179 **1988** *Date of presentation:* 19/9/1988

Moysés Gonzalez Tessler *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Palaeontology and Stratigraphy

State: SP *1/1,000,000 sheet:* SG23 *Centroid of the area:* ' - 'W

Abstract

Angeli,N. 1989. Research of the nickel occurrences and geology of the Ipanema quadrangle, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1912 **1989** *Date of presentation:* 8/5/1989

Nelson Angeli *Advisor(s):* Ribeiro Filho,E.

Committee:

Subject of thesis: Economic Geology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Furtado,S.M.A. 1989. Petrology of the Anitápolis alkaline massif, SC state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1820 **1989** *Date of presentation:* 14/12/1989

Sandra Maria de Arruda Furtado *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Fu-Tai,W. 1989. Provenance of the sandy rocks of the Itararé subgroup in the southern of the São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2187 **1989** *Date of presentation:* 5/6/1989

Wu Fu-Tai *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Godoy,A.M. 1989. Faciologic, petrographic and geochemical characterization of the Sorocaba and São Francisco massifs- SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2188 **1989** *Date of presentation:* 5/12/1989

Antonio Misson Godoy *Advisor(s):* Figueiredo,M.C.H.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Roisenberg,A. 1989. Petrology and geochemistry of the mesozoic acidic volcanism in the southern province of Paraná basin. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 328 **1989** *Date of presentation:*

Ari Roisenberg *Advisor(s):*

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Mesozoic acidic volcanism of the southern Paraná Basin covers an area of about 45,000 km² and has a minimum volume of 8,900 km³. The field and petrographic studies have demonstrated that the acidic units probably represent a thick ignimbrite sequence with many pyroclastic features. The K-Ar dating indicates that the acidic volcanics are younger than 130 My. and present a contemporaneity with the latest basic flows. The results do not show clearly, as expected, a migration of the magmatic activity through the Paraná Basin and the basic volcanism was widespread in all directions at 150 My. Statistic studies on the geochemical data discriminate two main acidic rock-types, which correspond to the end-members of acontinuous scale between dacites and rhyolites, enriched in potassium. The magmatic modeling gives evidence that the generation of acidic liquids does not involve crystal fractionation and crustal assimilation from the associated basalts. Partial melting (19 to 23% of melting degree) of crustal sources with a composition equivalent to the bulk crust average is consistent in terms of major and trace elements. Simple mixing between the acidic end-members can explain the compositional variability. It is stressed that the heat emanated from basic intrusions combined with regional heating are responsible by the melting of crustal material and can create a limited miscibility with the basalts.

Alvarenga,C.J.S. 1990. Sedimentary, structural phenomena and fluid circulation developped at the transition belt-craton: Example of Paraguai belt upper Proterozoic in age, Mato Grosso state, Brazil. PhD Thesis - Université d'Aix-Marseille III, France; pg

Glaciation; Neoproterozoic, Fluid inclusion; Turbidity; Schsitosity

Université d'Aix-Marseille III, França *Reference:*

DataBase Ref.: 1439 **1990** *Date of presentation:*

Carlos José Souza de Alvarenga *Advisor(s):* Trompette,R.R.

Committee:

Subject of thesis: Stratigraphy

State: MT *1/1,000,000 sheet:* SE21 *Centroid of the area:* ' - 'W

Abstract

Upper Proterozoic sedimentary rocks crop out along the southeastern border of the Amazonian Craton. Towards the east, they pass transitionally to the metasediments of the Paraguay Belt, folded during Brasiliano-Panafrican Orogeny.
Sedimentological studies of the lower unit (Puga Formation and Cuiabá Group) have permitted the identification of a platform covered by glaciomarine sediments. These sediments were partly reworked by gravity currents linked either to the ice margin dynamics (advanced-retreat) or to storm influenced. These glaciomarine reworked deposits constitute a talus built up by the Amazonian Craton.
The transition from the craton to the belt is characterized by an increase in folding intensity, schistosity and illite crystallinity index. An anchi-metamorphic zone separates the purely diagenetic craton to the west from an epi-metamorphic eastern zone corresponding to the internal part of the Paraguay Belt. In this last, three generations of fluid inclusions (CO_2, N_2-CH_4, aqueous) have been identified inside quartz veins. The inclusions are arranged in linear trails concordantly with the regional structure. A decrease of minimal trapping temperature of these inclusions is recorded when passing to rocks of lower metamorphic grade towards the west.

Carvalho,S.G. 1990. Geology, petrology and metallogeny of the Alpinópolis volcano-sedimentary sequence, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 216 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1053 **1990** *Date of presentation:* 23/8/1990

Sebastião Gomes de Carvalho *Advisor(s):* Barbour,A.P.

Committee:

Subject of thesis: Geochemistry and Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Crósta,A.P. 1990. Mapping of residual soils by remote sensing for mineral exploration in SW Minas Gerais state, Brazil. PhD Thesis - Imperial College, Royal School of Mines and Centre For Remote Sensing, University of London; pp

remote sensing; digital image processing; spatial data integration; geographic information systems; greenstone belt; sulphide mineralization

Imperial College of Science, Technology & Medicine - University of London, IC *Reference:*

DataBase Ref.: 1582 **1990** *Date of presentation:*

Alvaro Penteado Crósta *Advisor(s):* Moore,J.M.

Committee:

Subject of thesis: Remote Sensing

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This study is an appraisal of Landsat Thematic Mapper (TM) imagery as a data source for geological mapping and mineral exploration, in a Brazilian sub-tropical and vegetated terrain with thick soil cover. The study area, in the southwest portion of Minas Gerais State, comprises Precambrian metamorphic lithologies. Geological mapping is only available at regional scales and the value of TM imagery for regional mapping at regional scales has been examined.
An exploration model and methodology are formulated, for mapping applications in partially vegetated greenstone belt terrain with blanket of residual soils. Digital image processing techniques were used to identify spectral features of iron oxide minerals related to weathered volcanics and sulphide mineralization. Particular attention has been given to techniques which combine spectral information from multiple wavelength ranges as a single image, e.g. band differences and ratios, principal components, decorrelation stretch and four dimensional display of bands. A method to identify spectral information due to specific targets in principal components analysis has been developed, called Feature-orientated Principal Component Selection, and its application in detecting spectral signatures due to iron oxide minerals in principal component images is presented.

Lithological and tectonic fabric maps have been produced for SW Minas Gerais. Suitable image processing techniques demonstrate that spectral features from the entire wavelength range of the sensor can be used in prospecting for sulphide mineralization in greenstone belts.
The study concludes with an integrated digital geo-referenced database for mineral prospecting. Exploration data has been integrated into a geographic information system, by using digital image processing techniques. Data input to system included TM, aeromagnetic and soil geochemistry for two selected test areas. The integration of geochemical, geophysical and remote sensing data represent the best way to overcome the limitations of individual exploration techniques and produces the best results for mineral prospecting in weathered tropical terrains.

Della Favera,J.C. 1990. Temestites of the Parnaíba Basin
Tempestites of the Parnaíba basin. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 331 **1990** *Date of presentation:*

Jorge Carlos Della Favera *Advisor(s):*

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Although tempestites - or storm deposits - were only recognized as such in the 1970s, they constitute one of the most frequently occurring facies in sedimentary records. This dissertation examines the tempestites of the Parnaíba Basin of Brazil from the Devonian through the Permian.
We have relied on the holistic paradigm, which presumes that the universe is a dynamic web of related events, in which none of the properties of any one part of the web are fundamental, but rather all properties are a result of the other parts of the whole; it is the overall coherence of the interrelations within the web that will determine its structure. One of the ways in which the holistic view was applied in this study was the use of the "Zoom Method". Its goal was to establish the context, or part of the holistic web, wherein the problem is located, by means of a coordinated examination of observations of different magnitudes. In this approach, relations are thus more important than objects them-selves.
An extensive review of the literature on the state of the art of tempestite models indicates that the facies is abundant in sections that formed in shallow marine or lacustrine environments on muddy shelves. A "classic" tempestite can be recognized through the identification of hummocky cross-stratification, nor-mally found in upwards - fining layers that reveal truncated wave-ripples within. One special type, denominated as "oscillatory turbidite", displays a gradation of internal structures in which the crest spacing of the undulated laminae decreases upwards as their height increases. The genesis of hummocky cross-stratification involves the simultaneous action of unidirectional and oscillatory flows, which generate bi- or tridimensional migratory bedforms: it is impossible to confuse a hummocky structure with through cross-bedding, contrarily to what has been suggested by some authors. Although the question is still under debate, the determinant process in the formation of these combined flows seems to be the process generated by gradient currents and characterized by superimposed waves in the proximal part and geostrophic currents in the distal. Tempestites can be found at depths ranging from very shallow (supratidal zone) to bathyal.
The distribution of tempestites in relation to the depositional axis, in terms of proximality, produces distinct deposit characteristics. Proximal tempestites display a larger grain size; thick, amalgamated layers; a predominance of swaley over hummocky cross-stratification; a greater frequency of channels; and offshore oriented paleocurrents. Distal tempestites are thin-bedded, and thus often confused with turbidites; this type is further characterized by finer granulation, sole marks, and alongshore paleo-currents.
The primary depositional geo-metry of tempestites is that of lobes or sand sheets. Elongated shapes, corresponding to sand ridges or offshore bars, may later be generated by reworking processes during relative sea-level lowstands.
In the overwhelming majority of cases, the facies sequence coarsens and thickens upwards, and variations in relative sea level are responsible for the formation of this vertical succession.
Despite the debate surrounding the genesis of tempestites (i.e., whether turbidity currents were present as the main depositional agent), there is no question as to the similarity of this structure to turbidites. In this thesis, I have used the turbidite facies of Mutti & Ricci-Lucchi for the characterization and mapping of tempestites.
The relation between tempestites and certain causes, such as hurricanes, winter storms, or tsunamis, is still far from being definitively clarified. In human dimensions, major storms occur very rarely, that is, around once every one thousand years; furthermore, the magnitude and periodicity of episodic geological events, of which major storms are an example, depend on factors that have varied over geological time, thus placing limitations on the use of uniform-itarianism in the interpretation of tempestites.
The tempestites of the Parnaíba Basin were studied within the framework of sequence stratigraphy, a modern stratigraphic methodology. Based on the establishment of fifty-two electric markers and on a number of other parameters, depositional sequences denominated the Devonian, Devonian-Mississippian, Mississippian, Pennsylvanian, and Permian sequences were defined. Tempestites are found to occur principally in the muddy sections of these sequences, in the transgressive interval and base of the regressive interval, near the maximum flood surface of the sequence. Isopach maps reveal tectonic control from ancient lineaments generated in Pre-Silurian precursor rifts. Isolith maps show source areas to have been located mainly to the east of the basin. In terms of facies, proximality, and the constitution of the facies sequence, all character-istics seen in tempestites elsewhere around the world can be identified in the Parnaíba Basin.
There is an excellent global correlation between the depositional sequences of the Parnaíba Basin and those of the Northern Hemisphere, the Amazonas Basin, and Ghana offshore. The level that correlates best is the maximum transgressive surface of the Frasnian, corresponding to a global event of high organic productivity and profound alteration in the hydros-phere-atmosphere relation, in terms of CO2.

It is concluded that the abundance of tempestites in the Parnaíba is the result of the ancient situation of this basin, located in a seaway positioned between the limits of northern part of the African and South American continents and connected to the Thetis paleo-ocean. Similarly to the Cretaceous Western interior Seaway, it is hypothesized that the existence of a subtropical high-pressure cell at the mouth of the Parnaíba Seaway prompted the penetration of hurricanes that superposed themselves on extra-tropical cyclones at high altitudes, thus spawning the major storms (characterized by waves over ten-meter high) that produced the tempestites.
In economic terms and in terms of hydrocarbon exploration, it can be postulated that these tempestites, and mainly those located in the regressive intervals of the sequences, will become an important stratigraphic prospect within the Parnaíba Basin, today at an incipient exploration stage.

Fittipaldi,F.C. 1990. Fossil vegetals of the Itaquaquecetuba formation (Cenozoic, São Paulo basin). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2192 **1990** *Date of presentation:* 27/8/1990

Fernando Cilento Fittipaldi *Advisor(s):* Rösler,O.

Committee:

Subject of thesis: Palaeontology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Koppe,J.C. 1990. Metalogenesis of the Bossoroca mine gold, São Sepé, RS. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 332 **1990** *Date of presentation:*

Jair Carlos Koppe *Advisor(s):* Hartmann,L.A.

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Bossoroca Mine gold deposit is a small epigenetic hydrothermal load with medium to relatively high gold contents of approximately 15 g/t. The ore is hosted by volcaniclastic rocks metamorphosed in the greenschist facies. Their age is Upper Proterozoic and they belong to the Campestre Sequence of the Bossoroca Complex.
The Bossoroca Complex comprises two sequences: one contains mafic-ultramafic rocks, essentially volcanic in origin, with komatiitic and tholeiitic composition, associated with rocks of chemical deposition (cherts and iron formations), designated the Arroio Lajeadinho Sequence. The other, named Campestre Sequence, is composed of calc-alkaline rhyolitic to andesitic-basaltic volcaniclastic rocks, associated with chemical sedimentary rocks (cherts and iron formations) and epiclastic rocks. This supracrustal sequence was submitted to greenschist and amphibolite facies metamorphism and to one major deformational episode.
The gold deposit is cnclosed in metamorphosed crystal and fine- -grained tuffs without any apparent lithological control. The deposit comprises essentially extension veins or specifically oblique-type shear veins. These veins were formed during phases of brittle and brittle-ductile deformation under conditions of simple shear.
The gold occurs preferentially from among crystals of quartz, calcite or sulfides, either filling fractures or not, and also secondarily as inclusions or as part of the structure of pyrite.
The composition of the mineralizing fluid was characterized through fluid inclusion studies and was essentially represented by the system H2O-CO2 with low salinity (= 1%). The average density of the fluids is 0,82 g/cm³. The average temperature of gold deposition corresponding to the main stages of mineralization, was approximately 247°C. Lithostatic pressures, at the time of emplacement of the mineralizations, was estimated as 500 to 1,300 bars, corresponding to shallow depths of formation.
The isotopic values of Ù13C and Ù18O indicated the presence of homogeneous fluids, stable conditions of pressure and temperature and suggest a metamorphic origin for the fluids responsible for the mineralization.
Based on one of the models presented, the fluids were generated by the granulitization of the lower crust, migrating along regional structures and reaching the upper crust to form the gold deposit. The origin of the gold could be either the lower or the upper crust, extractedfrom the rocks by the fluids generated during granulitization. The gold would have been transported in the form of thio-complexes and its deposition would be due to lowering temperatures, pressure and variation in Eh, pH or oxidation state of the fluid.

Lemos,V.B. 1990. Carboniferous conodont assemblages of the Paraná basin. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 330 **1990** *Date of presentation:*

Valesca Brasil Lemos *Advisor(s):* Purper,I.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Carboniferous samples from wells drilled in the Amazon Basin (Eastern Amazon region) and Solimões Basin (Western Amazon region), Brazil, were processed for conodont bioe-stratigraphic studies.
The depositional sequence begins at the base with a cross-bedded sandstone of the Monte Alegre Formation of fluvial-aeolian origin, with marine carbonates intercalated. A pronounced unconformity exists at the base of the Monte Alegre Formation which, in most of the area, was deposited over pre-Carboniferous sediments in general of Devonian age.
This formation is overlain conformably by the Itaituba Formation which consists of interbedded carbonates, evaporites and shales, grading upwards to the Nova Olinda Formation with similar composition, but predominantly evaporitic. Black shales are the result of maximum inundation of the basin duringthe cyclic transgressions and constitute excelent bed markers. Evaporites represent regressive events followed by dessication.
Conodont assemblage zones were established for the Carboniferous section.
The Neoghathodus symmetricus/ Rhachistognathus muricatus Zone (Morrowan in age) is referable to the Monte Alegre Formation and lower part of Itaituba Formation. The Diplognathodus orphanus/ Diplognathodus coloradoensis Zone, recorded in the middle and upper parts of Itaituba Formation, helps to date this zone as of Atokan age.
Sampling problems do not allow a reliable interpretation of Desmoinesian and Missourian intervals. A Strepto-gnathodus elongatus / Idiognathodus ellisoni Zone was recorded at the base of the Nova Olinda Formation.

Rêgo,I.T.S.F. 1990. Petrology and geochemistry of the Bela Joana Charnockitic unity, São Fidelis region - RJ state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 348 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1052 **1990** *Date of presentation:* 4/4/1990

Inês Terezinha Soares Fernandes do Rêgo *Advisor(s):* Figueiredo,M.C.H.

Committee:

Subject of thesis: Geochemistry and Petrology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Rego,M.J.M 1990. Alteration and pedogenesis in granulitic rocks fom the coccoa cropping region of Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1989 **1990** *Date of presentation:* 3/4/1990

Maria Jose Marinho do Rego *Advisor(s):* Carvalho,A.

Committee:

Subject of thesis: Pedology

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Riccomini,C. 1990. Continental rift of southeast of Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 304 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1225 **1990** *Date of presentation:* 26/3/1990

Claudio Riccomini *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,A.C.G.A. 1990. Água Clara barite deposit in the ambit of the Precambrian in the Vale do Ribeira valley, Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1934 **1990** *Date of presentation:* 24/5/1990

Antonio Carlos Gondim de Andrade e Silva *Advisor(s):* Barbour,A.P.

Committee:

Subject of thesis: Economic Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Tanner de Oliveira,M.A. 1990. Mafic swarm diques of Olivença: Geochemical and petrogenetic aspects. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1226 **1990** *Date of presentation:* 10/1/1990

Maria Alba Farias Tanner de Oliveira *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Tomazelli,L.J. 1990. Contribution to the study of the holocene depositional systems from the northeastern coastal province of Rio Grande do Sul, with emphasis on the eolian system. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 329 **1990** *Date of presentation:*

Luiz José Tomazelli *Advisor(s):* Villwock,J.A.

Committee:

Subject of thesis: Marine Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Holocene depositional systems of the NE part of the Rio Grande do Sul Coastal Province (Lagoon, Eolian and Beach Systems) were studied from two points of view. On the geologic perspective they were treated as sedimentary environments responsible for the generation of an important assemblage of sedimentary facies. On the human point of view they were considered as a complex environment, fragile and dynamic, where multiple processes take place, associated with the sea, land, atmosphere and life.

The Lagoonal System comprises a group of depositional environments and sub-environments (lagoons, lakes, meandering rivers, inter-lagoonal meandering channels, fluvio-lagoonal deltas, "lagoonal-tidal" deltas, swamps) developed on the lowlands between the Holocene barrier and the Pleistocene terrains. The sedimentary processes acting in these environments, the morphologic patterns developed, the distribution of the sediments and the evolution through time are investigated in this study.

The Eolian System was studied with more detail, owing to its great importance. It is controlled by a wind regime of high energy and low directional variability that blows dominantly from the northeast. The sand drift potential was calculated from the velocity and directional data registered at the meteorologic stations. The eolian features were classified on a genetic and descriptive basis and studied in their morphological aspects and internal organization. The free dunes, important elements of the system, show a net migration to the southwest with rates between 10 and 38 m/year, according to determinations conducted directly on land and by aereal photographs analysis.

The Beach System, controlled basically by the wave action, is represented by a long, almost rectilinear and morphologically very uniform sandy beach which shows a dissipative behaviour most of the time. It usually has a "morphological state" that reflects the strong influence of the storms, making the beach profile completely flat and develops a persistent scarp in the frontal dunes. Several evidences show that in this system the erosional processes predominate over the depositional ones.

We tried in this study to know the processes that have acted on these coastal systems since their generation at the end of the great Holocene transgression until now. We have intended to understand their evolution during the Holocene, their nowadays behaviour and their future perspectives. In this context we verified that at the present this coastal region is submitted to a transgressive process that has reverted its previous tendency to progradation. This transgressive event that affects and interconnects all the coastal systems seems to be the most important process working in this coastal region nowadays.

Almeida,T.I.R. 1991. Magnesite from the Campo de Dentro deposit, Serra das Éguas, Bahia state : Geochemistry and genesis. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1894 **1991** *Date of presentation:* 29/1/1991

Teodoro Isnard Ribeiro de Almeida *Advisor(s):* Ellert,R.

Committee:

Subject of thesis: Geochemistry

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Atencio,D. 1991. Furcalite and other secondary uraniferous minerals from Perus, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1850 **1991** *Date of presentation:* 12/7/1991

Daniel Atencio *Advisor(s):* Hypolito,R.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Azevedo,S.A.K. 1991. Prestosuchus Chiniquensis Huene 1942 (Rreptilia, Archosauria, Thecodontia, Proterosuchia, Rauisuchidae) from the Santa Maria formation, Triassic of Rio Grande do Sul, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 334 **1991** *Date of presentation:*

Sérgio Alex Kugland de Azevedo *Advisor(s):* Barberena,M.C.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The cranial and partial postcranial osteology of Prestosuchus chiniquensis Huene 1942 is described here. The material was collected in sediments of the Santa Maria Formation (Ladinian of Rio Grande do Sul State, Brazil).
A carnivorous-predatory habitus for this species is clearly indicated by the morpho-functional characteristics of the masticatory apparatus.
From a paleoecological point of view, it can be said that Prestosuchus chiniquensis was the main occupant of the carnivorous-predatory niche during the Middle to Late Triassic transition.
This temporal transition also indicates the decline of the paleoecological role played by this huge thecodont, since sedimentary and some tectonic evidences point to a change to more drastic (drier climate) condictions in the paleoenvironment. New forms seem to have had better opportunities of survival in the Late Triassic paleoenvironment.
Thecodont taxonomy has been the subject of an extended discussion among the authors dealing with this group. As controversies still remain, and until they are clarified in face of more abundant materials, we decided, for the purposes of the present work, to follow the taxonomic proposition of Bonaparte (1982).

Campos Neto,M.C. 1991. Occidental part of Alto Rio Grande belt - Essay of tectonic evolution. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 210 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1077 **1991** *Date of presentation:* 16/12/1991

Mário da Costa Campos Neto *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Tectonic and Structural Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Castro,J.C. 1991. Marine and deltaic systems evolution of the Rio do Sul and Rio Bonito (Triunfo member) formations (late Permian) in southeastern Paraná basin. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 364 **1991** *Date of presentation:* 26/4/1991

Joel Carneiro de Castro *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Regional Geology

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The evolution of the glacial, marine and deltaic systems of Rio do Sul and Rio Bonito formations (Early Permian) is well documented in the "Rio do Sul Basin", located in the southeastern margin of the Paraná Basin. Excellent subsurface and outcrop data allow to map three distinctive geologic provinces in that basin.
The Rio do Sul province (basin center) evolved from a deep marine to a major shallow marine-deltaic setting, while the Alfredo Wagner province (southeastern margin of the Rio do Sul Basin) evolved from deep marine to glaciotransitional setting. The lateral facies relationships in the younger interval strongly suggests a contemporaneity between deltaic cycles (Triunfo Mbr) basinwards and glaciotransitional deposits (Rio do Sul Fm) marginwards. The same relationship can be deduced from the observed vertical successions, which display deglaciation deposits evolving to deltaic cycles.
The post-glacial deltaic cycles of the Triunfo Mbr are fluvial-dominated, with delta-front suspension and delta-plain tractive deposits. Those cycles are progressively younger and less important from the basin center towards Alfredo Wagner province, due to the retrograding nature of deglaciation. Transgressive markers, mostly marine tempestites, frequently punctuate the deltaic record and allow cyclostratigraphy and correlation of the Triunfo Mbr to be established.
The southernmost portion of the area, represented by the Lauro Müller province and by the "depressions" in the flanks of the Sul-riograndense Shield, exhibits a thin cover of glacioproximal deposits (overlying basement rocks) followed by a fault-controlled, post-glacial deltaic cycle.

Ferreira,F.J.F. 1991. Aerogammaspectrometry and aeromagnetometry of an occidental tract of the precambrian in São Paulo State. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 150 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1243 **1991** *Date of presentation:* 23/9/1991

Francisco José Fonseca Ferreira *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geophysics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Fragoso César,A.R.S. 1991. Plate tectonics in the Brasiliano cycle: The orogenies of the Dom Feliciano and Ribeira belts in Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 367 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1235 **1991** *Date of presentation:* 5/12/1991

Antônio Romalino Santos Fragoso César *Advisor(s):* Figueiredo,M.C.H.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Garcia,A.J.V. 1991. Stratigraphy, sedimentation and diagenesis of the sandstones from the Serraria formation, lower Cretaceous of the Sergipe-Alagoas basin, northeastern Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 339 **1991** *Date of presentation:*

Antônio Jorge Vasconcellos Garcia *Advisor(s):* Gamermann,N.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A multidisciplinar analysis of the Serraria Formation allowed a re-evaluation of the pre-rift sequence in coastal and interior basins in northeastern Brazil and western Africa with the resulting new definition of the Afro-Brazilian Depression.
The palaeogeographic characterization of several sedimentological evolutionary phases of the Serraria and Sergi Formations was vital to establish their source areas as well as a better understanding of the distribution of the arboreal vegetation. Silicified wood of this vegetation occurs in those units in Sergipe-Alagoas Basin and in the north part of Tucano Basin.
The prevailing climatic conditions in the Gondwana Continent and types of the sedimentary deposits point out the Afro-Brazilian Depression as a peridesertic region with endorreic and assimetric drainage. Efemerous braided rivers crossed this vast region in periodic torrents and, allied with local eolian and lacustrine deposits, provided the gradual filling of the palaeobasin.
In the north portion of the Depression, the best conditions of atmospheric precipitation allowed the development of a braided fluvial stream over a large extension, from headwaters in the Rio do Peixe region to distal portions in Sergipe-Alagoas Basin. However, in the southern portion, Recôncavo region, a greater distribution of eolian deposits occurred, owing to most intense aridity conditions.
I propose an integrated depositional model which involves the Antenor Navarro Formation of the Rio do Peixe Basin (proximal fluvial facies), the Serraria Formation (intermediate to distal fluvial facies) and the Bananeiras Formation (distal lacustrine facies) of the Sergipe-Alagoas Basin. The Etosha Pan in Namíbia, in a peridesertic situation in respect to Kalahari Desert, and the Eire Lake Depression in Australia are present-day analogous models.
Based on detailed sedimentological analysis the Serraria Formation can be divided into three lithological intervals, from the bottom to the top: 1) interbedded fine-grained sand-stones and shales (AFBPI), transitional to the shales of the Bananeiras Formation, 2) mid- to coarse-grained sandstones and con-glomerates (AMGC), and 3) fine-grained sandstones with intercalation of shales (AFPTI), transitional to the Barra de Itiúba Formation. Mid- to coarse-grained sandstones, called "Caioba Sandstone", also occur interbedded in the latter interval.
The sandy intermediate interval is possible to subdivide into three lithological units, each of them corresponding to an important evolutive aspect: a) a fluvial lower unit of mid- to coarse-grained sandstones (AMGI), b) an eolian intermediate unit of fine- to mid-grained sandstones (AE), and c) a fluvial upper unit of coarse-grained sandstones and conglomerates (AGCS). The eolian lithological unit has not been well developed and was strongly affected by erosion processes during the deposition of the AGCS unit.
A better approach on palaeoclimatic and palaeoecologic aspects during the sedimentation of the Serraria Formation is based on the study of the palaeontological material discovered in the Serraria Formation sandstones (silicified wood of gymnospermae and angyospermae) and in the underlying and overlying litho-stratigraphic units (scales of the genus Lepidotes, fragments of a hybodontid shark, and mollusk shells).
The mass balance of the eroded material from the most probably sedimentary source area and the deposited material in the north-central part of the basin allow to speculate that the sedimentation of the Serraria and the Sergi Formation took place under 10 Ma during the Lower Cretaceous, probably the Berrisian.
The petrological analysis of the sandstones permitted the definition of four diagenetic domains. Depositional conditions, burial history and geochemical characteristics of source rocks were responsible for the differentiation of these diagenetic domains. Diagenetic domains 1, 2, and 3 (Caioba, Atalaia Sul, Aracaju, Carmópolis, Robalo and Japoatã-Penedo sectors), situated at the most distal portions of the depositional system, display ferrous and non-ferrous dolomite as the principal eodiagenetic cement. On the other hand, in domain 4, in the São Miguel dos Campos Platform, the eodiagenetic cement is calcite. On this way, the eodiagenetic fluid conditions varied from saturated alkaline in respect to calcite (median portion of the fluvial system) to saturated dolomite in respect to the dolomite (distal portion of the fluvial system). Such conditions point out to an increase of the Mg/Ca ratio (continental sabkha). The meso-diagenetic carbonate composition has a direct relation to the regional compositional zoning of the eodia-genetic carbonate, i.e., a kind of heritage with respect to the original distribution.
The burial history of the three first diagenetic domains is characterized by uplift phases, with local exposition of the Serraria Formation during the pre-Muribeca unconformity (actually, this unit is exposed in domain 3). Infiltrations of the meteoric fluids during these phases played a very important role on the diagenetic evolution of the sandstones, with the production of: generalized dissolution of feldspars, intraclasts and micas with caolinization; significative removing of the carbonate cements with important production of secondary porosity (until 20%); oxidation of previous ferrous phases (ferrous dolomite and pyrite); and degradation of hydrocarbon compounds. The replacement of subarkoses sandstones by "diagenetic quartz sandstones" (980 2F OL) are formed as a result of high dissolution of framework grains in these domains. After the uplift phases, the lithological units of such domains suffered a new burial phase, when higher temperatures than those of the first mesodiagenesis dominated.
Although diagenetic domain 4 does not show a telodiagenesis during the burial history of the Serraria Formation, a very important mesodiagenetic aspect is described, i.e., a significative albitization of feldspars (plagioclase and K-feldspat), specially at the top of this unit. The sandstone porosity values of domain 4 are around 10%.
Intensity of clay mineral mechanic infiltration during the eodiagenesis (more intense in domains 3 and 4), the crushing of intraclasts, with pseudomatrix production, and the development of secondary quartz overgrowth are other important diagenetic processes for definition of reservoir characteristics of the Serraria sandstones.
In diagenetic domains 1, 2, and 3, organic solutions and hydrocarbons generated from continental and marine source-rocks percolated through Serraria reservoirs. Otherwise, in domain 4, there are just continental source-rocks.
I suggest additional studies with the proposal to improve the presented palaeogeographic and palaeoclimatic models for the pre-rift sequence as well as to get a better approach of the geochemical aspects associated with the diagenetic processes in the Serraria Formation (such as eodiagenetic cementation, telodiagenetic dissolution, albitization, and so forth).

Iwanuch,W. 1991. Geology of proterozoic alkaline complexes of the center of Tocantins state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 202 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1100 **1991** *Date of presentation:* 9/9/1991

Woldemar Iwanuch *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis:

State: TO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Lavina,E.L.C. 1991. Late Permian and early Triassic (Kazanianscythian interval) sedimentary geology and palaeogeography of the Paraná basin. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 335 **1991** *Date of presentation:*

Ernesto Luiz Correa Lavina *Advisor(s):* Barberena,M.C.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The end of the Paleozoic and the onset of the Mesozoic were times of remarkable planetary transformations. A trend towards the joining of continental masses modified the Paleozoic paleogeography, formerly characterized by the existence of "small" continents (with the exception of Gondwana). This process culminated with the formation of the Pangea super-continent at the end of the Permian and begining of the Triassic. In parallel fashion, the once well-defined Paleozoic climatic compartimentalization, produced by a high temperature gradient from equator to poles and development of polar ice, gave room to a Mesozoic hot and uniform climate, with no polar ice and exhibiting a low temperature gradient. In this scenario of great changes, the Permian represents a transitional phase. It starts by a generalized glaciation over the southern half of Gondwana, which in association with the compressive tectonic Hercinian episode produced high continents and a sea level eustatically low. As a consequence, the low latitudes of Pangea experienced an extensive desertification. It is possible that the "green house effect", provoked by Hercinian volcanism during Sakmarian time, determined the ice withdrawal in almost all of the gondwanic regions, causing the advance of the sea over the continents, so that a great development of epicontinental seas occurred during Middle Permian time. Owing to a new compressive tectonic episode (Late Hercinian) the borders of Pangea exhibited more or less generalized uplifts, which sectioned the epicontinental seas. It was then accentuated the desertification in the western half of Pangea at latitudes between 30°N and 30°S and monsoonal climates were established in the eastern half, at the promontories of Asia and Australia. During this time, the zones of higher humidity were situated above the 70° latitude. The pos-sibility on an increasing of the "green house effect" during tardi-Hercinian times seems adequate to explain the temperate to cool temperate climate pattern installed in the polar regions, leading to the development of forests and generation of coals.
At the begining of Triassic times, the stabilization of a new climatic pattern allowed the Lystrosaurus fauna to live at high latitudes such as 80°. This pattern of climate and temperature persisted along the duration of Pangea, being supressed only when the super- -continent was fragmented in the Upper Jurassic. During Permian times, since the glaciation, and mainly due to the retraction of shallow seas, the faunistic diversity exhibited a sharp decline, considered as the largest ever to occur during the Phanerozoic.
The above mentioned Permian modifications in climate and tectonics affected the area of the Paraná Basin, as testified by its sedimentary facies and depositional systems. The presence of ice characterized the onset of Lower Permian times; later on, associated to the post-Sakmarian transgressions, the following appearance of forests provided the generation of coals in Rio Grande do Sul and Santa Catarina areas. During the episode of maximum flood, a large body of water extended over the whole region of Paraná, Chaco-Paraná and Karoo Basins, where the betuminous shales of Irati, Chacabuco and Whitehill Formations deposited. The area corresponding to this sea was significatively larger then the one nowadays preserved. As a consequence of the large extension and high coastal onlap, the arrival of terrigenous sediments was precluded, causing the generation of a very extended condensed section. Stratification of the water column was then established, determining the presence of a thermocline which separated the colder bottom waters, rich of nutrients, with higher density and oxygen-deficient, from the warmer, well-oxygenized and low-density surface waters. Thus, an abundant life was favoured by the later, whereas anoxic environments at the bottom provided the accumulation of organic elements, leading to the deposition of lipid-enriched shales.
These environmental conditions ceased during the tardi-Hercinian tectonic activity, by the sectioning of the Pacific oceanic arm which regulated the water disposability for the basin. As a consequence, the Whitehill-Irati sea changed to a huge lake (or inner sea), becoming the depositional area for the Serra Alta and Teresina Formations. The decrease of geographic extension and mean deepness broke the stratification of the water column; anoxic conditions were supressed and the bottom waters became only moderately oxigen-deficient. Increasing aridity determined geographic restriction and, later on, the establishment of gently arched regions led to the compartmentalization of the main water body into a series of smaller lakes, though large enough at the begining of the process (Rio do Rasto Formation).
Although strong oscillations in water availableness occurred, the trend to an increasing aridity dominated, culminating with the desertification of the whole Paraná Basin in the Upper Tatarian/Lower Scythian (Buena Vista, Sanga do Cabral and Piramboia Formations). At this time, humid environments were restricted to South Africa, but probably included in a larger-scale semi-arid context.

Malagutti Filho,W. 1991. Geophysical methods in soil and rock characterization applied to urban planning geology. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 346 **1991** *Date of presentation:* 19/12/1991

Walter Malagutti Filho *Advisor(s):* Cottas,L.R.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This Thesis consists primarily on a methodological study which purpose is to demostrate the importance and the viability of geophysical technics represented by seismic refraction and vertical electric sounding, in the survey of information within two important vectors of urban planning geology in determining the geological and geotechnical properties and the thickness of different horizons within the weathered zone and the position, in subsurface of the water table.
In chapter II, the basic methodological concepts of the employed geophysical technics were reviewed, emphasizing the up-to-date field proceedings and the modern methods of analysis and interpretation of the data, besides the inherent limitation of each technic. The aim of this review was the potential and the perspective of the application of these technics in the integrated studies of planning.
The chapter III refers to an experimental study carried out in three testing-sites previously determined, consisted by the following lithological kinds: cretaceous arenites, diabasic sill and homogeneous precambrian granites. In this study, the referred geophysical technics were employed, and its purpose was to characterise all the weathered zone over the bedrock and the detection of the water table.
The integrated interpretation of the geophysical results obtained in the testing-sites, mentioned in chapter IV, showed the complexity of the variation of the measured physical parameters, in each lithology. The final product of this interpretation, resumed in electrical-seismic sections, has proved that the employed geophysical technics consists on a valuable tool that must be utilized as a rule within the integrated studies of planning to define the suitability of the terrain, for the different kinds of utilization by man.

Matos,G.M.M. 1991. Petrogenetic evolution of the stratabound gold bearing massive sulphides ore of Bico de Pedra, Minas Gerais - Brasil. PhD Thesis nº 51, Institut der Ruprecht-Karls-Universitaet Heidelberg - Germany, 264 p.

Metalogenesis, gold, petrogenesis, aurifeous sulfides, Bico de Pedra

Ruprecht-Karls Universität Heidelberg *Reference:* 3-89257-050-7

DataBase Ref.: 2330 **1991** *Date of presentation:* 9/11/1991

Gerson Manoel Muniz de Matos *Advisor(s):* Amstutz,G.C.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* 20 45 's - 44 00 'W

Abstract

The Bico de Pedra deposit is located at the coastal area of the region of Quadrilátero Ferrifero, 100 km southeast of Belo Horizonte, Minas Gerais, Brazil. The mineralization, within an area of tabular shape, is contained in several bodies of gold bearing massive sulphides. This work presents fundamentally petrographic and geochemical investigation of the ores and wall rocks.
The lithological sequence in the research area is composed of schists, quartzites and conglomerates displaying oxidic and sulphidic iron formation facies. In the mine area mica schists, calc-mica schists, chlorite schists and talc schist intruded by later subconcordant mafic dikes appear. The main ore mineral is pyrite, followed by pyrrhotite, chalcopyrite, sphalerite and galena. They are present as massive bodies, thin layers and lenses, as well as disseminated in the schist layers. Three different metamorphic and tectonic events taking place in the late Precambrian can be recognized. N and NE striking fold axes and longitudinal structures are related to a ESE-WNW compressive event of the third deformation plase.
The sequence has been metamorphosed to green schist facies, although the coexistence of low and high temperature minerals suggest an earlier higher grade metamorphic event. Both country rocks and ore bodies have been tectonically and metamorphically superinposed in the same way, developing small scale folding and recristallization. Geometry and intergrowths of the ore minerals can be explained by accretive crystallization from early diagenetic protores. The quartz veins considered in the past to be the mineralizing conducts, are mostly related to schistosity planes and therefore remobilization of wall rock material. The bulk of the sulphide mineralization can be found only in concordant quartz veins.
Phase relations of the sulphide minerals show that the ores reached at least once a temperature above 200° C.
Geochemical research was subdivided in three mayor investigation fields:
-premetamorphic wall rock composition;
-distribution of main ore metals within mine area;
-characterization of the different stages of formation
of pyrite.
Lithological associations within the Bico de Pedra area may represent a vulcano-sedimentary sequence probably deposited in a back-arc basin. The sulphide ore composition and its probable link to a bimodal volcanic association suggest an exhalative origin due to submarine volcanic activity. According to metall contents, rock types and probable geotectonic setting, a genetical working

hypothesis as a polymetallic VMS can be started for this ore deposit.
Its actual structural arrangement may be interpreted as due to overturned monoclinal folding of the Bico de Pedra rock sequence, as stratigraphic record and local tectonic style suggested.

Ribeiro,H.J.P.S. 1991. Seismic-stratigraphy and depositional architecture of the Recôncavo basin,state of Bahia, Brazil. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro / SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 365 **1991** *Date of presentation:* 28/6/1991

Helio Jorge Portugal Severiano Ribeiro *Advisor(s):* Gama Jr,E.G.

Committee:

Subject of thesis: Regional Geology

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

This thesis is a seismic-stratigraphic and depositional architecture approach of Recôncavo Basin, an aborted rift basin located on Northeast of Brazil. This analysis sought to distinguish the sucessives basin sedimentation events and correlated them with global events.
Seismic-stratigraphically, the sedimentary package was divided into two seismic sequences, defined as a relatively conformable succession of seismic reflections, genetically related, and limited by surfaces of discontinuity. The Lower Seismic Sequence is charaterized only by the paralell with razonable continuity seismic facies unit, and it is related to Dom João Stage (Middle-Late-Jurassic) and the initial part of Rio da Serra Stage (Jurassic/Cretaceous limit ?), corresponding to Aliança, Sergi, and Itaparica Formations and Tauá Member.
The Upper Seismic Sequence is composed by the following seismic facies units: progradational, paralell with low continuity, chaotic, fill, and divergent. This sequence corresponds to part of Rio da Serra Stage and Aratu, Buracica and Jiquiá Stages (Early Cretaceous), integrated by the Candeias and Salvador Formations, and Ilhas and Massacará Groups.
The same sedimentary package was conformed into the new models of depositional architecture, recently delivered by Vail and co-workers. In such way, four sequences were identified, during the Mesozoic, supported by eletric logs. These sequences are limited by important changes in the basin paleophysiography, genetically ralated to the paleo-lake base level changes. Moreover, these sequences remain the sense of an allostratigraphic unit, but there is some difference from the classical depostional sequence concept.
The basal sequence was called Middle-Jurassic, which is composed by a Transgressive and a Highstand system tract. This sequence corresponds to the lacustrine red shale of Afligidos Member and the fluvio-alluvial sandstones of Boipeba Member. Superimposed occurs the Upper-Jurassic Sequence, which is similar to the above one in terms of system tracts, corresponding to part of the lacustrine red shale of Capianga Member (Transgressive) and the fluvio-alluvial sandstones of Sergi Formation (Highstand).
Both sequences above are included in Dom João Stage.
Approximatelly at Jurassic/Cretaceous limit occurs the third sequence, denominated Berriasian, which is a transition between typical pre-rift and syn-rift sediments. This sequence is composed by a Lowstand Wedge System Tract (shales of Itaparica Formation), similar to those developed in a basin with a ramp margin, and by a Highstand System Tract corresponding to fluvial sandstones of Água Grande Member.
The fourth sequence represents the truthful syn-rift sedimentary package. It was designated by Neocomian Sequence and is integrated by the following system tracts: Transgressive (Tauá Member), Wedge-Prograding Complex (Candeias and Marfim formations), other Transgressive (lower Pojuca Formation), and Highstand (upper Pojuca Formation and São Sebastião Formation).
Each one of these sequences materializes a sedimentation episode. Moreover, these sequences represent cycles of raising of the paleo-lake base level caused by subsidence, followed by a decrease in water depth, due to sedimentary supply during the base level stillstand.
In such way, these four sequences mean four cycles of base level raising. These four cycles had showed a synchronism with Vail's curve second order cycles (10-30 mA), called Supersequence.
The second order eustatic cycles main control is the growing mid-oceanic ridge rate, therefore, an authentic tectonic event. Then, the main conclusion is that Recôncavo Basin, a paleo-lake rift, had evolved synchronously with the same second order tectonic cycles, which controled the sea-level changes and the opening of South Atlantic ocean during the Midle-Late Jurassic and Early Cretaceous.

Ribeiro,M.J. 1991. Sulfides in cambrian detritic sediments of Rio Grande do Sul, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 333 **1991** *Date of presentation:*

Marcelo José Ribeiro *Advisor(s):*

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Two sedimentar deposits, both of them lodged into non-carbonated sediments, are analyzed in this thesis.
After a brief history on the development of the cupper element knowledge in Rio Grande do Sul State, a merely descritive part is showed, inclosing the geology from molassic sequences of the Sul-rio-grandense Shield (with emphasis on mineralized sediments), and the proper cupper and lead-zinc mineral-izations.
Connected to the anterior remarks, an interpretative part follows by analyzing these among others matters: the questions on the shallow geochemical effects of the mineralization, inverse zonallity in Minas do Camaquã deposit and the Cu-Pb-Zn-Ag zonallity in Santa Mariadeposit and native silver and silver (including their anomalous concen-trations). In addition, questions on the sulfides formation into the diagenetic evolutive frame of the sediments and the vein ore formation are also discussed.
At last, a general synthesis of the obtained knowledge is made. By using the Cu-Pb-Zn geological history and the comparative analysis on the sedimentar deposits of this elements, it is intended to place the studied deposits into a larger frame, by detaching the noted likeness and discrepances in relation to the usual world remarks. These deposits are also examined accordingly to a generic and foreseeing conceituation. Finally, a short review on the proper Guaritas basin research potential is made.

Saad,A.R. 1991. Taubaté basin economic potential in the Jacarei, Taubaté, Tremembé and Pindamonhangaba regions, state of São Paulo, Brazil. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 363 **1991** *Date of presentation:* 12/4/1991

Antonio Roberto Saad *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The Taubaté Sedimentary Basin is part of an important northeast-trending system of Cenozoic taphrogenic basins, subparallel to the main structural elements of the southeastern region of the South American Platform. The origin of these depressions is related to the evolution of the Brazilian continental margin. Strectching processes that took place during Upper Cretaceous - Paleogene and associated alkaline magmatism are believed to have lead to the development of semi-grabens systems.
The Taubaté Basin is an assymetric basin, subdivided into horsts and grabens. The sub-basins, defined on the basis of gravimetric data, are the following: Jacareí, Eugênio de Melo, Taubaté, and Pindamonhangaba, separeted, respectivaly, by the following structural highs: Putins river, Caçapava, Una river and Aparecida. The sedimentary fill is totally continental, with ages from Eocene to Recent. The maximum depth of the basin, estimated from geophysical data, is about 800-900 meters.
In recent years, construction materials (sand and gravel) and clay minerals for different industrial uses have been extracted from these Cenozoic sediments. Based on geologic mapping and results of laboratory assays, associated with the mineral resources file of the Taubaté Basin, the present thesis evaluates the potencial for mineral exploration of the central part of this basin within the Jacareí, Taubaté, Tremembé, and Pindamonhangaba regions.
The geological mapping was based on modern concepts of genetic stratigraphy, i.e., the recognition of depositional sequences. Three major sequences were defined: Tremembé, Taubaté, and Paraíba do Sul. The last was subdivided into the Paleo-Paraíba do Sul and Neo-Paraíba do Sul subsequences. The Tremembé and Taubaté sequences are made up of depositional tracts consisting of alluvial fan, meandering fluvial and lacustrine systems; the Paraíba do Sul Sequence comprises alluvial fan, braided and meandering fluvial systems.
The lacustrine systems (Tremembé and Taubaté sequences) include important Fuller's earth clay minerals and bituminous shale occurrences; the meandering fluvial system (Taubaté Sequence) has aggregates for construction materials and structural clays; braided and meandering fluvial systems of the Paleo-Paraíba do Sul Subsequence provide sand and gravel as well as refractory clay minerals; the meandering fluvial system of Neo-Paraíba do Sul Subsequence is an important source of aggregates for construction materials, structural clays, and peat. Besides these mineral resources the Taubaté Basin has low enthalpy geothermal resources in the Taubaté and Pindamonhangaba sub-basins, which can be exploited by the local industries.
In the mapped area there are a large number of industries; farms and ranches, as well as growing urban areas that cause conflicts with mining activities. The area also includes environmental protection zones ("APA") where mining activity is not permited. Future exploitation of mineral resources in this region will have to lake these factors into consideration.

Schultz,C.L. 1991. The south american rhynchosaurs and their relationships to other representatives of the group. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 337 **1991** *Date of presentation:*

César Leandro Schultz *Advisor(s):* Barberena,M.C.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis intends to present a review on the knowledge on fossil rhynchosaurs, particularly the South American forms. The parallel revision of the fossil materials and the papers written about them, on the light of today's concepts upon paleobio-geography, paleoclimatology and specially taphonomy (whose influence on the resultant morphology of the fossil bones is

stressed), pointed to the necessity of changes in some of the ideas currently accepted. Among the fossil materials attributed to the genus Scaphonyx, the single only genus until now established to South America, some modifications in their taxonomic status are needed. Most of them belonged in reality to the genus Hyperodapedon. On the other hand, comparison between specimens of Scaphonyx fischeri and Scaphonyx sanjuanensis revealed a lack of diagnostic characters for justifying the existence of two species. Thus,the second must be considered a synonym of the first. By its side, the third species of the genus, Scaphonyx sulcognathus, presents morphological features that strongly indicate that it must be considered a new genus, which should belong to a subfamily different from the one to which Scaphonyx belongs. However, rhynchosaurian classification at sub-family level is not sufficiently clear today; therefore, propositions in this sense should be posponed for a while. The presence of the first pre-Carnian rhynchosaurian form ("Mariante Rhynchosaur") is also here reported and discussed. Several data obtained from the most recent collected South American rhynchosaurs, dealing with dentition, jaw mechanics and composition of paleofaunas, were integrated to discuss their implication on paleo-ecological and biostratigraphical interpretation.

Uhlein,A. 1991. Craton-fold belt transition: Example of the São Francisco craton and Araçuai belt (Brasiliano cycle) in the Minas Gerais state: Stratigrafic and structural aspects. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 295 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1236 **1991** *Date of presentation:* 20/5/1991

Alexandre Uhlein *Advisor(s):* Trompette,R.R.

Committee: Marcel Auguste Dardenne - IG/UnB
Joel Carneiro de Castro -
Umberto G. Cordani - IGc/USP
Johann Hans Daniel Schorscher -

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W
SE24

Abstract

It is a stratigraphical, sedimentological and structural study of the transitional zone between two Brasiliana (=Pan-African) provinces: the São Francisco Craton and the Araçuaí Fold Belt, both located in Central-North Minas Gerais.

Three main structural domains can be distinguished using the intensity of Brasiliano (~600Ma) deformation and metamorphism. The external domain is represented by the eastern border of the São Francisco craton. In the transitional domain outcrop the external structural units of the Araçuaí Fold Belt and in the internal domain the highly deformed and metamorphosed internal units.

The main lithostratigraphic units involved are Archaean and/or Transamazonian (2000 Ma) basement, Middle Proterozoic metasediments of the Espinhaço Supergroup, Upper Proterozoic metasediments of the São Francisco Supergroup, The Macaúbas Group and the Salinas Complex and finally the Brasilianos granitoids. The basement outcrops on the craton and in the external domain where it is polycyclic. The cover of the São Francisco Craton is made of São Francisco Supergroup. The Espinhaço Supergroup is found in both external and transitional domains. The Macaúbas Group is confined to the transitional domain and the Salinas Complex and the Brasilianos granitoids to the internal domain.

The Espinhaço Supergroup has been deosited in a roughly submeridien continental rift located in the transitional domain. Its lower part is made of acid to intermediate sub-alkaline metavolcanics and fluviatil metasediments grading lateraly to lw depth marine sediments. Its middle part is made of eolian quartzites deposited in a beach environment. Its upper part is composed of low depth marine deposits showing alternate regressive and transgressive cycles. After its deposition the Espinhaço supergroup has suffered a general uplift and intrusions of continental tholeiites. On the highest up lifted parts glaciogenic facies of the Jequitaí Formation (lower part of São Francisco Supergroup) are deposited. Eastwards, in the Araçuaí geosyncline, they grade into glacio-marine deposits associated to gravitational debris flows, mud flows and turbidites. Fine distal turbidtites are characteristics of the Salinas Complex. This facies change from West to East mark out the evolution from a continental englacial environment to a platform glacio-marine environment and finally to a deep oceanic basin. Gravity reworked deposits are concentrated along the slope separating the marine platform from the oceanic basin. The whole sequence of facies build a typical prism of pasive margin. Westward, on the craton, continental glacial facies disappear and the Bambuí (middle part of the São Francisco Supergroup) lies directly on the basement. The upper (molassic Tres Marias Formation) parts of the São Francisco Supergroup is only known on the craton. No equivalents have been identified in the Araçuaí Fold Belt because non deposited or eroded.

The structure of the Araçuaí Fold Belt - transitional and internal domains - is progressive (phase Dp-1 and Dp) and polyphased (Dp+1). The first or main (Dp) deformation generate a serie of wide undulated zones with asymetric folds showing westwards vergence separated by thin belts of ductile shearing. Sp slaty cleavage bears a proeminent stretching or/and mineral lineation indicating westward transport of materials towards the São Francisco craton. Locally a Sp-1 cleavage has been identified. It probably represents an early phase of the main progressive deformation (Dp) Dp+1 generates open folds with a non-penetrative crenulation cleavage. Covers of the cratonic domain are subautocgtonous: they are folded and thrusted by Dp on a width of about 100 kilometers. The regional barrovian metamorphism is associated to Dp. It increases from anchizone (cratonic domain) to greenschist facies (intermediate domain) and deep amphibolite facies (internal domain). Granitoids are mainly syntectonic, of S-type, leucocratic, generaly with two micas, garnets, cordierite and sillimanite.

The Araçuaí Fold Belt represents the northern part of the western flank of a mega orogen divide in two during the opening of the South Atlantic Ocean in Early Mesozoic time. It is characerized by a main ductile shearing with westwards vergence. Metasediments are cross-cut by low angle shearing zones, the most important of which are used to separate the 3 main structural domains. The substrate is sialic in the whole studied area. The Brasilian tectogenesis is roughly dated at 600Ma.

Yamamoto,J.K. 1991. Comparision between computational methods for mineral reserves: A case study in the

Chapada copper deposit, GO state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1900 **1991** *Date of presentation:* 26/4/1991

Jorge Kazuo Yamamoto *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Computation applied to geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Zaine,M.F. 1991. Fossil analyses of part of Paraguai belt (MS,MT) and its temporal and palaeoenvironmental context. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2197 **1991** *Date of presentation:*

Mariselma Ferreira Zaine *Advisor(s):* Fairchild,T.R.

Committee:

Subject of thesis: Palaeontology

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

MS

Abstract

Zouain,R.N.A. 1991. Evaluation of the sea level changes during the Holocene in the continental shelf adjacent to the La Plata river. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 338 **1991** *Date of presentation:*

Ricardo Norberto Ayup Zouain *Advisor(s):* Martins,L.R.S.

Committee:

Subject of thesis: Marine Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The sedimentological and miner-alogical study of the superficial bottom samples of sediments of the Rio de la Plata and adjacent continental shelf was developed to characterize the paleogeographic evolution of this area.
Textural parameters were obtained and analyzed by simple and multivariate statistic methods (cluster analysis and discriminant functions). This study allowed to establish the differents dynamic processes developed in the area.
The heavy minerals composition of the sands from the continental shelf adjacent to the Rio de la Plata, was determined by multivariate statistic methods (cluster analysis, principal components analysis and Q-mode factor analysis) in order to examine the causes of the probable dynamic conditions.
The results of the study of the relation between multivariate analysis and traditional analysis with morpho-logical aspects, have demonstrated that much of the continental shelf sand composition is in part relict, reflecting along and cross-coast-shelf sand movement associated with different sources.
The sea level rise and accompanying migration of paleo-coastlines, permitted to establish the Holocene paleographical evolution for this area.
Different positions of the paleo-coastlines level are located about 22/23m, 30-40 and 60-75m deep, and the rise of these different levels was developed previously to 11,000 years B.P. until 6,000 years B.P.

Angulo,R.J. 1992. Geology of the coastal plain of Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2201 **1992** *Date of presentation:* 12/6/1992

Rodolfo José Angulo *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Regional Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Asomaning,G. 1992. Comparative study of the hydrogeologic conditions of precambrian rocks in the Paraiba and São Paulo states, Brasil and Gana, occidental África. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1921 **1992** *Date of presentation:* 28/5/1992

George Asomaning *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: PB *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

SP

Abstract

Barbosa,R.M. 1992. Geochemical and mineralogical evolution of the overburdern of chomiferous rocks of Campo Formoso, Mina Coitezeiro mine: Behaviour of chrome in the hydrothermal and supergenic alterations. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 162 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1075 **1992** *Date of presentation:* 7/12/1992

Ronaldo Montenegro Barbosa *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Geochemistry and Petrology

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Bordest,S.M.L. 1992. Environmental risks in the high Coxipó river area, Mato Grosso state. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 347 **1992** *Date of presentation:* 8/7/1992

Suíse Monteiro Leon Bordest *Advisor(s):* Christofoletti,A.

Committee:

Subject of thesis: Geosciences and Environment

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This paper refers to studies carried out in the Coxipó River Upper Basin MT-Brazil. Most of the area has been part of the National Park since 1989. The paper discusses and presents results on the necessity of the environmental preservation by using simple methodology based upon the interactions among erosion agents, and processes perceived in the interface Nature-Society. Cartographic techniques and field-work have been the essential methodological procedures to carry out this research, which gave permitted recognition of five units of morphological features on two morphostructural units: Chapada dos Guimarães and Depressão Cuiabana and in the latter eight environmental high risk sectors. consequently of restrictions to use. The results have revealed that the environmental situation in the above mentioned area one finds a "path" for the degradation, making it evident that the predatory and the land exploitation make up the activities that, in the last twenty years were the most harmful to the environment and intensify the erosive processos.

Campanha,G.A.C. 1992. Proterozoic tectonics in the high and medium Ribeira valley, São Paulo and Paraná states. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 296 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1072 **1992** *Date of presentation:* 10/3/1992

Ginaldo Ademar da Cruz Campanha *Advisor(s):* Sadowski,G.R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

PR

Abstract

Carneiro,M.A. 1992. Setentrional Bonfim metamorphic Complexo (Quadrilatero Ferrifero, MG state) : Lithostratigraphy and geologic evolution of a segment of Archaean continental crust. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 233 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1526 **1992** *Date of presentation:* 23/11/1992

Maurício Antônio Carneiro *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

D'agrella Filho,M.S. 1992. Palaeomanetism of swarms of proterozoic mafic dikes and basement rocks of the São Francisco craton. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 201 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1520 **1992** *Date of presentation:* 24/11/1992

Manoel Souza D'agrella Filho *Advisor(s):* Pacca,I.I.G.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

D'el-Rey Silva,L.J.H. 1992. Tectonic evolution of the southern part of the Sergipano fold belt, northeastern Brazil. PhD Thesis, Royal Holloway University London, England; pg

Sergipano Fold Belt; Brazil; São Francisco Craton; Neoproterozoic; Sergie and Bahia States; Structural analysis; Stratigraphic analysis; Tectonic Evolution

Royal Holloway University London (RHUL) *Reference:*

DataBase Ref.: 242 **1992** *Date of presentation:* 2/11/1992

Luiz José Homem D'El-Rey Silva *Advisor(s):* McClay,K.R.

Committee: Michael Coward -

John Grocott -

Subject of thesis: Tectonic and Structural Geology

State: SE *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

This thesis is a stratigraphic and structural analysis of the Itabaiana Dome area in the southern part of the Sergipano Fold Belt, northeastern Brazil. The ESE-WNW trending Sergipano Fold Belt is a subgreenschist to amphibolite grade metavolcano-sedimentary wedge polydeformed during the 700-600 Ma Brasiliano - Pan-African orogeny. Crystlline basement gneiss domes mantled by metasediments are found within the fold belt which lies between the São Francisco Craton in the south and the Pernambuco-Alagoas Massif to the north. An area of 4000km2 surrounding the Itabaiana and Simão Dias gneiss domes was mapped at 1:50,000 scale.
A new stratigraphy has been established for this part of the Sergipano Fold Belt. Two major Middle to Late Proterozoic

sedimentary cycles have been recognised, each with a basal siliciclastic megasequence overlain by a carbonate megasequence. Four main stratigraphic groups have been established. The ˜ 330m thick Estância Group consisting of metasandstones, pelites, and metacarbonates unconformably overlies the crystalline rocks of the craton and is laterally equivalent to the ˜200-1100m thick Miaba Group which consists of the Itabaiana quartzites; the Ribeirópolis phyllites, pebbly phyllites, diamictites and metavolcanics; and the Jacoca metacarbonates. The Miaba Group is unconformably deposited around the gneiss domes. The ˜700m thick Lagarto Group has been identified as a new lithotectonic element in the southern part of the Sergipano Fold Belt. This Group is a coarsening-upward siliciclastic sequence that overlies the older rocks of both the craton and the fold belt. It consists of the Lagarto-Palmares mudstones, siltstones, sandstones and lithic wakes together with the Jacaré metasiltites and the Frei Paulo phyllites, metarhythmites, metagreywackes, minor metacarbonates and metavolcanics. The ˜200-2000m thick Vaza Barris Group, consisisting of the Palestina diamictites and the Olhos D'água metacarbonates, unconformably overlies the older rocks to the north of the Itaporanga fault.
The thickest Palestina diamictites occur in a WNW-ESE trending, fault-bounded depocentre which also received relatively deep water accummulations of the other formations. The siliciclastics generally thin towards the basement gneiss domes, whereas the carbonates thin away from the domes into the diamictite trough. The thickness and facies distributions of these units indicate tectonically controlled sedimentation, with basement highs supplying sediments from both the southern and northern margins of an asymmetric basin.
The structure of the Itabaiana Dome area is dominated by shallowly plunging, SSW vergent F1 and F2 recumbent to inclined folds and steep D2 thrust faults. D1 is characterised by WNW-ESE trending, SW vergent, nappe-like folds associated with a penetrative layer-parallel foliation. D2 is characterised by co-axial, up-right, tight and WNW-ESE trending folds, associated with penetrative axial surface foliations, lineations and high-angle, SSW vergent, oblique slip thrust faults. These regional thrust faults are probably inverted extensional faults. Late-stage, orogen-parallel movement generated transverse F3 kink-style folding and rotation of fault bounded domains.
Regional lithostructural correlations between the southern and northern parts of the Sergipano Fold Belt indicate that the Sergipano Basin may be interpreted to have been a WNW-ESE striking half graben that deepened towards the ENE. It was infilled by miogeoclinal-eugeoclinal sediments and evolved axially into a small oceanic basin, termed the Canindé sea, in its northern part. The preferred tectonic model for the evolution of the Sergipano Basin is that of a linked system of listric extensional faults that merged into a basal detachment with a ramp-flat geometry. Inversion of this extensional fault system, due to oblique collision of the Borborema Province to the north, with the São Francisco Craton to the south, produced sinistral transpression of the sedimentary wedge of the Sergipano Basin and resulted in the Sergipano Fold Belt.
The tectonic and stratigraphic evolution of the Sergipano Fold Belt is similar to that found in other Brasiliano and pan-africa mobile belts. In particular the correlation of stratigraphy from the craton into the fold belt and the interpretation of sedimentation controlled by extensional tectonics suggest a model of basin formation by extension of the craton margins, development of pericratonic and small oceanic basins which were then deformed by collision of continental fragments against the craton margins. This model agrees with those postulated of a supercontinent that evolved by fragmentation and amalgamation of along long-lived zones of lithosphere weakness throughout the Proterozoic.

Dino,R. 1992. Palinology, biostratigraphy and palaeoecology of the Alagamar formation- Cretaceous of the Potiguar basin, Northeastern of Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2037 **1992** *Date of presentation:* 11/11/1992

Rodolfo Dino *Advisor(s):* Lima,M.R.

Committee:

Subject of thesis: Palaeoecology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Fraga,C.G. 1992. Fluorine origin in underground waters of the Botucatu and Serra Geral aquifers systems of the Parana basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2200 **1992** *Date of presentation:* 21/12/1992

Carlos Gilberto Fraga *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Janasi,V.A. 1992. Syenitic and mangero-charnockitic Neoproterozoic rocks of the region between Caldas and Campestre, MG state: Petrologic aspects. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 298 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1057 **1992** *Date of presentation:* 9/11/1992

Valdecir de Assis Janasi, *Advisor(s):* Ulbrich,H.H.G.J.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Lehugeur,L.G.O. 1992. Sedimentary characterization of a part of the alluvial fans depositional system in the coastal province of Rio Grande do Sul. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 340 **1992** *Date of presentation:*

Loreci Gislaine de Oliveira Lehugeur *Advisor(s):* Martins,I.L.R.

Committee:

Subject of thesis: Stratigraphy

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The alluvial fans laid down in the Rio Grande Coastal Province stem from desagregation and decomposition of granit rocks. They display overlapped lobes related to several outflows.
The textural heterogeneity of the sediments is marked by the ample interval that goes from pebbles to clay. The grain size decreases towards the fan distal area, which is better observed in its northern region.
The mineralogical content of the sediments is basically granite, feldspar, mica and clay minerals.
The depositional processes responsible by the transport and deposition of the sediments are the debris flow, current flow and mud flow, with predominance of the first.
The outstanding facies present in the deposits are the conglomeratic sandstones, sandy-clay sedimentswith granules, and clay sediments carrying out massive internal structures with either normal or inverse graded bedding and planar cross-stratification.
The bedding internal features are related to depositional mechanism and processes.
The driving energy during the sediment transport and deposition varied according to each studied region, but the fluidity index remained always high.
Sedimentological evidences worked out the occurrence of arid climate intercalated with hot and humid periods during the transport and deposition of the sediments. These climatic alternances are correlated to the Pleistocene glacio-eustatic variations of the sea level.
The alluvial fan system has been stratigraphically recorded as Upper Tertiary - Lower Quaternary.

Mizusaki,A.M.P. 1992. Rb and Sr behaviour in recent sediments: Implications in radiometric dating in sedimentary rocks. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 140 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1073 **1992** *Date of presentation:* 6/8/1992

Ana Maria Pimentel Mizusaki *Advisor(s):* Kawashita,K.

Committee:

Subject of thesis: Geochemistry and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Perinotto,J.A.J. 1992. Stratigraphic analysis of Palermo formation (P), Paraná basin, Brazil. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 366 **1992** *Date of presentation:* 7/7/1992

José Alexandre de Jesus Perinotto *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Palermo Formation and the Taquaral Member (Irati Formation) are the main record of the Late Permian post-glacial marine

transgression in the Paraná basin. In spite of this, there are few detailed papers dealing with the Palermo Formation. This unit has not deserved too much attention like others also related to the Tubarão Supergroup. This thesis presents the state-of-art and a review of the Palermo Formation in the Brazilian portion of the Paraná basin.
The main analysed data came from outcrops in Rio Grande do Sul and São Paulo states. Subsurface data (cores and composite well logs) were studied from wells drilled by Petrobrás, Paulipetro and Companhia de Pesquisa de Recursos Minerais (C.P.R.M.) all over the Paraná basin.
Eight sedimentary facies were described. The generating process of these facies are related to marine shelf, shoreface and coastal alluvial fan environments.
In order to analyse the sedimentary evolution several stratigraphic cross sections were made based on sequence stratigraphy concepts (flooding surfaces - parasequence boundaries). Based on these cross sections it is possible to elaborate paleogeographic evolution maps.
World-wide pronounced eustatic marine fall has been recorded in Late Permian. In contrast, the Paraná basin was dominated by marine flooding events since Middle Permian with a climax in the Palermo Formation. It is likely, therefore, that these events have their causes related to tectonic factors rather than eustatic.
Geochemical analysis have pointed out the Palermo Formation as poor hydrocarbon generator. The sandy facies of this stratigraphic unit might present good reservoir plays in a nortwesthern trend in the basin.
It is proposed herein that both Palermo and Rio Bonito formations could be extended into São Paulo State replacing the former denominations Tatuí and Tietê respectively, as it has commonly been used in this region.

Rocha,E.B. 1992. Uranium and follwers dispersion and redistribution in uraniferous mineralizations submitted to lateritic alteration: Jazida Laranjeiras deposit example - Lagoa Real uraniferous province, Bahia state. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 150 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1076 **1992** *Date of presentation:* 10/3/1992

Eronaldo Bomfim Rocha *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Geophysics

State: BA *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Silva,J.M.R. 1992. Tectonic-metamorphic evolution of a part of Sul-Alagoana belt, Sergipano system - northeastern of Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 130 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1247 **1992** *Date of presentation:* 2/10/1992

José Maurício Rangel da Silva *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: AL *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Simões,M.G. 1992. Pelecipodes of the Palermo formation (Permian) of São Sepé (RS state) and Guiratinga (MT state) : Implications in the Paraná basin Neopaleozoic fauna evolution, Brazil. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,286 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1637 **1992** *Date of presentation:* 23/10/1992

Marcello Guimarães Simões *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis: Brazilian Geology

State: RS MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Zanardo,A. 1992. Petrographic, stratigraphic and microstructural analysis of the Guaxupé-Passos-Delfinópolis region, state of Minas Gerais. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 367 **1992** *Date of presentation:* 21/12/1992

Antenor Zanardo *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: MG SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* 21 05 's - 46 37 'W

Abstract

The area studied is confined by the coordinates of 46o15' and 47o00' WG and 20o20' and 20o45'S comprising part of southern Minas Gerais State and part of northeastern São Paulo State, southeastern Brazil.
The analysis of lithological, estructural, microstructural, metamorphic, geophysical, lithogeochemical and geocronological data, either surveyed or compiled, allowed the subdivision of the area in four distinct domains, bound by high- to low-dip angle shear zones.
In the southernmost part of the area, there is a suite of rocks displaying low-angle foliation and a high degree of metamorphism. This suite is represented by infracrustal lithologies (the Varginha Complex) and supracrustal lithologies (the Caconde Group). At the apex of metamorphism these rocks stood temperatures between 800 and 850°C and pressures between 7 and 8 Kbars.
Immediately north of the preceding domain, there is a set of metasediments attributed to the Araxá-Canastra Group intercalated with migmatites, granitic gneisses, amphibolites, and ultramafic rocks and bound by a low-angle shear zone. These rocks underwent metamorphic events involving temperatures between 630 and 750°C and pressures above 8.7 kbars. At the borderline between the first and the second domains there is a belt constitudes mainly by mafic and ultramafic rocks that may represent the remnants of an ophiolitic sequence.
The third domain, located north of the second domain, is constituted by a gneissic-granitic-greenstone terrain tectonically intercalated with rocks of the Araxá-Canastra Sequence, a subducted complex and intrusive rocks emplaced at different stages of evolution of the area.
Finally, the fourth domain, located in the northernmost portion of the area, corresponds to an alloctonous sequence, the Araxá-Canastra Group. This group overlies the gneissic-granitic-greenstone terrain and displays inverse barrovian-style metamorphism without inversion of strata. At the bottom of the sequence, temperatures appear to have reached values around 500oC, whereas at the top, values above 700oC.
Within the four domains, retrograde conditions disclose clockwise-style metamorphic pathways that resulted from low angle mass movement and interaction with the Campo do Meio shear belt that shapes the central portion of the area studied generating transpressive and transtensive structures.
The overall interpretation of the geological data has resulted in the creation of a geodynamic model, whereby the area under investigation would be a result of collisions between the tectonic blocks of Brasília, Paraná, São Paulo and Vitória.

Bizzi,L.A. 1993. Mesozoic alkaline volcanism and mantle evolution of the southwestern São Francisco craton, Brazil. PhD Thesis, University of Cape Town - South Africa; pg

Department of Geological Sciences - University of Cape Town *Reference:*

DataBase Ref.: 238 **1993** *Date of presentation:* 1/6/1993

Luiz Augusto Bizzi *Advisor(s):*

Committee:

Subject of thesis: Earth Sciences

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis explores the nature of the subcontinental lithosphere underlying the southwestern margin of the São Francisco craton and the relation of variations in the petrochemistry of Kimberlites and related alkali igneous rocks to variations in age, thickness and thermodynamic history of their continental lithospheric hosts. The São Francisco craton is a mid to late Archean basement granite-greenstone terrain flanked to the west by the Proterozoic Tocantins Province (Almeida, 1977; Almeida et al., 1981). New Rb-Sr and Sm-Nd data are presented for both on- and off-craton crustal rock sequences. The ultramafic greenstone association of the Rio das Velhas Supergroup yields 3.2 Ga Rb-Sr and Sm-Nd ages, in agreement with widespread 3.2 Ga old zircons from area. Granitic gneiss and juvenile granitoids associated with the greenstones in the Congonhas area give a Transamazonian 2128 Ma Rb-Sr age, which is in agreement with a 2124 Ma zircon age available. Further west, syntectonic granitoids and metabasalts from the Araxá Group define a 711 Ma Rb-Sr isochron. This latter age is interpreted as a Sr-isotope re-homogenization related to the development of the Brasília orogenic and foreland thrust belt. A 823 Ma Sm-Nd errorchron indicate that these rocks may be coeval to felsic volcanism of the Araxá Group which was recently dated at 794 Ma by zircon work (Pimentel et al., 1991). Further to the west still, combined samples from the Niquelândia mafic-ultramafic igneous complex and associated granitic basement rocks yield a 1.26 Ga Rb-Sr isochron, which is best interpreted as a metamorphic age. Crystallisation ages decrease and eNd values increase with increasing distance westward from the margin of the Archean São Francisco craton. The isotopic characteristics are consistent with a model which requires that large volumes of crust, derived in the Proterozoic from mantle reservoirs similar to the sources for modern oceanic basalts, were accreted onto the pre-existing Archean nucleus during the Brasiliano orogenic event.

The proterozoic rocks which overly and flank the São Francisco craton margin are intruded by Cretaceous Kimberlites, olivine melilitites, tuffaceous diatremes and carbonatite complexes. Eight of the freshest representatives of the alkaline magmatism are described in terms of their age and mode of emplacement, petrography and whole-rock geochemistry. Kimberlites have compositions similar to that of primary liquids derived from garnet peridotites. Their trace-element compositions indicate that melting processes occurred under the influence of the proto-Tristan hot-spot. It is suggested that the kimberlites and kimberlite-related magmas resulted from entrainment of enriched lithosphere in plume-derived small-volume melts. The source character of the kimberlitic rocks is similar to that of carbonatites and other alkalic volcanics in the area, but is dissimilar to that of kimberlites elsewhere in the world. The lower time-averaged Rb/Sr, Nd/Sm and Pb/U ratios of the kimberlites compared to the other rock types investigated might be related to a high 235U/204 Pb (HIMU) component.

Major and trace elements of the alkalic rocks change systematically with petrographic character towards more evolved compositions, approximating liquid evolution paths produced by shallow-level, olivine-dominated crystal fractionation. A restricted range of isotopic signatures, and the absence of any correlation between 87Sr/86Sr and 1/Sr, suggest that the shallower alkalic rocks were probably derived by melting of a light-REE enriched lithospheric mantle source rather than through crustal contamination of asthenospheric melts. Compared to the kimberlites, the other alkalic rocks studied have a greater lithospheric component. The involvement of plumes in their derivation is uncertain. Isotope characteristics of rift-related magma types are probably the best candidates to date for the “Enriched Mantle I” (EMI) component. The source of the alkaline occurrences, the source of the high-Ti basalts of the northern Paraná Basin, and the source of some Ocean Island Basalts (OIB) with Dupal signatures in the South Atlantic (viz. the Walvis Ridge basalts) are closely related to this EMI-like component. The linear correlation between Platinum Group Elements (PGE) and isotopic characteristics in the studied rocks appears to follow the temperature-dominated behaviour of PGE (c.f. Tredoux et al., 1989), and suggests that a significant temperature gradient may have existed between the two recognised mixing reservoirs (i.e.the sources of the EMI- and HIMU-like components).

The Nd isotope characteristics of the EMI-like component in the Mesozoic volcanics are compatible with an origin closely related to the evolution of the Proterozoic rocks of the Tocantins Province. eNd values related to Archean mantle have not been found in these volcanics. It is thus indicated that large amounts of pristine Archean enriched mantle lithosphere, not affected by the Proterozoic enrichment event, were probably not incorporated at the source region. It is speculated that the low 87Sr/86Sr of the Mesozoic volcanics represents time-integrated Rb depletion at lower crust/upper mantle levels attained during gabbro-eclogite-granulite phase transformations (which could have been accompanied by CO2 metasomatism) following tectonic overthickening at the end of the Brasiliano orogeny.

A tectono-thermal framework of the Paleozoic to the Cenozoic geological history of southwestern Gondwana is provided. Mantle plumes appear to have played an important role in the initial fission of Gondwana and the opening of the South Atlantic. The broad tectonic evolutionary framework and the location of the present passive continental margins of the South Atlantic, however, were highly dependent on the paleo-tectonic geometry of the Brasiliano-Pan African orogenic fold belts. The late-Mesozoic fission-related magmatism involved melts derived from both the crust (rhyolite ash-flows and related potassic granites) and the upper-mantle (kimberlites, alkaline complexes, flood basalts and related dike swarms). The compositional and isotopic characteristics of basaltic volcanism that occurred shortly before the opening of the new ocean basin are explained satisfactorily by asthenospheric plume models; but how the lithospheric and asthenospheric materials were remobilized during the melting process remain controversial, as does the original depth of plume generation. The overall plate-tectonic approach suggests it is the within-plate stress fields and fault reactivation which controls the sites of alkaline magmatism in the continental lithosphere. Alkaline magmatism along the southwestern margin of the São Francisco craton was contemporaneous with changes in the direction of plate movements which provoked reactivation of lithospheric shear zones and rifting within plates. The isotope characteristics of alkalics and HTZ Paraná basalts emplaced along the craton margin provide further evidence that discrete large scale

geochemical domains existed in Southern Gondwana. It is suggested that those domains were not necessarily related to ancient lithospheric chemical heterogeneities or bounded by ancient structural features, but rather to mixing processes that can be ascribed to specific geodynamic mechanisms.

Campos,H.C.N.S. 1993. Characterization and cartography of the hydrogeoquimical provinces of the São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1982 **1993** *Date of presentation:* 31/8/1993

Heraldo Cavalheiro Navajas Sampaio Campos *Advisor(s):* Szikszay,M.

Committee:

Subject of thesis: Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cava,L.T. 1993. Ore formation systems: Application to the Paraná basin. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 368 **1993** *Date of presentation:* 29/4/1993

Luis Tadeu Cava *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Regional Geology

State: PR *1/1,000,000 sheet:* SG21 *Centroid of the area:* ' - 'W
SG22

Abstract

This work aims demonstrate the usefulness of system analysis aproach techiques to geological exploration programs, looking toward mineral deposits, as the result of morphodinamic self-organizing ore forming systems working in favorable macro-environments. Spacial delimitation of these ore forming systems, as well as the discrimination of the processes through wich they operate, was achieved, taking them as particular entities that are thenselves superposed in a just higher order of natural geological systems. In attempt to determine and characterize their parameters, variables, components and the macro-environments, the General System Theory's principles and concepts were applied. In order to demonstrate the proposed modeling method's applicability and taking the Paraná basin as test area, a Cu-Pb-Zn ore forming systems was develloped, at particular lateral and vertical compactional fluid discharging zones. This systems can't have operate in east-central part of the Paraná basin, due to the lack of the required macro-environments factors.

Cerri,L.E.S. 1993. Geological hazards associated to landslides: Disaster prevention proposal. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 350 **1993** *Date of presentation:* 17/12/1993

Leandro Eugênio Silva Cerri *Advisor(s):* Zuquette,L.V.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The General Asembly of the United Nations designated the 1990's as the International Decade for Natural Disaster Reduction - IDNDR, taking into account the tendency to the increase of natural disasters.
In comparison with other types of geological disasters occurring in Brazil, landslides have caused the most of losses of life.
The results of this work shows that it is possible to take measures for the assessment, prediction, prevention and mitigation of geological hazards concerned to landslides in Brazil, in order to reduce loss of life.
The various types of environmental hazards, including the geological hazards, are presented and classified. It is also presented a definition of geological hazard, and the methods and techniques developed for yhe identification, analysis and cartographic representation of the risks related to prone areas to landslides.
The effectiveness of a disaster prevention model of approach is analysed by considering the technical choices to eliminate and/or reduce the number of geological risk situations related to planar type landslides, and also to avoid the appearing of new risk areas.
Considering the brazilian socioeconomical conditions, it is presented a metodology for the formulation, application, implant, and operation of lanslides disaster prevention plans, based in the experience of the civil defense plan conducted to enhance public safety in risk areas to landslides situated along the Atlantic Coast of São Paulo State.

Dias,M.E.R. 1993. Palynology of the Itararé group in Rio Grande do Sul. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 341 **1993** *Date of presentation:*

Maria Elice Rosa Dias *Advisor(s):* Marques-Toigo,M.M.

Committee:

Subject of thesis: Palaeontology

State: RS *1/1,000,000 sheet:* SH21 *Centroid of the area:* ' - 'W

SH22

Abstract

This thesis refers to a study of the microflora registered in samples of a sedimentary sequence correspondent to Itararé Group in Rio Grande do Sul State.
The qualitative and quantitative analysis of the microfloristic associations as well as the taxonomy of one hundred thirty three (133) taxa occurrent in the Herval, Dom Pedrito, São Sepé, São Gabriel, Cachoeira do Sul, Gravataí and Rio Pardo areas are presented.
The sporopollinic association identified is constituted of spores of PTERIDOPHYTA (FILICOPHYTA, LYCOPHYTA and rare SPHENOPHYTA), pollen grains of GYMNOSPERMAE (CONIFEROPHYTA, CORDAITOPHYTA and PTERIDOSPERMOPHYTA), ALGAE (Botryococcus and Tasmanites), ACRITARCHS and elements related to ALGAE (Portalites).
The interpretation in relation to the paleoclimate, paleoecology and also the paleogeographic reconstitution of some of the areas analyzed is made (Candiota and Leão-Capané mine regions).
The extension of the marine environment that existed during the deposition of this unity in the south of Paraná Basin is inferred through the register of the marine microfossils in several searched areas.
The age of these sediments correspond to Sakmarian/Artinskian (H2 to I1 intervals of Daemon & Quadros, 1970 and Cannanoropolis korbaensis Zone, as well as to Protohaploxypinus goraiensis and base of Caheniasaccites ovatus subzones of Marques-Toigo, 1988).

Freitas,S.R.C. 1993. Gravimetric tides: Implications for the South American plate. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 212 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1517 **1993** *Date of presentation:* 4/6/1993

Silvio Rogério Correia de Freitas *Advisor(s):* Mantovani,M.S.M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Giannini,P.C.F. 1993. Depositional systems of the coastal Quaternary between Jaguaruna and Imbituba, SC state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 2v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1644 **1993** *Date of presentation:* 12/11/1993

Paulo César Fonseca Giannini *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Brazilian Geology

State: SC *1/1,000,000 sheet:* SH21 *Centroid of the area:* ' - 'W

Abstract

Gonçalves,M.L. 1993. Geology for the planning of use and territorial occupation of the Joinville municipality. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 68 pp 5 maps.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1647 **1993** *Date of presentation:* 3/12/1993

Monica Lopes Gonçalves *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Brazilian Geology

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Heilbron,M. 1993. Tectono-metamorphic evolution of the Bom Jardim de Minas (MG state) - Barra do Pirai (RJ state Section) : Central sector of the Ribeira belt. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,268 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1640 **1993** *Date of presentation:* 30/9/1993

Monica da Costa Pereira Lavalle Heilbron *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Brazilian Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Jabur,I.C. 1993. Quaternary paleoenvironmental analysis in the upper Paraná hidrographic basin. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 348 **1993** *Date of presentation:* 30/3/1993

Issa Chaiben Jabur *Advisor(s):* Barcelos,J.H.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The paleogeolocial, geological and geomorphological studies were perfomed to obtain datas on the genesis and the evolution of several deposits that make up the Upper Quaternary hydrographic basin of the high Paraná.
In order to simplify the understanding of the work, the region was divided in two areas of study: macroregion, that include the North and Northwest of the Paraná State, and the microregion, called Porto Rico, located between the States of Mato Grosso do Sul and Paraná, including the alluvial plains of the Paraná river.
An effort was carried out in order to stablish the depositional dynamic of the unity envolved, and its relationships with the tectonics and morphoclimatic processes. The palinological studies were also performed on several turf deposits existing on the second and the third plateau of the Paraná State, and in the Mato Grosso do Sul side, near the Paraná river.
Related to the polinomorphs found, the quatitative determination were analysed toward the paleoenvironmental and paleoecological interpretation. The polinic diagrams of the percentage and redution were also worked out.
The results gathered on the several subjects, allowed to detect the significance of the neotectonics on the regional morphology, jolning the vegetation and the climates changes.
It is reported that in the continental quaternary study, the majority of the deposits do not show complete sequence, being descontinuous, and fragmentary on the space, nearly always controlled by the morphology relieve, another preserved in spacial conditions (localized basins, alluvial plains, etc.) making difficult a better stratigraphic reconstitution.
The study on the continental quaternary became obvious, making dependent on the methodological development, conciliating paleoecological, morphostratigraphica, and tectonics subjects.

Juliani,C. 1993. Geology, petrogenesis and metallogenetic aspects of the Serra do Itaberaba and São Roque groups in the Itaberaba hill and Pedra Branca hill region, NE of the São Paulo city, SP state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 2v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1642 **1993** *Date of presentation:* 29/4/1993

Caetano Juliani *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Brazilian Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Lelarge,M.L.M.V. 1993. Thermochronology by fission track method of a passive margin (Ponta Grossa arch, SE Brazil) and a collisional mountain belt (External zone of western frech Alps, France). PhD Thesis; Université Joseph Fourier - Grenoble 1-France

Fission tracks; Ponta Grossa Arch; passive margin; collision mountain belt; Belledonne massif; uplift; erosion;denudation rate; geochronology; geodynamics processes

Université Joseph Fourier - Grenoble 1-France *Reference:*

DataBase Ref.: 1896 **1993** *Date of presentation:* 14/4/1993

Maria Lidia Medeiros Vignol Lelarge *Advisor(s):* Poupeau,G. Soliani Jr,E.

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

AFTA (Apatite Fission Track Analysis) method was applied in two different geological settings: a passive margin context(Ponta Grossa Arch, SE Brazil) and a collisional mountain belt (Belledonne and Grand Chatelard massifs, including the adjacent Dauphinois flysch thrust belt, western french Alps). This study aims to retrace the cooling histories of the rocks in these two regions as well as constrain to some extent, the geodynamic processes wich took place within a chronological framework.
The 21 apatite samples from Ponta Grossa arch record the cooling event caused by uplift/denudation budget of the Serra do MAr - the montaneous bulge flanking the south-eastern coast of Brazil. The Serra do Mar is probably an expression of the opening of the south Atlantic around 120 Ma B.P. (at Lat.26°S). The apparent FT ages analysed from the 21 samples range from 100 Ma to 80 Ma B.P.
The AFTA results obtained from the 33 alpine samples indicate an extremely complex cooling history for this region. The apparent FT ages range from 7,5 Ma to 1,7 Ma B.P. Denudation rates vary from place to place and therefore expres different response patterns to the tectonic processes. From the upper Miocene to 1Ma B.P., apparent denudation rates are estimated at 0,4mm/an for Belledonne massif and 0,7mm/an for the Grand Chatelard and the flysch zone. From 1Ma to present, the apparent denudation rate, increase and reach values of 2mm/an over the whole area.

Mendes,I.L.V. 1993. Malacofauna, palaeoecology and biofacies of holocene sediments from the coastal plain at imbituba and Imaruí, Santa Catarina, Brazil. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 343 **1993** *Date of presentation:*

Inga Ludmila Veitenheimer Mendes *Advisor(s):* Esteves,I.R.F.

Committee:

Subject of thesis: Palaeontology

State: SC *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

A study of the D'Una river, belonging to the municipalities of Imaruí and Imbituba, Santa Catarina, Brazil, is conducted from drilling holes samples, based on the taphocenosis of mollusks and the accompanying paleobiota. Its aim is to identify paleoenvironments and to correlate them with oscillations of the sea level which happened along the Brazilian coast during the Holocene.
The present study analyzes strata obtained from 25 drilling holes. The selection, identification, counting and characterization of Mollusca taxa, basic group of the study, and the accompanying paleobiota were carried out. For the paleoecological analyses, the following parameters and ancillary elements were used: Mollusk Specific Diversity Index, Relative Abundance of Faunal Groups, Dominant Mollusks, Preservation State of Dominant Mollusks, Present Habitat of Dominant Mollusks, Present Habitat of Accompanying Fauna, knowledge of present mollusks found in nearby areas and identification of successional biofacies and Cluster Analysis.
Eighty six Mollusca species are identified. From those, 20 have in the Caribbean Province of São Paulo State their southernmost present record, whereas three of them have the State of Rio Grande do Sul (Brazil) as their northernmost present record. Regarding the accompanying paleofauna, are registered species of Foraminifera, Porifera, Cnidaria, Cirripedia, Ostracoda, Echinoidea and Pisces. The Index of Specific Diversity varies from zero to 3.3060. The predominant taxa of Mollusca are: Crepidula spp., Caecum spp., Finella dubia, Heleobia australis nana, Odostomia spp., Petaloonchus sp., Acteocina spp., Parvanachis spp., Anomalocardia brasiliana, Corbula spp., Codakia pectinella, Dosina concentrica, Gouldia cerina, Mytilidae and Ostreidae. Identified successional biofacies are connected to the oscillations of the sea level during the Holocene.
Two transgressions related to D'Una river area under study can be identified. According to the time analysis of shells from shell-middens and mollusk shell banks submitted to radiocarbon, it is possible to establish an older event with 5,100 years B.P. (sequences IV, V and VI) and another one with 3,600 years B.P. (sequences VIII, IX, X and XI). The depositional environments during the transgressions are characterized as lagoonal or estuarine and shallow coastal sea of low energy, the latter being represented by bays or bights. The predominant average temperatures at the time of transgressive events were probably higher than the present ones.

Mioto,J.A. 1993. Seismicity and seismogenic zones in Brazil. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 349 **1993** *Date of presentation:* 18/11/1993

Doutorado | 1993

José Augusto Mioto *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Some seismotectonic analysis of the Brazilian territory have emphasized the correlation of seismic activity and crustal weakness zones of intermitent mobility throughout the geological time. These analysis have significant differences from those of the late 70's and early 80's by the emphasis on the geological setting. That approach is adopted in this work, using geological and geophysical (seismicity, gravity, magnetic and geothermal) information to distinguish seismogenic zones or areas of present crustal instability in the Brazilian intraplate. The concept of seismogenic zone incorporate seismic activity and geological-tectonic background as it has been used for the first time in the Southeastern region, in studies carried out by the Instituto de Pesquisas Tecnológicas do Estado de São Paulo for the Angra dos Reis nuclear plants.
Twenty three seismogenic zones (SZ) habe been identified and the description of each one is here presented. They are:
01 - Boa Vista SZ, related to the Guiana-Central Belt, between the Caroni and Maecuru blocks;
02 - Cruzeiro do Sul SZ, along the Serra do Divisor and Acre suture zones, between the Juruá Block and the Peruvian subandine domain;
03 - Manaus SZ, at the Rio Negro, Madeira and Médio Tapajós suture zones, and the Japurá, Maecuru and Juruena blocks;
04 - Belém SZ, in the Belém Block, with some influence of the Amapá and Gurupi suture zones;
05 - Aripuanã SZ, on the Rondônia Belt, between the Juruena and Parecis blocks;
06 - Itacaiúnas SZ, near the Central Pará suture zone, between the Belém and Araguacema blocks;
07 - São Luís SZ, near the Gurupi suture zone;
08 - Sobral SZ, along the Granja suture zone, between the São Luís and Ceará blocks;
09 - Pacajus SZ, adjacent to the Jaguaribe suture zone in Southeastern Ceará;
10 - Açu SZ, practically restricted to the Rio Grande Block, between its junction with the Pernambuco Block and the Patos suture zone;
11 - Caruaru SZ, restricted to the Pernambuco Block, which southern and southeastern boundaries seem to be extension of the Salvador suture belt;
12 - Cuiabá SZ, restricted to the Pantanal Block, between the Guaporé and Coxim suture zones;
13 - Porangatu SZ, in the Porangatu Block, between the Porto Nacional and Ceres suture zones;
14 - Passos SZ, on and adjacent to the Itumbiara and Alterosa suture zones;
15 - Paraguaçu SZ, in the Serrinha Block;
16 - Jequitinhonha SZ, along the Abre-Campo suture zone and the Governador Valadares Lineament; at the junction of the Brasília and Vitória blocks;
17 - Paraopebas SZ, near the southern border of the Brasília Block;
18 - Ribeirão Preto SZ, in the Paraná Block, between the Ribeirão Preto and Presidente Prudente suture zones;
19 - Presidente Prudente SZ, also in the Paraná Block, between the Ribeirão Preto, Presidente Prudente and Três Lagoas suture zones;
20 - Pinhal SZ, in the São Paulo Block, near the junction of the Ribeirão Preto and Alterosa suture zones, and coincident to the Moji-Guaçu Uplift;
21 - Cananéia SZ, along the Ubatuba suture zone and the coastal flexure related to the Santos Basin;
22 - Cunha SZ, at the Ubatuba and Abre-Campo suture zones, between the Brasília, Vitória and São Paulo blocks, as well as at the domain of the Mantiqueira Uplift, and the flexure zone related to the Santos Basin;
23 - Santos SZ, near the Ubatuba suture zone, at the western border of Santos and Campos offshore basins and the São Paulo Plateau.
Three other seismogenic zones are suggested:
01 - São Francisco, in the Remanso Block, not very far from the Piauí and Lencóis blocks, and from the South Piauí and Cafarnaum suture zones;
02 - Jequitaí, in the Brasília Block, and separated from the Paraopebas Seismogenic Zone by a large NW-SE magnetic anomaly;
03 - Montenegro, at the northern part of the Eastern Sul-Rio-Grandense suture zone.
Possibly improvements of the geological and geophysical knowledge will better the definition of other seismogenic zones and allow more accurately outline of the boundaries of those here presented.
Zones may be related to very old geoestructural setting of the upper lithosphere, which consist of a mosaic of old Precambrian crustal blocks separated by deep discontinuities well marked by gravity and magnetic data. The distribution of Archean high-grade terranes and metavolcano-sedimentary belts highlights the block junction zones of triple-junction type, which involved continental collisions and huge rock masses displacemnts. Block mosaic development is not yet well understood, but it is clear that junction zones are crustal weakness domains that much controlled the younger geologic processes. Intermitent tectonic movements have been related to ressurgent tectonics not at completely known.
Seismic energy releases reflecting present tectonics, occur diffusely but not randomly. Epicenter spread out mostly on the above mentioned junction zones and their neighbourhoods, indicating strong influence of ancient anisotropies/discontinuities on seismic activity. Seismicity directly related to current plate displacements are recognized only in the Acre region, where fragments of Nazca Plate are consumed in the asthenosphere at depth. The already proposed relationship of epicenters with pre- and post-Gondwana environments is not confirmed, even for the far Northeastern region of Brazil, where faults were proved to be active with failure effects at surface ground level. Seismic records are fairly low in the emerged area and rare in the submerged area;only the segment between Vitória-Trindade Ridge and Florianópolis Lineament have a got higher seismic level, in contrast with the relative inactivity of the Continental Margin. Although the purpose of this work was not to present models for the intraplate tectonics, many hypocenters as well as seismic energy releases suggest stress distribution in fragmented continental masses and adjustment of upper lithosphere controlled by weakness zones.
Tectonic qualification of the above seismogenic zones after Precambrian, Paleozoic, Mesozoic and Cenozoic times has pointed out several utilities. It may be related to the just flourishing field of Neotectonics and to earthquake hazards assessments. They

may also help to assess the regional or macro-regional stability.
Seismic zoning here presented contributes to the analysis of problems arised by human tampering with the environment and the reactions of Nature, so briefing much of the dicussion on seismic risks, community protective measures against earthquakes, qualifications of active tectonic movements, determinations of seismic safety coefficients for nuclear and hydraulic structures, potential of occurrence of induced earthquakes in reservoirs and safe storage of radioactive and toxic wastes.

Montes-Lauar,C.R. 1993. Paleomagnetism of meso-cenozoic magmatic rocks of South American platform: Study of Anari (RO) and Tapirapuã(MT) formations, S.Sebastião island(SP), Tapira (MG) and Salitre (MG)alkaline-carbonatitic complexes and Abrolhos archipelago islands (BA). PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 206pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1516 **1993** *Date of presentation:* 25/6/1993

Célia Regina Montes-Lauar *Advisor(s):* Pacca,I.I.G.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Morales,N. 1993. Tectonic evolution of the western portion of the Campo do Meio shear belt, Brazil. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 369 **1993** *Date of presentation:* 19/11/1993

Norberto Morales *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* 21 02 's - 46 45 'W

Abstract

Structural studies has been carried out along the Campo do Meio Shear Belt of Southwestern Minas Gerais State in the area bettween 20045' and 21030'S and 46030' and 47000'W, with the aim to understand the shear displacements and the evolution of the Precambrian terrains.
Three major structural domains were recognized, represented by portions of the São Paulo and Brasília blocks, separeted by an intermediate belt.
The São Paulo Block is constituted of high-grade terrains, mostly orthogneisses of granulitic origin retrometamorphosed (Varginha Complex), with some associated metasedimentary rocks (Caconde Group). The structural geometry of this block is characterized by a low-angle penetrative foliation, trending SE-NW and dipping SW; a stretching lineation with SSE-NNW direction and shear sens criteria indicating mass movements from SSE towards NNW. Late small ductile shear zones of sinistral strike-slip type associated with folds are observed. The foliation has increasing dips towards the North, reaching the vertical attitude and the lineation was rotated westwards. These distortions and the stretching lineation pattern are interpreted as a result of two superposed shear events, the first one of low angle type, seemly with northwards vergence, and the second one of high-angle sinistral transcurrent character along E-W shear zones.
The basement of Brasilia Block is constituted of migmatized gneisses of mediun-grade type (Campos Gerais Complex), whose are preserved into lens-shaped portions deformed to variable degrees. They present a folded compositional layering; the fold envelopes are low dipping and associated stretching lineation has NW-SE to N-S direction. These portions are separeted by thin, anastomosed, sinistral and high-angle WNW-ESE shear zones; their stretching lineations indicate oblique displacements with large strike-silp component. Late folds associated or not to the shear zones are present. Metamafic-ultramafic rocks (Morro do Ferro Sequence) and metasedimentary rocks form lenses whose are seen as frequent inlayers along shear zones. The metasedimentary rocks (Araxá-Canastra Group and Carmo do Rio Claro Sequence) partially cover the basement and present a low-dipping foliation with an associated E-W stretching lineation; the shear criteria indicate mass displacements from W towards E. Strike-slip shear zones of the basement also displaced the supracrustal sequences, as seen in areas where the major folds are observed (Itaú Antiform, Chapadão Synform). Cross folds (dome-and-basin pattern) superposed the former features.
The intermediate belt is the principal domain of the Campo do Meio Shear Belt. Anastomosed shear zones are the most prominent features; they have attitudes around E-W/vertical and sinistral transcurrent character and separate lens-shaped portions with inner low-angle foliation. The stretching lineation and shear criteria indicate mass movements towards E, firstly developing the low-angle foliation and later the strike-slip shear zones.
The structural features, mostly foliation, stretching lineations and shear criteria allow to recognize the displacements of the above domains. They may be related to an oblique collision of the crustal blocks (São Paulo and Brasilia), developed during a first stage of overthrusting, involving the Araxá-Canastra - Andrelândia volcano-sedimentary belt (intermediate belt). The high-grade terrains correspond to a portion of the São Paulo Block lower crust which was uplfited by the overthrusting. During a later tectonic stage the Campo do Meio Shear Belt developed, causing large displacements and strong geometric changes in the former structure.

Nascimento,N.R. 1993. Systems of pedologic transformation of lateritic soils with ferruginoous crust in

silcrete and/or planossoill : Aplication to the pedo-morphological cartography of the middle Rio Paramirim valley- BA state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 2v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1641 **1993** *Date of presentation:* 14/9/1993

Nadia Regina do Nascimento *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Brazilian Geology

State: BA *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Oliveira,C.G. 1993. Interaction between the processes of deformation, metamorphism and gold mineralization during the evolution of the Diadema Shear Zone, Southern Pará - Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D001

DataBase Ref.: 1 **1993** *Date of presentation:* 2/2/1993

Claudinei Gouveia de Oliveira *Advisor(s):* Kuyumjian,R.M.

Committee:
Hardy Jost - IG/UnB
Othon Henry Leonardos - IG/UnB
Fernando Roberto Mendes Pires - DG/UFRJ
Detlef Hans-Gert Walde - IG/UnB

Subject of thesis: Prospection and Economic Geology

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

The Sapucaia greenstone belt in the southeastern Amazon Craton comprise a metavolcanic sedimentary sequence which is correlated to the Andorinhas Supergroup. The structural features that express the Sapucaia belt are formed bx7 shear zones with a MNW general trend beut to NW in its central portion through a regional transtension structure. The deformation of the Sapucaia belt (or Diadema Shear Zone) is worked by a high angle moviment generated during north-south regional shortening.
The differences in the deformation within the Diadema Shear Zone have led formation of metamorphic tectonites with variable mineralogy, grain size and shape and orientation of the ellipsoid of finite deformation in the different microestrutural domains. The deformation partition process was controlled by cyclic individual episodes representing spatial and temporal variations in the strain rate and in the path and mechanism of deformation.
The continuous sliding among the shear zones that were submited to heterogenous deformation has led to different metamorphic domains which were mainly controlled by the intrinsic P-T conditions of each crustal level, by rheological properties of the deformed rocks and by lateral variations in strain rate and in the mechanism of the deformation. Based on these controls and with the help of petrographic and stable isotope investigations, the metamorphism was divided into the following domains: I) metamorphism induced by the simultaneous actions of volatilization mechanisms and pervasive fluid ascension (regional domain where Pfluid = Pload); 2) metamorphism induced by progressive devolatilization (transpression domain where Pload is greater than Pfluid); 3) metamorphism induced by chanelled fluid infiltration through dilation sites (transtension domain where Pfluid is greater than Pload)-
The metamorphism brought about by fluid infiltration within transtension domains was accompanied by the development of progressive halos of hydrothermal alteration such as chloritization, carbonatization, albitization, sericitization, silicification, tourmalinization and pyrite formation. The several hydrothermal alteration products were grouped in initial, intermediate and advanced stages of hydrothermal alteration.
The cyclic repetition between transtension domains has controlled fluid migration within the shear zones, that is, fluids of external origin generated at deeper crustal levels and fluids set free by the host rocks during devolatilization metamorphic reactions. Based on the average isotopic composition of carbon (l8Osmow = + 9.O%o) and strontium (87Sr/86Sr = O,7155) in hydrothermal calcites and hydrogen in chlorite (D = -58%o) and sericite (D = 57%o) of the advanced stage of alteration it is suggested the presence of magmatic fluids generated during melting at the base of the crust and of metamorphic which has been collected by the shear zone during its propagation across the crust.
The deformation, metamorphism and gold mineralization within the Diadema shear zone took place initial at a crustal level marked by plagioclase e crystalline superplasticity (> 18 Km, 450 o C). Within this domain, the relationship between load and fluid pressure was subjected to sudden variations at different scales resulting local abrupt changes in the metamorphism record. The metamorphic fluids that were initially subjected to pervasive upward migration begun at that crustal level to be channelled through deformation heterogeneities caused by the partitioning and ciclicity of the deformation. The gold mineralization is controled by these deformational heterogeneities.

Pitoni,V.L.L. 1993. Subsuperficial cenozoic mollusks in Imaruí, Santa Catarina, Brazil: Palaeoecology, transgressions and regressions. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 342 **1993** *Date of presentation:*

Vera Lúcia Lopes Pitoni *Advisor(s):* Esteves,I.R.F.

Committee:

Subject of thesis: Palaeontology

State: SC *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The taphocoenosis of mollusks is studied in the area around Imaruí lagoon, State of Santa Catarina, Brazil. It was obtained from data of drilling cores, with the purpose of characterizing the paleoenvironment and identifying records of Holocene fluctuations of the relative sea-level that occur along the coast of Brazil.
One hundred and nine strata of 15 drilling cores were analyzed by sorting, identifying, counting and characterizing the Mollusca taxa and the paleobiota that comes along. For the paleoecological study the follow-ing criteria were adopted: Index of Specific Diversity of Mollusks, Relative Abundance of the Counted Paleobiota, Dominant Mollusks, Preservation State of Dominant Mollusks, Present Habitat of the Paleobiota that comes along, Present Investigation of the Mollusks in Neighboring Areas, Identification of the Sedimentation Environment and Cluster Analysis.
Seventy-five Mollusca species were identified. At present, 63 of them occur in the Caribbean Province. Eleven of them have their more austral register in that territory, 16 in Santa Catarina and 6 in Rio Grande do Sul, Brazil. The taxa of dominant Mollusks with the greatest number of registers Codakia pectinella, Finella dubia, Gouldia cerina are found within that area. The only exception is Heleobia australis nana, which has its more austral limit in Rio Grande do Sul and the more septentrional limit in São Paulo.
Four facies can be found in the depositional environments: sandy-muddy, sandy, muddy-sandy and muddy. An energy variation is recorded in eight drilling cores with coarser sediments ocurring during the maximum transgressive phase and fine sediments during the regressive phase. Two environmental cycles are detected: the marine cycle and the lagoonal one. The first one coincides with a transgressive phase and the second one with a regressive phase.
Based on previous datafrom a nearby shell bank, it is possible to correlate the evidences with an event of more or less 5,100 years B.P. from a initial transgressive moment to a maximum transgressive one.
This characterizes an increase of the oceanicity with gradual decrease of this influence - transgressive to regressive - until the establishment of a typical lagoonal environment with a clear evidence of continentality.

Raposo,M.I.B. 1993. Palaeomagnetism of the dike swarm of Ponta Grossa Arc. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 104 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1518 **1993** *Date of presentation:* 7/1/1993

Maria Irene Bartolomeu Raposo *Advisor(s):* Ernesto,M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Scarton,J.C. 1993. Stratigraphic analysis of the lower Tertiary in Campos basin - A modern view (with emphasis on petroliferous oil fields of Corvina and Malhado). PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 344 **1993** *Date of presentation:*

Julio Cesar Scarton *Advisor(s):* Figueiredo,A.M.F.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The stratigraphy of the Lower Tertiary sedimentary package, in the central area of Campos Basin, offshore the southeastern Brazilian margin, is analyzed in great detail, in order to establish the viability to use the Sequence Stratigraphy concept and methodology to interpret the sedimentary facies; to define depositional paleoenvironments; to explain the abundant presence of glauconite in turbidites and to interpret isotopic data.
The research area, with aproximately 350 km², whose water depth ranges from 100m to 800m, encompasses the Corvina and Malhado oil fields.
The studied interval, pertaining to the Paleocene, Eocene and Early Oligocene epochs, was divided into six third order stratigraphic sequences called P1, P2 and P3 (Paleocene) and EI, EII and EIII (Eocene and Early Oligocene). These stratigraphic sequences are related to relative sea level variations strongly influenced by tectonic and volcanic events. The isotopic studies (13 and 18 O) corroborate the interpretation of a sea level fluctuation.
Analysis of aproximately 255m of cores from 17 wells allowed the identification of eleven descriptive sedimentary facies (Fd -

Diamictite facies; Fca - Algalic calcirudite facies; Fcp - Polimitic conglomerate facies; Fci - Intraformational conglomeratic facies; Fcb - Bioclastic calcarenitic facies; Fam - Massive sandstone facies; Fax - Glauconitic sandstone with cross-stratification facies; Fab - Bioturbated sandstone facies; Fal - Laminated sandstone facies; Fp - Pelitic facies; Paf - Bioturbated and interbedded sandstone/mudstone (turbidites reworked by bottom currents - contourites). These facies are arranged in genetic facies scheme. The turbiditic systems could be reworked by botton currents and this fact is evidenced by the exotic character presented by Fab of Faf facies.
The subaqueous gravitational systems are related to the lowstand systems tracts associated to each stratigraphic sequence. In a regional scenario it is inserted in a channel-lobe transition area. The channels show structural (halokinetic) control and were enlarged by turbiditc currents and possibly by bottom currents also.
The paleoecological studies made with benthonic foraminifera and ichnofossils characterize a middle bathyal paleoenvironment for the deposition of stratigraphic sequences and associated turbiditic systems.

Schobbenhaus,C. 1993. The Middle Proterozoic of Brazil with emphasis on the Center-Eastern Region: A Review. PhD Thesis - Universität Freiburg (Albert- Ludwigs), A.L.U.F., Germany

Brazil,Proterozoic,Geotectonics,Rift,Espinhaço

Universität Freiburg (Albert- Ludwigs), A.L.U.F., Alemanha — *Reference:*

DataBase Ref.: 2231 **1993** *Date of presentation:* 8/7/1993

Carlos Schobbenhaus *Advisor(s):* Pflug,R. Hoppe,A.

Committee:

Subject of thesis: Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Souza Filho,E.E. 1993. Aspects of the geology and statigraphy of the Paraná river sedimentary deposits between Porto Primavera (MS state) and Guaira (PR state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo — *Reference:*

DataBase Ref.: 2211 **1993** *Date of presentation:*

Edvard Elias de Souza Filho *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Stratigraphy

State: MS PR *1/1,000,000 sheet:* SG21 *Centroid of the area:* ' - 'W

Abstract

Strieder,A.J. 1993. Deformation and metamorphism in the Santa Cruz de Goias region: Tectono-stratigraphic correlation and regional tectonic evolution. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília — *Reference:* D002

DataBase Ref.: 2 **1993** *Date of presentation:* 2/4/1993

Adelir José Strieder *Advisor(s):* Nilson,A.A.

Committee:
Fernando Flecha de Alkmim - DEGEO/UFOP
Carlos José Souza de Alvarenga - IG/UnB
Reinhardt Adolfo Fuck - IG/UnB
Marcel Auguste Dardenne - IG/UnB

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

This thesis was Planned to map geologically and structurally some important tectonic structures that are seen in Central Brazil. The mapping procedures were conducted in selected areas, that were correlated from the point of view of their lithodemic constitution, and their structural and tectono-stratigraphical characteristics. The correlations were helped by regional geological profiles selected from Lineaments Map and remote sensing images.

The geologic and structural mapping in the Santa Cruz de Goiás region brought up lithodemic units that are very similar to the Abadiânia region one's. The structural correlation between these both regions showed that they were linked during an intense

regional mylonitic episode (DI). The first deformational phase occurred after 794+-IO Ma, as a consequence of continental collision. The structural correlation also showed that these two regions were linked during the development of the Abadiânia nappe, which folded the lithodemic units pseudo-stratigraphically organized by the mylonitic (D I) process. These general characteristics of the Abadiânia nappe allows one to define it as a tectono-stratigraphic terrane, that is regionally very important.

From the third deformational phase on, the Abadiânia and the Santa Cruz de Goiás regions followed different structural pathways and are not structurally correlated; they were separated by the Chapada das Covas Breach Fault. This fault characterizes the existence of double thrust sheets and gives rise to dispersion of the previously developed tectono-stratigraphic terranes. The breaching geometry characterizes a regional foreland-directed thrust propagation sequence. The onset of tile Chapada das Covas Breach Fault is a consequence of the rigid wedges thrust sheet underthrusting. The wedge indentation led to development of longitudinal faults and introduced the differential movement components to the Pirineus Inflexion. Since the onset of the Chapada das Covas Breach Fault, Santa Cruz de Goiás region was located in another tectonic position, where the thrust sheet displacement was accommodated by the development differential movement structures (D3)-, this structures have imbrication ramps that locally propagated in a break-back sequence.

Valeriano,C.M. 1993. Tectonic evolution of the meridional edge of the Brasília Belt, Furnas Damp region, southwest of Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 192 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1224 **1993** *Date of presentation:* 30/4/1993

Cláudio de Morrison Valeriano *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Vlach,S.R.F. 1993. Geology and petrology of the granitoids of Morungaba/SP state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 414 pp 2 maps.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1645 **1993** *Date of presentation:* 20/5/1993

Silvio Roberto Farias Vlach *Advisor(s):* Ulbrich,H.H.G.J.

Committee:

Subject of thesis: Petrology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bueno,C.R.P. 1994. Ocupation and risk of erosion of the medium and high Jacaré-Pepira river basin(SP state). PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA09

DataBase Ref.: 1800 **1994** *Date of presentation:* 20/10/1994

Célia Regina Paes Bueno *Advisor(s):*

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present study was carried out aiming to give the necessary subsides to plan the correct occupation of the medium and high Jacaré-Pepira river basin, São Paulo State - Brasil, based on the basic ambient characteristics, and main factors related to erosion, which determined the risk of erosion. The methods used were based on the interactions between the physical and natural soil condition, such as soil erodibility (K), rainfall erosivity (R), slopes (D) and length (C) of slopes, to define the natural potencial to erosion and anthropics factors, according to the actual soil farming conditions which gives the expectation to erosion. Cartographycs techniques and field work were essential procedures in this research by which the areas were divided according to their erosive characteristics. The results showed the area characterization in respect to the erosion processes, giving evidences to their natural potencial and the changer produced by human beings actions, showing the broad and specifs aspects in the erosion conditions and, consequently, the physical limitations to the soil utilization.

Campanha,V.A. 1994. Depositional architecture of the Taubaté sedimentary basin (São Paulo state) as a subside to the limitation of mineral growth zones. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 370 **1994** *Date of presentation:* 23/9/1994

Vilma Alves Campanha *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

An analysis of the Taubaté Sedimentary Basin according to the Sequences Stratigraphy method represents a new approach to the assessment of mineral resources and land-use planning, which can be referred to a new geological map at the 1:50.000 scale. This work deals with some of the mains goals of post-modern Geology which are environmental equilibrium and sustainable; they agreee with present understanding that social concern is part of realm of the geological sciences.
Stratigraphic studies allowed the definition of the basin's depositional architecture, stressing out the polyciclic character of the sequences. Four distinct general physiographic patterns were also recognized. They have succeeded one another alone geological time, defining four "Tabubaté basins": the first one possibly existed from Upper Cretaceous to Paleoceno; the second compress teh Eoceno-Oligocene interval; the third is of probable Miocene age; and the fourth one has been developing between Pliocene and Pleistocene. This polyciclic history is materialized into five sequences, as follows: Basal Sequence, Tremembé Sequence, Taubaté Sequence, Pindamonhangaba Sequence and Vale do Paraíba Sequence.
Sequences genetically linked to variations fo the ancient base level were also identified, allowing the recognition of sucessive system tracts of low base levels, trasngressive and upper base levels.
Notwithstanding lithostratigraphic column is also proposed based on the indentified genetic units, as an aid to make easier the use of the results of Sequences Stratigraphy by geologists not acquainted to fieldwork with facies and deposicional system maps. The column comprises the following units: 1) an enlarged Taubaté Group (of Tertiary age), comprising the the (redefined) Resende and São Paulo formations, the here formally proposed Guararema, Itaquaquecetuba, Tremembé and Pindamonhangaba formations; and 2) the Santo Silvestre Facies (of Quaternary age).
The use of the Sequences Stratigraphy method resulted i the following products:
semi-detailed maps of mineral resources of the entire basin area, mainly aggregates for civil construction and sands and clays or different purposes; a new theoretical evaluation of the basin's metallic mineral potential is also presented;
the identification of the different economic facies according to their contents of mineral substances such as gravel, sands, clays and peat;
a proposal of mining zones, in agreement to mineral regulations, comprising three main zones, as follows: Free Zones, Controlled Zones and Blockaded Zones;
the recognition of emerging conflicts between mining and other human activities;
mapping of MPZs (Mineral Production Zones) as a tool for land-use planning by regional and local authorities; and
the proposal of a model for "regional management of mining activities in the Paraíba Valley", focusing the sedimentary area and applying the general concern with sustainable development.
This thesis is, therefore, a proposal to insert adequately mining activities on municipality planning, regarding them as a necessary and basic branch of both modern planning adn industrial development.

Canuto,J.R. 1994. Facies and sedimentation einvironment of the Rio do Sul formation (Permian), Paraná

basin, in the Rio do Sul region, Santa Catarina state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 164pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1648 **1994** *Date of presentation:* 6/4/1994

José Roberto Canuto *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Carvalho e Silva,M.L.M. 1994. Mineral crystalochemistry of nickeliferous lateritic deposit : The example of the Vermelho, Serra dos Carajás (PA state). PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 88pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1656 **1994** *Date of presentation:* 24/6/1994

Maria Luiza Melchert de Carvalho e Silva *Advisor(s):* Oliveira,S.M.B.

Committee:

Subject of thesis: Brazilian Geology

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

Coelho,C.E.S. 1994. Genesis of the fluids in the deformed and mineralized zones of the Rio Itapicuru greenstone belt: Fazenda Brasileiro e Fazenda Maria Preta deposits: A reconstitution based in the fluid inclusions study at its microstructural context. PhD Thesis, University of Orléans - France; pg

Universitée d'Orléans *Reference:*

DataBase Ref.: 239 **1994** *Date of presentation:* 21/11/1994

Carlos Eduardo da Silva Coelho *Advisor(s):* Touray,J.C.

Committee:

Claire Ramboz	-	
Marcel Auguste Dardenne	-	IG/UnB
Gaston Giuliani	-	Univ_Orléans
Alain Prost	-	
Anne Marie Boullier	-	
Michel Faure	-	

Subject of thesis: Prospection and Economic Geology

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

We studied the mineralogy and the fluid inclusions from gold-bearing quartz veins and their host rocks of two deposits of the Rio Itapicuru greenstone-belt, in the São Francisco Craton.
The Fazenda Brasileiro mine (FB) (150 tons of gold) is situated in the southern extremity of the belt, where it took a E-W direction. The mineralization hosted by altered basalts (XM facies) seems to be controlled by a sedimentary guide horizon, rich in carbon (GRX facies). Two tectonic events successively affected the region: the D1 event corresponds to a transcurrent dextral ductile shearing event which created the main foliation S1, followed by the D2 event which reflects brittle-ductile northward thrusting. Hydraulic fracturing is one of the processes responsible for the opening of the mineralized veins. The deformation of the quartz vein network and the development of the hydrothermal alteration are sin- to late-D2 event.
Three main lithologic facies were distinguished in the FB mine area according to the petrogenetic study of the quartz veins and their host-rocks: chlorite-magnetite schists (XM facies); organic-rich acidic tuffs (CLXv facies); and sulphide-rich quartz-albite altered rocks (SUF facies), resulting from hydrothermal alteration of the XM facies around mineralized concordant and discordant veins. Four quartz generations were recognized in the FB mine area, each of which were characterized by their specific fabric and fluid(FI)/solid inclusion content (analysed by Raman spectrometry, RS): (i) Generation Q0 groups the cogenetic pre-D1 porphyroclasts from the XM and CLXv facies, mainly the quartz from the CLXv facies with enterolitic texture, rich in carbon particles of semi-graphite type. This type of quartz is the deformed, metamorphosed and gold-bearing equivalent quartz, rich in hydrocarbons, with nodules of chalcedony and barite of the Cretaceous deposit of Munela, hosted in the ophiolitic rocks of Mirdita, Albany (Sinojmeri, 1992). Q0 traps primary vapour-rich FI, sometimes halite-satured, and aqueous FI CO2-CH4-bearing and halite-saturated. They commonly contain abundant 'semi-graphite' particles and trapped complex Ca-Mg-Fe-Mn carbonates with carbone relicts. (ii) Generation Q1 consists of syn-D1 fibers in the pressure shadows of pre-D1 clasts (quartz Qo, apatite,

albite, magnetite) and it contains very small vapour-dominant FI and dominant aqueous FI. Q2 and Q2r quartz generations are characteristic of the mineralized quartz veins. (iii) Q2 quartz generation consists of plastically-deformed quartz porphyroclasts in mineralized discordant veins with primary type Lc water-deficient (= 1 mole% H2O) CO2-CH4±N2-bearing FI that commonly contain 'anthracite'-like trapped particles; (iv) Quartz Q2r, mainly developed in the concordant veins, results from the recrystallization of Q2 quartz; it contains both type Lc and Lwc CH4±CO2±N2±H2O FI, with rare anthracitic compounds, either inside (=primary FI) and/or along the Q2r grain boundaries. Additionally, types Lc and Lcw CH4±N2±H2O FI may occur in secondary trails crosscutting Q2r quartz.
The mineralogical and microthermometric studies permitted the establishment of the poliphasic hydrothermal history of the supracrustal rocks of the FB mine area in the Proterozoic: (i) Early hydrothermal seafloor metamorphism affected the pile (stage H1) prior to the D1 event. In the CLXv facies, this induced the maturation of interstratified organic matter to 'semi-graphite'. In the tuffs, long-lived fluid unmixing caused the formation of oxidized brines which in turn caused late hematitization and the precipitation of abundant carbonates (also partly formed after the volatilization of organic matter, as shown by RS). Gold is seen as inframicroscopic particles attached on the semi-graphite from the CLVv facies. The formation of all pre-D1 porphyroclasts in both the XM and CLXv facies (in particular the magnetite in the XM schists) are related to stage H1. The $fO2$ in the XM schists at stage H1 was buffered to ~QFM values by the Fe2+-bearing wall-rock, and not by the boiled oxidized solutions. (ii) The opening of the vein system occurred during the prograde metamorphism (400°-500°C, P = 2 to 3,5 kb; gradient of 40°C/km during D1?) by the combustion of earlier-formed semi-graphite in order to reabsorb the metastable semi-graphite-hematite association inherited from the H1 stage. The composition of the near water-free C-O-H fluids is compatible with that of fluids trapped on both parts of the $fO2$-upper limit of stability of 'graphite' ($fO2$=2.10-25 bar at 450°C and 3 kbar). In this way, it is demonstred the primary character of the water-free FI trapping, which will evolve in the brittle-ductile deformation during D2 event. Gold was probably introduced in the vein system attached on the semi-graphite and left behind as the carbon compounds volatilized; (iii) the trapping of low compressible fluids as secondary type Lwc FI in the Q2 and Q2r quartz implicates in an increase in the fluid pressure regime compared to the P-T conditions previously inferred, compatible with the thrusting of the Barrocas dome during late D2 deformation. Only the isochores of those low dense Lwc FI may explain the formation of sphene in the SUF facies in prograde P-T conditions: P= 4.5 kbar and T= 450°C. Those high temperatures probably favoured gold solubilization (Gibert et al., 1993). The textural study of SUF facies showed that gold was precipitated during the late-D2 retrograde evolution, when the vein system evolved in the brittle-ductile domain, by the following processes: cooling; reduction of gold-sulphide-complexes in the fluid at the surface and/or fractures of the sulphides (mainly arsenopyrite) and transient boiling (late hematite and sericite).
100 km to the north, the only brittle-ductile progressive D1 deformation event is regionally recognised in the greenstone-belt, responsible for the NS foliation dipping of 60°W with shallowly-dipping stretching lineations plunging predominantly to the north. The gold mineralization of Fazenda Maria Preta (FMP) is hosted in shear zones are which cut rocks of andesitic composition interlayered with lenses of pyroclastics and carbon-rich (anthracite type) sediments. The mineralized quartz veins are mainly hosted in late D1 shear fractures and rarely in extensional fractures. The analysis of the structural indicators (mylonitic foliations, stretching lineations) define a sinistral strike-slip deformation generated by a dominant non-coaxial simple shear component with minor early oblique-reverse motions. The ductile to brittle-ductile deformation is limited. The FI in the quartz contain CO2±CH4+N2 and they are aqueous (type Lwc) or water-deficient (type Lc which may contain 'anthracite'-like particles). Both types of FI may occur in secondary fluid inclusion planes (FIPs) crosscutting vein quartz, parallel to vein and mylonitic foliation directions. Both type Lwc and Lc inclusions are also present at the grain boundaries of recrystallized quartz grains or at sub-grain boundaries of deformed grains. Note that the carbon compounds in metasediments around the veins are also anthracitic. The intersection of isochores representative of cogenetic type Lwc and Lc FI fixes the P-T conditions of vein formation and fracturing at FMP at ~350°C and 2kbar. The absence of thrusting (=D2 event at FB) in this part of the belt explains why in FMP there is no trapping of low compressible type Lwc FI, analogous to those measured at FB. Probably the vein-opening process at FMP was favoured by the combustion process of carbon particles analogous to that of FB. However, the volatilization character at FMP was not as violent as at FB (constant trapping of aqueous Lwc and water-deficient Lc FI during the opening and the deformation of the veins). The abundance of hematite and anthracite coexisting in the carbon levels of the metasedimentary host-rocks around the veins indicates that temperatures at FMP have only transiently reached the blocking temperature of the 'graphite'-fluid, i.e., 400°C and never overpassed it. Smaller economic gold concentrations at FMP than at FB can be explained by combined chemical and mechanical effects of lower temperatures in the former deposit: lower gold solubilization, persistence of metastable association hematite-anthracite, lower permeability of the shear zone caused by limited plastic deformation and quartz recristalization.

Correia,C.T. 1994. Petrology of the Cana Brava mafic-ultramafic complex, Goiás state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 151 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1234 **1994** *Date of presentation:* 29/4/1994

Ciro Teixeira Correia *Advisor(s):* Girardi,V.A.V.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: TO *1/1,000,000 sheet:* SC22 *Centroid of the area:* ' - 'W

Abstract

Correia,P.B. 1994. Palaeomagnetism and anisotropy of magnetic susceptibility of the Itaqui intrusive complex, São Paulo state. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 115 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1511 **1994** *Date of presentation:* 20/10/1994

Paulo de Barros Correia *Advisor(s):* Ernesto,M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Coutinho,M.G.N. 1994. Geology of the shear-zone hosted gold deposits in Northeast of Brazil. PhD Thesis, University of London, England, 359 pp.

Gold mineralization, Borborema Province, Northeast Brazil

University of London, Royal Holloway and Bedford New College *Reference:*

DataBase Ref.: 2210 **1994** *Date of presentation:* 1/10/1994

Maria Glícia da Nóbrega Coutinho *Advisor(s):* Alderton,D.H.

Committee: Paulo Garrard - Univ_London_IC

Subject of thesis: Geosciences

State: RN PB *1/1,000,000 sheet:* SB24 *Centroid of the area:* 04 00 's - 38 00 'W

Abstract

Mesothermal gold-bearing quartz veins are widespread in the Borborema Province in N.E. Brazil and well exposed in two active mines: São Francisco mine and Cachoeira de Minas mine.

Although the Borborema Province shows a complex crustal evolution, the general structure consists of a mosaic of Archaean-Early Proterozoic massif terranes surrounded by Proterozoic fold belts. The major tectonic features are the development of crustal-scale shear zones and the emplacement of batholiths and stocks of granitoid related to the Brasiliano-Pan African thermal-tectonic event (0.9-0.5 Ga). The province is a medium to high-grade metamorphic zone cut by two E-W crustal-scale lineament systems or first order shear zones, about 150 km apart. These structures developed a complex anastomosing network of thrust faults and subsidiary strike-slip shear zones. Deformation is predominantly in the plastic regime, although plastic-brittle deformation also occurs. Many subsidiaries N to NE trending structures are characterised as second-order shear zones, which allowed the migration of metal-bearing hydrothermal fluids and provided sites for mineralization. Mesothermal lode gold deposits occur either within the shear zones, on the limbs of folds commonly associated with thrust faults and strike-slip faults, or in close association with major shear zones. The relationship between the quartz veins and the deformation indicates that mineralization and shearing overlapped in time.

Gold-bearing quartz veins occur in a variety of host rocks: Archaean basement, Early Proterozoic metavolcanic-sedimentary fold belts, and Early to Late Proterozoic granitoids that intruded both the supracrustal and basement rocks. The basement consists of gneiss-migmatite-granite terranes and is characterised by a transition from granulite to upper amphibolite facies (720°C and 4.0 kb). The Proterozoic supracrustals consist of schists and gneisses, and minor amphibolite, and are predominantly mylonitic with a penetrative foliation. Schists contain a high component of felsic, and minor mafic volcanics and greywackes, and gneisses are predominantly granite-derived. Maximum metamorphic conditions for metavolcanic-sedimentary rocks are estimated at 55 kb and 600°C, suggesting a depth of ≈ 25 km and characteristic of amphibolite facies. A lead isotope study of the host rocks to the mineralization has yielded a Pb-Pb isochron age of ≈ 1.0 Ga, regarded as the time of regional high-grade metamorphism, and stabilisation of amphibolite facies crust. Mineral assemblages in all lithologies confirm that these rocks were subsequently subjected to a retrogressive metamorphism in the subgreenschist facies (350° C).

Calc-alkaline magmatism associated with the Brasiliano Orogeny resulted in hybrid S-I type granites, the chemistry of which is consistent with derivation in either a continent-continent collision or continental magmatic arc tectonic setting. The widespread gold-bearing quartz veins hosted by calcalkaline magmatism reflect a genetic link between the magmatism and the gold mineralization.

Ore-mineral studies have placed constraints on the gold metallogenesis and these, combined with the structural information, suggest three stages of mineralization. In the first stage, during brittle deformation, the mineral assemblage is characterised by titanium, iron oxides and the early sulphides (pyrrhotite and pyrite), which were formed by the destabilisation of mafic minerals in the host lithologies. Fluids enriched in CO2 and S provided conditions for the precipitation of metals, and gold occurs as submicron particles associated with pyrite and chalcopyrite. In the second stage there is a greater input of additional elements, particularly those which indicate a granitic influence (e.g. Bi, Te, Mo, F and B). The gold liberated from the sulphides during this stage occurs as visible gold associated with recrystallised sulphides or intergrowths with bismuth and selenium/tellurium minerals. The last stage developed under an extensional tectonic regime and is characterised by an enrichment in lead, tellurium and gold. The mineralization occurs in fine to medium-grained annealed sulphides. The gangue mineralogy is dominated by quartz and tourmaline.

The geochemistry of the wallrock alteration indicates massive additions of K, and less Ti, Fe and Mn. The mineralized areas are enriched in a distinctive suite of trace elements: Ba, Pb, Th, V, Zn, Se, Ga, Y, Rb, Nb, and Nd. Depletions in Ca and Na are typical. The high values of K, Ba, Rb, and B in the potassic and tourmaline-rich alteration suggest a magmatic-hydrothemal paragenetic association.

The same pattern of wallrock alteration occurred in different host lithologies, suggesting that the rocks were all subjected to the same metasomatic processes and also that the hydrothermal fluid composition was not controlled by the chemistry of the host rocks.

The relationships between deformation, gold mineralization, and wallrock alteration indicate that the wallrock alteration took place before the gold mineralization, possibly at the same time as some of the early sulphide-rich mineralization. The gold mineralization overprints regional metamorphism and is contemporaneous with, and/or later than, retrogressive metamorphism

and the terminal plutonic deformation event.
Lead isotope results from sulphides associated with gold-bearing quartz veins show a model age of 0.8-0.6 Ga. The lead isotope data suggest that gold mineralization was formed after peak metamorphism.
The hydrothermal fluid from which the gold-bearing quartz veins crystallised is CO2-rich (3.0-23.0 mole %) and characterised by low salinity (≈ 6.0 eq. wt % NaCl) and minor amounts of CH4 (3-10 mole %). The fluid was originally homogeneous and CO2-rich, but the subsequent immiscibility process caused separation of CO2-rich and CO2-poor or H20-CO2 phases. The unmixing of fluids was related to episodic hydraulic fracturing, which provided pressure fluctuations during the growth of the veins by multi-increment crack-seal deformation.
P- T conditions during mineralization have been constrained by a variety of methods (chlorite geothermometry, ore mineral assemblages and pyrite texture, temperature of fluid inclusion homogenization and fluid inclusion isochors) and indicate that gold precipitated at 270-350 0C and 1.03.4 kb.
Stable isotope analyses of fluid inclusions in gold-bearing quartz veins indicate that the carbon (δ13C) has a magmatic, possibly mantle, derivation. There is a large scatter in the δ18O quartz values (7.0 to 14.5 0/00), suggesting mixing of fluids from different sources, including that of meteoric water.
On the basis of these studies the Borborema Province is shown to have had a complex geological evolution. The model for mineralization invokes several sources for the fluids and the ore components; the importance of granitic magmatism and convecting meteoric fluids is highlighted. Further exploration should be concentrated in fold belts which represent former back-arc basins, and particularly where these contain subsidiary shear zones.

Figueiredo Filho,O.A. 1994. Geochemistry and geochronology of meta-volcanic rocks of the Orós and Jaguaribe belts, southeast of Ceará state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 156 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1084 **1994** *Date of presentation:* 3/4/1994

Orlando Augusto Figueiredo Filho *Advisor(s):* Figueiredo,M.C.H.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Fonseca,A.C. 1994. Geochronological outline of Cabo Frio region, Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 186 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1096 **1994** *Date of presentation:* 20/4/1994

Ariadne do Carmo Fonseca *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Galvão,L.S. 1994. Spectral reflectance lithostratigraphy and a quantitative approach to spectra analysis. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 181pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1513 **1994** *Date of presentation:* 9/9/1994

Lênio Soares Galvão *Advisor(s):* Vitorello,I.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Garcia,M.J. 1994. Palinology of the quaternary peat bogs of the middle Rio Paraiba do Sul valley, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2216 **1994** *Date of presentation:*

Maria Judite Garcia *Advisor(s):* Lima,M.R.

Committee:

Subject of thesis: Palinology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Góes,M.H.B. 1994. Geoprocessing environmental diagnosis of the Municipio of Itaguai, RJ. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 352 **1994** *Date of presentation:* 31/8/1994

Maria Hilde de Barros Góes *Advisor(s):* Christofoletti,A.

Committee:

Subject of thesis: Geosciences and Environment

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This investigation was conducted and is presented in three modules:
aretrospective analysis of the geologic/geomorphology evolution of the area;
a survey of the present environmental situation of the municipality of Itaguaí, represented basically by the nine initial maps;
identification mapping and analysis of relevant environmental situation.
The municipality of Itaguaí has a large variety of environmental situations, as a consequence of its geographical position, physical characteristc and other natural and anthropic peculiarities.
Area showing different potencialities are spread over the municipality territory. Among these, can be mentioned: Sand Extration, Sand Ocurrence, Urban Expansion, Intensive Agriculture. Problematic areas were indentified as: Areas of Risk of Flooding, Soil Erosion and Landslides Areas. Areas denominated Critical were those where Risk of Flooding Areas coincided with special Land Use Areas (Urban, for instance). Incongruent Areas were considered those where areas recommended for some Land Use were not under this specific type of Land Use. The sectorized impact of the Urban Expansion in Itaguaí, was estimated in relation to flooded areas and the areas of sand extraction. Using the technology of Geographic Information Systems, a digital model of the environmental for the municipality of Itaguaí, State of Rio de Janeiro, was created.
A fundamental data base was composed by nine thematic maps Basic Data (Drenage and transport network and urbanized areas) Geomorphology (territorial units). Geomorphology (relevant process), Geology (lithology units); Soils, Land Use and Proximities. Using the software SAGA/UFRJ twelve evaluation maps were generated, encompassing relevant envrironment situations found the analysed area. Those maps which identified Risk Areas (flood, lanslides), Potencial Areas (agricultural, Urban Expansion, Project Impacted Areas (urban expansion over flood risk areas and over sand extraction areas) and other types of areas, named Critical, Incongruent and Conflicting Areas. All these authomatized structural information were alicerced in technics and conventional methods of survey - field, aquisicion and processing sedimentology, geostactistical, documents interpretation and of remote sensoring. Thematics maps, useful for geoprossing environmental analysis, were generated from these data.
The municipality of Itaguaí was subjected to a diagnosis of its relevant strategic environmental conditions, of which were registered, as digital maps, the basic geographic attributes of localization, extension, environmental conditions of which were registered, as digital maps, the basic geographical attributes of localization, extension, correlation and evolution. This assemblage of georeferenced environmental knowledge, constitutes a digital model of environmental, found at the municipality of Itaguaí.

Hippertt,J.F.M. 1994. Microstructural processes in mylonitic rocks from Southeast Brazil. PhD Thesis - James Cook University - Australia; pp

JCU-James Cook University - Australia *Reference:*

DataBase Ref.: 1535 **1994** *Date of presentation:*

João Fernando Martins Hippertt *Advisor(s):*

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis consists of six independent pieces of work (sections A to F) which have been submitted as individual papers to international journals during the last two years. Sections A, B, C and D are published or in press. Sections E and F still are under editorial review in Lithos and Tectonophysics, respectively. Details of the submission process are given in the first page of each section.

All the sections deal with microstructural processes (crystal-plasticity, dissolution, microfracturing, grain growth etc) operating in mylonitic rocks from different shear zones of southeast Brazil. Section F also includes a microstructural analysis of mylonites, but the main aim of this paper is to elucidate the mesoscale flow structure of a migmatite diapir. Sections A to D describe

microstructures and related deformation processes in sheared quartzites and granitoids deformed in low metamorphic grade shear zones from an Archaean granite-greenstone terrain (Quadrilatero Ferriffero region, Minas Gerais State). In contrast, Section E deals with myrmekite and related K-feldspar porphyroblastesis in a granulite facies shear zone from Archaean crystalline terrains of the Guanabara Bay region (Rio de Janeiro State). Descriptions on these different regional geological settings are given in each paper. The content of each section is briefly described below, and individual ABSTRACTS are provided in each section.

Section A describes "V"-shaped pull-aparts in feldspar and discusses the use of these microstructures as a new shear sense indicator. Based on the c-axis pattern of the quartz aggregates within the ÒVÓ-shaped gaps, processes of gap infilling(precipitation vs plastic flow vs mechanical collapse) are also discussed.

Section B presents microstructures and c-axis fabrics associated with dissolution and mica enrichment in quartzites and phyllonites from a low metamorphic grade shear zone. The role of solution-transfer and crystal-plastic mechanisms as concurrent processes during progressive phyllonitization is discussed.

Section C documents intergranular porosity in a phyllonite and its precursor quartzite by Scanning Electron Microscopy. The SEM observations associated with domainal c-axis measurements clarified the relationship between crystal orientation and intergranular porosity. Processes of pore formation are discussed.

Section D describes grain boundary microstructures of a micaceous quartzite observed by Scanning Electron Microscopy. Microstructures formed by both fluid processes and grain boundary migration were identified. The paper also discusses the distribution of grain boundary porosity in relation to the stress-strain framework in shear zones. Mechanisms for both fluid movement and fluid-assisted grain boundary migration in deforming rocks are suggested.¥

Section E describes myrmekites from an augen gneiss formed in a granulite facies shear zone. Based on this occurrence, the current hypotheses of myrmekite formation are re-examined and a new model is proposed, where myrmekites are explained as a microstructure associated with K-feldspar porphyroblastesis.

Section F is an investigation on the internal flow structure of a migmatite diapir. Based on mesoscopic structural patterns and microstructural analyses, a new mechanism of emplacement of migmatite masses is proposed. The paper also discusses the rheological transition from magmatic to solid state flow during progressive refreshment of the diapir.

Hirata,R.C.A. 1994. Fundamentos e estratégias de proteção e controle da qualidade das águas subterrâneas. Estudo de casos no Estado de São Paulo. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2221 **1994** *Date of presentation:*

Ricardo César Aoki Hirata *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Jardim de Sá,E.F. 1994. The Seridó Belt (Borborema Province, Northeastern Brazil) and its geodynamic meaning in the Brasiliano/Panafrican Orogen. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D003

DataBase Ref.: 3 **1994** *Date of presentation:* 6/10/1994

Emanuel Ferraz Jardim de Sá *Advisor(s):* Fuck,R.A.

Committee: Umberto G. Cordani - IGc/USP
Alcides Nóbrega Sial - DG/UFPE
Luiz José Homem D'El-Rey Silva - IG/UnB
Ariplinio Antonio Nilson - IG/UnB

Subject of thesis: Regional Geology

State: PB RN *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

This thesis deals with the geodynamic evolution of the Seridó belt in the Borborema Province, NE Brazil, and its significance in the framework of the Brasiliano/Pan-African orogenic chain. Discussion of criteria concerning hypotheses of monocyclic vs. polycyclic evolution of the belt and adjacent domains is a major part of the investigation. The approach integrates field structural

and stratigraphic date, age determinations and geochemical affinities concerning magma sources and tectonic setting, objectives and targets of this study were defined together with a review of the regional geology and crustal evolution of the Borborema Province.

In the Seridó belt, the Brasiliano orogeny is marked by deformation under a transcurrent kinematic regime (D3) and low pressure, mostly amphibolite facies conditions (M3), later evolving to a retrogressive stage during slow cooling of the region. Strain partitioning between domains of folding (with an important flattening component) and strike-slip or obliqueslip mylonitic belts (dominated by simple or general shear deformation) is an intrinsic characteristic of this event. This feature, together with early-D3, low temperature, pressure solution veins and seams post-dating the high strain/high temperature D2 fabrics, suggests that D3 overprinting started in an already deformed crust undergoing progressive heating. Dextral transpression is dominant along the central (and probably over most of the western) part of the belt, including features like positive flower and variable crustal structures, contractional-transcurrent duplexes and variable crustal thickening. In the eastern part of the region the Brasiliano structures display a transtensional style with negative flower structures and extensional detachments.

Syn to late-tectonic plutona (G3 granitoids) represent an outstanding kinematic marker of the Brasiliano event. They bear features like a continuum of the transcurrent fabrics and shear sense from the viscous to the plastic flow stages, sheets intruded along F3 axial surfaces, characteristic foliation trajectories and dynamic metamorphic aureoles. Several plutons display an en cornue shape in the horizontal, XZ section, consistent with (mostly dextral) displacements along nearby shear zones; such an arrangement demands a forceful emplacement mechanism. The space problem is overcome by a combination of intrusion by sheeting or in transtensional P-bridges and hypothetical rotated, early sinistral tension fractures. Other plutons were emplaced in a more passive fashion, occupying transtensional bends, bridges and wedges, or extensional detachments of the shear zone network.

Dating of syntectonic Brasiliano granitoids by U-Pb zircon and Rb-Sr whole-rock isochron techniques point to the interval 580±30 Ma as the main period of pluton emplacement and coeval D3 ductile deformation. Late to post-tectonic plutonism, cooling and brittle deformation lasted from 540 to 500 Ma, as suggested by available Rb-Sr, K-Ar and 4OAr/39Ar. mostly mineral dates.

Besides subordinate calc-alkaline and alkaline plutons, the Brasiliano magmatism encompasses three kinds of suites: a) basic-to-intermediates shoshonitic or high-K calc-alkaline, metaluminous, transitional I-A types (K-díorites), coeval with; b) porphyritic granitoids of metaluminous, transitional I-A types with subalkaline/monzonitic affinities; c) younger, slightly peraluminous granites, a few of them being true two-mica, garnetbearing leucogranites.

Trace elements data confirm different parental magmas for the K-diorites and porphyritic granitoids, respectively ascribed to mantle and crustal sources on the basis of Sr isotopes and geochemical modelling. Even though some degree of mixing and crustal contamination is chemically detected and field supported in the K-diorites, fractional crystallization±combined assimilation (AFC) trends are still preservei in compatible vs. incompatible trace element variation diagrams. Mixing of mantellic and crustal components in the K-diorite suites produce anomalously old Rb-Sr pseudoisochrons (mixing lines). Sr and Nd isotopes, LREE-highly fractionated patterns and LILE-enriched, Nb-depleted spidergrams (even for the most primitive samples) support a lithospheric enriched mantle source for these rocks, with an old, arc-type component. The porphyritic granitoids are ascribed to lower crustal melting of an intermediate, I-type basementlike source combined with subordinate mantle contribution. The leucogranites derived by melting of dominantly I-type crustal, partly metasedimentary levels.

The Brasiliano orogeny in the Seridó belt overprints rock units and structures of Paleoproterozoic age. The Caicó Complex is a gneiss-migmatite basement encompassing older, subordinate supracrustals. Its dominant, plutonic (now gneissified) rock types represent juvenile magmas extracted from a metasomatized, enriched mantle wedge above subduction zones. Successive aglutination of arc-type sequences during the 2,3-2,15 Ga time interval (as defined by available Rb-Sr isochrons and U-Pb and Pb/Pb zircon its initial deformation (D1, informally referred as the Paleotransamazonian event), preceding the Seridó Group deposition.

Inferred sedimentary protoliths and chemical affinities of interlayered volcanic rocks suggest that the lower unite of the Seridó Group (Jucurutu and Equador formations, originally unconformably overlying D1-deformed Caicó gneisses) were deposited in a rift to passive margin setting. Continental, transitional to tholeiitic basalts and andesi-basalts at the lower levels of the Jucurutu Formation reflect an enriched lithospheric source (negative EtNd values, high LREE contents) with an arc-type signature inherited from Caicó times. Stratigraphically higher volcanic levels record a more depleted or normal source. Deposition of the upper, turbidite-type unit (Seridó Formation micaschists) with penecontemporaneous contractional structures marks the onset of a convergent regime in the belt, corresponding thus to a flysch sequence. Subordinate tholeiitic volcanic layers at the base of this unit reflect a depleted (positive EtNd values), probably astenospheric source which rose in response to the previous lithospheric stretching setting. In this context, the absence of calc-alkaline or other arc-type lavas suggests that this region was attached to the trailing edge of a subducting plate. A hypothetical suture zone to the north, plus the required active margin assemblages, should be looked for in the Nigerian shield.

This collisional scenario is antecipated mostly on the basis of D2 deformation features, This is a highly penetrative and widely distributed, greenschist to amphibolite facies event. Unfolding of later (D3) structures confirm a tangential geometry for its S+L fabric, with S/SE tectonic transport. Stratigraphic inversions caused by recumbent folds and nappe structures, coupled with medium pressure (kyanite) conditional during D2, support its interpretation as a contractional, collision-related event. A later period of higher temperature, possibly extensional reworking of at least some of the tangential shear surfaces, seems to be related to the gravitational collapse of the thickened orogen. Considerations on kinematic incompatibility (two fabrics with different shear senses, recorded on markers of very different ages) confirm an older, pre-D3 age for these tangential structures, allowing to discard their interpretation as flats or detachments of the D3 strike-slip shear zones.

Syn to late-tectonic granitoid intrusions of monzonitic, calc-alkaline and shoshonitic affinities, ingluding several augen gneiss plutons, represent a conspicuous kinematic and chronological marker for the D2 event. U-Pb, Pb/Pb zircon and Rb-Sr isochronic

dates of these rocks, their D2 mylonitic facies and pegmatite sheets injected and deformed along F2 axial surfaces, as well as U-Pb dating of zircons from a high-grade Jucurutu paragneiss, point to a time interval of 1,9 O,1 Ga (or alternatively, 1,95±0,05 Ga) for the D2 deformation and coeval granitoid emplacement (provisionally referred to as the Neotransamazonlan orogeny).

On the grounds above summarized, the Seridó belt is regarded as a polycyclic tectonic unit. At the present crustal level, the Brasiliano Cycle is essentially an intracontinental reworking event, Neoproterozoic cover rocks, eventually deposited in pull-apart basins, would have been eroded away in this region. This feature holds true over most of the central part of the Borborema Province, where the major supracrustal sequences are of Paleoproterozic (Seridó Group, Ceará Group, at least some of the highergrade metasedimente in the Transversal Zone domain) or Meeoproterozoic age (Orós-Jaguaribe sequences, Salgueiro-Cachoeirinha groups, the northern block of Riacho do Pontal belt). Although large areas remain poorly-dated both in NE Brazil and West Africa, Neoproterozoic sequences appear to be dominant only at the belts surrounding the large West Africa/São Luís and São Francisco/Congo cratonic masses - Atacora/NW Ceará and Riacho do Pontal/Sergipano/Oubanguides.

In a brief review, NW Ceará is regarded as a Brasiliano tectonic pile of Meso (?) and Neoproterozoic supracrustal units overlying and partly interleaved with Paleoproterozoic to Archean high-grade gneisses, as a result of oblique collision between the West Africa/São Luis Craton and the Hoggar/Nigeria/Borborema block. In both the Sergipe and Riacho do Pontal belts, the external and younger nappes were emplaced at high angles to the cratonic margin, while terrane collision at the inner regions is mostly oblique. This is the case of the northern part of the Riacho do Pontal belt, interpreted as a mesoproterozoic terrain accreted to the cratonic margin during an early Brasiliano stage.

Older tangential, thrust-related tectonics with NW transport directions is recorded over large areas of the Transversal Zone domain, south of the Patos shear zone. Ca. 950±20 Ma old (Rb-Sr isochrons, U-Pb and Pb/Pb zircon dates) augen gneisses, with similar setting and geochemical signature as compared to the Seridó G2 granitoids, are correspondingly regarded as syn- to late-tectonic intrusions with respect to this tangential deformation. Penecontemporaneous arc-type sequences attest to the orogenic, probably collisional significance of this event, lending support to interpret the Cachoeirinha/Salgueiro groups as part of a polycycle, Meso to Neoproterozoic belt.

North of the Patos shear zone, both at the Seridó belt and Central Ceará domain, the tangential structures display southwards kinematic indicators and are ascribed to the older, 1,9tO,1 Ga orogeny, As the Paleoproterozoic and Mesoproterozoic supracrustals and plutonics have not been found in direct, original contacts but rather occur separated by major, tangential or strike-slip shear zones. Other reported features like basic, eclogitic rocks and positive gravity trends along these tectonic contacts have also to be considered. On these grounds, a terrane interpretation is posed for the central part of the Borborema Province, encompassing at least two suture zones between (and possibly partly coincident with) the Patos and Pernambuco shear zones. At least one of these sutures could be related to the 1,0 Ga old event. Alternatively, both structures are related to the Brasiliano orogeny, in this case performing a lateral, transform accretion style.

Geological interpretations in the Borborema Province are also constrained by correlations with the Trans-Sahara belt in West Africa. Integration of data from both continents highlights the following points: a) tangential structures in Nigeria and Hoggar are still poorly dated and although ascribed to the Brasiliano/ Pan-African event, some of them could also be of pre-Brasiliano age, just like in the Seridó belt and other polycyclic domains in NE Brazil; b) the predominance of dextral movements along the Pan-African shear zones demands an emphasis on oblique accretionary/collisional models at the scale of the belt, rather than on the frontal collision one traditionally held in western Hoggar,

Within the broader framework of the Brasiliano/Pan-African orogenic chain, the Seridó belt and similar domains in the Borborema Province and Africa should be regarded as discrete, allocthonous terranes preserving an old orogenic record. Amalgamation of these terranes is mostly the result of an early stage (700-600 Ma) of the Brasiliano/Pan-African orogeny. However, other accretionary/collisional events probably date back to ca, 1,0 Ga or even more, like in Seridó. During a later stage of the Brasiliano cycle (600-540 Ma), following the closure of oceanic domains surrounding the major cratonic landmasses, a larger plate encompassing most of the Hoggar, Nigeria-Cameroon and Borborema shields was subjected to reworking along crustal- and lithospheric-scale shear zones, in connection to a lateral extrusion process, Basic magmas (the K-diorite suites) were extracted from LILE- and LREE-enriched, sheared or delaminated lithospheric slabs. These melts, ascending through or trapped within the base of the crust, coupled with variable effects of crustal thickennig (along transpressional zones) and/or lithospheric thinning (in transtensional structures) related to the istrike-slip kinematics, triggered lower crustal anatexis resulting in the voluminous intermediate I-A type granitoids so characteristic of the belt.

Based on literature research and the studied examples, a discussion is presented concerning the anatomy and evolution of orogenic belts. The points emphasized are specially relevant to the inner, deeper parts of these belts and include the discrimination of their different kinds of tectonostratigraphic units, kinematic models explaining the development of folds and deformation phases coeval with shear zones, and the capability of the continental crust to preserve a polycyclic orogenic record.

Karmann,I. 1994. Evolution and actual dynamics of the karstic system of the Rio Ribeira de Iguape high valley, southeastern of the São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1839 **1994** *Date of presentation:* 2/12/1994

Ivo Karmann *Advisor(s):* Sadowski,G.R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SG23 *Centroid of the area:* ' - 'W

Abstract

Lima,M.A. 1994. Environmental quality analysis of the servidão catchment (Rio Claro county, SP). PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 353 **1994** *Date of presentation:* 10/10/1994

Magda Aparecida de Lima *Advisor(s):* Cavalheiro,F.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This document presents an experience on environmental quality analysis, as a component of the natural resources management, through two scalar approaches. Firstly, the natural features of Rio Claro County are presented, at the scale 1:50.000. The land suitability for agricultural and urban uses is analysed, and throught their comparison with the present land use, it is stablished the present scenery of land exposure to degradation caused by each one of those uses. Secondly, this analysis allowed the selection of a small catchment for a study case, in order to evaluate the environmental quality, at the scale 1:10.000. The criteria for the development of proposals to the recuperation of the catchment, were based on the integrated treatment of three components: the physical attributes characterization and quantification, the environmental legislation concerning preservation areas and urban settings, and the public consultation with upstream dwellers of the Servidão catchment. This exercise of integration of systemic and perceptive analysis was proved to be valid to determinate means and strategies for recovery the catchment, providing subsidies for the catchment management and simultaneously suggesting the necessity of redefinition of patterns used in projects of urban construction, so they would be in conformation with the conservation requirements.

Marangoni,Y.R. 1994. Crustal model for the northern of Goiás state based on gravimetric data. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 105 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1514 **1994** *Date of presentation:* 2/8/1994

Yára Regina Marangoni *Advisor(s):* Mantovani,M.S.M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Martim,M.S.C. 1994. Characteristics and environmental problems of the Rio Apodi basin, Mossoró, RN. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 351 **1994** *Date of presentation:* 16/3/1994

Maria do Socorro Costa Martim *Advisor(s):* Christofoletti,A.

Committee:

Subject of thesis: Geosciences and Environment

State: RN *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

The Apodi-Mossoró River Basin, located mainly in western Rio Grande do Norte State (NE-Brazil), was studied as to its environmental characterization and assessment of anthropogenic interference. The theoretical background and field research data used in this study, permit approaching the desertification phenomenon on a conceptual basis. Pluviometric data from available meteorological ground stations were analysed in order to characterize the environment of the study area. Morphometric techniques were employed to quantify and analyse the variables: topographic shifting, river sources, soil use and ground occupation; results there of are presented in tables, graphs and charts. Granulometric analysis of river sediments along the basical area revealed low sediment reworking, thus demonstrating the low energy level of the Apodi-Mossoró River Basin system, as related to topographic relief and scant rainfall.. Along four rural to urban areas, as shown by population censures and degradation of municipalities in a accelerated rate, especialy in the 1960"s, and distinctly caused by political interests. Environmental legislation covering the use fluvial hydric resource is commented. Based on the results of this survey it's concluded that the environment in the study area is being misused; a state of affairs that can be counteracted through decisive action-taking by competent Public Authrorities and citizens towards enforcing the pertinent environmental legislation, adapting it to the needs and peculiarities of each region and, thus, properly regulating the exploitation of fluvial hydric resources in semi-arid lands.

Nicola,S.M.C. 1994. Pedologic systems developed on basalt, in the Ilha Solteira region (São Paulo state-Brazil) : Genesis and transformations. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2223 **1994** *Date of presentation:*

Silvia Maria Costa Nicola *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Pedology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Paes Bueno,C.R. 1994. Ocupation and risk of erosion of the medium and high Jacaré-Pepira river basin(SP). PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro / SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 354 **1994** *Date of presentation:* 20/10/1994

Célia Regina Paes Bueno *Advisor(s):* Garcia,G.J.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present study was carried out aiming to give the necessary subsides to plan the correct occupation of the medium and high Jacaré-Pepira river basin, São Paulo State - Brasil, based on the basic ambient characteristics, and main factors related to erosion, which determined the risk of erosion. The methods used were based on the interactions between the physical and natural soil condition, such as soil erodibility (K), rainfall erosivity (R), slopes (D) and length (C) of slopes, to define the natural potencial to erosion and anthropics factors, according to the actual soil farming conditions which gives the expectation to erosion. Cartographycs techniques and field work were essential procedures in this research by which the areas were divided according to their erosive characteristics. The results showed the area characterization in respect to the erosion processes, giving evidences to their natural potencial and the changer produced by human beings actions, showing the broad and specifs aspects in the erosion conditions and, consequently, the physical limitations to the soil utilization.

Pedreira,A.J. 1994. The Espinhaço Supergroup in the Center-Eastern Chapada Diamantina, Bahia state: Sedimentology, Stratigraphy and Tectonics.. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 126 pp

Proterozoic, sedimentology, stratigraphy, tectonics, Chapada Diamantina

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1241 **1994** *Date of presentation:* 14/10/1994

Augusto José de Cerqueira Lima Pedreira da *Advisor(s):* Brito Neves,B.B.

Committee:

Fernando Flecha de Alkmim	-	DEGEO/UFOP
Carlos Schobbenhaus	-	DNPM
Celso Dal Ré Carneiro	-	IG/UNICAMP
Claudio Riccomini	-	IGc/USP

Subject of thesis: Geochemistry and Geotectonics

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* 12 45 's - 41 30 'W

Abstract

The Espinhaço Supergroup crops out in the eastern part of Brazil in the states of Bahia and Minas Gerais, since the 10 parallel along the right bank of the São Francisco river in Bahia, down to the 20 parallel, northeast of Belo Horizonte in Minas Gerais. In this area the Espinhaço Supergroup is divided into four domains named from north to south as Chapada Diamantina, Northern Espinhaço, Rio Pardo Plateau and Southern Espinhaço. Its rocks are essentially conglomerates, sandstones and pelites; the latter two lithologies locally are metamorphosed to quartzites and schists. Terrigenous and carbonatic deposits of the Una Group, were deposited on the Espinhaço Supergroup.
In order to revise the supergroup stratigraphy and analyse the depositional systems that make up each of the lithostratigraphic units, to determine the paleotectonics of the source areas, and to set on a firm basis the geodynamic model of the basin, was selected an area of 16500 square kilometres in the Central - eastern Chapada Diamantina. This selection took into account the low grade or absent metamorphism, the low intensity of the tectonics, the presence of good outcrops and the fact that part of the area recently was mapped emphasizing the depositional systems of each lithostratigraphic unit.

In this region the Espinhaço Supergroup basement is composed by diatexites and metatexites in the western sector (Paramirim river valley) and by the Jequié and Caraíba complexes as well as the Senhor do Bomfim Gneisses in the eastern sector. The Jequié Complex consists of plutonic and supracrustal rocks metamorphosed in the granulite fácies. The Caraíba Complex and the Senhor do Bomfim Gneisses comprise gneisses, banded migmatites and metasediments. Their compositions are tonalitic - granodioritic. Separating Jequié and Carnaíba complexes from the Senhor do Bonfim gneisses, there is a contractional fault with westward tectonic transport that thrust those complexes upon the sediments of the Jacobina and Contendas-Mirante groups. These groups crop out northeast and southeast of the area of the research, separated by a basement high and are intruded by ca. 1.9 Ga leucocratic granites.
The Espinhaço Supergroup comprises the following groups: Rio dos Remédios (not divided into formations), Paraguaçu (Ouricuri do Ouro, Mangabeira and Guiné formations) and Chapada Diamantina (Tombador, Caboclo and Morro do Chapéu formations). In these lithostratigraphic units the conglomerates, sandstones and pelites, besides carbonates and diamictites, are associated into continental, transitional and marine depositional systems. The continental depositional systems are aluvial fan, fluvial and desertic, and occur in the Rio dos Remédios Group as well as in the Mangabeira, Tombador and Morro do Chapéu formations. The transitional ones, litoral and deltaic, are concentrated in the Guiné Formation and the marine systems --tidal flat and platform-- in the Caboclo Formation. The alternance of depositional systems and the presence of unconformities and correlative conformities among them, allowed their grouping into four depositional sequences; the lower two sequences coincide with the Rio dos Remédios and Paraguaçu groups; the upper two coincide with the Tombador--Caboclo and Morro do Chapéu formations. These sediments are folded into a series of anticlines and synclines with NNW--SSE undulating axes, whose radius of curvature increases from west to east.
The terrigenous-carbonatic sediments of the Irecê and Una-Utinga "basins" that crop out in the centre- northern and eastern sectors of the study area were interpreted as glciomarine and tidal flat deposis.
The study of 45 thin sections with point count of 400 grains in each one, allowed to classify the Espinhaço Supergroup sandstones (s.l.) as quartz arenites and litharenites of quartzose, quartzfeldspathic, quatzolithic and volcanoplutonic petrofácies. The paleocurrents measured in the fluvial fácies of the Mangabeira, Guiné, Tombador and Morro do Chapéu formations, indicated the provenance of the former two from the west and the latter two from the east, that is, from the Jacobina / Contendas-Mirante Belt. Aditionally, this provenance is emphasized by the presence of green quartzite pebbles from the Jacobina Grroup in conglomerartes of the Tombador Formation. The paleotectonics of the source-- areas was determined after the analysis of the modal composition of the arenites with the Qm-F-Lt diagram. This diagram indicated the provenance of the sediments from fold-thrust belts.
The basin of the Espinhaço Supergroup and the Una Group was classified as a polyhistory successor basin. It evolved from a continental interior fracture type basin through a continental interior sag to a continental margin sag. This continental margin was closed by a Transamazonic tectonic event, so that the basin returned to continental interior conditions. The evolution ended with the deposition of the Una Group in a continental interior fracture type basin. The provenance of the Chapada Diamantina Group sediments from the Jacobina / Contendas--Mirante Belt implies in a genetic relationship between the Chapada Diamantina Group and that belt, that was interpreted as collisional. The Espinhaço Supergroup in the Central--eastern Chapada Diamantina, being deposited along a fold thrust belt, beginning with sediments of similar age to those of the belt with provenance in the foreland, and ending by sediments derived from the collisional belt, is interpreted as a foreland basin.

Reis Neto,J.M. 1994. Itaiacoca belt: Record of a collision between two continental blocks at the Neoproterozoic. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 253 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1038 **1994** *Date of presentation:* 20/10/1994

José Manoel dos Reis Neto *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Petrology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Shiraiwa,S. 1994. Flexure of continental lithosphere under the Central Andes Centrais and the origin of the Pantanal basin. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 86 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1510 **1994** *Date of presentation:* 20/12/1994

Shozo Shiraiwa *Advisor(s):* Ussami,N.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Sousa,S.H.M. 1994. Microbiofaciologic study of the Amapá formation (Tertiary), Amazonas mouth basin: Biostratigraphic and palaeoecologic interpretations. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2220 **1994** *Date of presentation:*

Silvia Helena de Mello e Sousa *Advisor(s):* Fairchild,T.R.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Stevaux,J.C. 1994. Paraná river: Geomorfogenesis, sedimentation and Quaternary evolution of its superior course (Porto Rico region, PR state). PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 242pp 1map.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1649 **1994** *Date of presentation:* 11/4/1994

José Candido Stevaux *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Brazilian Geology

State: PR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Alexandre,G.A.L. 1995. Contribution to the study of geochemical behavior of 'As', 'Cu', 'Pb', e 'Zn', originated from agricultural pesticides, in the not saturated and saturated zones in urban and farm zones in the Louveira municipality – SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 158 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1087 **1995** *Date of presentation:* 18/9/1995

Gisela Angelina Levatti Alexandre *Advisor(s):* Szikszay,M.

Committee:

Subject of thesis: Geochemistry

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Almeida,A.R. 1995. Petrology and tectonic aspects of the Quixadá-Quixeramobim granitic Complex, CE state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 279pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1670 **1995** *Date of presentation:* 1/12/1995

Afonso Rodrigues de Almeida *Advisor(s):* Ulbrich,H.H.G.J.

Committee:

Subject of thesis: Brazilian Geology

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Camargo,E.C. 1995. Definition of the characteristics of the physical environment for the installation of waste fill in the southern portion of the Paranaguá municipality. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 126 pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1671 **1995** *Date of presentation:* 10/11/1995

Emerson Carneiro Camargo *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Brazilian Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Dias Brito,D. 1995. Calcispheres and microfacies from mid-Cretaceous pelagic carbonate rocks. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

calcispheres;calcisphaerulids; Pithonelloideae; Cretaceous; pelagic carbonate rocks; microfacies; South Atlantic;Brazil; Tethys

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 2002 **1995** *Date of presentation:*

Dimas Dias Brito *Advisor(s):*

Committee:
Jorge Carlos Della Favera - DG/UERJ
Luiz Antonio Pierantoni Gamboa -
Paul Edwin Potter -
Setembrino Petri -
Yvonne Therezinha Sanguinetti - IG/UFRGS

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A global study of Mesozoic calcispheres (especially the subfamily Pithonelloideae Keupp, 1987, calcareous dinoflagellates), their occurence in the mid Cretaceous pelagic carbonates rocks of the Brazilian Atlantic margin, and an Atlas of microfacies and fossils and their significance are the subjects of this thesis.

The first part focuses on the widely dispersed literature of Mesozoic calcispheres, particularly the subfamily Pithonelloideae, whose components are classically called "calcisphaerulids". More than 100 references about pithonelloids were reviewed dating from the last century and an exhaustive syntesis was made of their paleoecology, stratigraphic ranges, and paleobiogeography. Many diagrams of global stratigraphy and biogeography of the Cretaceous subfamily and its different taxa are presented stage by stage from the Albian to the Maastrichtian. The most important conclusion from this review is that the Pithonelloideae climaxed simultaneously all over the world during the highest of all the Cretaceous sea levels in late Albian to Coniacian time. A strong association also exists between the maximum temperature and the salinity of the Tethyan water mass and the acme of the opportunistic Pithonelloideae.
In the second part, nineteen wells were examinated in ten of Brazil's offshore basins all along its coast. Over 1000 thin sections were made from core samples, and more than 5000 specimens of calcispheres were observed with the S.E.M. The basins having tropical carbonates extend northward from the São Paulo Plateau/Walvis Ridge and belong to the northern part of the South Atlantic Ocean. The subfamily Pithonelloideae is mostly represented by five taxa (Pithonella sphaerica, P. ovalis, P. trejoi, P. cf. perlonga and Bonetocardiella conoidea). These vary greatly in abundance in the neritic pelagic carbonates of Brazil's offshore. They are most abundant in the upper Albian of the Campos, Santos, Espírito Santo and Barreirinhas basins, where there are also many radiolarians and some black shales. Coastal upwelling is infered. Other important results include the stratigraphic ranges of the Pithonelloideae throughout the Brazilian Margin and their comparison with other sections abroad, the bathymetric evolution of each basin, and the high incidence of redeposition of their Albian chalkstones, whose planktogenic content is essentially the same of the European and North American ones. The study of the Brazilian margin also showed that the Tethyan ocean clearly extended south to the São Paulo Plateau/Walvis Ridge during Late Aptian-Albian and that during this time the primitive northern South Atlantic was a long and narrow arm of the Tethys, here termed "the South Atlantic Tethys". The idea of a warm Tethys Ocean was also used to revise its Cretaceous worldwide limits.
The Atlas has 101 plates, 634 photomicrographs, and is based on both thin section and S.E.M. studies and displays all the essential fossils of the Brazilian mid Cretaceous pelagic carbonates. The established 28 different Albian-Turonian microfacies are defined by variations of terrigenous and calcareous material and by the quantity and kind of planktonic microfossils. These new microfacies include the types and significance of fine-grained limestones and marls and provide a consistent and easy way to estimate the paleobathimetry and paleoecology of mid Cretaceous pelagic carbonates. It is hoped that the new methodology used in this atlas will facilitate more comparative studies of open sea carbonates everywhere.

Duarte,G.M. 1995. Coastal cenozoic deposits and the Santa Catarina far south morphology. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 1v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1659 **1995** *Date of presentation:* 14/9/1995

Gerusa Maria Duarte *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Brazilian Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Faria,A. 1995. Stratigraphy and depositional systems of the Paranoá Group in the Cristalina, Federal District, and São João d'Aliança areas. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D004

DataBase Ref.: 4 **1995** *Date of presentation:* 8/3/1995

Álvaro de Faria *Advisor(s):* Dardenne,M.A.

Committee:
Carlos José Souza de Alvarenga - IG/UnB
Benjamim Bley de Brito Neves - IGc/USP
Onildo João Marini - IG/UnB
José Maria Landim Dominguez - IG/UFBA

Subject of thesis: Regional Geology

State: DF GO *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The main object of this doctorate thesis was to investigate the lithostratigraphy and the depositional environments of the Paranoá Group, in the external zone of the northern portion of the Brasília Belt, Goiás, central Brazil. The study covered an area of approximately 12.000 kM2, including the Cristalina dome., the area of the Distrito Federal extending to the north, towards the area surrounding the town of Alto Paraíso de Goiás.
The mesoproterozoic (l350-950 Ma) Paranoá Group represents a ca, l,600 m thick megasequence, limited by unconformities at the base and at the top. It overlies the Araí Group and is overlain by the Bambuí Group.
This megasequence was deposited in a marine environment and can be divided in 12 (twelve) lithofacies with "formation" status: São Miguel Paraconglomerate (SM); - Meta-rhythmite (R1); -fine- to medium-grained quartzite (Q1); - Meta-rhythmite (R2); Microconglomeratic quartzite (Q2); - Shaly meta-siltstone (S); - Slate (A); - Sandy meta-rythmite (R3); - Medium-grained quartzite (Q3); - Shaly meta-rhythmite (R4); - Feldspatic quartzite (QF); - Pelitic-carbonate (PC)

These units were grouped into four sedimentary megacycles. The two older cycles were transgressive, the following one was dominantly regressive, with oscillations, which were not discriminated, and the last one was again transgressive.
The sedimentation on the western margin of the São Francisco Craton was controlled by extensional tectonics, active from the beginning of the deposition of the Araí Group until the end of the sedimentation of the Bambuí Group.
The Araí Group sediments were deposited in a rift environment at around 1.8 Ga, as indicated by the age of acid metavolcanics, coeval with the rift opening. The Paranoá megasequence corresponds to a further opening of that rift, evolving into a marine platformal setting. The reactivation of the extension at the beginning of the Neoproterozoic led to the formation of the Bambuí basin.
The deformation associated with the Brasiliano Cycle affected the external zone of the Brasília Belt at ca. 650 Ma. In the studied area, four lithostratigraphical domains were identified, and they all display, at varied intensities, two distinct compressive events which resulted in the generation of more intense tectonic folds, thrust sheets and nappes, with general more intense tectonic transport direction from W to E and, less intense, from N to S.

Garda,G.M. 1995. Basic and ultrabasic dikes of the coastal region between São Sebastião and Ubatuba towns, state of São Paulo. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 156

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1668 **1995** *Date of presentation:* 14/12/1995

Gianna Maria Garda *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Brazilian Geology

State: SP *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Goes,A.M. 1995. Poti formation (Carboniferous Inferior) of the Parnaiba basin. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 1 v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1669 **1995** *Date of presentation:* 5/9/1995

Ana Maria Goes *Advisor(s):* Coimbra,A.M.

Committee:

Subject of thesis: Brazilian Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Haddad,R.C. 1995. Pinhal-Ipuiuna granitoid batolith (SP-MG states) : An example of Neoproterozoic potassic calc-alkaline magmatism in the brazilian southeastern. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1811 **1995** *Date of presentation:* 7/11/1995

Regina Clélia Haddad *Advisor(s):* Ulbrich,H.H.G.J.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W
SP

Abstract

Herrmann,H. 1995. Mining and environment: Institutional-juridical changes. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 356 **1995** *Date of presentation:* 8/12/1995

Hildebrando Herrmann *Advisor(s):* Batista,J.J.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The minerals considered as a part of strategic resources used to be treated as a State's assets separated from surface property even on private land. Its use was considered in the context of public benefit and operations needed to make use of it subject to special rules in preference to other private and public interests. This approach has now changed, and mining activities are given the same treatment as other commodities, transfering them from the public domain to the rules of private rights. On the other hand, the environment, considered in the colonial period, during the empire and the first republic, as a matter of private concern, is now considered to be of social interest and a part of public law and with a dominat interference over all human activities including the use of mineral the society.

Infanti Jr,N. 1995. Bed rock erosion downtream geological: Forecast and environmental impacts. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 357 **1995** *Date of presentation:* 15/12/1995

Nelson Infanti Junior *Advisor(s):* Batista,J.J.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis presents a thorough review of the hydraulic and geomechanical approach to the problem of scouring of rock masses downstream of spillways by turbulent flow. All the equations for the forecast of the phenomenon are analyzed; the problems of rock mass simulation in scaled hydraulic models are discussed and the present trends in numerical analysis are presented.
An approach based on geological forecast of rock mass behavior is proposed. As paradigms of the phenomenon, the evolution of water falls and sea cliffs were studied.
All the available data, published or not, also records of a good performance of the rock mass and cases of deep scouring in rock were analyzed, providing a record of 100 case histories around the world.
The mechanisms of rock blocks dislodgment due to the impinging of the water jet and controlled by the geomechanical parameters is presented. Based on this study a geomechanical classification of rock masses with respect to scouring is presented, as well as a geological forecast of the erosion depth. A preliminary evaluation of scouring hole evolution is presented, as well as the trends of the upstream slope.
Finally, an approach is presented to the environmental impacts of the process and additional research is proposed.

Lanzarini,W.L. 1995. Models and facies simulations and fluvial and eolic sedimentary sequences of petroleum reservoirs. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1903 **1995** *Date of presentation:* 9/8/1995

Wilson Luiz Lanzarini *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Lima,E.F. 1995. Petrology of the volcanic and hypoabissal rocks of the Lavras do Sul shoshonitic association (ASLS), RS state. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, 338 pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 345 **1995** *Date of presentation:*

Evandro Fernandes de Lima *Advisor(s):*

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Lavras do Sul Shoshonitic Association (ASLS) is composed of effusive basic to intermediate rocks, pyroclastic deposits, hypabyssal monzonitic to rhyolitic bodies, spessartitic lamprophyres and granitic intrusive rocks. In this study, volcanic and hypabyssal rocks belonging to ASLS, exposed in the Lavras do Sul region, were investigated from a geological mapping, petrographic, mineral and lithochemical point of view, in order to elucidate their origin and evolution. They are stratigraphically positioned after calc-alkaline metagranitoids of Brasiliano age, and are succedded by a post-orogenic oversaturated alkaline

magmatism. The alternate character of effusive and pyroclastic activity, the presence of columnar jointing in the effusive terms, and the lack of evidences for a subaqueous volcanic setting, indicates the cyclicity of the explosive-effusive aerial volcanic regime. The lack of ductil deformation in the rocks of the ASLS in the Lavras do Sul region and their syn-transcurrence positioning in the Dom Feliciano Belt, suggest their late to post-orogenic character. The shoshonitic affinity, as well as the orogenic relationship of ASLS, is indicated by the SiO2-satured character of basaltic terms, as well as by their low-TiO2 content, relatively high amounts of Al2O3, Rb, Ba, Sr and LREE, K2O/Na2O ratio close to 1.0, and moderate HFS-element content. The crystallization of basalts was initiated with olivine, augite, labradorite and ilmenite, with pressures under 10 Kbar, from an evolved magma, as suggested by its low Ni, Cr, and Co contents and mg lower than 0.7.
REE petrogenetic modelling using the basaltic compositions point to primary liquids derived by melting (F=5 to 10%) of a garnet lherzolitic mantle, enriched by a factor between 6 and 8, in REE and LIL elements. The intermediate volcanic rocks have augite, olivine and Ti-magnetite phenocrysts besides the dominant andesine-labradorite exhibiting a variation of habits ascribed to decompression. Petrogenetic modelling based upon major and trace-element data indicated that the intermediate liquids are probably derived from shoshonitic basalts through olivine+clynopiroxene fractionation. Some assimilation is evident from petrographic evidence, nevertheless its influence on magmatic differentiation is negligible.The intermediate liquids have probably evolved through plagioclase+augite±olivine fractionation up to monzonitic liquids, as indicated by mass balance and trace element modelling, as well as by the presence of cummulatic leucodioritic bodies. Volatile increasing fugacity during the fractionation process culminated with hornblende early stabilization in the monzonitic liquids. The fractionation of this phase together with plagioclase and biotite, leads to rhyolitic compositions similar to the granitic rocks of Lavras Granite Complex nucleous and of rhyolitic dikes belonging to the ASLS, as far as major and trace element, including REE are concerned. The late stages of shoshonitic magmatism are represented by intermediate to acid dykes and spessartitic lamprophyres. The higher amounts of MgO, alkalies, Cr, Ni, and lower of Al2O3, Sr, Zr and Nb observed in the lamprophyres are due to assimilation of calc-alkaline granitoids by volatile-enriched basic magmas of shoshonitic affinity.Isotopic Rb-Sr data obtained in the studied rocks yielded ages close to 653±23 Ma and initial ratios around 0.704. Similar values were determined in the nucleous of Lavras Granite Complex and in the Santo Antonio Monzogranite. As suggested by field relations, younger ages, close to those of alkaline magmatism, may be found by further geochronogical work. According to the data obtained in this study, the evolution of shoshonitic associations, similar to ASLS, may be explained by a model involving: fractionation of olivine and clinopyroxene from a mantellic primary basaltic magma, followed by fractionation of these phases and plagioclase, and eventually by plagioclase and hydrated mafic minerals. This evolution is illustrated in the QAP diagram by the trend parallel to AP for basic and intermediate terms, and then inflecting to quartz-rich liquids. The fractionation of iron-enriched mafic phases causes the Fe/Mg stabilization during the differentiation of shoshonitic magmatism.

Maranhão,M.S.A.S. 1995. Fossils of the Corumbatai and Estrada Nova formations in the state of São Paulo : Subsidies to the paleontologic and biostratigraphic knowledge. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 2v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1673 **1995** *Date of presentation:* 21/12/1995

Maria da Saudade Araujo Santos Maranhão *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Brazilian Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Marciano,V.R.P.R.O. 1995. Santa Maria de Itabira pegmatitic district, MG state: Mineralogy, geochemistry and zoneography. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 216 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1085 **1995** *Date of presentation:* 27/12/1995

Vitória Régia Peres da Rocha Oliveiros Marcia *Advisor(s):* Svisero,D.P.

Committee:

Subject of thesis: Geochemistry and Petrology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Mello,I.S.C. 1995. Geology and metallogenetic study of Itaoca massif, Rio Ribeira valley, SP and PR states. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,168 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1624 **1995** *Date of presentation:* 19/12/1995

Ivan Sergio de Cavalcanti Mello *Advisor(s):* Bettencourt,J.S.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Melo,J.G. 1995. Impacts on urban development in the underground waters of Natal city-RN state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2224 **1995** *Date of presentation:*

José Geraldo de Melo *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: RN *1/1,000,000 sheet:* SB25 *Centroid of the area:* ' - 'W

Abstract

Melo,M.S. 1995. Rio Claro formation and associated deposits: Neocenozoic sedimentation in the paulista periferial depression. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1885 **1995** *Date of presentation:* 27/12/1995

Mario Sérgio de Melo *Advisor(s):* Coimbra,A.M.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Mendes,J. C. 1995. Mineralogy and genesis of the tourmaliniferous pegmatites of Mina do Cruzeiro mine, São José da Safira, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2232 **1995** *Date of presentation:* 9/10/1995

Júlio César Mendes *Advisor(s):* Svisero,D.P.

Committee:

Subject of thesis: Mineralogy and Economic Geology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Noce,C.M. 1995. Geochronology of magmatic, sedimentary and metamorphic events in the Quadrilátero Ferrifero region, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 128 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1131 **1995** *Date of presentation:* 7/4/1995

Carlos Maurício Noce *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Ohara,T. 1995. Geoenvironmental zonation of the high and medium Paraiba do Sul river region (São Paulo) using remote sensing. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 372 **1995** *Date of presentation:* 13/12/1995

Tomoyuki Ohara *Advisor(s):* Rueda,J.R.J.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This study was performed at he Upper and Middle Rio Paraíba do Sul valley, localized at the eastern border of São Paulo State. Its objective was to develop a systematic evaluation of the physical environment (Geology, Geomorphology and Soils), using spatial attributes of TM Landsat images. The technique used consisted of an analysis of the textural characteristics of relief and drainage elements, with the definition of homogeneous photogeologic zones. The conviction on these definition was realized through the homogeneity analysis (to check the existence of internal heterogeneity) and similarity analysis (to check the existence of units with analogous characteristics). After the observation of TM Landsat images, a correlation was made with main lithologies and soil types. Furthermore, with the informations of data from soils laboratory analysis (physical and chemical) of material collected along weathering profiles, was produced the determination and map-making of units and covers of weathering alteration. At last was realized the integrated avaliation of these units and covers of weathering alteration with others informations of physical environment, as well as edaphoclimatic information, and informations on physiographic and morphostructural anomalies, with the determination of different geoenvironmental zones, with purpose to supply the technical allowances to definition and priorities for engineering works, technical evaluation of water resources, evaluations of land use, regional planning, environmental protection issues, etc.

Pedrosa-Soares,A.C. 1995. Gold potential of the Araçuaí valley: History of exploration, geology and tectono-metamorphic control. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D007

DataBase Ref.: 7 **1995** *Date of presentation:* 29/9/1995

Antônio Carlos Pedrosa Soares *Advisor(s):* Leonardos,O.H.

Committee:
- Reinhardt Adolfo Fuck - IG/UnB
- Marcel Auguste Dardenne - IG/UnB
- Benjamim Bley de Brito Neves - IGc/USP
- Rudolph Allard Johannes Trouw - DG/UFRJ

Subject of thesis: Prospection and Economic Geology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

In the Minas Novas region of the Araçuaí River Valley, northeast Minas Gerais State, gold deposits were discovered in 1727 and exhaustively mined until 1750. After this period only small prospects (garimpos) have been sporadically exploited. Despite gold scarcity, prospecting companies have worked in the region but all the results appear to have been unsatisfactory.
This thesis presents a detailed historical review, the geology of the region including the preparation of a geological map at the scale 1: 150 000 covering an area of . 12 000 km2, a through lithochemical evaluation of country rocks and a gold geochemical picture of wall-rocks. A model for the geotectonic evolution of the Neoproterozoic Araçuaí Belt is also proposed.
The historical review is vital to complement the geological interpretation of the gold occurrences. The contribution of primary gold was minor in the past as it is nowadays. Rather, lateritic colluvial gold and alluvial deposits comprised the main targets for the pioneers, and it is likely that 4 to 6 tons of metal would have been recovered from them.
The primary gold occurrences belong to two types. The most important are gold-bearing quartz veins similar to the slate belt gold-only deposits, in which the lack or scarcity of hydrothermal alteration in the wall-rocks is a striking feature. Typical examples of this type of deposit are those in the Meguma Group in New Scotia, Canada and the Victorian goldfields in Australia. The second type comprises minor gold occurrences found in pyrite-rich, ductile shear zones where hydrothermal alteration is notable. The distribution of these different types of occurrences is controlled by the tectonometamorphic framework of the Salinas Formation, distal unit of the Macaúbas Group in the Araçuaí Belt.
The Salinas Formation comprises quartz-mica schists (graywacke pelites) and quartzose metagraywackes, with minor intercalations of calc-silicate rock, clast-supported metaconglomerate, metalimestone and graphitic schists. Field, petrographic and lithochemical data show that this unit represents a deep-sea sand-mud sequence deposited on a passive continental margin. A distal portion of the Salinas Formation is composed of a metavolcanosedimentary sequence, named Ribeirão da Folha Facies. This facies hosts tectonic slabs of meta-ultrafic rocks. A Sm-Nd isochron obtained from five samples of orthoamphibolites (MORB-type tholleiitic basalts) of this facies gives an age of 816 ± 72 Ma, which indicates the epoch of oceanic opening in the distal domain of the Araçuaí Belt. In this metavolcanosedimentary environment no significant gold occurrence has yet been found.
During the collisional Brasiliano Event different structural and metamorphic domains were formed in the central sector of the Belt. The slate belt-type gold occurrences are found in the Araçuaí - Minas Novas Structural Domain (AMND). This domain is interpreted as a positive flower-structure. The crustal level exposed in the central area of AMND indicate a zone of major fluid generation and gold leaching vi devolatilization of the metasedimentary pile in the greenschist to amphiboli facies transtion. Sparse gold-bearing quartz veins are found in the AMND and are interpreted as testimonies of the fluid release to higher, presently eroded crustal levels. A minimum metamorphic temperature of 470o is obtained by garnt-biotite geothermometer of the wall-rock. Fluid inclusion studies of a quartz vein indicate a composition dominated by H2O + CO2, a salinity of < 2-4% (NaCl eq.) and homogenization temperature of > 250-280o C. The metamorphic temperature and the results of these studies are in good agreement with the AMND gold model proposed above. The pyrite rich shear zones occur m the structural domains characterized by frontal and oblique thrust ramps of low dip angle. In these zones the final products are quartz + sericite + pyrite + spessartite ±

albite ± clorite ± biotite mylonitic schists. The hydrothermal alteration was not completely pervasive and occurred at temperatures of > 380o C, i.e. close to the upper limit of the best range for gold deposition.
The historical and geological data presented in this thesis point to a very low gold potential for the region, in comparison with present day economic gold deposits.

Pereira,V.P. 1995. Alteratin in the Catalão I alkaline carbonatitic massif - Brasil: Mineralogic evolution. PhD Thesis, University of Poitiers, France; pp

Université de Poitiers, França *Reference:*

DataBase Ref.: 1317 **1995** *Date of presentation:*

Vitor Paulo Pereira *Advisor(s):* Decarreau,A. Formoso,M.L.L.

Committee:

Subject of thesis:

State: GO *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

The alkaline-carbonatitic massif of Catalão I has a radiometric age of about 80 Ma and it is situated in the Southeast of Goiás State. These rocks outcrop in an area of 33 square Kilometers and they display a semicircular shape. They are rocks that represent the products of multiple magma injections in schists of the Araxá Group, making up a fenitization.
In the sequence of different events, the first one was related to magmatic origin and genetically to the emplacement of phoscorites and pyroxenites. This phase was followed by a metassomatic event that transformed original olivines into phogopites and introduced in these rocks a niobium mineralization. Afterwards the "mise en place" of carbonatites and hidrotermals processes took place. This event was responsible for phosphate apatitic mineralization and for certain kinds of transformations such as olivines in to serpentines, "bowlingite" and "iddingsite" and perowskites in to anatase. The anatase was also generated by weathering processes.
Subsequently a latter event was responsible for the introduction of quartz (silicite) enriched by secondary phosphates of the plumbogumite group, which contains in its composition rare earth elements with concentrations higher than 10%.
Later, supergenic processes took place and a thick lateritic profile developed (in some place it can reach 100m of thickness). It was related to secondary enrichment of elements as niobium, rare earth, titanium and minerals such as phosphates and vermiculites. The characteristic of this last process is its advanced stage of development, concentrating elements such as Nb, Fe, Ti, Al, Zr, REE, Sr, Ba and P. On the other hand, alkaline and alkaline earth elements were leached from the profile and were formed 2:1 clay minerals, showing a process of patial hydrolyzes.
Taking into account the different minerals that form these rocks, it has emphasized the micromorphological and crystalochemical studies with the intention of understanding the chemical changes related to hydrothermals and weathering processes. In this research a set of techniques were used such as X-ray diffraction (in some cases with microsampling and punctual analysis with linear detector), infrared spectroscopy, scanning electron microscopy, cartography of chemical elements and oxygen isotopes analysis. Punctual chemical analysis by EDS and WDS and whole rock analysis by X-ray fluorescence, atomic absorption spectroscopy and ICP have been used.
Among the minerals that were investigated, the following ones were important:
- The tetraferriphlogopites. They are related to potassium metassomatism in olivines that are strongly depleted in aluminium. This element is replaced which Fe3+ at the tetrahedrical sites;
- The fluorapatites. They have cpmplex chemical compositions and chemical replacements. These minerals are altered to secondary highly fluor enriched apatites and secondary phosphates that belong to plumbogumite minerals group, normally enriched with REE.;
- The calcium pyrochlore. During the action of supergenic processes, this mineral loses a portion of alkaline and earth alkaline chemical elements from their structural site A and they are hydrated. As the weathering grows, the niobium, a quite immobile element, is attached to the "skeletal" structure of the mineral. The products of weathering of associated minerals in the rock generate iron oxyhidroxides and secondary phosphates that normally migrate to the empty structures of altered pyrochlores, making in the end a pseudomorphose of pyrochlore grains. As the weathering evolved, the sites where there were pyrochlores were completely occupied by plasmas of complex chemical composition.
Besides these minerals, it is common to find the magnetites that have been transformed to oxihydroxides of iron by supergenic processes. Niobozirconolite and quartz are also important.
The profiles are isalterites at the basement and aloterites at the upper portion. Inside the upper aloterite portion, it is possible to see dissolutions and absolute accumulation zones with the formation of phosphatic and iron oxihydroxides plasmas, which are policyclic remobilized.
As the result of a comparative study among the Alkaline-carbonatitic Massif of Catalão I and some other Brazilian alkaline complexes, it was possible to conclude that those associated to Província Alto Paranaiba are quite similar in terms of lithologycal types, evolutive sequence of generation and mineralizations. Also they have similarities of supergenic process evolution, considered as a mechanism that improved the enrichment of some chemical elements economically important.

Petta,R.A. 1995. Geochemical study and petrogenetic relationships of the São Vicente/Caicó multiple composed batholith, state of Rio Grande do Norte, Brazil. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 371 **1995** *Date of presentation:* 27/9/1995

Reinaldo Antonio Petta *Advisor(s):* Hackspacker,P.C.

Committee:

Subject of thesis: Regional Geology

State: RN *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

In northeast Brazil, early Proterozoic rocks are exposed in comparatively large areas. Before crustal reworking during Proterozoic, these rocks probably belonged to a more continuous Archean cratonic mass, now represented by strongly deformed acidic to intermediate gneisses, containing only minor amounts of more basic types and metasediments of the earliest of crustal growth in this region.
The largest preserved portion of this ancient cratonic mass or continent is the Borborema Province, which covers an area of 370.000 Km2, with particular structural, stratigraphic, tectonic, metamorphic and magmatic features. It shows a complex precambrian geological evolution which has not been fully understood and consequently has been variously interpreted. Defined by Almeida et.al, (1977) as a cratonic Precambrian area of the South American Shield and formerly considered by Neves et al. (1975) as a Archean crystalline basement reworked and remobilized in the middle and upper Protezoroic, it was lately interpreted by V. Schmus et al. (1993) as an older paleocontinent consisting of large crustal blocks with different model ages for their protoliths.
The Borborema Province is composed of a basement of ancient metamorphic and igneous rocks, a metassedimentary rock cover and intracratonic basins of Jurassic to early Cretaceous ages. The southern boundary is formed by the Craton São Francisco and the northwestern boundary is formed by the Parnaiba Basin. The basement is represented by several older gneisses-migmatites complexes that Brito Neve (1975) and Jardim de Sá (1984) have considered Archean. Folded belts of Mesoproterozoic age overlay discordantly on the basement. In the older rocks the transamazonian ages (2.0 Ga) were interpreted as an event of isotopic rehomogenization. After 2.15 Ga U/Pb ages in zircons obtained by Hackspacher et al. (1990) on rocks interpreted as "archean basement", a new interpretation has considered these rocks as paleoproterozoic.
The Proterozoic Central Structural Domain (CSD), in the central-eastern portion of Borborema Province, extends for 900 Km and occupies about 90.000 Km2 with SW-NE trending metamorphic rocks. It contains a large number of granitoids and comprises a basement with supracrustal segments: Seridó (SFG - in Fig. I.2), Cachoeirinha-Salgueiro (CSF - inf Fig.I.2) and Riacho do Pontal (RPF - in Fig.I.2) fold belts.
The supracrustal series of schist belts comprises predominantly low-to-medium grade metasediments with subordinate mafic-ultramafic rocks, marbles and calcgneisses trending approximately northeast-southwest; cut by the Brasiliano granites (ca. 600 Ma) and related rocks with fine-to-medium grained aplitic dikes with several pegmatite phases.
The São Vicente/Caicó Massif, which includes the study area (marked area in Fig.I.2 and I.3), is located in the central part of the Rio Grande do Norte state, representing one of the oldest crustal components of the Borborema Province. It has a northeast/southwest elipsoidal form, and covers more than 1000 Km2.. Its main feature is a zoned pluton composed of petrographically different sequences of granitic gneisses (GDTGG), with gabbroic-dioritic-tonalitic-granodioritic-granitic composition (the São Vicente/Caicó Suite), cutting a sequence of metasediments and banded gneisses (the Basal Sequence). A fine-to-medium grained monzogranitic orthogneisse, two types of augen-gneisses and leucogranites occur partially parallel to the contact with the supracrustal metasediments of the Seridó Group.
Major conclusions about these massifs include: i) a polydiapiric magmatic evolution during the early Proterozoic with a well defined architecture consisting of suites of gray gneissic rocks and metagranitoids; ii) a syntectonic viscous-ductile emplacement of the granitoids; iii) a progressive deformation history in two different regimes (thrusting and strike-slip); and iv) derivation of the granitoid magmas from mantle sources.
The age of metamporhism, especially that of the amphibolite facies, and deformation of the province belongs to the Transamazonian Cycle as shown by Rb/Sr isochrons from the magmatic rocks of the São Vicente/Caicó Suite (Dantas et al., 1992) with values of 2.15-2.2 Ga. and initial ratios of 0.7012-0.703. These values were interpreted as typical of rocks derived from the mantle (type I) and formed in deep crustal levels with short periods of crustal residence. Also U/Pb ages have been obtained in different lithologies for this suite, with an upper intersection aat 2.15 Ga., and Sm/Nd model ages at 2.65 Ga., defining the transamazonian cratonization or reworking of a primordial archean crust (Hackspacher et al., 1990). The current very negative Nd values endorse the evolution of magmas from deep-seated sources. A short time interval between the magmatism and its deformation seems to have made possible a partial mixing between magmas with slightly different viscosities during their sub-solidus emplacement.
This thesis presents the results of detailed field work supplemented by geochemical studies and provides new interpretations of the complex geology of this region. The main purposes are to study the chemical variation trends that characterize the major lithologic types of the São Vicente/Caicó Suite, to establish of a geochemical and petrogenesis classification and to ascertain the main characteristics of the magmatic evolution. These massifs provide an unusual opportunity for the study of source differentiation and accretion at different crustal levels, with the co-existence of reworked terrains and formation of mantle-derived younger crust.
The São Vicente/Caicó Batholithe is a metamorphic polydeformed granitoid pluton within the mid-to-upper amphibolite facies. It presents a widespread foliation (Sn) developed by the kinematic phase (Dn) of prograde regional metamorphism (Mn). In the GDTGG, this foliation ranges from pervasive, in small granitoid bodies and margins of large plutons, to weak in the interior of the large intrusive bodies. A superposed shearing event (Dm) produced the irregularly-shaped outlines of the pluton. The thermal episode of regional metamorphism (Mn) produced gneisses with quartz-biotite-muscovite-feldspar assemblage and migmatitic biotite-hornblend gneiss, the latter being an autochthonous products of anatexis.
Since these rocks are metamorphosed to amphibolite facies and could have been affected by variable degrees of metasomatism and fluid flow during metamorphism, we have tested the mobility of elements in isocons diagrams (Grant's method). Data interaction has show that in various sites, the metamorphism acted in a closed system.
The São Vicente/Caicó Suite is compositionally broad, with a wide range of SiO2 contents (53-76 wt%), showing a variation in both major and trace elements from gabbroic to granitic composition. Geochemically, the SV/Ca suite is shown to be a calcalkaline series of metalumunous characteristics with a light tendancy toward peraluminous, formed by granitoid rocks of medium to high K. All these granitoids show characteristics similar to "I type" tectonic associations, predominantly "cordilheriano", with Rb/Sr ratios between 1 and 0,1, characterizing its generation in great depths. These granitoids had their participation registered during all of the periods of the orogenic event, showing affinity with the series evolving out of the pre to the post and

late orogenesis, suggesting, in addition, a participation of crustal associations. They show arcomagmatic character - VAG (volcanic arc granites), with characteristics typical of calcalkaline series.
The rocks of the suite shows a positive correlation between SiO2 and K2O and Rb (partial in Al2O3, Na2O) and a negative correlation between SiO2 and TiO2, FeO*, MnO, MgO, CaO, P2O5. Abundances of Sr are significantly higher in these rocks, consistent with a more calcalkaline character. For silica values spanning from 55% to 65%, there is an increase in Na2O. For values greater than 65 wt%, the rocks display a high K2O trend.
The basic enclaves found in the granitoid rocks are dioritic-gabbroics, of round or angular forms. The rounded enclaves are protected from the hosts rocks by a reaction boundary and, when associated with porphiritic granites and large granodiorites, exhibit feldsphats potassic poikilitics. The angular enclaves exibit, in addition, a texture harmonious with the original rock and a barely transformed mineralogy composed, principally, of plagioclase and hornblende with some piroxenes.
The presence of piroxenes crowned by anphiboles and quartz grains sealed in the enclaves, of plagioclase surrounded by alkaline feldsphats and/or hornblende, and of hornblende skeletons in granite hosts are indicators of the process of hybridism in these rocks. The presence of contact boundaries between the rounded enclaves and the granitoides, and the angular fragments cemented by the granites, as well as the anphibolitics veins in strict relation to contact, imply the coexistence of two liquids of different composition (granitic and gabbroic), separated, at least, by very short time intervals.
This basic enclaves beside the field relations, textures, compositions, metamorphism and geochemical data suggest the existence of only one magmatic suite in all the massif, geochemically cogenetic, showing the same calcalkaline trend. The São Vicente-Caicó suite was treated as a congenital sequence, for it shows parallel, interlocking and continuous trends for all of its lithotypes, presenting quite similar geochemical characteristics, and having in its petrological similarities favorable arguments for a common origen. Each magmatic impulse suffered its own differentiating processes, with the fractionation of minerals of distinct paragenesis, that were forming at the rate at which the magmatic chamber was evolving. These features lead us to consider their formation as beginning with a rapid and simultaneous drainage of an unique multiple stratified magmatic chamber.
The following observations were taken as indicators of the almost simultaneous drainage of a multicomposite chamber, chemically stratified with a mixture of its magmatic terms occurring during the ascension of its fractioned products: i) field observations, such as the occurrence, in a single out cropping, of rocks with different compositions in a process of plastic interlocking, both presenting the same deformation markes and with reciprocal enclaves, demonstrating that at the moment of batholith emplacement there was a contemporaneous occurrence of contrasting and chemically differentiated magma compositions; ii) the presence of finely granulated enclaves, of basic and intermediate composition, of angular or globular aspects, in a mingling process, with its contact relations demonstrating that the mixture of the diverse magmatic components occurred when they were in a subsolid state; iii) the presence, in these enclaves, de xenocristals similar to those found in the granite host rocks, and reaction boundaries with the encasements, showing that the mixture process really occurred with the hybridization of the encasing rocks; e iv) the interlocking geochemistry of the diverse composicional trends, demonstrating the cogenesis of these granitoids.
On the basis of these indicators, the following evolutionary model was proposed: a) injection of a basic magma into a magmatic chamber with an advanced process of compositional stratification, b) this injection produces a strong turbulence in the chamber, resulting in the basic magma being fragmented into globules that are spread by convection cells, c) being that the viscosities of these two magmas are contrasting, the mixture only occurs partially, resulting in a new stratification of the chamber, where the layers of more basic magma are interspersed among themselves, d) when the magmatic chamber begins its evacuating process, the magmatic pulses that exit the chamber leave already incorporating hidrid rocks and unmixed portions of the two magmas, and e) this process becomes repetitive until the complete evacuation of the magmatic chamber.
The more primitive rocks of basic series are potentially representative of original magma compositon, from which the remainder may be derived by differentiation. Metagabbros and tonalitic gneisses, with silica contents of 52 to 60%, suggest that this primary composition represents a ratio of cumulate and melt or derivation from some more primitive magma chamber.
Simple melting or crystallization models of the origin of calcalkaline orogenic rocks, include a range of problabe source material, in reality, such models do not always explain all elemental (major or trace) variations or isotopic trends. Thus, a more complex, multi-stage model including crystallization, melting with assimilation and magma mingling is proposed.
Our approach seeks a combination or crystallization/mixing model that include, major and trace element composition of the source, relative proportion of phase crystallization, distribution coefficients, and a type of fractional model with continuos separated melt.
The calcalkaline magmatism of the São Vicente/caicó Batholite is typical of mantle-derived magma. This is evident from plots of Sr verus Rb, and Sr/Sr initial ratio for the São Vicente-Caicó Massif, where the rocks have similar initial ratios (0.701-0.703), assuming that they could have the same magma source. Otherwise, the "G2b"augen gneisses, and leucogranites, have high initial ratios (0.7110), indicating that a crustal component was present during the final evolution of the massifs.
As the chemical and isotopic features of the granitoids suggest mantle-derived magmas with a minor crustal component, in the petrogenesis model it is suggested that generation of the granitoid magma of the São Vicente/Caicó Massif, occurred in two stages, each one involving a different fractionation process. The first stage, that formed the basic-intermediare part of the suite, was the fusion of the protolith (exhausted mantle) followed by a long history of fractionation and stratification chamber, while, the second stage that formed the more acid granitic rocks, involved (0.7011-0.7013). The main period of crustal growth occurred in the Transamazonian Cycle (2.2-2.0 Ga.), with only a short time gap between magmatism and deformation, and is represented by cratonization of its granitoids massifs.

Pulz,G.M. 1995. Gold prospective models in greenstone belts: Example of Maria Lázara, Guarinos and Ogó deposits, Pilar de Goiás-Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D006

DataBase Ref.: 6 **1995** *Date of presentation:* 15/9/1995

Gênova Maria Pulz *Advisor(s):* Fuck,R.A.

Committee:
Nilson Francisquini Botelho - IG/UnB
José Caruso Moresco Danni - IG/UnB
Roberto Ventura Santos - IG/UnB

Raimundo Netuno Nobre Villas - CG/UFPA

Subject of thesis: Prospection and Economic Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Ogó gold deposit is associated to the Moinho shear zone, which defines the contact between Moquém block granite-gneiss and the Serra do Moinho Formation, of Pilar de Goiás greenstone belt. The ore distribution is conditioned by saddle reefs and recumbent fold hinges, which deform metamorphosed volcanoclastic rocks, exhalites, tuffaceous exhalites, pelites and carbonaceous phyllites. The ore minerals were deposited in four mineralization stages, including the precipitation of metals in the oceanic seafloor (early and intermediate stages) followed by the recrystallization and remobilization produced during shearing and granitoid intrusion into the mineralized layer. Gold is found as native gold and electrum with Fischer coefficient > 900. The genesis in multi-stages is supported by carbon isotopes data, which suggest that rocks in the Ogó gold deposit area interacted with water as well as with metamorphic, magmatic and juvenile fluids. Native gold is found associated with galena, whose Ph isotopic signature indicates that this metal was extracted from its reservoir at least 2025 Ma ago. The Ogó deposit model invokes the existence of an volcanic-exhalative environment with intense fumarolian activity and seawater infiltration into the volcano-sedimentary pile, resulting in gold enrichment, later mobilized and reconcentrated during metamorphism and deformation.
The Maria Lázara gold deposit is located in the Guarinos greenstone belt, represented by metabasalts, banded iron formations, metapelites and carbonaceous phyilites. These rocks were deformed by the Carroça shear zone, which was developed along their contact with the Moquem block granite-gneiss. During the oblique, ductile shearing, syntectonic intrusion of the Guarinos dome occurred, which developed a triple point foliation. These structures controlled the location of the Maria Lázara deposit due to the channelling of hydrothermal fluids into the triple point structure. Gold is found either in its native form or as maldonite (AU2Bi), associated with arsenopyrite, whose textures indicate that sulphide deposition occured after metamorphism. Isotopic data of carbonates show positive correlation between 3C and 8O characterized by the simultaneously depletion of these isotopes, indicating that the metamorphic decarbonization produced fluids which episodically percolated the mineralized layer and interacted with carbonaceous phyllites. Pulses of magmatic fluids interacting with metabasalts as well as with metapelites resulted in the tourmalinization of the rocks.
The geologic features of the Ogó and Maria Lázara deposits demonstrate that there are different styles of gold mineralization in the regional context of the Guarinos and Pilar de Goiás greenstone belts. The similarities reflect the regional controls, while the differences reflect the local controls concerning the ore distribution.

Quintas,M.C.L. 1995. Basement of Paraná basin: Geophysical reconstruction of its framework. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 213 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1509 **1995** *Date of presentation:* 6/4/1995

Marcia Cristina Lopes Quintas *Advisor(s):* Mantovani,M.S.M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Rohn,R. 1995. Environmental evolution of the Paraná basin during the Neopermian in the Eastern of Santa Catarina and Paraná states. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 2v.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1666 **1995** *Date of presentation:* 7/3/1995

Rosemarie Rohn Davies *Advisor(s):* Rösler,O.

Committee:

Subject of thesis: Brazilian Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

SC

Abstract

Santos,E.J. 1995. Lagoa das Pedras Granitic complex: Acretion and collision in Floresta region (Pernambuco state), Borborema province. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 220 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1245 **1995** *Date of presentation:* 12/6/1995

Edilton José dos Santos *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PE *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Santos,M.D. 1995. The role of granitoids in the genesis of archean lode gold deposits : The Cumaru mine, Pará state - Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D008

DataBase Ref.: 8 **1995** *Date of presentation:* 11/12/1995

Márcio Dias Santos *Advisor(s):* Leonardos,O.H.

Committee: Hardy Jost - IG/UnB
Nilson Francisquini Botelho - IG/UnB
Eduardo Antonio Ladeira - DEGEO/UFOP
Lauro Valentim Stoll Nardi - IG/UFRGS

Subject of thesis: Prospection and Economic Geology

State: PA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Cumaru Au-Cu deposit lies within the Carajás Province about 100 km west of the city of Redenção in the southeastern Pará State. The Cumaru deposit is hosted by small Archean plutons (Cumaru Granodiorite) intruded in the horse-tail dilation zones of the dextral Serra Ruim shear zone. This shear zone crosscuts the volcano-sedimentary milonite rocks of the southern flank of the Gradaús greenstone belt (Gradaús Group). The main pluton (Cumaru stock) displays an isotropic fabric and it is emplaced under latetectonic conditions. The sigmodal-shaped Maria Bonita stocks, on the other hand, show a sintectonic emplacement.
The petrographic and geochemical characteristics of the Cumaru stock are consistent with those of type I calc-alkaline granitoids of volcanic arc affiliation. The low 87Sr/86Sr initial ratio of the Cumaru Granodiorite suggests mantle derivation or a short crustal residence source for the granodiorite magma. The volcanic rocks associated to the Cumaru pluton comprise a bimodal calc-alkaline suite related to the evolution of the greenstone belt.
The Cumaru deposit is chiefly represented by a well developed vein system trending to NE-SW at the NW edge of the Cumaru stock, following second order extensional fractures and faults related to Serra Ruim shear zone. This structural situation has favored the fluid migration required for gold deposition within the quartz veins. Disseminated ore in a stockwork array of veinlets is hosted within strongly hydrothermal alterated rocks associated to the main lodes. In both the vein and the disseminated ores, the gold is associated with sulfides, mainly pyrite. Minor chalcopyrite, bismuthinite, molibdenite, magnetite and hematite are also characteristic of the ore paragenesis.
Pervasive phyllic alteration surrounds the ore shoots and stockwork mineralization. It is the dominant hydrothermal wall-rock alteration type which is characterized by a brecciated rock made up by sericite + quartz + pyrite and minor epidote and chlorite. Propylitic alteration (chlorite + epidote + albite + calcite) and potassic alteration (k-feldspar) are restricted, enveloped and replaced by phyllic alteration.
Three kinds of fluids were identified in the quartz veins of the Cumaru deposit. Aquo-carbonic fluid, immiscible at the time of ore formation, is represented by a series of inclusions with varying degree of fill (F). F varies from nil in carbonic inclusions to higher than 0.9 in aquo-carbonic brines. These fluids were interpreted as metamorphic fluids related to Serra Ruim shear zone. The second type of fluid comprises brines within the H2O-NaCl-KCl-CaC2L system interpreted as derived from the granodiorite residual fluids. The third kind of fluid is formed by low- salinity meteoric water.
The P-T conditions for the gold deposit formation were estimated using the hydrothermal chlorite geothermometer and the isochores calculated from the fluid inclusion microthermometric data. Values range from 300 to 3500C and 1.3 to 3.8 Kb. The low fO2 values of the mineralized fluids and the paragenetic association of the gold with sulfides suggest that sulphur was on reduced state at the time of ore formation. These conditions favor the gold transport as Au(HS)2.
Mixing between aquo-carbonic fluids and H2O-NaCl-KCl-CaC2L brines was regarded to be the main cause for gold deposition. This mixing process brought about an increase of the fO2 and decrease of pH, triggering the precipitation of gold. The fluid-rock interaction would also favor gold deposition through the reduction of the fO2 and fS during the hydrolysis related to phyllic and propylitic alteration.
The stable isotope data have placed important constraints on the source of the mineralized fluids. While the d18O and dD values point to metamorphic water, probable with some magmatic interaction, the d13C data are consistent to geothermal fluids, possibly mantle-derived, for the CO2 of the fluid inclusions of the Cumaru gold deposit.
The geological, structural, geochemical, fluid system and isotopic characteristics of the Cumaru gold deposit are similar to greenstone-hosted lode gold deposit that occur in shear zones, as well as to porphyry mineralization typical of phanerozoic magmatic arc. This situation suggests that both shear zone and granodiorite intrusion were active processes involved in the genesis of the Cumaru mesothermal gold deposit.

Siga Jr,O. 1995. Tectonic domains of southeastern of Paraná state and northeastern Santa Catarina state: Geochronology and crustal evolution. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 212 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1132 **1995** *Date of presentation:* 27/9/1995

Oswaldo Siga Jr *Advisor(s):* Basei,M.A.S.

Committee:

Subject of thesis:

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

SC

Abstract

Simões,L.S.A. 1995. Tectonometamorphic evolution of the Passos Nappe, southwest of Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 149 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1232 **1995** *Date of presentation:* 23/5/1995

Luiz Sérgio Amarante Simões *Advisor(s):* Girardi,V.A.V.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Toledo,L.A.A. 1995. The geochemical evaluation in ground water contamination risks in the municipio of Bebedouro, SP. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 355 **1995** *Date of presentation:* 10/11/1995

Luiz Antonio Alves de Toledo *Advisor(s):* Batista,J.J.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Geochemical methods (stream sediments and water) were applied in the risk to assessment of surface water contamination in the region of Bebedouro country. Northern of São Paulo state. GEOQUANT system alowed perform univariate and multivariate statistical analysis. Stream sediment sampling is an effective environmental geochemistry tool. For this sampling, a high detection grade was associaste to Fe, Cu, Co, Ni, Mn, Zn, Cd, Cr, Pb, Al, Ba, Ca, Mg, Na, K, e F. Some important geomedicine aspects for alive organisms were reported. From the environmental point of view, several anomalous areas were selected and further studies are suggested. The results show it is a powerful method, but it is recommended that on similar application elsewhere other elements as well as organic compounds may be added to the analysis.

Vasconcellos,E.M.G. 1995. Petrology and geochemistry of alkaline dikes and plugs of do Ribeira valley region, São Paulo state frontier to Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 202 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1088 **1995** *Date of presentation:* 30/8/1995

Eleonora Maria Gouveia Vasconcellos *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Geochemistry and Petrology

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Winge,M. 1995. Evolution of the granulitic terrains of the Tocantins Structural Province, Central Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D005

DataBase Ref.: 5 **1995** *Date of presentation:* 28/3/1995

Manfredo Winge *Advisor(s):* Danni,J.C.M.

Committee: Reinhardt Adolfo Fuck - IG/UnB

Leo Afraneo Hartmann - IG/UFRGS
Ariplinio Antonio Nilson - IG/UnB
Johildo Salomão Figueiredo - IG/UFBA

Subject of thesis: Regional Geology

State: TO GO *1/1,000,000 sheet:* SD22 SE22 *Centroid of the area:* ' - 'W

Abstract

The Tocantins Structural Province, Central Brazil, consists of Proterozoic metassedimentary folded belts (Araguaia, Uruaçu and Brasília) and ensialic basement rocks of various ages (from archaean granite-greenstone up to neoproterozoic island arc roots) amalgamated in N-S structural trend during the neoproterozoic continental collision between the Amazonas and the São Francisco cratons.

The sudied high grade mobile belts show always tectonic limits following the main structural lineaments and are inserted into two crustal blocks 80-100km wide limited by sutures. The suture at the eastern side shows higher gravimetric contrast related probably to mantle elevation pushed over flexured crust during inverse faulting directed to the foreland at east .

The northern belt (Ceres) is NE-SW oriented, extends for more than 350 km and comprehends three granulitized mafic-ultramafic complexes (Cana Brava, Niquelândia and Barro Alto) with a gabbronoritic trend. The complexes are separated by transversal deep transference faults and by proterozoic metassedimentary covering.

The southern segment is a NW-SE crustal block (Complexo Anápolis-Itauçu), separated from the northern by a regional E-W structural inflection (Pireneus Mega-inflection). With ca. 320 x 70 km long it is constituted of a sialic crust, archaean in part, with supracrustal remnants with tectonics insertions of amphibolie, migmatite gneissic terranes and plutonic rocks of various generations including mafic-ultramafic granulitized complexes similar to the northern complexes. They are variably disrupted by strong neoproterozoic tectonism of the Brasiliano Cycle. The northern mafic ultramafic complexes differ from these by their bigger size, the more allochtonous character and by the systematic association with anortositic massifs and volcano-sedimentary sequence strucured over oceanic crust with back arc signature.

The evolution of these high grade terrains began with an extensional tectonics, palaeo to mesoproterozoic in age affecting a sialic crust with listric faulting that caused the inception of higher crust fragments in the medium to lower crust while at the surface occurred the intrasialic rift accumulation (Araí/Araxá/Serra da Mesa Groups). This process was more intense at the northern segment favouring more melting and the huge intrusions derived from high Mg tholeitic magma in batch arrivals conditioned to the evolution of the lithospheric stretching.

The progressive heating of the initially cold sialic crust promoted by the magma advection began the generation of a hybrid mafic-palingenetic magma (varying from gabbrodiorites to aluminous granites) with an extensive brecciation of the already solidified mafic-ultramafic bodies. This event was probably related to the increasing of the listric faulting with the detachment of higher levels of the crust with consequent lowering of lithostatic pressure. Granitic magma generated at favourable places rose in the crust and were located in the rift sedimentary sequences or extruded as volcanics.

With the listric faulting the stretched crust with the intrusions moved away laterally from the magmatic foccuses and then started a new scenario with batches of a different magma, partially fractionated with more Al and higher fO2 solidifiing as troctolite gabbro-anortositic massifs in a structure probably similar to the transitional crust of NW Norwegian and SE Greenland coasts. This magmatism preceeded a crustal rupture that gave place to the opening of ocean basins, probably small, filled with volcano-sedimentary sequences. Transitional facies between olivine gabbros and metabasalts occur at Serra da Figueira and are probably related to recurrent magmatism installed in a ~10 km depth magma chamber. These olivine gabbros show metamorphic coronas with static thermodynamic conditions around 6000C and 4kbar.

The closure of these ocean basins occurred at the mesoproterozoic (1,3Ga) with a probably faint tectonics that obducted these supracrustal and plutonic rocks over the sialic crust containing the older mafic ultramafic complexes using the old listric planes.

The extensional tectogenesis (900-750Ma) of the Brasiliano Cycle reactivated this region and the old structural surfaces pulling the old complexes to lower positions in the crust were they, and the envolving sialic crust, were heated and granulitized approximately at the same time that occurred the crustal rupture at West giving rise to the neoproterozoic ocean in the Porangatu area at north and the Arenopolis-Jaupaci area at South. The now epicontinetal Bambui basin was already installed at cratonic areas. The clockwise path metamorphism developped low to medium pressure metamorphic paragenesis with the termic peak at 700 to 9500C and 5 to 8,5kbar, corresponding to 15 to 25 km depth in the crust what precludes the granulitization at lower levels of a duplicated normal crust.

These sialic blocks were occurred the granulitization worked as passive margin and probably were locally or periodically exposed because of the diapiric tectonics promoted by granitic anatexis and/or granultic metamorphism heating the sialic rocks.

With the changing of the tectonics from extensional to compressional occurred the oceanic closure with island arc structures overthrusting the borderland and flexuring the crust. The older faults were reworked and the strong vergence directed to the east was in part conditioned into transference blocks giving rise to structural inflections as the Pireneus Megainflection with fan shaped (oroclines) frontal and lateral escapes in the suprastructure.

The obduction of the granulitic crust proceeded during nappe tectonics in two steps recorded by retrometamorpic paragenesis:
1) in the high to medium amphibolite facies when couppled with the anorthositic massifs in the northern segment and with the Santa Bárbara anorthositic Complex and associated gabbro, diorite, monzonite and granite rocks at South;
2)in the epidote-amphibolite to green schist facies typomorphic of the proterozoic metassedimentary cover. This facies represents the final allochtonous movement of the granulites during the maxima compression at ~640Ma ago.

During the final uprising movements occurred fast erosion of the belt with deposition of the terrigenous sedimentation (Tres Marias Formation) in the foreland and the cooling of the metamorphic core complexes. Probably the pseudotachilite veins where formed during seismic events in these final stages when the granulites where already placed in the elastic levels of the crust.

Araujo,S.M. 1996. Geochemical and isotopic characteristics of alteration zones in highly metamorphosed volcanogenic massive sulfide deposits and their potential application to mineral exploration. PhD Thesis; University of Toronto, Canada; pp

hydrothermal alteration, base metals, volcanogenic deposits, petrochemistry, oxygen isotope, mineral exploration

University of Toronto, UofT, Toronto, Canadá *Reference:*

DataBase Ref.: 1470 **1996** *Date of presentation:*

Sylvia Maria de Araujo *Advisor(s):* Scott,S.D.

Committee:

Subject of thesis: Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Archean Geco, Canada and the Proterozoic Palmeirópolis, Brazil volcanogenic massive sulfide deposits are within tholeiitic bimodal volcano-sedimentary sequences. Both deposits were subjected to amphibolite facies metamorphism.

Metamorphic conditions in the alteration zones of the Palmeirópolis deposits are estimated to have been 550 to 625o and 2 to 5.5 kbar. These conditions are very similar to estimates for the Geco deposits by previous work.

The Geco and Palmeirópolis deposits are associated with large volumes of hydrothermally altered volcanic rocks. The Geco alteration zones are characterized by anthophyllite-cordierite assemblages and by muscovite-sillimanite assemblages. Based on trace and rare earth elements geochemistry, these assemblages are interpreted to be hydrothermally altered mafic and felsic metavolcanic rocks, respectively. Alteration zones at Palmeirópolis are composed of a complex mixture of anthophyllite-biotite, biotite-plagioclase and sillimanite-quartz assemblages. Lenses of amphibolite within the alteration zones are very common. This study suggests that the alteration zones in Palmeirópolis consist of a mixture of mafic and felsic components but with a strong predominance of the mafic ones.

The oxygen isotope signature of the anthophyllite-cordierita rocks from the Geco alteration zones is similar to that of primary chlorite alteration zones from non-metamorphosed deposits, and can be easily distinguished from the isotope signature of the host rocks. No isotopic distintion exists between host and altered rocks at Palmeirópolis and rehomogenization by pervasive fluid flow during metamorphism is suggested. The difference of isotope behaviour between the two deposits may reflect the volume of altered rocks present. The small size of the alteration zone and the close spatial association of non-altered and altered rocks at Palnmeirópolis facilitated isotopic reequilibration. At Geco, the much larger alteration zone was an effectively closed isotopic system which retained its distinctive ?18O signature through high-grade metamorphism. Oxygen isotopes may be a useful exploration tool in highly metamorphosed terrains if used with caution. Large areas affected by hydrothermal alteration and, consequently, large ore bodies such as Geco, may be identifiable using this technique. However, areas characterized by small hydrothermal cells, such as Palmeirópolis, are likely to have undergone isotopic reequilibration during high grade metamorphism and would be undetectable.

Assine,M.L. 1996. Aspects of the Pre-carboniferous stratigraphy of sequences of the Paraná basin in Brazil. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 207 pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1685 **1996** *Date of presentation:* 26/8/1996

Mario Luis Assine *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Brazilian Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bitencourt,M.F.A.S. 1996. Syntectonic granitoids of the Porto Belo region, SC state: A petrologic and structural approach to the magmatism in shearing zones. PhD Thesis, Curso de Pós-Graduação em Geociências, University Federal of Rio Grande do Sul, Brasil ; 310 pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 1663 **1996** *Date of presentation:*

Maria de Fátima Aparecida Saraiva Bitencourt *Advisor(s):* Nardi,L.V.S. Hackspacker,P.C.

Committee:

Hans Dirk Ebert	-	IGCE/UNESP
Lauro Valentim Stoll Nardi	-	IG/UFRGS
Leo Afraneo Hartmann	-	IG/UFRGS
Jean Michel Legrand	-	DG/UFRN
Roberto Dall'Agnol	-	CG/UFPA

Subject of thesis: Geochemistry

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The region of Porto Belo is located on the northeastern end of the Major Gercino Shear Zone (MGSZ), which is one of the several shear zones within the so-called Southern Brazilian Shear Belt (SBSB) - a major crustal-scale discontinuity which was active during the Neoproterozoic. The Quatro Ilhas Metagranitoids and the Mariscal Metagranite are the oldest recognized granitic bodies in the area; they intrude an association of quartz-feldspathic orthogneisses, whose main structure was built under a tangential regime, probably of Brasiliano/Panafrican age. The tangential regime is registered in the metagranitoids mainly as a geometrical control of country rocks. The Estaleiro Granitic Complex is composed of the Estaleiro Granodiorite and a large amount of granitic veins in successive generations, as well as minor mafic tabular intrusions. The emplacement of this complex was controlled by the MGSZ transcurrent tectonics, and it constitutes an early-transcurrence intrusion. The Zimbros Intrusive Suite (ZIS) is composed of the Zimbros and Morro dos Macacos granites and by rhyolitic and basic rocks which constitute a dyke swarm parallel to the main plutonic body. A minor volume of composite dykes is part of the swarm, due to the coexistence of acid and basic liquids within a single intrusion. The rocks of this suite have intruded the older granites assemblage at high-level conditions, during a late-transcurrence period. Petrographic and microstructural features of the granitoids indicate their formation within a liquid environment, as well as their continuous evolution through syntectonic magmatic crystallization, towards the formation of typical solid-state, low-temperature microstructures. High-temperature microstructures are represented by prismatic and basal subgrain boundaries, constituting a chessboard pattern in quartz, as well as progressive rotation of subgrains to recrystalklized grains in feldspars. Subsolidus reaction products of micas include bluish-green, new biotite, muscovite and chlorite formed from the magmatic old biotites. The progression from magmatic to solid-state deformation is also registered in the behaviour of feldspars from the Estaleiro Granodiorite and the Zimbros Granite, which show a highly developed preferred orientation, in contrast with near-unit Rs values farther from the main shear zone, and develop progressively higher Rs values towards the high-strain zones. The shape and orientation of mafic enclaves in rhyolitic dykes indicate a dextral shear sense of the walls during intrusion. The same sense of movement is indicated by the angular relation of shear bands to the main foliation in high-strain zones and by the vorticity of pressure shadows in feldspars. Geochemical patterns of successively intruded granitoids point to a magmatic evolution in post-collisional environments. The early-formed Quatro Ilhas and Mariscal metagranitoids show a high-K, calc-alkaline affinity, with a major crustal contribution recognized in the latter; the Estaleiro Granitic Complex has a shoshonitic affinity and is followed by the Zimbros magmatism, of mildly alkaline, late- to post-orogenic character.

Campos,J.E.G. 1996. Stratigraphy, sedimentation, tectonic evolution and geology of diamond in the central-northern portion of the Sanfranciscan basin. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D012

DataBase Ref.: 12 **1996** *Date of presentation:* 11/12/1996

José Eloi Guimarães Campos *Advisor(s):* Dardenne,M.A.

Committee:
- Carlos José Souza de Alvarenga - IG/UnB
- Detlef Hans-Gert Walde - IG/UnB
- Armando Márcio Coimbra - IGc/USP
- Newton Souza Gomes - DEGEO/UFOP

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work presents the geologic integration to the middle-north portion of the Phanerozoic cover of the São Francisco Craton, defined as the Sanfranciscana Basin. The study enphasized the stratigraphy, sedimentology, tectonic evolution and the diamond occurences geology.
The Phanerozoic cover is mainly composed by sedimentary continental rocks and by little explosive volcanic contribution, only present in the southern portion of the basin. The stratigraphy and sedimentology of the Phanerozoic succections is summarized as follows:
Santa Fé Group (Permo-Carboniferous) - divided in the Floresta and Tabuleiro formations. This glaciogenic sequency represents the gondwanic glaciation record in the Sanfranciscana Basin. These sediments are preserved in valleys excavated in the basement and outcrop in all sites of the basin .
Areado Group (Eocretaceous) - constituded by the Abaeté, Quiricó and Três Barras formations, interelated by lateral and vertical interfingering. The Abaeté Formation was deposited by alluvial fans (southern basin portion) and by braided stream (moreover basin regions); the Quiricó Formation registrates a lacustrine sedimentation, locally represented by stratified lakes, and the Três Barras Formation, wich represents the fluvial, fluviodeltaic and aeolian environments. This unit shows greater thickness in the basin southern portion (>200 meters), while the middle-north occurences are discontinuos and less thick (up to 60 meters). Mata da Corda Group (Upper Cretaceous) - composed by the Patos (absent in the studied area) and Capacete formations. The Capacete Formation represents the distal epiclastic sediments with important aeolian sand contribution. It is just present in the southern sector of the studied area.
Urucuia Group (Upper Cretaceous) - composed by sandstones, divided in the Posse (with Fácies 1 e 2) and Serra das Araras formations, respectively interpreted as dry field dune deposits, braided stream of channelized deposition and braided stream deposited by sheet flows. It is present from the basin southern portion, where it is recovered by volcanic sandstone, until the northern, where it becomes the most important unit.
Chapadão Formation (Cenozoic), represents the sandy, unconsolidated, recent covers of talus, residual or alluvium origin.
This basin tectonics evolved since the Paleozoic with epirogenetic movements, with further Mesozoic reactivations and

neotectonic activity during the Cenozoic. Its origin and tectonic evolution had been controled by the São Francisco Craton marginal fold and thrust belts (Brasília and Araçuaí belts), by the South Atlantic openning (during the rift stage) and by the development of the transform oceanic fractures (during the drift stage). The tectonic compartmentation allowed the subdivision in the Abaeté Sub-Basin (south portion) and the Urucuia Sub-Basin (middle-north portion).
The diagenetic reactions observed in all units had been, not pervasive and influenced by the depositional environments, and the eodiagenetic fase has been the most important The carbonatic ceimentation was important in the Santa Fé Group and less evident in the Areado Group, while siliceous cements are observed in isolated levels in the Urucuia Group.
Provenance studies applied to all units show the following transportation vectors and source areas: Santa Fé Group - NE to SW transport, with source areas in Northern Espinhaço Range and by the Bambuí Group; Areado Group - transport from the adjacent elevated blocks, showing important axial flow; Urucuia Group - transport from NEE to SWW, with sources situated in the São Francisco Craton northest and the Capacete Formation - showing double direction transport, with volcanic rocks contribution from South to North and aeolian sand contribution from NE to SW.
The correlation between the sedimentary record and fossils present in some units, indicates that since the Neopaleozoic semi-arid climates predominate, with important aeolian influence in the sedimentation of all phanerozoic succetions. The climate in the Abaeté Sub-Basin was more humid than in the Urucuia Sub-Basin, where desertic conditions ruled out until the end of Cretaceous age.
The diamond widespread in many regions of the basin is the product of continous reworking by sucessive sedimentary cyicles. Initialy the diamonds have been transported from the northern Espinhaço region by glaciogenic processes. The reworking of glaciogenic sediments was responsible for transfering the diamonds to the Lower Cretaceous conglomerates. The placers and paleoplacers of the recent dranaige system are fed by the Neopaleozoic and Cretaceous sediments.

Daitx,E.C. 1996. Origin and evolution of Perau-type sulfide deposits (Pb-Zn-Ag) based in the Canoas and Perau ore deposits (Ribeira Valley region, PR, Brazil). PhD Thesis, Institute of Earth and Exact Sciences - UNESP University, Rio Claro / SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 375 **1996** *Date of presentation:* 14/10/1996

Elias Carneiro Daitx *Advisor(s):* Soares,P.C.

Committee:

Subject of thesis: Regional Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The ore deposits of Canoas and Perau, located in Adrianópolis, PR, make up the major deposits of the so-called Perau-type (Fleischer, 1976), in the Vale do Ribeira region. The main characteristics of the ore deposits with this typology include:
lithostratigraphic positioning in the carbonatic/pelitic-carbonatic sequence of the Perau Complex, from the Mesoproterozoic period;
its stratiform or stratabound formation;
the association between the sulfide mineralizations (Pb-Zn-Ag-Fe) and barite-rich bodies;
the presence of iron-magnetite formations on the hanging wall rocks;
the embedded wall rocks of the mineral are the result of the metamorphism of a pelitic-carbonatic sequence, including K-rich volcanic rocks;
the deposits present a metallic and mineralogical zoning marked by areas rich in lead, zinc and barium, or in galena, sphalerite, pyrite, pyrrothite and chert;
mineral bodies underwent the same tectonometamorphic events as the wall rocks, the sulfide material was remobilizated mechanically and/or hydrothermally over the tectonic planes, cementing the fragments, resulting in brecciated or stringer ores.
The lithological characteristics of the pelitic-carbonatic sequence in the areas with mineralization indicate the presence of lithotypes uncommon in the region, including felsitic volcanic rocks, tuffaceous sericite-schist, metacherts and metaconglomerates, suggesting peculiar sedimentation and volcanism conditions, in small tectonic basins. Mineral layering, alternating silicate beds, pyrite, sphalerite, galena, sulfide/sulfate and calcium-silicate beds are considered a fundamental feature of the mineral, indicating its syn-sedimentary nature. The mineral bodies were heterogeneously deformed over three episodes of a low angle shearing event under conditions that varied progressively from ductil to ductil/(ruptil) and (ductil)/ruptil, the latter two episodes being mostly responsible for the intense deformation and lenticular geometry shown by the ore bodies. The ore beds were gently folded by regional structures and truncated and dislocated by late faulting. The lead isotopic data suggest that the sources of this metal were crust rocks and the values of S34 , near 0, indicate similarities between these types of deposits and vulcanogenic deposits. The values of C13 and O18 in carbonate minerals differ from those present in regional carbonates, indicating the effects of hydrothermal systems, in submarine environments, as shown by the data from Sr87/Sr86 in barite, similar to those in sea water from the Mesoproterozoic. The Perau-type deposits correspond to sedimentary-exhalative deposits, formed in the environment with volcanic influence, with a intermediate position between Broken Hill-type and Mount Isa-type deposits.

De Ros,L.F. 1996. Compositional Controls on Sandstone Diagenesis. Doctorate Thesis, Uppsala University, Sweden, 340 pp.

Uppsala University, Suécia *Reference:*

DataBase Ref.: 1222 **1996** *Date of presentation:*

Luiz Fernando De Ros *Advisor(s):*

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Aiming to address the role of compositional variables on sandstone diagenesis, detailed petrologic and geochemical studies were carried on twelve sedimentary clastic units from different basins in Brazil, Norway, Tunisia, Spain and the North Atlantic, ages ranging from Ordovician to Miocene, depositional environments from alluvial-fan to deep-sea turbidites, burial depths from surface to more than 5000 m and composition from quartzarenites to arkoses and diverse litharenites. Geochemical models developed to explain the patterns of evolution of sandstone diagenesis and porosity usually stress the control of temperature, pressure, time and fluid-flow parameters, regarding compositional variables to a subordinate role. The results of this thesis yielded however ample evidence that realistic diagenetic models must incorporate substantial data input on the composition of detrital grains, pore fluids and early diagenetic constituents, as these variables exert a consistent and basic control on the diagenetic evolution of sandstones.

Interactions involving fluids, detrital and diagenetic constituents during early, near-surface diagenesis, as well as during the progressive burial and the uplift and exposure of the clastic sequences were investigated through the examination of cases selected to represent specific detrital compositional classes and diagenetic environments. The investigated processes comprised the dissolution and replacement of detrital and authigenic components, and the precipitation of authigenic carbonates, silicates, sulfides, oxides and sulphates, as well as the mechanical deformation and pressure dissolution of detrital constituents. The diagenetic evolution of most clastic sequences is concluded to be strongly imprinted by paleoclimatic controls and the influence of labile detrital components such as volcaniclastic grains on the chemical and isotopic composition of eodiagenetic phases, which in turn influence mesodiagenetic processes, and by patterns of fluid circulation through faults and fracture systems.

Diniz,H.N. 1996. Study of the hydrogeologic potential of the Baquirivu-Guaçu river hydrographic basin, Guarulhos and Arujá municipalities, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2032 **1996** *Date of presentation:* 25/4/1996

Hélio Nobile *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Dourado,J.C. 1996. Application of seismic methods in the flood plain of the Paraíba do Sul river (São Paulo state). PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro / SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 359 **1996** *Date of presentation:* 30/4/1996

João Carlos Dourado *Advisor(s):* Kiang,C.H.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

High resolution seismic reflection and seismic refraction survey using both compressional (P) and shear (S) waves were carried out in the flood plain of the Rio Paraíba do Sul, in the vicinity of São José dos Campos (SP).
Over 8000 m of seismic reflection lines using common offset and CDP and 2500 m of seismic refraction lines have been acquired using 24 channels seismograph (Bison, GEOPRO 8024). High resolution seismic reflection sections have imaged up to 300 ms (TWT), reaching locally the basement. These lines were useful to interpret structural features of the Tertiary sediments of Taubaté Basin.
Seismic refraction was employed to survey the superficial horizons, consisting of soil, peat and recent alluvial sediments. Elastic parameters (E,G,) have been determined using P and S waves.
The excellent results obtained in the present study demonstrate the usefulness of seismic methods in geotechnical and geological studies of alluvial plains. Refraction seismic using S waves is an excellent tool to determine elastic parameters of soft materials such as peat.

Fassbinder,E. 1996. Água Clara Unity in the context of Açungui group: A transpressive model of collision, oblique in the Neoproterozoic of Parana state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 207 pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1684 **1996** *Date of presentation:* 8/11/1996

Elvo Fassbinder *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Brazilian Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Fernandez,O.V.Q. 1996. Shoreline erosion in Itaipu reservoir (Brazil-Paraguay border). PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 362 **1996** *Date of presentation:* 28/6/1996

Oscar Vicente Quiñonez Fernandez *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Geosciences and Environment

State: PR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work involves the processes and factors responsible for shoreline erosion in Itaipu reservoir, located in Brazil-Paraguay border. The lake was filling from 1982 to 1984, when the normal pool level of 219,60 m was reached. Surrounding land is rolling to flat. The reservoir is characterized by a geometry elongated (151 km in length and 6 km in width) orientated N-S. Inundation of lower reach of important tributaries form embayments, with 5 km in width. Lake level variation and wind-waves are the main activating factors of bank recession. Actively eroding bank were grouped in two prominent types: 1) bank located in main trunk of reservoir with large erosion produced by wind-driven waves; 2) banks located in protected marginal embayment with low to moderated erosion rates. The bank recession study was made through the measuring of historical bankline changes (1984-1993) and present recession (1993-1995). A GIS developped from the University of Rio de Janeiro (SAGA) was used to quantified historical bank recession. Estimated average historical recession rates of shoreline in the reservoir, based in aerial photographs, were of 2,5 m/yr. to 5,0 m/yr. Present bank erosion rate was measured regularly in nine stations established along the southern 20 km of Itaipu reservoir. Measurements methods adopted are: erosion pins and bank profiles. Eroded bank range from 0,5 to 3 m in height, are typically vertical and consist of basalt residual soil. Monitoring began during july 1993 and continued bimonthly until march 1995. The averages yearly retreat of the bank were 0,62 to 4,80 m. Dominant bank erosion processes were wind-wave erosion (corrasion) and slump. Land-use prior to reservoir formation was identified as the major man-made factor contributing to local bank instability. Agricultural activity with prolonged use of tractors plough produces a type of reinforced earth, which is much stronger that the original soil. Bank bordered by natural forest, without cited reinforced soil, show high erosion rates. In last 11 year (1984-1993), stage of lake would maintained into the interval operation (219,60 to 219,80 m). This condition, shoreline located in marginal embayment would reached state of equilibrium, which characterized by seasonal of erosion. In this case, bank show low recession rates (0-20 cm/month) in fall and winter (dry period) and spring and summer (wet period). On the other hand, banks situated in main trunk of lake show high recession rates and slowly go towards state of equilibrium. Observation show that small rising level (50 cm above level operation) break state of equilibrium of embayment banks, causing small increasing of bank erosion. The same tendency was observed in bank located in main trunk of lake. Extraordinary rising of lake level (above 221 m), should cause greatest erosion in embayment and main trunk banks. An alternative approach to mitigate the impact of operating schemes on bank erosion, is to maintain the lake level into the present water level fluctuation interval (219,60-219,80 m).

Ferreira,G.C. 1996. Analysis of the industrial sand producer and consumer markets in the São Paulo state. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 361 **1996** *Date of presentation:* 28/6/1996

Gilda Carneiro Ferreira *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

In this study the industrial sand producer and consumer markets were analysed in the state of São Paulo, with the objective of evaluating the production and consumption development of the mineral over the last then years. The methods used included questionnaires sent out and thechnical inspections made at the main mineral industrial sand companies and to glass, foundry and ceramic industries, and data used about these sectors available at public agencies (DNPM, ABNT and IPT) and class associations (ABIVIDRO, ABC and ABIFA). This study permitted us to define the geology of the deposits; mining and processing methods; the profile of the main sand mining companies located in the Paulista Peripheral Depression and southern Coast; market participation of the different producers and the types of sand that they produce; the profile of the glass and foundry industries (these companies consume around 81% of industrial sand production in the state); the progressive relocation of industrial sand production from the coast to the central region of the state; and the question of quality as the main requirement for

the raw material. The study of the development of the producer and consumer markets during the period of 1985-1994, proved it to be unstable, with growth between 1985 and 1989, decreasing during the 1990-1992 period, 1992 having the worst results for all the industrial sectors studied and growth resuming in 1993. As a future projection, a 4% per year increase was established for the next ten years for the mining industry and consumers, with industrial sand production expected to be 3.8 x 106 t for the year 2000.

Fonseca,M.A. 1996. Structural styles and tectonic framework of the setentrional segment of the Brasília belt. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D009

DataBase Ref.: 9 **1996** *Date of presentation:* 29/2/1996

Marco Antônio Fonseca *Advisor(s):* Dardenne,M.A.

Committee:
Reinhardt Adolfo Fuck - IG/UnB
Luiz José Homem D'El-Rey Silva - IG/UnB
Mário da Costa Campos Neto - IGc/USP
Alberto Pio Fiori - DG/UFPR

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W
TO SD23

Abstract

The Brasília fold and thrust belt is a major tectonic unit of the Tocantins Province is central Brazil. It extends for over a 1,000 km in a north - south direction. The general vergence of folds and thrust faults is towards the São Francisco Craton, a stable area that behaved as a foreland for several others Brasiliano fold belts. At parallel 16, the Brasília belt shows a major tectonic feature, termed Pirineus Bending. It divides the belt into two distinct north and south segments. In the northern segment two main structural zones with meridian distribution have been recognized: the foreland fold and thust belt and the metamorphic core. Regional fault systems separate each of these zones. The outer foreland borders the São Francisco Craton. It contains the cratonic cover (Bambuí Group) and the mid Proterozoic Paranoá Group. Shortening of such cover is almost always balanced by top - basement detachments and also by NE trending wrench faults north of parallel 14. The inner foreland consists of the mid Proterozoic Araí, Canastra and Paranoá metasediments. In the northern portion of the inner foreland, shortening is accomodated by basement- involved reverse faults and extensive transcurrent and oblique fault systems. In the southern portion a low angle detachment is proposed to balance shortening of the cover. The outer metamorphic core comprises basement terrains and medium to high grade metamorphic rocks of the Serra da Mesa Group. Two regional fault systems form a complex right-lateral transpressive zone. Shortening of the cover is achieved by asymetric to isoclinal folds and ductile faults. Basement rocks are intirely involved in various thrust slices and deformation is of polyphase character. Different from the described transpressive systems in the literature, the transpressive zone in the outer metamorphic core affects basement and medium grade metamorphic units and the main faults are not vertical thus indicating a transpressive zone in its root. Regional structural analysis at the outer metamorphic core in the northern segment of the belt as well as at the Pirineus bending has detected strain partitioning. From an axis along the bending to the north, slight right-lateral oblique movements give rise to intirely right-lateral wrench faults and finally to slight oblique right-lateral thrusts. This pattern of strain partioning is also detected south of the bending and is equivalent to the northen one except for the sense which is left lateral. According to current models in the literature the arcuate form of the fold and thrust belts is ascribed to collisions with obstacles in the foreland, interaction of the belt with strike slip-faults and collisions with indentors of finite along-strike length. The decreasing effects of the bending towards the foreland and the absence of regional strike -slip faults along the Pirineus bending exclude the first two hypotheses. The third leads to the development of an nonrotational arc. This arc would be due to the collision with and indentor with an wedge - shape, concave-to-the foreland, the same shape of the negative Bouger anomaly along the Rio Maranhão system. By decoupling the maximum compression axis and considering the nonrotational arc hyphothesis, the Brasília Belt thus represents a transpressional orogen in which the contractional component dominates the strike-slip one.

Fortes,P.T.F.O. 1996. Metallogeny of the Mina III, Mina Nova e Mina Inglesa gold deposits, greenstone belt of Crixás, Goiás state-Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D010

DataBase Ref.: 10 **1996** *Date of presentation:* 29/3/1996

Paulo de Tarso Ferro de Oliveira Fortes *Advisor(s):* Jost,H.

Committee:
Raul Minas Kuyumjian - IG/UnB
Othon Henry Leonardos - IG/UnB
Zara Gerhardt Lindenmayer - DG/UNISINOS
Roberto Perez Xavier - IG/UNICAMP

Subject of thesis: Prospection and Economic Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Mina III, Mina Nova and Mina Inglesa gold deposits are situated in the Crixás greenstone belt, State of Goiás, Central Brazil, which is an Archaean volcano-sedimentary sequence (Crixás Group), consisting, from base to top, of metakomatiites (Córrego Alagadinho Formation), metabasalts (Rio Vermelho Formation) and chemical and detrital metasedimentary rocks (Ribeirão das Antas Formation), surrounded by Archaean gnaisses (Anta and Caiamar Blocks or Domes) and Proterozoic metasedimentary rocks (Araxá Group ?).
The Mina III gold deposit has two main mineralized zones: the Upper Ore Zone, represented by massive sulphide (arsenopyrite and/or pyrrhotite) within a sequence of marbles and quartz-chlorite- carbonate-sericite schists and associated with pyrrhotite-magnetite-biotite-schists, chlorite-garnet schists, garnetites, sericite schists, sericite-chlorite schists and biotite marble; and the Lower Ore Zone, represented by a concordant quartz vein within carbonaceous schist and also by arsenopyrite and/or pyrrhotyte-bearing carbonaceous schist close to the contact with the quartz vein. The Mina Nova gold deposit consists of: the Ore Body I, arsenopyrite and/or pyrrhotyte-bearing carbonaceous schist and Ore Body II, sericite- carbonate schist. The ore body of Mina Inglesa is a concordant quartz vein within talc schists.
The ore bodies lie along the main metamorphic foliation plane and are structurally controlled by intersection and elongation lineations parallel to the axis of semi-recumbent, asymmetric and tight folds, formed by progressive ductile simple (quasi-pure) shearing.
Mineral paragenesis in the gold deposits indicate metamorphism under epidote-amphibolite facies, consistent with geothermobarometric data of silicates (450 to 550 C and 1,5 to 4,5 kb), followed by greenschist hydrothermal alteration, as silicification, sulfidization, sericitization, carbonatation and talcification, closely related to the mineralization.
Rb/Sr, K/Ar and Ar/Ar geochronological data suggest that the metamorphic peak occurred by about 550 My ago, while the hydrothermal and mineralization took place by about 500 My ago, indicating the influence of the Brasiliano Cycle.
Carbon isotope data of carbonaceous matter from the carbonaceous schists indicate its organic origin, while Carbon and Oxygen isotope data of marbles suggest a sedimentary origin, except for the biotite marble that, as the carbonate ot the amphibole schists, quartz-chlorite-carbonate-sericite schists, carbonaceous schists, quartz-chlorite-sericite-garnet schists, feldspathic schists and talc schists, is hydrothermal.
Two generations of arsenopyrite were characterized: aspy 1 (in the center of the grains, with evidences of dissolution and sulphur rich) and aspy 2 (in the border of the grains, arsenic rich and to which gold is preferably associated). Thermometric estimates from aspy 2 indicate that it formed between 375 and 525 C.
Fluid inclusion studies in quartz revealed the presence of penecontemporaneous early fluids associated to the ore bodies, represented by saturated aqueous-carbonic fluid, carbonic, aqueous-carbonic and aqueous fluids and fluids rich in methane and nitrogen, in the Mina III and Mina Nova ores, and aqueous fluids, in the Mina Inglesa ore, suggesting a lithological control on their formation. At Mina III and Mina Nova, minimum fluid trapping temperature and pressure are situated close to 350 C and from 1,4 to 3,7 kb, while at Mina Inglesa the minimum fluid trapping temperatura is close to 250 C, indicating, in both cases, conditions of greenschist retro-metamorphic hydrothermal alteration.
Au/Ag ratios in the electrum are different between the ore bodies, but still lie along a trend, suggesting different sources for gold and/or chemical evolution of the mineralizing fluids. The variety of gold occurrences indicates that gold precipitation took place at several stages.
The genesis of the deposits favours the metamorphic-hydrothermal mobilization and concentration or remobilization and reconcentrartion models, once singenetic pre-concentration processes should not be discarded.

Freitas-Silva,F.H. 1996. Metallogenesis of the Morro Do Ouro gold deposit, Paracatu, Minas Gerais State-Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D011

DataBase Ref.: 11 **1996** *Date of presentation:* 23/9/1996

Flávio H. Freitas-Silva *Advisor(s):* Dardenne,M.A.

Committee: Roberto Ventura Santos - IG/UnB
Roberto Perez Xavier - IG/UNICAMP
Carlos Alberto Rosière - IGC/UFMG
Claudinei Gouveia de Oliveira - IG/UnB

Subject of thesis: Prospection and Economic Geology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

The Morro do Ouro Gold deposit is localized immediately to the north of the Paracatu Town (northwest of the Minas Gerais State). It is hosted by carbonaceous phyllites at the base of the Paracatu Formation (Morro do Ouro Member). A thin, but regionally continuos, quartzite stratum (2 to 10 meters) occurs at the base of the Morro do Ouro Member and constituted a guide level. Toward the top, the carbonaceous phyllites pass gradationaly to the sericite-quartz-phyllites of the Serra da Anta Member of the same formation. In the context of the mine geology, the mineralized phyllites were divided in the follows units (from base to top): MO-B2 (fresh rocks), MO-B1 (weakly weathering rocks), MO-T (transition level between weakly and strongly weathering rocks), MO-C (strongly weathering rocks) MO-L (lateritic hard crusts); which represent a typical lateritic profile. The unmineralized phyllites were named as MO-A in the footwall and MO-D in the hanging wall. The unmineralized phyllites has a background gold values about 0,1ppm and constituted the protore of the mineralized section.
In the deposit region, internal thrusts in the Morro do Ouro Member, arranged in a duplex structure, provocated two repetitions of the basal portions and in which could be individualized the frontal ramp (N10W/15SW), horizontalised flat and lateral culminations. In this duplex structure, the generation of a transtensive zone in the flat, where the resultant normal pressure was about 10 to 40% less than in the frontal ramp, conditioned the fluid migration towards the horizontalized zones and in this way is responsable for the strong structural control of mineralization.
The mineral paragenesis of the mineralized and unmineralized phyllites define conditions of greenschist facies, between 2000

and 3000 bars and 350 and 380oC. The small paragenesis differences observed are due to the higher fluid pressure (specially the CO2-CH4-N2 partial pressures) in the mineralized zones.
The mass balance characterization between the mineralized (MO-B2 unit) and the protore (MO-A/MO-D units) showed a process with about 6% of volume gain and almost isochemical to the majority of the elements. In the mineralized zone there was a marked enrichment of volatile, base metals and gold. The gold enrichment, beginning from the protore (MO-A unit) with 0.1 g/ton initial gold content until a 0.39 g/ton gold content in the mineralized rock (MO-B2 unit) was about 310% corresponding to a mass increase of about 0,3 g/ton.
The ore paragenesis, geochemistry and fluid inclusion studies revealed a low fluid rock ratio and the same P-T-X conditions determined by metamorphic paragenesis, reflecting the metamorphogenic fluid origin. The fluid inclusions and mineral chemistry studies evidenced significative variations in the sulfur and oxygen fugacities that oscillated respectively between 10-12 - 10-8 and 10-33 - 10-28. However, the oxygen fugacitie variations was buffered by carbonaceous matter along to the saturation limit of the carbon in the fluid. These variations occurred in response to continuous effervescence process of the mineralized fluid which was water dominated with important quantities of CO2, CH4, N2, ± NaCl and traces of HS-/H2S and low chain hydrocarbons. The fluid chemistry evidenced a endogenous derivation and pointed the gold transport as thiocomplex and arseniate/thioarseniate.
The isotopic geochemistry (C, O, H, and S stable and Sr/Sr, Rb/Sr, Pb/Pb radiogenic isotopes) provide additionally evidences for the endogenous/metamorphogenic origin of the mineralization and to effervescence process also indicating a fluid/rock ratio about 1:4, compatible with low greenschist metamorphic conditions. The radiogenic isotopes pointed a 1300 my for the hosted phyllites and about 680 my for the mineralizantion event.
After the primary mineralization process there was a supergenic enrichment of the gold in response to almost isovolumetric but not isochemical process which resulted gold enrichment of the MO-B2 toward MO-C units of the about 40% (in concentration) and 0,16g/ton of the mass gain.
In a general conclusion, the Morro do Ouro Gold Deposit origin was due to metamorphic fluid channelization toward the horizontal foliation zones in response the normal pressure gradient established along of a duplex structure and related to continuous effervescence process which promoted physical-chemistry variations that unstabilized a dominant solubilized gold-thio/arsenocomplex and consequently causing gold precipitation.

Jorge,L.A.B. 1996. Primitive forest relicts study in the Botucatu region using geoprocessing techniques (São Paulo state). PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 358 **1996** *Date of presentation:* 1/3/1996

Luiz Alberto Blanco Jorge *Advisor(s):* Garcia,G.J.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

The general objective of the present research was to study the landscape structure, with emphasis put on the natural vegetation fragmentation (mesophyll semideciduous forests, ciliary woods and savanna vegetation (cerrado)), for a subject area with 15774 ha in the County of Botucatu - São Paulo State. The land use map was generated from the digitalization of a vectorial layer in the GIS with the RGB colour composite Landsat-5 TM image in the monitor screen background. It was obtained too, a raster layer from the grey level reflectance/absorptance ratio classification. Edge effect resulting from the habitat fragmentation was detected by indexes were utilized in a first step to quantify the remaining forestal formations fragmentation: 1) area and medium perimeter; 2) number and density of fragments; 3) perimeter-area ratio, fractal dimension, and the shape diversity index; 4) mean nearest-neighbor distance and a measure of dispersion. The following relations were modelled: 1) fragments size distribution; 2) perimeter-area of fragments; 3) number of fragments with the increasing of landscape area; 4) edge effects.

Mendes,J. C. 1996. Petrogenetic characterizatin of the noritic and charnockitoid borders of the Venda Nova and Várzea Alegre massifs - Espírito Santo state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 238pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1682 **1996** *Date of presentation:* 20/8/1996

Júlio Cezar Mendes *Advisor(s):* McReath,I.

Committee:

Subject of thesis: Petrology

State: ES *1/1,000,000 sheet:* SF24 *Centroid of the area:* ' - 'W

Abstract

Menegasse Velasquez,L.N. 1996. Effects of urbanization on the hydrologic system : aspects of the recharge in the phreatic aquifer and surficial flowage - pilot area: Sumaré and Pompéia sub-basins, São Paulo municipality. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2040 **1996** *Date of presentation:* 18/10/1996

Leila Nunes Menegasse Velasquez *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Nardy,A.J.R. 1996. Geology and petrology of the Paraná basin central region Mesozoic volcanism. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 373 **1996** *Date of presentation:* 1/3/1996

Antonio José Ranalli Nardy *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: PR SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The main purposes of this work are to establish stratigraphic relationships of volcanic rocks from Central Region of Paraná basin, define possible chemical variations within lava flows, recognize the main petrological process, explain the observed volcanic associations, to define the volcanological eruption style (mainly acid volcanic ones) and recognize chemical signatures of basaltic rocks to establish what kind of mantle source were involved in the genesis of these rocks. Field and petrographic data besides bulk rock chemistry, REE and Sr initial isotopic ratio were obtained in order to achieve these purposes. The geological mapping leads to define two stratigraphic members of Serra Geral Formation named Palmas (defined by Palmas Acid Volcanics - ATP) and Chapecó (defined by Chapecó Acid Volcanics - ATC). Ar40/Ar39 radiometric ages reveal a 132.41.1 M.y for this magmatic event and an efusion rate of 1 Km3 of lavas per year. Based on petrographic and chemical data, two main volcanic associations were recognized: Tholeiitic (characterized by low TiO2 basalts - andesites and Palmas acid volcanic rocks) and Tholeiitic-Transitional (characterized by high TiO2 basalts and Chapecó acid rocks) which are enriched in incompatible elements compared with first ones. The geochemical stratigraphy within any lava flows of these associations (including acid ones) has showed a large scale homogeneties. The rheology of acid rocks associated with large surface distribution reveals a possible rheo-ignimbrite efusion style. Harker diagrams and incompatible element spider diagrams reveal that fractional crystalization has played and important role on the evolution of basic magmas accompanied by variable degrees of crustal contamination, more extensive in Tholeiitic Association from South Paraná Region. Based on these diagrams and Sr isotopic initial ratios it is possible to conclude that geochemical signature of magm sources from south Paraná Region is different from North ones, indicating generation from melting of lithospheric subcontinental mantle reservoirs.

Oliveira,M.C.B. 1996. Technological characterization of the crisotile ore of the Mina da Cana brava mine, GO state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 250pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1681 **1996** *Date of presentation:* 23/8/1996

Mirian Cruxen Barros de Oliveira *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Brazilian Geology

State: GO *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

Pinto,M.A.S. 1996. The recycling of archaean continental crust: The example of Gavião block - Bahia state, Brazil. PhD Thesis, University of Rennes, France, pg.

Université de Rennes I, França *Reference:*

DataBase Ref.: 252 **1996** *Date of presentation:*

Marilda Alves Santos Pinto *Advisor(s):*

Committee:

Subject of thesis:

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

The Gavião block, located to the West of the São Francisco Craton (Bahia, Brazil), is the oldest crustal block so far recognised in South America - 3.42 Ga. In its southern part, the Gavião block has been divided into three domains on the basis of 207Pb/206Pb dating on single zircons and monazites combined with Sr and Nd isotopic data and major and trace element geochemical modelling(a) 1) An Archaean juvenile domain consists of grey gneisses (Bernada Massif) which evidence mantle extraction around 3.3 Ga, (b) an Archaean domain (3.24 - 3.16 Ga) either recycled, or juvenile with crustal contamination, consists of trondhjemitic grey gneisses (Aracatu Massif) and K-rich calc-alkaline granitic gneisses (Mariana and Serra do Eixo Massifs), and (c) a Paleoproterozoic recycled domain consists mainly of the Umburanas granites, which yielded, inherited zircons ages ranging from 3.1 to 2.8 Ga whereas the monazite age is ca 2.0 Ga. The Aracatu and Mariana Massifs are cut by granites at ca 2.0 Ga, the same age of the Serra da Franga Massif. The Gavião Block is the type example of an Archaean continental crust (3.2 Ga) that has been recycled through partial melting events mainly in Paleoproterozoic times during the Transamazonian orogeny (2.0 - 2.1Ga). Brazilian cooling ages are recorded by the Rb-Sr system of biotite-whole rock pairs c.a. 500 Ma.

Pinto-Coelho,C.V. 1996. Magmatic and hydrothermal evolution of Serra Branca granite - Goiás - Brazil: hydrothermal processus related to Sn, Be and F mineralizations. PhD Thesis - Thèse Institut Polytechnique de Lorraine - França, 271 p.

cassiterite; topaz, granite; greisen; Serra Branca; Brazil

Institut National Polytechnique de Lorraine- Nancy -França *Reference:*

DataBase Ref.: 2512 **1996** *Date of presentation:* 27/9/1996

Cristina Valle Pinto-Coelho *Advisor(s):* Charoy,B.

Committee:
Pierre Barbey -
Nilson Francisquini Botelho - IG/UnB
Gaston Giuliani -
Fernando Noronha -
Philippe Rossi -

Subject of thesis: Geosciences

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Tin Province of Goiás, central portion of Brazil, is subdivided into four sous-provinces (essentially from structural arguments). It contains about twenty granitic plutons and several pegmatites fields supposed to be responsible of an important tin mineralization (together with Nb, Ta, W, F and Be). Every pluton has its proper geochemical pattern so it is more metallic convergence (Sn) than a real genetical unity which characterizes the granites of the Tin Province.
The Serra Branca pluton, located in the Tocantins sous-province, presents several differencied granite types: a biotite granite; a two-mica granite up to a muscovite granite. A small topaz granite is the more evolved type in the East part of the pluton. Post-magmatic alterations are pervasively developed although the pluton and progressively increase to the East up t the transformation in massive greisen. All the rocks of the pluton (granites and greisens) together with the surrounding quartzites and quartz-micaschists of the Araí Group have been deformed and largely recristallized during the tectono-metamorphic event of Brasiliano (Panafricain) Cycle. This deformation, as the intensity of the hidrothermal alterations increases from W to E in the pluton.
The relative intensity of the post-magmatic alteration processes, already present in the biotite granite, are chronologically: albitization, greisenization and hen microclinization. The main mineralization (cassiterite, topaz and beryl) is related to the second. Micas from the different granites types and from some greisens have been also hydrothermally modified. Biotites are heterogeneous in a give granite type but homogeneous at the crystal scale. Al is high in octahedral location and biotites are aluminous. White micas are poor in Mg, Ti and Na and are largement phengitic: they are ferrous, fairly fluorine rich and without any Li.
The tardi/post-magmatic alterations have strongly modified the original geochemical signature of the granites. Chemical variations are mainly he expression of those superimposed modifications. From the major elements, the different granites types presents an equivocal behaviour and are dominantly peraluminous. The Serra Branca pluton, with its peraluminous character and its low contents in Ti, Mg, Fe, Th and Zr appears rather different of the others plutons from the Tin Province of Goiás.
From trace elements, the granite belongs to the NYF type (Nb > Ta, Y, REE, Sc, Ti, Zr, Be, Th, U and F). Ga contents is high, mainly above what is usually presented by A-type granites. They have no similarities with what characterize I, S and M-type granites from the literature. This also results from the imprint of the pervasive hydrothermal alteration.
REE patterns shown by the granites and greisen are very similar in shape, which constitutes a strong argument for a genetical relation between both. There is apparently no important fractionation during the hydrothermal alteration (perhaps excepted Eu) and there is only a variable dilution of the initial REE stock.
Ages have been obtained on the different rocks of the pluton and the surrounding rocks by K/Ar method on micas. They are homogeneous (486-531 Ma) and signifie the imprint of the Brasiliano Cycle when micas have been reopened.
Some monazites, contrary to micas were able to preserve, at the lattice scale, the memory of crystallization times and were tested by the U/Th method. However, the perturbing Brasiliano Cycle is still recognizable. Ages are 1,344 ± 38 Ma for the muscovite granite; 1,479 ± 63 Ma for greisens and 1, 616 ± 95 Ma for enclosing quartzites. Those last appear the olders which is in contradiction cartographical evidences and could be explained by some inheritance of the phosphates. The older age (150 Ma) of the greisen which are obviously younger that granites could be explained by some leaching during alteration. Some young ages 205-260 Ma could correspond to a later hercynian episode which is unknown in the Tin Province.
Fluid inclusions have been studied in quartz, topaz and fluorite from differents rocks: granites, greisens and quartz-veins. Two main types of fluids are present: aqueous and aquo-carbonic. Their microthermometric characteristics are higly variable for every type of lfuid: salinity, density. The construction of the corresponding isochors indicates that these fluids were not

contemporaneous and did not result from an unmixing process. Those fluids are likely to characterize more the episodes of the deformation of Brasiliano Cycle than the postmagmatic alterations. Fluid inclusions with a primary status in K-feldspars from the granites are all identical and aquo-carbonic.

Rostirolla,S.P. 1996. Favorability analysis in exploration : A methodological approach. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 374 **1996** *Date of presentation:* 20/8/1996

Sidnei Pires Rostirolla *Advisor(s):* Kiang,C.H.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A system for estimating the favorability in petroleum and mineral exploration is presented. It uses geomathematical techniques, deposit modeling and classical methods of prospection. The basic methodology consists in weighting the diagnostic variables of mineralization and accumulation processes. Conceptually, the objective of the weighting is to characterize the necessity and sufficiency conditions of these variables.
The exploratory data are spatially integrated in the selected area, in order to establish the association frequency between variable and deposit, and the relationships among distribution, topology and indicator pattern of all variables. Geological, geochemical and geophysical data are integrated in a raster form, using simple geographical information system procedures. In order to represent raster database, the maps are initially transformed according to a Boolean decision (pixels containing deposits or variables are discretized with code one and the others with zero). The combination of these binary maps are used to predict the potential in the area.
Two methods of statistical analysis were considered. The first one is a conditional probability approach, and the second is a multivariate (principal components) analysis. In the conditional or Bayesian method, the pixels signaled with code one are considered as a subset of the complete database. The favorability estimation is based on the probability of deposit and variable joint occurrence. The weight is defined as a log ratio of the deposit probability when the variable exists, to the probability of the same event without the variable. In the multivariate analysis, the cells which contain deposits are selected as control cells. The weights are determined by eigendecomposition. The weights are the coefficients of the eigenvector related to the system's largest eigenvalue.
The two techniques of weighting and complementary procedures were tested on three case studies: 1. fictitious area (petroleum exploration), 2. Recôncavo Basin, Northeast Brazil (petroleum exploration) and 3. Itaiacoca Formation of Ribeira Belt, Southeast Brazil (Pb-Zn Mississippi Valley Type deposits). The proposed methodology was used in these three examples, resulting in quantified maps of favorability. The developed system proved to be easy to use and of great assistance to predict the favorability in large areas, particularly in the initial phase of exploratory programs.

Silva,A.P. 1996. Mercury in aquatic environments of Pocone-MT state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2238 **1996** *Date of presentation:*

Alexandre Pessoa da Silva *Advisor(s):* Hypolito,R.

Committee:

Subject of thesis: Geochemistry

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Soave,R.C.F. 1996. Floristic composition of degraded lands in limestone mining in the municipality of Rio Claro, São Paulo state, Brazil: Natural reclamation. PhD Thesis, Instituto de Geociências e Ciências Exatas - UNESP, Rio Claro/SP, pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 360 **1996** *Date of presentation:* 7/5/1996

Rita de Cassia Frenedozo Soave *Advisor(s):* Schlittler,F.H.M.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Unreclaimed mined sites ranging in age 0 - 40 years were sampled to evaluate vegetation and some minesoil properties changes

with time. The region has a Cwa - type climate and the soil types found are podzol reddish-yellow and dark-red ortho latossol. A total of 99 species, belonging 75 genera and 31 families was found in the mined area. The mined areas (A0, A9, A12, A27 e A37, respectivelly, 0, 9, 12, 27 and 37 years after mining) had very sparse vegetation dominated by weedy species. On mined older than 27 years, shrub and tree canopies began supressing understory species. Shrub and tree species were observed on mined area as early as 9 years after mining, but shrub and tree cover did not become substantial until 27 to 37 years after mining. Minesoil pH ranged from 6,08 (A37) a 8,50 (A9). Bulk density of minesoils in the surface (Ap horizon) declined with time as vegetation, litter and organic matter increased on the site. A similarity index revealed the intermediate-aged mined sites (A9, A12 and A27) were similar in plant species composition.

Suita,M.T.F. 1996. Geochemistry & metallogeny of platinum-group elements (PGE+Au) in brazilian mafic-ultramafic complexes: Criteria & guides with emphasis on the Barro Alto high-grade layered mafic-ultramafic complex (BAC, Goias). PhD Thesis, Curso de Pós-graduação em Geociências, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, 1996, 525 p.

Brazil; geochemistry; metallogeny; PGE+Au; mafic-ultramafic complexes; Barro Alto high-grade layered complex; Goias.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 1783 **1996** *Date of presentation:* 16/10/1996

Marcos Tadeu de Freitas Suita *Advisor(s):* Hartmann,L.A.

Committee: José Caruso Moresco Danni - IG/UnB
Lauro Valentim Stoll Nardi - IG/UFRGS
William S. Fyfe - Univ_WestOntar

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Several studies have emphasized the PGE-deposits related to magmatic sulfides from layered intrusion due to its economic importance. A few authors have discussed the distribution caused by late fluids during post-magmatic processes with PGE concentration or dispersion and less attention has been given to the tectonic-metamorphic-hydrothermal character of PGE occurrences and deposits, and to the weathering effects. It has not been paid a due attention to the silicate rocks and chromitites normalized PGE patterns that suffered post-magmatic processes, such as deformation, metamorphism and/or hydrothermal activities, and, sometimes, laterization. In mafic-ultramafic complex (MUC), in tropical regions, like in Brazil, it is necessary to pay concentrated attention to the weathering process. In Brazil, the MUC have a great diversity of absolute tenors, PGE+Au normalized patterns, and variety of magmatic and post-magmatic process. The studied Brazilian MUC include deformed, metamorphosed and/or hydrothermalized bodies, under several conditions, from granulite to greenschist facies, from komatiitic, and picritic to tholeiitic layered or ophiolitic nature, including residual mantle material. The noble metal patterns and tenors many times are not dependent of the associated MUC. Metamorphosed/hydrothermalized and deformed MUC have been directly compared to classic layered or ophiolitic complexes, with little or no deformation and/or metamorphism. The undeformed and unmetamorphosed layered bodies, including stratiform chromitites and magmatic sulfide deposits, have PGE+Au patterns rich in PEGP+S. The ophiolitic bodies are IPGE-richer and S-poor. Due to PPGE(PPGM) and IPGE(IPMG) geochemical and petrographic features during magmatic crystallization and differentiation a nd on the course of post-magmatic processes the IPGE are more protected from fluid attack and less reacting than the PPGE. Reacting fluids in shear zones may cause IPGE-enrichment, of residual nature, in layered (Campo Formoso, Jacurici Valley, Niquelândia, and Serro) complexes through post-magmatic processes, and may cause PPGE enrichment in originally PPGE-poor ophiolitic (Morro Feio and Abadiânia region) bodies by metamorphic-hydrothermal deposition. In deformed and metamorphosed/hydrothermally modified MUC to interpret the PGE+Au patterns, Ru anomalies, genesis, layered or ophiolitic characteristics, and related tectonic regimes we must first retrieve the original rock (protolith), the physical-chemical conditions and the process(s) during the metamorphism(s) and deformation(s). It is not possible to determine the layered or ophiolitic protolith and associated tectonic environment without an evaluation of the developed petrological processes. PGE+Au residual patterns are due to preferential PPGE solubilization and whole-rock chemical alteration on the course of post-magmatic processes, sometimes with a final lateritic stage. During MUC low grade metamorphism are formed some mineral assemblages that indicate, generally speaking, strong oxidizing conditions with alkaline to fairly acid (pH>4) environment, and abundant fluids, generally H2O and CO2. These are the ideal conditions to PPGE-hydrothermal transport. Positive Ru anomalies occur due to residual IPGE-enrichment and due to the PPGE-mobility. They are suggested as the product of PPGE+S-poor ophiolitic rocks or due to PPGE depletion in strongly deformed and metamorphosed/hydrothermalized layered MUC. The intensity of positive Ru anomalies may reflect the residual degree of some MUC. The Barro Alto layered mafic-ultramafic high-grade Complex (BAC) is a body intruded into continental crust, with a minimum, or close to, age of 1,729± 29 Ma (U-Pb age in zircon). The BAC is the largest layered intrusion in Central Brazil and one of the biggest in the world. The BAC whole-rock and mineral chemistry are similar to those of the intracratonic tholeiitic-picritic stratiform complexes. Shape and compositional modifications in BAC rocks and minerals reflect the nature of the original magma(s) and the influence of the superimposed deformation and metamorphism. The possible generating process of the layered rocks is suggested as the successive influx of more primitive magma mixing when it is in contact with more differentiated magma intracamara. The suggested tectonic mechanism is one of mantle plumes in an intracontinental rift environment. It may exist a spatial-temporal relationship between the tholeiitic-picritic mafic magmatism, responsible for the great layered complexes, BAC-type, and the “A”-type, alkaline, tin-bearing, acid rocks from the Paranã Sub-province, Tocantins Province. BAC is divided into four great transitional cumulitic sequences, from the “basal” to the “upper” part: SSB, SUM, SSG (+SS), and SM. These cumulitic sequences suffered enstatite to hornblende granulite and up to amphibolite facies metamorphism (T: 700º-900º), from the “lower” part (SSB) towards the “top” (SM), with (garnet) amphibolite and greenschist facies retrogressions. The BAC monociclic deformation is associated with the Brasiliano/Pan-African Cycle, ca. 0.77-0.79 Ga (U-Pb ages in zircon, monazite, and rutile). Around 1.25-1.30 occurred mafic-felsic(?) magmatism, initially anorogenic, probably in a rift environment related to the beginning

of the Brasiliano Orogeny. The so called Uruaçuano “Orogenic” Cycle is reinterpreted as a “Tectono-magmatic Event” of extensional nature, local character and with ages around 1.20-1.40 Ga. BAC zircon images show o nly two episodes of magmatic core generation (ca. 1.70-1.75 Ga and 1.25-1.30 Ga) and only one metamorphic episode, around 0.77-0.79 Ga. These ages are for the granulite, amphibolite and greenschist facies metamorphism for the crystals with magmatic nuclei from the main petrotectonic associations in BAC region. The BAC represents an exposed section of layered rocks emplaced into continental crust under low lithostatic pressure (<5 Kbars) and tectonic emplaced into upper levels by huge thrust faults that reached the lower crust-upper mantle interface. The BAC sequences are partially allochtonous due to thrusts and transcurrent faults in a regime of frontal and lateral displacements, over the Archean (?) granite-gneiss basement and the Neoproterozoic Araxá Group, in the Barro Alto region, Central Goiás, during the deformation associated to the Brasiliano Cycle, due to the collision of the São Francisco and Amazonian cratons. The SUM sequence may represent the BAC lowest zone, t ectonically imbricated and eroded between the SSB, SSG, and the SM. If so this makes possible the discovery of deeply buried chromite deposits, with a structural control by thrust faults. The general geological characteristics reflect a similar geological evolution for the Barro Alto, Niquelândia, and Cana Brava bodies. The PGE+Au patterns from the BAC could be related to layered, tholeitic-picritic, and intracratonic MUC, which suffered high-grade metamorphism under lower crust-upper mantle conditions and deformed under dutil to brittle conditions. The BAC may be divided into two units based on the PGE+Au, Ni, Co, Cu, and S tenors: an enriched noble metal unit, the SSB, near to S-saturation, with conditions to form a M.S.S. near to the “top”; and, a depleted unit represented by the SUM, SSG (+SS), and SM. Cumulus plagioclase reinforces the possible occurrence of PGE-sulfide deposits at the SSB “top”. The tectonic contacts between the SSB “top” and the SUM, SSG, and SM “basal” parts are suggested as a model for PGE occurrences. This model implies remobilization and ore formation into or close to shear zones, along the main thrust faults. The common Ru positive anomalies in BAC rocks suggest their PGE+Au-residual character. The PGE+Au tenors, platinum-group minerals and patterns from the Luanga Complex chromitites (Pará) are similar to those of layered intracratonic complexes and they are due to a CO2-rich reacting fluid phase deficiency, during post-magmatic processes, which by PPGE- leaching could modify the rock and mineral igneous geochemistry. Due to S-insaturation, on the course of magmatic crystallization, arsenides may have acted as the collectors. The large amount of PGM, specially sperrylites, native Pt and Pd in the gangue, among the cumulus chromite in the massive stratiform chromitites facilitate PGE-economic explotation from the Cr-ore. Chromites (s.l.) should be used as indicators of MUC modifications and as guides for PGE metalogenesis. Chromite cores in massive chromitites even under strong deformation and high-grade metamorphism show the MUC magmatic origin, petrological evolution, and tectonic setting. To interpret PGE+Au profiles and patterns from different MUC it is only possible with at least the knowledge of chromite geochemistry and petrology due to its more refractory character to post-magmatic transformations than the PGE/PGM. The 3D-group elements may be used as tools in MUC to get information about the original nature, igneous and metamorphic petrological evolution, and for metalogenesis. The PGE occurrences in Brazil related to MUC were divided into associations with: 1) oxide phases (Fe and Cr-spinels): a. chromitites: Luanga (Pará), Santa Maria da Vila Nova (Amapá), Pedra Branca (Ceará), Niquelândia, Abadiânia, Morro Feio, Cromínia e Mairipotaba (Goiás); Campo Formoso, Jacurici River Valley (Bahia); Petúnia, and Espinhaço (Serro region) and Abaeté(?) Districts (Minas Gerais); b. magnetitites: Rio Jacaré (Bahia); Piên (?, Paraná); c. banded iron formations: Ipitinga Hills (Pará); 2) sulfides (and/or arsenides and/or tellurides): Barro Alto, Niquelândia, and Americano do Brasil (Goiás); Fortaleza de Minas (Minas Gerais); Brasilândia d´Oeste (?, Rondônia); Ipiau, Sertâozinho, Pirulito, and Serrinha-Uauá region (Bahia); Canindé (Sergipe-Alagoas); Bodocó (Pernambuco); Onça Range (Pará). Most of the Brazilian MUC is Precambrian in age and suffered deformation, metamorphism and/or hydrothermalism in various degrees so the PGE-occurrences should be affected by post -magmatic process. It could occur modifications in noble metal tenors and primary patterns, with associated minor or major remobilizations, and under strong metamorphism/hydrothermalism and/or deformation it should have occurred preferential (PPGE+Au)-loss from the site of magmatic deposition. The metal noble metalogenesis in the Tocantins Province at least, and perhaps in the São Francisco Craton, is constrained by the evolution of the Brasiliano Neoproterozoic Cycle. Laterization processes in different MUC emphasize the importance, in areas like Amazonian region, of the post-magmatic alterations to the formation, and (re)concentration or dispersion of PGE mineralizations. These processes can induce changes on the typology and on the control of PGE deposits and contents making more difficult its research. In some MUC the high Pt and/or Au values associated to rocks with low PGE values and very low PPGE may be due to laterizaton processes of basic-ultrabasic rocks and associated mineralizations, this may be the case for some of the Pt and Au occurrences in the Morro Feio and in the Abadiânia region alpine-type bodies. The largest PGE+Au metallogenic potential taking in account the body nature and dimensions, even with the influences of polyphasic deformation and metamorphism, is related to the BAC and Niquelândia MUC in Goiás, Central Brazil. The PGE occurrences from the Espinhaço and Abaeté Districts (Minas Gerais) and Pedra Branca (Ceará) are very interesting from an economic point of view. The Luanga Complex chromitites (Carajás Province, Pará) have the major and richest economic PGE-potential, specially for Pt.

Szabó,G.A.J. 1996. Petrology of the metaultramafic suite of the Morro do Ferro Volcano-sedimentar y sequence in the Alpinópolis southern to western region, MG state (northern domain of the Campos Gerais Complex). PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 354pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1683 **1996** *Date of presentation:* 7/11/1996

Gergely Andres Julio Szabó *Advisor(s):* Candia,M.A.F.

Committee:

Subject of thesis: Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Valladares,C.S. 1996. Geologic evolution of Paraiba do Sul complex, in the central segment of Ribeira belt, based on geochemical and U-Pb geochronological studies. PhD Thesis; Institute of Earth Sciences,

University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1091 **1996** *Date of presentation:* 19/8/1996

Claudia Sayão Valladares *Advisor(s):* Figueiredo,M.C.H. Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Vieira,S.R.S.S. 1996. Study of metamorphic-metassomatic processes in Embu and Pilar complexes, Juquitiba block, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 210 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 166 **1996** *Date of presentation:* 17/12/1996

Silvia Regina Soares da Silva Vieira *Advisor(s):* Candia,M.A.F.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Weska,R.K. 1996. Geology of the Poxoréu diamond region and neighbour areas, Mato Grosso state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 219 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1039 **1996** *Date of presentation:*

Ricardo Kalikowski Weska *Advisor(s):* Svisero,D.P.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: MT *1/1,000,000 sheet:* SD21 *Centroid of the area:* ' - 'W

Abstract

Alves,F.R. 1997. Contribution to the geological and petrological knowledge of the alkaline rocks of the Ilha dos Búzios island, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1816 **1997** *Date of presentation:* 4/8/1997

Francisco Rubens Alves *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Barbosa,C.F. 1997. Paleoenvironmental reconstitution of lagoonal facies based in foraminifera: the sea level in the Upper Quaternary in the Cabo Frio region, RJ state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1931 **1997** *Date of presentation:* 8/8/1997

Catia Fernandes Barbosa *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Palaeontology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Barbosa,L.M. 1997. Coastal dune fields associated to São Francisco river mouth (SE/AL states): Origin and environmental controls. PhD Thesis, Institute of Geosciences, University of Bahia, pg.

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 253 **1997** *Date of presentation:*

Liana Maria Barbosa *Advisor(s):*

Committee:

Subject of thesis:

State: SE *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

AL

Abstract

Expressive coastal dunefields occur on the Quaternary strandplain associated with the São Francisco river mouth. There, two different generation of dunes are identified, one inactive already fixed by vegetation, and another active, bordering the recent shoreline and transgressing over the inactive dunefield.

The integration of interpretation of aerial photographs, overflights, and fieldwork, allowed the identification of three morphological provinces in the active coastal dunefields. In the updrift side of the São Francisco river mouth, the provinces are: (a) sand-sheet with shrub coppice and shadow dunes; (b) isolated dunes of the barchan-transversal type up to 5 m high, and interdunes areas; and, (c) a 23 m high compound dune, with superimposed small dunes. The same provinces are recognized in the downdrift side of the river mouth, with two important exceptions: the barchan-transversal and compound dune are replaced, respectively, by (i) zibar-type dune up to 5 m high, and (ii) a 19 m high precipitation dune, which is associated with numerous blow-outs.

In the updrift side of São Francisco river mouth, the mean grain size varies from 1,9 to 3,3 (. Here, very fine sand dominate in 51 % of samples. In the downdrift side, the mean grain size varies from 1,6 to 2,6 (. These data show the tendency of the grains to be coarser on the beach sands in the downdrift side. In the São Francisco strandplain the persistent longshore drift is oriented from NE through SW. Because of the groin effect associated with the river mouth, the longshore drift sediments are retained in the updrift side. The riverborne sediment nourishes the downdrift side. These observation would explain the difference in grain size distribution in the both sides of river mouth.

The prevailing eastern winds which dominate from August through January favour the development of the aeolian bedforms and the migration of dunes. The shoreline orientation almost transversal to the winds and the great supply of fine grain sediments contribute to the formation of barchan-transversal types and composed dunes in the updrift side. On the other hand, in the downdrift side the shoreline orientation almost parallel to the prevailing winds and the coarser grain size in the beach shoreface, favour the formation of zibar-type and precipitation dunes with numerous blow-outs.

Field and aerial photograph observations define an average rate of dune migration for a 2-m high dune around 20-24 m per year. Therefore, it takes aproximately 100-200 years for an isolated dune to migrate from the shoreline, and reach to the more internal

compound dunes. These measurements suggest that the aeolian sedimentation is a relatively recent phenomenon at the Quaternary strandplain of the São Francisco river.

Barreto,A.M.F. 1997. Palaeoenvironmental interpretation of the fixed system of dunes of the middle São Francisco river, Bahia state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,174 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1633 **1997** *Date of presentation:* 29/1/1997

Alcina Magnolia Franca Barreto *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Sedimentary Geology

State: BA *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Braga,A.C.O. 1997. Geoelectric methods applied to the geologic and geotechnicque characterization - Rio Claro and Corumbataí formations, Município de Rio Claro-SP. PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA020

DataBase Ref.: 1802 **1997** *Date of presentation:* 15/7/1997

Antonio Celso de Oliveira Braga *Advisor(s):* Malagutti Filho,W.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Carvalho,A.S. 1997. Integration of Radar / Jers-1, TM / Landsat-5 and geophisical images for the geological mapping of the northeastern of Roraima territory, Brasil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D016

DataBase Ref.: 16 **1997** *Date of presentation:* 18/9/1997

Albertino de Souza Carvalho *Advisor(s):* Meneses,P.R.

Committee:
Fernando Pellon de Miranda - PETROBRÁS
Waldir Renato Paradella - INPE
Reinhardt Adolfo Fuck - IG/UnB
Augusto Cesar Bittencourt Pires - IG/UnB

Subject of thesis: Regional Geology

State: RR *1/1,000,000 sheet:* NA20 *Centroid of the area:* ' - 'W

Abstract

This work presents a detailed analysis of digital integration methodology using SAR/JERS-1, TM/LANDSAT-5 and aerogeophysical data for geological mapping in 1:100,000 scale in the southern portion of Guiana Shield, Roraima, Brazil. This type of digital processing technique has been used as a real tool for geological studies and is considered a potential tool for mineral exploration. Isolated and integrated analysis of SAR/JERS-1 and TM/LANDSAT-5 images with aerogeophysical data was applied to obtain geological information about this region.

Three sets of the original analysed data were submitted to different digital processing steps including geometric and radiometric correction, digital enhancements and spatial resampling before the integration phase. The SAR/JERS-1 data processing is characterized by speckle suppression filtering, geometric correction and contrast stretch. This investigation presents and emphasizes the first results of SAR/JERS-1 data evaluation of this orbital radar system., its instrumental and acquisition parameters and the importance of using SAR data. TM/LANDSAT-5 images were submitted to digital enhancement techniques that include linear contrast stretch, principal component transformation, decorrelation, direcional filtering and RGB color composites, before being merged with geophysical images. The original digital geophysical data were converted from vector to raster format, displayed as black and white images, resampled and enhanced by stretching.

The IHS/RGB Transformation technique was used to obtain the merged products for final geological interpretation. The integrated images provided more geological information than those derived from conventional methods of interpretation for isolated satellite images aiming at geological mapping. The best results were obtained for the integration of SAR/JERS-1 and TM/LANDSAT-5 with isolated gamma ray (Total Count, U, Th) channels. These products favored insights between terrain radiometric properties

and lithological units, rock types and also tectonical /structural patterns. The use of merged images and digital enhancements techniques allowed the definition of major physiographic-lithological units and structural lineaments. Additional geochemical and petrographic informations were compared to these results, adding new geological interpretation in agreement to recent field works.

The final map interpretation has improved the geological knowledge of the region and has shown that the applied integration technique can be successfully used for geological mapping purposes and is a potential tool for mineral exploration.

Carvalho,J.B. 1997. Petrology of the mantelic xenoliths from the Alto Paranaíba Province, Minas Gerais state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D021

DataBase Ref.: 21 **1997** *Date of presentation:* 19/12/1997

Jessica Beatriz Carvalho *Advisor(s):* Leonardos,O.H.

Committee:
Cesar Fonseca Ferreira Filho - IG/UnB
Jose Carlos Gaspar - IG/UnB
Luiz Augusto Bizzi - SOPEMI
Maria Angela F.Candia - IGc/USP

Subject of thesis: Prospection and Economic Geology

State: MG *1/1,000,000 sheet:* Sf23 *Centroid of the area:* ' - 'W

Abstract

Mantle xenoliths brought to the surface by intracontinental potassic volcanic rocks are the deepest and best preserved samples from the lithospheric continental mantle. Their chemical characterization provides information about the depth and thermal conditions of the mantle, as well as about the processes involved with modifications of these features during its temporal evolution. One of the most important consequences of this study is the evaluation of the diamond potential of a particular region.

Here we present textural and chemical data of about 80 mantle xenoliths collected from six different pipes from the Alto Paranaíba Igneous Province (APIP), southeastern Brazil. This province is particularly interesting for such a research because of the high complexity of its "kimberlitic", "lamproitic" and "kamafugitic" magmas, and the undefined origin of the diamond present in many alluvial deposits in the region. The xenoliths are normally small, and this research is focused in their textures and major element mineral chemistry of garnet, olivine, pyroxenes, phlogopite, amphibole, spinels and ilmenite. The main rock types observed are garnet peridotites, spinel peridotites sometimes with primary amphibole, two-phase harzburgite with Cr-Al enstatite (and chromite, phlogopite), igneous rocks equivalent to the MARID suite, and other metasomatism-related samples. Each rock type may be further subdivided into different chemical groups with particular genetic characteristics.

The continental lithospheric mantle beneath the Alto Paranaíba Igneous Province had a Cretacic geotherm equivalent to a surface caloric flux of 36mW/m2, and a depth of at least 190km. The Cretaceous thermal event responsible for the generation of the APIP magmas is related to a mantle plume imprint, which promoted strong perturbation of the previous thermal and chemical state of the mantle in a very short time before the xenoliths were brought to the surface. The processes involved with this perturbation are mainly: (a) heating around T > 1100-1300oC; (b) deformation, with formation of olivine neoblasts and pyroxene alteration; (c) increase of the fO2, from ~FMQ to FMQ+2 or +3. Other chemical features related to the same event are bulk rock aluminum depletion and increase in Fe-Ti-K, after garnet decomposition, pyroxene alteration and crystallization of phlogopite, potassium richterite, and eventually ilmenite. We have also observed a new substitution for the potassium richterite, with extensive solid-solution with cummingtonite under very high temperature. The thermal and metasomatic imprint is still responsible for local chromium mobilization under ultra-high temperature and fO2 conditions, and for the generation of MARID-related magmas and secondary fluids.

There is no systematic depth variation for the thermal and metasomatic alteration of the mantle peridotites. In similar depth intervals it is possible to observe both well preserved, coarse and cold peridotites, and very modified hot peridotites. The same chemical patterns is noted in both types of peridotites, although in the best preserved rocks the chemical alteration occurs in a submillimetric scale, while at least in a centimetric scale in the most modified rocks. We suggest as a likely mechanism the migration of a very hot metasomatic fluid along grain boundaries or channels through the lithospheric mantle.

The calculated original geotherm and the depth of the lithospheric mantle underlying the APIP region are characteristic of a normal cratonic mantle. However, the bulk rock composition of APIP peridotites in the garnet or spinel mantle facies is richer in basaltic elements than typical cratonic regions such as the Kaapvaal or Siberian Cratons. Its composition is more similar to particular regions like Australia and Tanzania. The chemical pattern for the Cretaceous mantle modification is similar to that from other cratonic regions, but we did not identified an inflection in the cratonic geotherm, or the depth where the rocks are homogeneously modified by the Cretaceous metasomatic imprint.

The APIP diamond potential is high, for the following reasons: (a) the magmas were generated in a cratonic mantle, despite the surface tectonic setting of a Upper Proterozoic mobile belt; (b) the lateral and vertically heterogeneous imprint of the Cretaceous metasomatic and thermal event must be related to diamond survival during this event; (c) some of the "kimberlitic" magmas were derived from the diamond mantle facies and the "diamond window" is present. We suggest that the diamond potencial is limited to the pipes in the western portion of the province or to the older intrusions, as well as to primitive magmas which were not submitted to fractional crystallization. The relative fertile chemical character of the APIP mantle inhibit the direct application of traditional prospective criteria based on the presence of a very depleted harzburgitic chemical signature, such as revealed by G10

garnets.

Castro,P.T.A. 1997. The conglomerates associated to the Bambuí Group in the southwestern portion of the São Francisco Craton: sedimentology, estratigraphy and tectonic implications. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

São Francisco Craton, São Francisco Supergroup, Bambui Group, Neoproterozoic, sedimentology, stratigraphy, fan delta system, foreland basin

Instituto de Geociências - Universidade de Brasília *Reference:* D020

DataBase Ref.: 20 **1997** *Date of presentation:* 5/12/1997

Paulo de Tarso Amorim de Castro *Advisor(s):* Alvarenga,C.J.S.

Committee: Roberto Ventura Santos - IG/UnB
Alexandre Uhlein - IGC/UFMG
Luiz Sérgio Amarante Simões - IGCE/UNESP

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

In the Southwest part of São Francisco Craton occur Neoproterozoic metasedimentary rocks of the Bambuí Group, the upper unit of the São Francisco Supergroup. Among these rocks, the Samburá Conglomerate outcrops as isolated patches nearby the external (eastern) region of the southernmost part of Brasília Fold and Thrust Belt. These outcrops extend from nearby Lagamar at the north to the Carmo do Rio Claro at the south, beyond Furnas Hydroelectric Dam.
From all-over this text, in order to simplifying the terminology, it was adopted the suppression of the prefix meta from the metasedimentary rock names.
Stratigraphic studies carried out on rocks from the Bambuí Group at the highest part of the São Francisco river, at east and west border of the Serra da Pimenta and at the surroundings of Cristais town reveal that they can form three different informal lithostratigraphic units. The lowest one, the unidade carbonática (carbonatic unit), is composed by dark gray to black limestones and dolomites that can be laminated, oolithic, calciruditic or, even, stromatolithic. This carbonatic unit rests unconformably over plutonic and high metamorphic rocks from the basement. Above this unit, the unidade clástica com predomínio de pelitos (clastic unit comprised mostly by pelites) is lying conformably. This lithoestratigraphic unit shows some sandstones and siltstones centimetre thick stratas. To the west, this unit laterally grades to more coarse grained siliciclastic unit, the unidade clástica com predomínio de psefitos (clastic unit comprised mostly by psefites), that is formed mainly by clast-suported conglomerates and, subordinately, by matrix-suported conglomerates, arcoses and pelites.
According to the formal lithoestratigraphy proposed for the region, these informal lithoestratigraphic units can be related to the Paraopeba Subgroup, and the psefitic unit may be partially related to the Samburá Formation. In the other hand, the conglomeratic rocks from the Lagoa Formosa and the Carmo do Paranaíba region, the informally so-called Lagoa Formosa unit, can not be correlated to the Paraopeba Subgroup, and seem to be located under these subgroup.
Sedimentological studies carried out on these rocks reveal that they were formed in different ways:
- the conglomerate rocks from unidade clástica com predomínio de psefitos were formed in fan delta systems that developed eastward due to erosion of Mesoproterozoic rocks of the Brasilia Belt;
- the unidade clástica com predomínio de pelitos rocks represent a muddy shelf system occasionally under effect of storm conditions;
- the rocks from unidade carbonática are formed in platform/ramp system that developed eastward from clastic input of fan-delta systems, at the west flank of the Sete Lagoas High.
In the studied region, there are no evidence of glacial conditions nor glacial influence over all the different depositional systems.
Stratigraphic, sedimentological and tectonic studies carried out on the rocks of the Bambuí Group at the southwest part of São Francisco Craton point to they were formed in fan delta, muddy shelf and platform systems that developed in a foreland basin. These foreland basin is due to the progressively and eastwardly emplacement of Brasília Fold and Thrust Belt with Mesoproterozoic rocks on the west border of the São Francisco Craton.

Chaves,M.L.S.C. 1997. Geology and mineralogy of diamond on tne Serra do Espinhaço range, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1887 **1997** *Date of presentation:* 5/8/1997

Mário Luiz de Sá Carneiro Chaves *Advisor(s):* Svisero,D.P. Karfunkel,J.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Chodur,N.L. 1997. Mineralogy and geology of the rubi and saphire deposits in the Barra Velha region, Santa Catarina state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2008 **1997** *Date of presentation:* 13/10/1997

Nélson Luíz Chodur *Advisor(s):* Svisero,D.P.

Committee:

Subject of thesis:

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Cunha,R.C.A. 1997. Risk evaluation of contaminated areas by desactivated industrial sources: A case study. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2244 **1997** *Date of presentation:*

Rodrigo César de Araújo Cunha *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Dantas,E.L. 1997. U-Pb and Sm-Nd geochronology of archaean and palaeoproterozoic terrains of the Caldas Brandão massif, NE Brasil. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 208 pg.

Crustal Evolution, Early Archean, Borborema Province

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GR016

DataBase Ref.: 931 **1997** *Date of presentation:* 15/8/1997

Elton Luiz Dantas *Advisor(s):* Hackspacker,P.C.

Committee:
- Wilson Teixeira - IGc/USP
- Miguel Ângelo Stipp Basei - IGc/USP
- Benjamim Bley de Brito Neves - IGc/USP
- Alfonso Schrank - IG/UNICAMP

Subject of thesis: Regional Geology

State: PB *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

The Caldas Brandão Massif (CBM) in the Borborema Province, NE Brazil, comprises the oldest crustal segment recognized at the South American Platform, and constitutes an important key to understand the correlation of the South American continent and the African continent during the West Gondwana assemblage. The CBM is characterized by different periods of continental crust generation and accretion during its evolutionary history. The litho-stratigraphic framework of the CBM is defined through U-Pb and Sm-Nd geochronology. It consists of an Archean nuclei that is surrounded by different Paleoproterozoic terranes. The presence of older sialic crust during Paleoarchean time is suggested by Nd isotopic signature (negative eNd (t) values) of the Bom Jesus unit rocks (> 3,4 Ga, U-Pb in zircons). The main trondhjemitic magmatic event occurred at CBM during the Mesoarchean period (ages ranging from 3,25 to 3,0 Ga). Reworked continental crust (Presidente Juscelino Complex) and juvenile crust generation (Brejinho Complex, positive eNd (t) values) characterize the lateral and vertical heterogeneity of Archean continental crust in this region. High pressure and temperature metamorphism as well as an increase of alkalinity in sienogranites represents the Neoarchean evolution in the area (Senador Elói de Souza and São José do Campestre unit). Two events define the accretionary and collisional orogenesis that developed during the Paleoproterozoic. The first is related to generation of juvenile continental crust (Serrinha-Pedro Velho terrane, 2,2 Ga , U-Pb in zircons) and another is associated with strong calc-alkaline magmatism derived from reworked Archean continental crust (Santa Cruz terrane). Both terranes are associated with mainly NW-oriented thrusting. The cratonization of this Paleoproterozoic belt occurred around 2,0-1,9 Ga ago (U-Pb in sphene and late leucogranites intrusives into the granitoids). The final configuration of the CBM, involving reorganization of small crustal blocks into a mosaic pattern, happend during the Brasiliano Orogeny. Strike slip shear zones delimit these crustal blocks. They are associated with granitic magmatism. Transpressional and transtensional systems developed during the Brasiliano Orogeny. They can be distinguished by their different isotopic systems.

Endo,I. 1997. Archaean and proterozoic tectonic regimes in the interior of Sanfranciscana plate: Quadrilátero Ferrífero and adjoining areas. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 243 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1217 **1997** *Date of presentation:* 24/11/1997

Issamu Endo *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Fernandes,A.J. 1997. Cenozoic tectonics in the middle portion of Rio Piracicaba basin and its application to hydrology. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 244pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1216 **1997** *Date of presentation:* 13/8/1997

Amélia João Fernandes *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Ferrari,J.A. 1997. Continental drift and palaeoclimatic succession: Simulation of lateritic landscapes evolution of South America and Africa. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 111 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1104 **1997** *Date of presentation:* 18/2/1997

José Antônio Ferrari *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Ferreira,C.J. 1997. Geochemistry and analysis of deformation of the Itaqui complex, SP state: Evolution of poli-intrusives calcalkaline granites. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.272

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1482 **1997** *Date of presentation:*

Cláudio José Ferreira *Advisor(s):* Wernick,E.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Ferreira,J.M. 1997. Seismicity and strain in Northeastern Brazil. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 126 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1508 **1997** *Date of presentation:* 19/5/1997

Joaquim Mendes Ferreira *Advisor(s):* Assumpção,M.S.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Frantz,J.C. 1997. Petrology and hydrothermalism of the tin granitoids from Rio Grande do Sul state. PhD

Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D014

DataBase Ref.: 14 **1997** *Date of presentation:* 18/9/1997

José Carlos Frantz *Advisor(s):* Botelho,N.F.

Committee: Jose Carlos Gaspar - IG/UnB
Márcio Martins Pimentel - IG/UnB
Alcides Nóbrega Sial - DG/UFPE
Jorge Silva Bettencourt - IGc/USP

Subject of thesis: Prospection and Economic Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The eastern part of the Dom Feliciano Belt is constituted by supracrustal rocks and granitic batholiths which emplacements were controlled by the tectonic evolution of the Belt. In this area the tin-bearing granitoids of the Cordilheira and Campinas intrusive suites are found.

The evolution of this Belt was determined by the action of a tangential tectonic phase and a transcurrent one. The tangential regime, defined by low angle planar and linear structures showing a W-NW tectonic transport, was responsible for crustal thickening and tectonic imbrications. It controlled the syn-kinematic injections of high-K calc-alkaline granite batholiths of the Arroio Solidão Intrusive Suite, around 800Ma. The transcurrent regime is defined by high angle deformation sets of planar and linear structures (mineral stretching) indicative of a N-NE tectonic transport, parallel to the elongation of the belt. The associated magmatism began with the 672Ma calc-alkaline granitoids of the Arroio Moinho Intrusive Suite which were followed by the 630-617Ma crustal melt granitoids of the Cordilheira Intrusive Suite. The transcurrent tectonics generated local structural transpositions and shear zones which are hundreds of meters width. At the end of this process an extensional regime was installed. During this transition, late- to post-kinematic calc-alkaline granites of the Campinas Intrusive Suite were intruded. The magmatism developed during the extensive regime is represented by the 585Ma post-transcurrence calc-alkaline granitoids of the Canguçu Intrusive Suite. Alkaline-metaluminous granitoids of the Encruzilhada Intrusive Suite and isolated bodies of peralkaline granitoids represent the final manifestations of the granite magmatism in this region.

The syn-tangential granitoids are high-K calc-alkaline and have similarities with those related to a continental collision regime. The syn- to post-transcurrence high-K calc-alkaline granitoids are similar to late- to post-orogenic injections of other orogenic belts. In this tectonic setting the muscovite-garnet granites of the Cordilheira Intrusive Suite also occur. The fractionation of FeO, TiO2, MgO, MnO and Na2O is pronounced in the syn-tangential granites of Arroio Solidão Intrusive Suite. In the syn- to post-transcurrence granitoids of the Arroio Moinho and Canguçu intrusive suites the fractionation of CaO, Na2O, MnO, and P2O5 is less intense. The Rb, Sr, Ba, and Zr concentrations are high in the granitoids from the eastern side of the Dom Feliciano Belt but they are different for each suite. The REE are strongly fractionated in the calc-alkaline granitoids, with CeN/YbN ratios around 15, similar to granites of the high-K calc-alkaline series. The main characteristics of the calc-alkaline magmatism can be related to the participation of a thick continental crust during its generation likewise granitic systems associated to continental collision. Their negative Nd values may reflect a magma source closely connected to the continental crust, with the igneous protoliths having relatively homogeneous composition as a consequence of the continental collision phase.

The peraluminous leucogranites of the Cordilheira Intrusive Suite have high silica contents and geochemical characteristics of crust derived rocks. The several bodies suggest different melt sources or accentuated fractionation in the source. The use of MgO as a differentiation index indicates the existence of two groups of rocks, the high MgO and the low MgO group. The high MgO group shows the highest values of Al2O3, TiO2, Na2O, Fe2O3/FeO, P2O5, Rb, Li, Zn, B, and Sn, and the lowest values of Sr, Ba, and Zr compared with the low MgO group. Both groups are, in general, poor in REE contents with low fractionation between light and heavy ones. The presence of muscovite, garnet and tourmaline in the more evolved granitoids of the Cordilheira Intrusive Suite is coherent with systems crystallized under medium to low water activity. The biotite-muscovite pair represents the earlier conditions of equilibrium crystallization in the syn-transcurrence granitoids. For the late-transcurrence granitoids there is a change to more aluminous compositions with muscovite, tourmaline and garnet gradually concentrating more Mg. The primary muscovite in equilibrium with the biotite has low Mg/Mg+Fe and Si but high Fetot, Al, and Na. The garnet shows high molar relations of almandine and spessartite with Ca- and Mn-rich cores in a normal magmatic zoning.

The late- to post-kinematic injections of the Campinas Intrusive Suite are characterized by the presence of xenoliths and microxenoliths from the wall rocks, including tourmalinites and greisens. These xenoliths change the composition of the granitoids through the assimilation of minerals like plagioclase, biotite, quartz, tourmaline and muscovite, particularly, in the apical zones. The narrow chilled margin represents the igneous original composition. Hydrothermal alteration and Sn mineralization are restricted to zones with significant quantities of xenoliths and microxenoliths. High values of TiO2, FeO, CaO, P2O5, MnO, Y, Nb, Ni, and REE, and strong fractionation of MgO, Zr, Sr, and Cu are common in the chilled margin. The zones with xenoliths have higher values of Al2O3, Na2O, Sr, Cs, and Ga, with enrichment in B and Sn. Therefore, the general composition of the Campinas Intrusive Suite granitoids suggests an evolution from an original high-K metaluminous calc-alkaline magma with a strong incorporation/assimilation of continental material, represented by the xenoliths. The relationships between Nb, Y, and Rb in the chilled margin indicate that the original Campinas magmatism is lower in Rb and higher in Nb and Y than the composition of the xenoliths bearing rocks attest. The LIL, HFS and REE contents reveal that the chilled margin has a more alkaline character than the zones containing xenoliths. The general tendency and the values for these elements are suggesting continental lithospheric mantle or fertile mantle involving sub-continental lithosphere as source, with incorporation/assimilation of continental material. The original biotite of these granitoids suggests equilibrium crystallization conditions with the liquid phase under homogeneous

temperatures. The amphiboles from the chilled margin indicate medium to high O2 crystallization conditions. The O2 data and the presence of primary titanite are not compatible with the high FeO/Fe2O3 values for the total rock. This fact may be a consequence of the incorporation of country-rocks (xenoliths) and their fluids by the granitoids. The secondary titanite build over the xenolith's biotite is richer in Sn and F than the magmatic one. This (crustal contamination) might be one of the Sn incorporation mechanism to the magmatic and hydrothermal systems of the Campinas Intrusive Suite.

The hydrothermal alteration and the Sn-mineralization are associated to the Cordilheira and Campinas intrusive suites. The granitoids of the Cordilheira Intrusive Suite generated a pervasive hydrothermal alteration constituted by micaceous and tourmalinized zones which can be best seen in the outcrops of the Cerro Branco Mine. The biotite granites of the Campinas Intrusive Suite developed micaceous and clayed hydrothermal alteration zones in the apical areas of the intrusions and Campinas Mine is the one that best represents the mineralization and the hydrothermal alteration of the granitoids of this suite. Both hydrothermal associations are accompanied by quartz veins and greisen bodies with cassiterite. The Tabuleiro Mine represents a intermediary situation between the two previous ones, with one part of the association developed on a roof pendant of the Cordilheira Intrusive Suite and the remaining part developed on the apical zone of the Tabuleiro Granite of the Campinas Intrusive Suite.

The muscovite associated to the greisen bodies and to the micaceous zones generated by granitoids of both suites occur as two polytypes. The most frequent polytype 2M1, represents mica stabilized during the hydrothermal alteration and it is richer in Al and poorer in Ti and Fe. The polytype 3T is represented by the white mica formed over biotite and it is always higher in Ti. Ti is the best element to discriminate the greisen micas of the two suites. In the alteration zones developed on the Cordilheira Intrusive Suite granites, all the associations are lower Ti compared to those of the Campinas Intrusive Suite. The Ti values lead to the conclusion that there is a strong connection between the hydrothermal paragenesis composition and the protolith.

The hydrothermal tourmaline developed in the Cerro Branco Mine is poorer in Ti, Fe, Mn, and Ca, but richer in Si, Mg, and Na compared to that from the Campinas Mine. The Tabuleiro Mine tourmaline has an intermediate composition. The tourmaline shows a reverse zoning on the roof pendant area of the Tabuleiro Mine and on the contact zone in the Campinas Mine indicating re-equilibration over a pre-existent one from Cordilheira Intrusive Suite.

The cassiterite found in the Cerro Branco Mine is homogeneous and has an uniform regular zoning. Fe, Ta, and Nb have a compatible behavior along the crystallization. The Ti has irregular variations with high compositional dispersion and a weak reduction from its crystal cores towards the edges. The cassiterite in the Campinas Mine appears in two distinct ways: as crystals with abrupt compositional variations between two different zones and as small crystals with uniform regular zoning. The first one has core zones compositionally similar to that from the Cerro Branco Mine. Their edges as well as the isolated grains display higher values of Sn and Ti, but smaller values of Ta e Fe. Compositional and textural features lead to the conclusion that part of the cassiterite of the Campinas Mine might have been incorporated as pre-existent crystals, and were later enclosed by a newly formed one, as a result of the Sn addition to the Campinas magmatism.

The analysis of fluid inclusions associated with the mineralized quartz veins indicate a mixture of aqueous and carbonic fluids. The core zones of quartz grains in the Cerro Branco Mine present exclusively aqueous inclusions with medium salinity, while in the inter-granular contacts and late fractures zones there is a tendency for Lwc and Lc inclusions. On the opposite, in the Campinas Mine, the core zones of quartz grains contain aqueous-carbonic and carbonic inclusions whereas the late fluids are aqueous. In the Tabuleiro Mine the fluid inclusions are aqueous, carbonic, and aqueous-carbonic either, and represent the best example of mixture between the different kinds of fluids. The Cerro Branco Mine fluids had not the same evolution compared with the Campinas and Tabuleiro ones, and, they represent different sources. The Campinas Mine fluids had a more restricted composition and higher temperature than the others. The fluid inclusion data revealed the action of, at least, three fluid types, which were responsible for the Sn-mineralization and the whole hydrothermal history of the region. The first has an aqueous composition of moderate salinity originated by the interaction between orthomagmatic and wall rock fluids during the hydrothermal processes related to the emplacement of the Cordilheira Intrusive Suite granitoids. The second and the third types of fluids are carbonic and aqueous-carbonic of low salinity related to the hydrothermal alteration processes of the Campinas Intrusive Suite. They have been originated due to the interaction of wall rocks and the fluids mixture. Thus, the hydrothermal systems and the mineralization may have resulted from the circulation of aqueous fluid with moderate salinity in the granitoids of the Cordilheira Intrusive Suite and from a mixture process between an aqueous and CO2-rich one resulting from the emplacement of the Campinas Intrusive Suite granitoids. This mixture process was responsible for the formation of the highest ore grade deposits in the area.

Galembeck,T.M.B. 1997. The Itu multiple, centered and plurisserial complex, SP state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.374

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1486 **1997** *Date of presentation:*

Tamar Milca Bortolozzo Galembeck *Advisor(s):* Wernick,E.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Giusti,D.A. 1997. Quantification of geoenvironmental parameters of the Paranagua municpality, PR state. PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA019

DataBase Ref.: 1801 **1997** *Date of presentation:* 11/4/1997

Donizeti Antonio Giusti *Advisor(s):*

Committee:

Subject of thesis: Geosciences and Environment

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Godoy,H. 1997. Identification and geotechnical classification of lato-soils in São Paulo state using MCT tablets. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 132 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1381 **1997** *Date of presentation:* 9/5/1997

Helder de Godoy *Advisor(s):* Carvalho,A.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Guimarães,E.M. 1997. Origin and diagenesis of phyllosilicates - with emphasis on its characterization - from Paranoá and Bambuí groups, Bezerra-Cabeceiras region, Goias state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

provenance; diagenesis; phyllossilicates - clay minerals; Paranoá and Bambuí groups; sedimentation environments; stromatolites

Instituto de Geociências - Universidade de Brasília *Reference:* D017

DataBase Ref.: 17 **1997** *Date of presentation:* 17/10/1997

Edi Mendes Guimarães *Advisor(s):* Dardenne,M.A.

Committee: Carlos José Souza de Alvarenga - IG/UnB
Nilson Francisquini Botelho - IG/UnB
Henri Simon Jean Benoit DuPont - IGC/UFMG
Daisy Barbosa Alves - CENPES/Petro

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The three most extensive proterozoic sedimentary sequences in Central Brazil - Paranoá and Bambuí groups and Jequitaí Formation - are in contact with each other in the Bezerra - Cabeceiras region. This region is located on the limite between the São Francisco Craton at East and the Brasília fold belt to the West.
Sedimentological, petrographic and chemical studies of the Paranoá and Bambuí groups rocks have shown that the rocks of both units originated in different tectonic settings and source rocks were different.The Paranoá Group rocks are sandstones and mudstones, consisting of mature cratonic sediments, deposited slowly on a tectonic stable basin. The Bambuí Group terrigenous rocks are mineralogically and texturally immature sediments, which accumulated in a basin under the influence of collisional processes.
In these studies, characteristics of phyllosilicate minerals, determined by X-ray diffractometry and microprobe analysis, were emphasized.
The phyllosilicates in the Paranoá and Bambuí rocks are detrital micas and authigenic illite, chlorite and glauconite. The illites of both rock units show a phengitic composition and are well crystallized, with less than 10% of mixed-expandable layers. The illite structure and composition characterize the anchizone of diagenesis.
In the Paranoá Group rocks, illite is the dominant phyllosilicate and glauconites constitute different compositional glauconitic levels. The lack of chlorite in anchizonal rocks indicates that the detrital clay minerals were chemically mature such as kaolinite and/or illite.
Glauconites are authigenic minerals originated on the outer platform and their chemical diagenetic evolution is strongly affected by the rock composition.
In the Bambuí Group, the terrigenous rocks are rich in detrital micas and clay minerals. Micas (muscovite and biotite) are diagenetically alterated to chlorite and illite or have a phengitic composition. Composition and textures of Fe-chlorites indicate substitution of mafic minerals or that they represent the product of diagenetic evolution of trioctahedral smectites.
The lithostratigraphic studies have allowed the correlation with neighbouring regions, where the sedimentary sequences were to a great or lesser extent affected by the Brasiliana Orogeny.

Hachiro,J. 1997. The Irati subgroup (Neopermian) of the Paraná basin. PhD Thesis, Institute of

Geosciences - University of São Paulo, SP, Brazil, 196pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1688 **1997** *Date of presentation:* 7/2/1997

Jorge Hachiro *Advisor(s):* Coimbra,A.M.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Hassuda,S. 1997. Criteria for the managing of suspect or contaminated areas by solid residua: Case study in the metropolitan region of São Paulo. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2242 **1997** *Date of presentation:*

Seiju Hassuda *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Hutchison,M.T. 1997. Constitution of the deep transition zone and lower mantle shown by diamonds and their inclusions. PhD Thesis, University of Edinburgh - United Kingdom; pg

Diamond, Juina, Mato Grosso, Lower Mantle, Transition Zone, TAPP, perovskite, ferropericlase, inclusion

University of Edinburgh - United Kingdom *Reference:*

DataBase Ref.: 245 **1997** *Date of presentation:* 10/12/1997

Mark T. Hutchison *Advisor(s):*

Committee:

Subject of thesis: Geochemistry

State: MT *1/1,000,000 sheet:* SD21 *Centroid of the area:* ' - 'W

Abstract

Diamonds from the São Luiz alluvial deposit, Brazil, have been found to occlude syngenetic inclusions whose associations are evidence for formation in the mantle transition zone and lower mantle (Wilding, 1990; Harte and Harris, 1994). These diamonds represent the most extensive sample of deep mantle available to date, and have been subjected to detailed study. Five principal associations are identified.

One association involves orange garnet inclusions (with diopside and pyrrhotite) which contain a significant pyroxene component in solid-solution (majorite component) indicating formation in the transition zone (Akaogi and Akimoto, 1977). Trends of major element composition against Si content are most consistent with formation within the deepest regions of the transition zone where equilibrium with perovskite structured CaSiO3 (CaSi-Pvk) is envisaged (Irifune and Ringwood, 1987).

The remaining associations all involve MgO - FeO (fPer) and are also believed to have been in equilibrium with CaSiO3 composition inclusions. The association of fPer and (Mg,Fe)SiO3 (LM I) is understood to have formed at pressures of >24 GPa (Yagi et al., 1978), within the lower mantle, where (Mg,Fe)SiO3 adopts a perovskite structure (MgSi-Pvk) at pressures above the breakdown of (Mg,Fe)2SiO4 ringwoodite. Indeed, all the broadly pyroxene composition phases recovered in association with fPer are envisaged to have formed with perovskite structures. The LM I association also includes grains of broadly pyrope-almandine composition with high Fe3+ content (Fe3+/S Fe=~0.7) and very low Ca (<0.15 wt% CaO) and depleted rare earth element (REE) concentrations consistent with equilibrium with REE-phyllic CaSi-Pvk. This new mineral is shown to adopt a tetragonal I4(bar)-2d structure and is referred to provisionally as 'TAPP' (tetragonal almandine-pyrope phase). Given the propensity for MgSi-Pvk to adopt the entirety of the likely lower mantle Al2O3 budget within its structure at depths over 820 km (e.g. Kesson et al., 1995), and the stability of an Al2O3-involving association at depths of 720-820km (Irifune et al., 1996), TAPP is believed to form in aluminous bulk compositions in the depth region, 670-720km. A deeper association of fPer, aluminous and Fe3+-rich MgSi-Pvk and Al2O3 (ruby) from São Luiz diamonds forms a third (LM II) association.

The remaining two associations have characteristics indicative of formation in the deepest regions of the transition zone. An association (LM III) of low Ca-garnet with a small majoritic component, a previously unrecorded C2/c structured Al-Ca-Na-Fe3+-rich magnesium silicate (with 11, 5 and 6 wt% Al2O3, CaO and Na2O respectively) and fPer is reported. Trace element compositions of this garnet are found to be transitional between majoritic garnet (Harte, 1992) and TAPP. The final association, found in a single diamond involves a (Mg,Fe)2SiO4 composition inclusion, fPer and TAPP (UM/LM association), and is suggestive of formation within the range 460-720km depending on bulk composition (Jeanloz and Thompson, 1983). Also identified from São Luiz is the first recorded sapphire inclusion in diamond.

Change in cell parameters on release of two fPer inclusions (one from Guinea, West Africa) have been measured and interpreted on the basis of expected mantle geotherms and physical properties of compressibility and expansivity. Depths of formation of ~300km are inferred which, on correction due to the fractured and plastically deformed nature of the diamond hosts, extend to within the lower mantle. The very low Fe3+ content of fPer and the large Fe3+ content of aluminous MgSi-Pvk inclusions additionally support formation at high pressure (McCammon et al., 1995 and McCammon, 1997). Furthermore, the presence of significant quantities of magnesioferrite as inclusions in many fPer inclusions is consistent with the high Fe3+ content of associated phases and indicates relatively oxidised conditions of formation. Partitioning of Fe, Ni and Mg between fPer and MgSi-Pvk is indicative of high temperature (>2000K) within the lower mantle which suggests a steep thermal gradient at 670km and hence a thermal boundary layer between the upper and lower mantle. This observation, in addition to indications from associations of a compositional distinction between upper mantle and lower mantle, supports separate régimes of mantle convection.
The diamonds themselves show cathodoluminescence patterns indicative of a complex interplay of growth and resorption. Transition zone stones show a range in nitrogen content from <15 to 311ppm, and are highly aggregated indicating a long, high temperature history. Lower mantle stones are even more deficient in nitrogen (mostly Type II diamond), and show a very tight clustering of d13C composition around -5‰. Given ranges of up to 9‰ within single stones, precipitation under fluctuating conditions within a homogeneous reservoir is concluded. Values for d 15N of -6 and -5.2‰ have been obtained for an upper / lower mantle boundary sourced stone.
Thermoelastic modelling is applied to a variety of deep mantle phases and it is concluded that, with a thermal boundary between upper and lower mantle, there exists a narrow depth region just below 670km where many phases, (particularly diamond) are gravitationally stabilised. Diamond moving within the circulatory system of the lower mantle will, therefore, tend to pond in this region. Exhumation from the deep mantle is believed to have been relatively swift due to the lack of: re-equilibration of composite grains; complete exsolution of majoritic garnet; and recombination of magnesioferrite with fPer. A régime of transportation by upwelling mantle plume is envisaged. The dominance within thin cratonic areas amongst world-wide locations of deep mantle diamonds is also discussed. This observation is interpreted in terms of thin cratonic areas being suitably reduced to stabilise diamond at shallow depths, unlike in oceanic settings where diamond burns to form CO2. Additionally, the crust in thin cratonic regions is not suitable for formation of lithospheric diamond and so the deep population of stones is not outnumbered by shallow sourced diamonds.

Kaul,P.F.T. 1997. Magmatism of the Serra do Mar and Neighbouring Regions, Southern Brazil, at the end of the Neoproterozoic, and its Tectonic Constraints. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 291 pp

Magmatism;Geochemistry;Geochronology; Tectonic Constraints; Serra do Mar

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1031 **1997** *Date of presentation:* 29/9/1997

Pedro Francisco Teixeira Kaul *Advisor(s):* Cordani,U.G.

Committee:
Alberto Pio Fiori - DG/UFPR
Márcio Martins Pimentel - IG/UnB
Eberhard Wernick - IGCE/UNESP
Silvio Roberto Farias Vlach - IGc/USP

Subject of thesis: Geochemistry and Geotectonics

State: PR SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The Luís Alves Craton, in which is located the studied region (Serra do Mar and neighboring areas, SMA, Southern Brazil), was involved at the end of the Neoproterozoic in the agglutination of the Gondwana Supercontinent. Several ancient tectonic zones were reactivated, and additional ones were formed. The continental lithosphere was periodically submitted to horizontal stresses, and during a short period around 580 M.y. tensional faulting occurred, firstly along N2O-3OW trending system (corresponding to NE-SW distension), and later along N5O-6OE (corresponding to NW-SE distension). Such tensional fault zones were the sites of the emplacement of several granitic complexes, volcanic rocks associated with graben-type structures, and acid dyke swarms. The granitic complexes are the principal subject of this study (namely Agudos, Morro Redondo, Anhangava, Graciosa, Marumbi, Mandira, Guaraú, Corupá, Alto Turvo, Dona Francisca, Piraí, Serra Alta and Serra da Igreja). They are c omposed of four granitoid types: metaluminous type, weakly peraluminous type, peralkaline type and weakly peralkaline type. The metaluminous type granitoids largely predominane in the SMA. The volcanic rocks are commonly associated with sedimentary rocks in the graben-type structures. They are principally of acid composition, some are of intermediate as well as basic composition. 72 samples of granitoid rocks were chemically analysed for major, minor and rare earth elements. Several trends were indicated in variation diagrams, assembling samples of only one or more granitoid types. In the evolution of these trends, Al2O3, CaO, Fe2O3, MgO and TiO2 decrease while SiO2 increases. Na2O and K2O do not present well defined trends. Y, Rb and Nb are incompatible and Ba and Sr are compatible as commonly occurs. In these diagrams, these elements have frequentely suggested magmatic evolution of the granitoids by fractional crystallization, as well as by partial melting (in at least one case). In those cases (fractional crystallization), major mineral phases to fractionate were feldspars and one or more mafic minerals, with accessory phases acting in the final stage of the magmatic process.

Sr and Nd isotopes indicate the participation of early different materials in the parental magmas of the granitoid rocks. Our preferred interpretation is a mixing by assimilation, within the magmatic chambers, of juvenile mantelic magmas with preexisting crustal rocks. The radiometric data available for magmatic rocks of the SMA (including 50 new Rb-Sr determinations) are not

completely conclusive, due to the lack of adequate precision of the methods involved (Rb-Sr, K-Ar, U-Pb, Sm-Nd). However, the concordance of several age determinations close to 580±20 M.y., by different methods, seems to indicate that most magmatic events of the SMA occurred about then. Isotopic rejuvenation was record, probably associated to hydrothermalism, by some K-Ar and Rb-Sr results which yield age data around 500 M.y. The plutonic and volcanic rocks of the SMA are spatially and temporally associated. This, together with their chemical affinities, indicate that they are the products of the same tectonomagmatic process. Moreover, the granitic complexes, formed either just after the main continental collisions, or perhaps still during the last phases of agglutination of Gondwana, should not be described any longer as "anorogenic", but preferentially as post-collisional complexes, formed in a distensive within-plate environment.

Leal,A.B.M. 1997. Contribution to the geology and geochemistry of the Mesozoic basaltic magmatism of Roraima state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 137 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1063 **1997** *Date of presentation:* 2/10/1997

Ângela Beatriz de Menezes Leal *Advisor(s):* Girardi,V.A.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: RR *1/1,000,000 sheet:* NA20 *Centroid of the area:* ' - 'W

NB20

Abstract

Leite,P.R.B. 1997. Petrology, Geochemistry and Tectonic Evolution of the Alto Pajeú Terrane of the Monteiro Sheet (State of Paraíba). PhD Thesis, Departament of Geologiy, University Federal of Pernambuco, pp.

Alto Pajeú Terrane, Supracrustal rocks, granitoids, Petrology, geochemistry, Metamorphism

Departamento de Geologia - Universidade Federal de Pernambuco *Reference:*

DataBase Ref.: 611 **1997** *Date of presentation:* 16/10/1997

Paulo Roberto Bastos Leite *Advisor(s):* Lima,E.S.

Committee:

Subject of thesis: Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The most recent models for the Borborema Province geotectonic evolution suggests that it represents a collage of tectonic-stratigraphic terrains, tectonically accreted and amalgamated during the Cariris Velhos and Brasiliano events. This dissertation proposes the study of supracrustal and granitoid rocks cropping out in, the Monteiro sheet area in Pernambuco State, by means of petrology, lithogeochemistry, mineral chemistry and geochronology, to better understanding the Alto Pajeú terrane from a metamorphic, tectonic environmental and magmatism age point of view. The Alto Pajeú terrane is composed, in the study area, by metasedimentary and metavolcanic-sedimentary sequences which rest upon a gneissic-migmatitic basement. Granitoids of different compositions and ages cut through the supracrustals and basement rocks. This latter is represented by orthogneisses with tonalitic-dioritic and granitic-granodioritic composition, besides diatexitic orthogneisses which constitute isolated bodies. The supracrustals are represented by two sequences, called in this study Irajaí and São Caetano Formations, respectively. The Irajaí Formation constitutes a metavolcanic-sedimentary sequence, represented by biotite-muscovite gneisses with intercalations of basic metavolcanics, metagabbros and subordinated para-amphibolites, calc-silicate rocks and metamorphosed limestones. The São Caetano Formation constitutes a metasedimentary sequence, composed of biotite gneisses with calc-silicate rocks, para-amphibolites and metamorphosed limestones. The granitoids occur in a great number as dikes, sheets and batholiths. Whole-rock of some granitoids indicathe that they are peraluminous, of the calc-alkaline series, emplaced in volcanic arc and syn-collision settings. Some granites present U-Pb ages in zircon indicate Brasiliano Cycle (650-500Ma) event in the Alto Pajeú terrane. A sample taken from the Tabira body presents upper intercept with a sub-conformable fraction, indicating an age of ± 970 Ma, which constitutes another record of the Cariris Velhos event in the Alto Pajeú terrane. Biotite presents an intermediate composition within annite-phlogopite series; garnet is chiefly almandine, and feldspar of the gneisses presents composition in the An24-An40 range, while in the amphibolites they vary from An30 to An70. White mica is muscovite and amphibole is hornblende. Metamorphism reached the conditions of amphibolite and high-amphibolite facies. Metamorphism temperature calculated from garnet-biotite and amphibole-plagioclase geothermometry is 600ºC for the Irajaí Formation gneisses and 680ºC for the São Caetano Formation gneisses. Pressures, calculated from plagioclase-garnet-Al2SiO5-quartz and quartz-muscovite-biotite-plagioclase-garnet geobarometry are around 6 kbar for the Irajaí Formation and 6.4-7.5 kbar for the São Caetano Formation. These results suggest that the supracrustal rocks have been deposited in a volcanic arc environment. The whole sequence has been deformed by a tangential and later transcurrent event, that reached amphibolite and high-amphibolite metamorphic grade, with temperatures over 600ºC. Two magmatic events took place in the region:at about 970 Ma (during the Cariris Velhos orogeny) represented by a peraluminous calc-alkaline granite, and between 600 and 500 Ma, with similar chemical characteristics.

Maniesi,V. 1997. Petrology of amphibolitic rocks of Adrianópolis, Campo Largo and Rio Branco do Sul regions/PR state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo,

Rio Claro, pg.215

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1483 **1997** *Date of presentation:*

Vanderlei Maniesi *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Mello,C.L. 1997. Cenozoic sedimentation and tectonics in the middle Vale do Rio Doce valley (MG, southeastern Brazil) and their implications on the evolution of a system of lakes. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2243 **1997** *Date of presentation:*

Cláudio Limeira Mello *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Moraes,R. 1997. Conditions and evolution of the metamorfism in the Barro Alto Complex and lithogeochemistry of the bimodal volcanism from the Juscelândia sequence, Goianésia, Goiás. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D015

DataBase Ref.: 15 **1997** *Date of presentation:* 12/9/1997

Renato de Moraes *Advisor(s):* Fuck,R.A.

Committee: Ariplinio Antonio Nilson - IG/UnB
Cesar Fonseca Ferreira Filho - IG/UnB
Asit Chouduri - IG/UNICAMP
Rudolph Allard Johannes Trouw - DG/UFRJ

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Oliveira,S.F. 1997. Palinology of the devonian sequence of the Paraná basin in Brasil, Paraguai and Uruguai : biochronoestratigraphic, palaeoenvironmental and paleogeographic implications. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2241 **1997** *Date of presentation:*

Sandra de Fátima Oliveira *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1529 **1997** *Date of presentation:* 30/1/1997

Alex Ubiratan Goossens Peloggia *Advisor(s):* Basei,M.A.S.

Committee:

Subject of thesis: Environmental Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Pereira,S.Y. 1997. Proposal of cartographic representation in the hydrolgeological evaluation aiming the study of planning and environment, example of the Campinas metropolitan region, SP state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,190 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1635 **1997** *Date of presentation:* 11/3/1997

Sueli Yoshinaga Pereira *Advisor(s):*

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Perrotta,M.M. 1997. Auriferous potential of a region in the Vale do Ribeira valley, São Paulo state, evaluated bymodelling of geological, geochemical, geophysical and remote sensing data in a geographic information system. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1827 **1997** *Date of presentation:* 25/3/1997

Monica Mazzini Perrotta *Advisor(s):* Campos Neto,M.C.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Pinese,J.P.P. 1997. Geochemistry, isotopic geology and petrological aspects of the precambrian mafic dikes of Lavras region (MG) state, southern portion of the São Francisco Craton. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 178 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1061 **1997** *Date of presentation:* 9/6/1997

José Paulo Peccinini Pinese *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Porcher,C.C. 1997. Relationships Between Metamorphism and Deformation in the Ribeira Belt: Três Rios and Santo Antônio de Pádua Region (RJ), Eastern Brazil. PhD Thesis, Curso de Pós-Graduação em Geociências, University Federal of Rio Grande do Sul, Brasil ; pp.

Ribeira Belt, Thermobarometry, transcurrent shear zone, Paraíba do Sul Shear Zone, Rio de Janeiro Geology, metamorphic petrology, granulites, high grade shear zone

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 1632 **1997** *Date of presentation:* 27/6/1997

Carla Cristina Porcher *Advisor(s):* Fernandes,L.A.D.

Committee: Leo Afraneo Hartmann - IG/UFRGS
Reinhardt Adolfo Fuck - IG/UnB
Yoceteru Hasui - IGc/USP

Subject of thesis: Geochemistry

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Results of a study about the metamorphic evolution of rocks from two selected areas within the Ribeira Belt in the Rio de Janeiro State, through the application of geothermobarometric methods integrated with structural analysis and microtectonics, has demonstrated that rocks of these regions were affected by two main metamorphic episodes of granulite facies. The first metamorphic episode, syntectonic to the main deformational event during which a flat-lying fabric with NW-transport direction attributed to colisional processes was formed, was developed under temperature conditions of c.850o C and pressures between 6 and 6.7 kbar in the southern area (county of Três Rios) and of 807o C to 877o C, in the north (Santo A.Pádua). The younger metamorphic episode, syntectonic to the deformation responsible for the development of the transcurrent Rio Paraíba do Sul shear zone, was developed under lower temperature and pressure conditions, of 715oC to 747oC and 4.5 kbar for the southern area, and of 734oC to 743oC and 5.2 kbar, for the northern area. There is no significant difference between temperatures and pressures obtained for these two areas in a distance of more than hundred-and-fifty quilometres along strike. This, if interpreted with the evidence indicating a significant temperature and pressure reduction between both these metamorphic events, demonstrate the need to reevaluate tectonic models that postulate differential thickening or uplift of crustal segments along the Ribeira Belt.

Rodrigues,L.C.R. 1997. Gold mineralization in archaean banded iron-formation of the Quadrilátero Ferrífero, Minas Gerais, Brazil - The Cuiabá mine. Ph.D. Thesis, Aachen University of Technology. Augustinus Verlag, Aachener Geowissenschaftliche Beiträge, Band 27, 264 p. (ISBN 3-86073-606-X)

Iron Quadrangle, gold in banded iron formations, metalogeny

Aachen University of Technology, Aachen, Alemanha *Reference:*

DataBase Ref.: 2003 **1997** *Date of presentation:* 12/12/1997

Luiz Cláudio Ribeiro Rodrigues *Advisor(s):*

Committee:

Subject of thesis: Mineralogy and Economic Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The Cuiabá Gold Deposit is located in the northern part of the Quadrilátero Ferrífero, Minas Gerais State, Brazil. The region constitutes an Archaean granite-greenstone terrane composed of a basement complex (ca. 3.2 Ga), the Rio das Velhas Supergroup greenstone sequence and related granitoids (3.0-2.7 Ga) which are overlain by the Proterozoic supracrustal sequences of the Minas (< 2.6-2.1 Ga) and of the Espinhaço (1.7 Ga) Supergroups.

The study area is sited in the Nova Lima Group, which forms the lower part of the Rio das Velhas Supergroup. The lithological succession of the mine area comprises, from bottom to top, lower mafic metavolcanics intercalated with carbonaceous metasediments, the gold-bearing Cuiabá-Banded Iron Formation (BIF), upper mafic metavolcanics and metavolcanoclastics and metasediments. The metamorphism reached the greenschist facies.

Tectonic structures of the deposit area are genetically related to three deformation phases (D1, D2, D3) which took place under crustal compression representing one progressive deformational event (En). This event, which occurred after the Minas Supergroup deposition, is responsible for the formation and development of folds, axial plane surfaces, mylonitic foliations, lineations, faults, shear zones and shear fractures. The D1 phase is responsible for the formation of the dominant structure of the deposit, a large-scale, closed, south-east

(30o-400) plunging tubular-sheath fold with a pervasive axial planar (S1=135 / 45), locally mylonitic foliation and a prominent stretching (mineral elongation) lineation (Lm1=116 / 34).

The dominant components of the unmineralized BIF are alternating millimeter-to-meter scale quartz-carbonate layers and chert layers. The distribution patterns of major and trace elements of the Cuiabá-BIF are analogous to other Archaean iron-formations.

The bulk of the economic-grade gold mineralization is related to six main ore shoots (ranging in thickness between 1 and 6 m) which are contained within the Cuiabá-BIF horizon. The BIF-hosted gold orebodies (> 4 ppm Au) represent sulfide-rich segments of the Cuiabá-BIF which grade laterally into non-economic mineralized or barren iron-formation. The ore ranges from dark to light colors and is, in places, marked by definite banding or by a massive appearence. Transitions from sulfide-rich to sulfide-poor BIF is indicated by decreasing sulfide abundances from 30-70 vol.% to less than 1 vol.%, and decreasing gold grades from over 60 ppm to values below the fire assay detection limit in sulfide-poor portions. Subordinate mineralization occurs related to disseminated sulfides and/or quartz veins in shear zones within metavolcanics and metasediments.

The deposit is „gold-only“ and shows a characteristic association of Au with Ag, As, Sb and low base-metal contents. Gold is fine-grained (up to 60 µm) and is generally associated with sulfide layers, occurring as inclusions, in fractures or along grain boundaries of pyrite, which is the predominant sulfide mineral (> 90 wt.%). Chemically, gold is characterized by an average fineness of 840 (Au/Ag= 1:6) and large fineness range (759-941).

The country rocks of the mineralized BIF show strong sericitization, carbonatization and chloritization. Textures observed on a microscopic- to mine-scale indicate that the mineralized Cuiabá-BIF is the result of sulfidation involving pervasive replacement of Fe-carbonates (siderite-ankerite) by Fe-sulfides. Microtextural studies (microfabrics) indicate that gold deposition occurred simultaneously with sulfide precipitation due to fluid-wallrock sulfidation reactions which induced instability of gold complexes, decreasing the sulfur activity. The close association of gold mineralization with sulfides suggests that reduced sulfur complexes were the predominant gold transport mechanism.

Gold mineralization at Cuiabá shows various features reported for Archaean gold-lode deposits including: (1) gold mineralization is associated with Fe-rich host lithologies; (2) the strong structural control of the gold orebodies, showing remarkable down-plunge continuity

(> 3000 m) relative to strike length and width (up to 20 m); (3) the epigenetic nature of the mineralization, with sulfidation as the major process of wall-rock alteration and directly associated with gold deposition; (4) the geochemical signature, with mineralization showing consistent metal associations (Au-Ag-As-Sb and low base metal) which is compatible with metamorphic fluids.

The ore textures and structures indicate an epigenetic, structurally-controlled, replacement-dominated mineralization during the D1 phase of the En-event. The oreshoots show a consistent down-plunge continuity parallel to the Lm1 stretching and L1 intersection lineations. Local remobilization of syn-D1 mineralization occurred during the D2 and D3 deformation phases.

Sgarbi,G.N.C. 1997. Paleogeography and sedimentology of the mesozoic rocks from western of Minas Gerais state: Paraná basin, high Paranaíba arc and Sanfranciscan basin. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D013

DataBase Ref.: 13 **1997** *Date of presentation:* 20/6/1997

Geraldo Norberto Chaves Sgarbi *Advisor(s):* Dardenne,M.A.

Committee: Carlos José Souza de Alvarenga - IG/UnB
José Eloi Guimarães Campos - IG/UnB
Kenitiro Suguio - IGc/USP
Joel Carneiro de Castro - IGCE/UNESP

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Climatic changes have been detected in all the geological records, from Precambrian to Cenozoic. Tillites and varvites in Gondwana are features of Proterozoic and Paleozoic ice ages. The Mesozoic, on the other hand, had a global warm climate, exhibiting generally high level sea and low thermal variation between the poles and the equator. The Mesozoic continental geologic records in Central and Southern part of the Gondwana are a consequence of this arid climate, and its sedimentary rocks are mainly red-beds sequences or others related to desert environments.

Relationship between the climate, geological records and paleogeographical aspects in the Mesozoic Central Gondwana are presented, focusing on the NNE border of the Paraná Basin and the Southern Sanfranciscana Basin. These Cretaceous basins show sequences of varied types -volcanic (tholeiitic and alkaline lavas) and sedimentary (epiclastic, eolian, lacustrine, alluvial fan and pluvial) - of environments, and exhibit ages ranging from Late-Jurassic/Early to Late Cretaceous.

The present thesis consists of a collection of published papers that describe several aspects of the studied area. In the Sanfranciscana Basin, the following fossiliferous contents present in lacustrine sediments of the Areado Group have shown: ostracoda faunula (Darwinula and Cypridea), ponlens (Transitoripollis crisopolensis and Afropollis) and fisches (celacants of the Mawzonia genus), considered as paleoclimatic and paleogeographic indicators of Early Cretaceous. In the Same basin, diagenetic aspects of sandstones of the Areado Group as cementation by silica, calcite and k-feldspar were discussed and they are also, paleoclimatic indicators of Early Cretaceous. General Aspects of the Mata da Corda Group of the Sanfranciscana Basin were also described.

The NNE border of the Paraná Basin was studied focusing the geochronological and field relations aspects of the São Bento Group (sandstones of the Botucatu Formation and basalts of the Serra Geral Formation). In the same basin, the Uberaba and Marília Formations were described, and sedimentological, fossiliferous and diagenetic aspects of these sediments were reported, showing paleoclimatic data of the Late Cretaceous.

The following correlation aspects between the two studied basins were reported:

a) Early Cretaceous : Age correlation between the Areado Group (Sanfranciscana Basin) and the São Bento Group (Paraná Basin);

b) Late Cretaceous: The epiclastic sediments of the Mata da Corda Group (Sanfranciscana Basin) were correlated with the Uberaba Formation (Bauru Group, Paraná Basin);

c) No chrono- and lithological evidences could be found between the Sanfranciscana Basin and the Maastrichtian Marília Formation of the Bauru Group, Paraná Basin.

The Alto do Paranaíba Arch occurs between these basins and forms an important paleogeographical feature in the studied area. This arch occurs as a strip of intensely deformed Precambrian rocks with a NW-SE tectonic trend, and is now preserved as a succession of thrust slices showing tectonic vergence toward the east. This structure is related to the emplacement of the Cretaceous basins in the studied region".

Silva,F.O. 1997. Geology and petrology of the Taquaral mafic-ultramafic Complex, Goiás state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D018

DataBase Ref.: 18 **1997** *Date of presentation:* 18/11/1997

Francisco Oliveira da Silva *Advisor(s):* Nilson,A.A.

Committee: Leo Afraneo Hartmann - IG/UFRGS

Vicente Antônio V. Girardi - IGc/USP
José Caruso Moresco Danni - IG/UnB
Cesar Fonseca Ferreira Filho - IG/UnB

Subject of thesis: Prospection and Economic Geology

State: GO *1/1,000,000 sheet:* Sd22 *Centroid of the area:* ' - 'W

Abstract

The Taquaral Mafic-Ultramafic Complex is located north of Goiânia in the state of Goiás. It consists of a cumulate sequence in tectonic contact with a granulite gneiss rock assemblage. The northwestern part of their complex was wrapped on a 1:50.000 scale. The rocks of the complex were sub-divided in four units: Marginal Gabbroic Unit, Peridotitic Unit, Main Pyroxenitic Unit and Main Gabbroic Unit. Gabbros from the Marginal Gabbroic Unit exhibit sparse staurolite grains. The Peridotitic Unit typically shows cumulus olivine and post-cumulus orthopyroxene megacrysts frequently containing olivine inclusions. Pyroxenite intercalation in this unit consist of cumulus clinopyroxene and orthopyroxene and post-cumulus space-filling plagioclase. The Pyroxenitic Unit contains feldspathic pyroxenite layers exhibiting clinopyroxene megacrysts with plagioclase exsolution lamellae. Gabbros from the Main Gabbroic Unit contain cumulus plagioclase and clinopyroxene and inter-cumulus ilmenite. Mafic xenoliths and mafic dykes occurring within the gneissic country-rocks appear to be unrelated to the Taquaral Complex.
The Taquaral Complex underwent strong tectonic deformation and granulite to amphybolite facies metamorphism. There deformation phases were identified: the first one is represented by relict folds in the country-rocks, the second phase is related to a period of regional thrusting with eastward mass movement and the third one corresponds to a ductile shear zone, open folds and crenulation.
Examination of whole rock major element distribution especially TiO2, Al2O3, FeOt and MnO and of trace elements (e.g. Cr, Ni) lead to the suggestion that the rocks of the Taquaral Complex were generated through fractional crystallization. These rocks are typically enriched in light REE (3,5 to 15 times the chondrite value) and are thus similar to REE patterns of Bushveld-type layered complexes and distinct from pattern of mantle residual peridotites. They also display a negative Eu anomaly. All country-rocks except for the calc-silicate rocks were originated from igneous protoliths.
Variation in the chemical composition of minerals, especially of clinopyroxene, is also the result of fractionation of the Taquaral parental magma. High Al2O3 content of orthopyroxene (4 to 6,5 weight %) and clinopyroxene (4 to 11 weight %) is a striking feature of the mineral chemistry. These high values are complemented by exsolution lamellae of plagioclase and associated magnetite host. The main substitution in pyroxenes is of Ca-thschermackite type with some contribution from the jadeite molecule. High Al2O3 contents in pyroxenes is similar to those found in pyroxenes from the Giles Complex (Australia), thought to have crystallized in lower crustal conditions.
The Taquaral Complex parental magma gad a tholleitic composition of FeO/ MgO ratio around 0.65 and high Ni and Cr contents. It crystallized according to the following crystallization order: olivine + Cr-aluminous spinel, orthopyroxene, clinopyroxene, apatite and Fe-Ti oxides.
Clinopyroxene AlVI-AlIV relations close to 0.7 are suggestive of crystallization of the Complex in intermediate to lower crust. Pressure estimated for crystallization of the Taquaral magma yielded approximately 9 kbar, corresponding to lower continental crust conditions.

Sousa,M.Z.A. 1997. Petrology and geocheminstry of the Ponta do Morro alkaline complex - MT state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 168 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1059 **1997** *Date of presentation:* 11/8/1997

Maria Zélia Aguiar de Sousa *Advisor(s):* Ruberti,E.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MT *1/1,000,000 sheet:* SE21 *Centroid of the area:* ' - 'W

Abstract

Souza,C.R.G. 1997. The coastal drift cells and the erosion at the São Paulo state beaches. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1879 **1997** *Date of presentation:* 28/5/1997

Célia Regina de Gouveia Souza *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Sedimentary Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Takiya,H. 1997. Study of the Neogenic-Quaternary sedimentation in São Paulo municipality: Characterization of the deposits and their implications to the urban geology. PhD Thesis, Institute of

Geosciences - University of São Paulo, SP, Brazil,152 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1634 **1997** *Date of presentation:* 5/3/1997

Harmi Takiya *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Sedimentary Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Tomazzoli,E.R. 1997. Geological and petrological aspects of the Morro Agudo de Goiás dykes swarm. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Dykes - Swarm - Petrology

Instituto de Geociências - Universidade de Brasília *Reference:* D019

DataBase Ref.: 19 **1997** *Date of presentation:* 20/11/1997

Edison R. Tomazzoli *Advisor(s):* Nilson,A.A.

Committee:
Hardy Jost - IG/UnB
Raul Minas Kuyumjian - IG/UnB
Ari Roisenberg - IG/UFRGS
Vicente Antônio V. Girardi - IGc/USP

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The dike swarm Morro Agudo de Goiás (approx. 10.000km² area) is located at midwest of the Goiás state, intrusive in the granitic and gneissic terraines of the Maciço Mediano de Goiás, situated north and southward of the Goiás and Crixás Greenstone belts, respectively.

The swarm is constituted dominantely by mafic and ultramafic dikes and secoundarily by ultramafic stocks. The dikes display variable thickness (since lesser than 1m to bigger than 80m), going on discontinuely ten of kilometres, interrupted and dislocated by faultings that exhibit several directions.

The dikes are positioned according four main orientations: a) N10° - 20°W; b) N40° - 50°W; c) N30° - 50°E; d) E-W. The stocks occur in the southern sector of the area, showing rounded or elliptical shape and average diameter of 5 to 6km.

Predominate in the mafic dikes the next lithotipes: basaltic andesite, basaltic metandesite, diabase, metadiabase, metagabbro and anphibolite. The ultramafic dykes are constituted preferentially by orthopiroxenite, websterite, serpentinite and talc-schist. Orthopiroxenite and serpentinite are the dominant lithotipes of the stocks.

The dikes and stocks were metamorphised variably, predominating the greenschist facies and anphibolite, besides of the local metamorphism that originated the typical paragenesis of the granulite facies.

In accordance with petrographic and lithogeochemical characteristics and the way of occurrence, the rocks were subdivided in five groups: Group I - andesite and basaltic metandesite dikes; Group II - diabase, metadiabase, metagabbro and anphibolite dikes; Group III - metadiabase dikes associated to ultramafic rocks; Group IV - ultramafic dikes; Group V - ultramafic stocks.

The ultramafic lithotipes, typical of the dikes and stocks, present dominantely cumulated nature, probably formed by the settlement of olivine, orthopiroxene and clinopiroxene cumulus, fractioned from a basaltic magma progenitor. The diabases more evolved represent the magmatic liquid fractioned in that minerals in different grades.

The metadiabases of the Group II are distinguished of the Group III because present differences in the Ti/Zr, P2O5/Zr e Y/Zr rates and ausence of Sr negative anomaly. The characteristics allowed to interpret these diabases provenient of a mantelic source richer than the Group III ones. Otherwise, the andesites and basaltic metandesites of the Group I display abundant ETRL and LIL contents. Possibly these lithotipes were originated from mantelic sources enriched priorly in these elements, different of the metadiabases of the Group II.

Considering that the dikes of the Groups I and II occur preferentially in the north sector of the swarm and the dikes and stocks of the Groups III, IV and V are concentrated in the southern sector, let in the origin of these distinte groups from two mantelic provinces, located north and southward, respectively. These are enriched and decreased in imcompatible elements.

Radiometric data K-Ar indicated ages around 2.400Ma to the dikes of the Group I, while isotopic data Sm-Nd revealed isochronical ages of 2.330,7 ± 101,4Ma to the mafic-ultramafic dikes of the Groups III and IV.

Almeida,S. 1998. Petrology of ultramafic rocks associated to Andrelândia group and its basement, in Liberdade, Arantina, Andrelândia, São Vicente de Minas and Carrancas region, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 194 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1200 **1998** *Date of presentation:* 18/11/1998

Soraya Almeida *Advisor(s):* Candia,M.A.F.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Amaro,V.E. 1998. Combined analisis of geological, geophysical and remote sensing data of the far northeastern sector of the Borborema province, Northeastern of Brazil, with emphasis on neoproterozoic ductil shearing zones. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 256 **1998** *Date of presentation:* 1/10/1998

Venerando Eustáquio Amaro *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present thesis presents a methodological contribution to the integration of geological, geophysical (gravimetrics and aeromagnetics) and remote sensing (Landsat 5-TM and X-Band airborne SAR) data in the improvement of reconnaissance and detailed geological mapping of the semi-arid Brazilian Northeast region. The results allowed the development of a hypothetical model related to the geodynamical evolution of the Borborema Province affected by a lithospheric-scale ductile shear zone system in transtensional style during the Neoproterozoic.
The extreme northeastern domain of the Borborema Province includes the São José do Campestre and Caldas Brandão massifs (SJCM-CBM), affected by a system of transtensional and extensional ductile shear zones with roots in the mantle during the Brasiliano/Pan-African orogeny. The SJCM-CBM are formed by gneissic-migmatitic rocks which denote remnants of accretionary collisional Paleoproterozoic orogens, representative of neoformed juvenile crust and reworking of Archean sialic protocrust, resulting in a penetrative tangential fabric to these massifs.
Directional filtering (Sobel, Prewitt, Kirsch and Laplacian filters) applied to Landsat 5-TM images, allowed the detection and enhancement of the lineament system associated with the geometric and kinematic framework of the ductile shear zones with a general NE and NW trends and D3 fabric (foliation and lineation). The organisation of these structures is associated with a mechanical conformity with shear zones developed under a transtensional and transpressional regimes respectively in the North (Seridó Belt) and Central (Zone Transversal Domain-ZTD) sectors of Borborema Province.
Reflectance spectrometry measurements on mineral and rock samples were diagnostic for the main lithologic components. They allowed the detection of subtle geochemical variation, mainly in the Fe, Ca, Mg, Al and OH contents, in rocks petrologically similar. Distinction of lithological units and enhancement of strain features was based in colour compositions of bands and ratio triplets, selected from the statistical comparative analysis of the albedo variations and the shape of spectral curves. The visual analysis of colour compositions obtained by digital image processing techniques (RGB, IHS, Principal Component Analysis, Band Ratios and HRGB) resulted in improvement of the geological maps for the area and mapping of new units.
Analysis of pressure-temperature (P-T) information resulted in the definition of metamorphic zoning and its relationship with the main ductile deformational elements and Brasiliano granites. The metamorphism climax reached the low pressure granulite facies and was accompanied by extensive migmatization along transtensional and transpressional shear zones affecting metapelitic belts and basement gneissic terrains. Based on the plagioclase-amphibole geothermometer and amphibole-Al geobarometer, the migmatized granulitic metapelites presented temperature variations in the range 781-811°C and pressures between 3.8-5.9 kbar. The mafic granulite bands presented variations between 799-823°C and 3.0-4.5 kbar. Using the orthopyroxene-clinopyroxene geothermometer, the mafic granulites presented a variation in the range 818-973°C. The plagioclase-amphibole and amphibole-Al methods resulted in a range from 713-835°C and 2.5-5.5 kbar for the Campina Grande Complex. The syn- to late-tectonic granitogenesis yielding an age of 555 ± 10 My, correlated with the 575 ± 25 My age for the high-T ductile shear zones (microprobe monazite dating by U-Pb method). Uplift and exposure of deeper crustal levels, promoting reworking of the high-T fabric under retrometamorphic conditions (T < 530°C), presented an age of 403 ± 38 My.
Filtering of magnetic and gravimetric data in the frequency and space-time domains enhanced the mass and susceptibility contrasts among different continental crust-lithospheric mantle levels, due to its different wavelengths. The fit among geophysical signatures and geological features is indicative for mantle rooting of the shear zones. Regional and residual geophysical anomalies reflect the D3 fabric framework. This situation is demonstrated by the ductile shear zones control on the geometry of crustal blocks with contrasting geological characteristics (geochemical and geochronological); in the emplacement of syn- to late-tectonic alkaline and subalkaline granitoids of mantle origin; in the granulite facies metamorphism and migmatization. These features indicate that the crustal structural framework of the SJCM-CBM is marked by Moho transposition and uplift of lithospheric mantle and/or mantle derived magmas following the transpressional and transtensional ductile shear zones. The proposed Neoproterozoic geodynamic evolution involves: (i) an accretionary episode under transcurrent/transform regime (ca. 850-600 My)

affecting allochthonous fragments (continental microplates) and juvenile continental crust (associated magmatic arcs) formed during early Brasiliano/Pan-African or older (ca. 950 ± 50 My observed in ZTD). This episode occured between the West African/São Luís; Congo/São Francisco and East Sahara cratons, interacting by oblique collision; (ii) intracontinental reworking by transcurrent shear zones, with the style of lateral block extrusion in a collisional regime of the Tibetan Plateau type (ca. 580 ± 30 My), after welding of older and juvenile continental plates and microplates.
Comparison among upper crust gravimetric anomalies, the swarm of topographic lineaments, morphotectonic features and field data is suggestive for reactivation of the Brasiliano shear zone system, probably by successive brittle regime episodes since cooling and uplift of late Brasiliano phases. In the Cainozoic these reactivated structures are associated with horsts and grabens which control the sedimentation in the Northeast Coastal Region.

Andrade,F.R.D. 1998. Geochemistry of the Barra do Itapirapuã carbonatite alteration system (PR/SP states). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.136

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1487 **1998** *Date of presentation:*

Fábio Ramos Dias de Andrade *Advisor(s):* Artur,A.C.

Committee:

Subject of thesis: Regional Geology

State: PR SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Andrade,T.C.Q. 1998. Production rate of radiogenic heating in the basement of Paraná basin. PhD Thesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo,112 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1505 **1998** *Date of presentation:* 17/12/1998

Telma Côrtes Quadros de Andrade *Advisor(s):*

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Araújo Filho,J.O. 1998. Structural Characteristics and Tectonic Evolution of the Pirineus Syntaxis, Central Brazil. PhD Thesis, University of Illinois,USA; p

Syntaxis, fold-thrust belts, Brasiliano orogeny, assembly of Gondwana, shear-zones

University of Illinois,USA *Reference:*

DataBase Ref.: 1874 **1998** *Date of presentation:* 8/12/1998

José Oswaldo de Araújo Filho *Advisor(s):* Marshak,S.

Committee:
Stephen Marshak - Univ_Illinois
Bruce Faulke - Univ_Illinois
Albert T. Hsu - Univ_Illinois
Thomas F. Anderson - Univ_Illinois

Subject of thesis: Tectonic and Structural Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Pirineus Syntaxis is a pronounced-to-the-foreland curve in the otherwise north-south trending strutural grain of the Brasilia Orogenic belt, along the western margin of the São Francisco craton in central Brazil. Deformation in the Brasília belt has been attributed broadly to the Neoproterozoic Brasiliano (=Pan-African) orogeny. My 1:50,000-scale mapping of 12,000 km2 encompassing the Pirineus syntaxis suggests that the curve represents the overlap of two distinct fold-thrust belts.The southern limb of syntaxis consists of an east-verging fold-thrust belt in which spoon-shaped thrust sheets, bordered by lateral ramps, are arrayed in a imbricate fan. These thrust sheets consist of continental-margin stata of Araxá, Canastra and Paranoá Groups. An east to west traverse across this belt passes through Barrovian-type metamorphic facies, from lower greenschist facies in the east to upper amphibolite in the west. Granulite-grade basement slices, derived from the Goiás Central Massif, border the belt at its western edge. The northern limb of the syntaxis consists of a southeast-verging fold-thrust belt. This belt consists of retrograded basement slices interleaved with basement-derived psammitic/pelitic schist. The Goianésia mafic/ultramafic massif borders this

belt to the north. Thrust faults parallel to those of the syntaxis's northern limb occur in the southern limb as well, where they cross-cut the east-verging structures of the southern limb. Because the two limbs of the Pirineus Syntaxis have different structural and metamorphic histories, and because structures from the northern limb cross-cut those of the southern limb, I conclude that the two limbs formed during separate, non-coaxial deformation events. This interpretation implies that the Brasilia belt itself form as a result of at least two non-coaxial episodes. These episodes may reflect sequential collision of microcontinents with the western margin of the São Francisco craton during the Neoproterozoic assembly of Gonswana. Subsequent to this history, the region was cut by NW and NE-strike slip faults, perhaps during a late phase of the Brasiliano, and finally by NS-strike Cretaceous dikes.

Bitencourt,A.L.V. 1998. Morphogenesis, quaternary and archaeaology in karstic environment: The site of Morro Furado, Serra do Ramalho (Bahia)- Brazil. PhD Thesis, University of Caen - France; pg

Morphology; Quarternary; Archaeology; Karst; Serra do Ramalho

Université de Caen, França *Reference:*

DataBase Ref.: 241 **1998** *Date of presentation:* 2/7/1998

Ana Luisa Vietti Bitencourt *Advisor(s):* Lautridou,J.P.

Committee:

Subject of thesis: Geomorphology

State: BA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This investigation presents a geomorphological, sedimentological and palaeoenvironmental study of the northwestern part of Serra do Ramalho. This consists of a limestone massif of Pre-Cambrian age on which important karstic landforms are developed. Geomorphological, structural, lithological and vegetational characterisation of the areas has been achieved by field investigation , air photographic interpretation and the analysis of Landsat TM imagery. The results of this investigation have enabled the presentation of maps of each of these elements. This region is divided into four morphological areas: the plateau underlain by Pre-Cambrian pelites and Cretaceous sandstones; the massif of exposed Pre-Cambrian limestones; the glacis whith colluvial deposits and read soils, and the valley floors. Three erosional surfaces have been identified. These surfaces have resulted from combined erosional and epeirogenic processes which have caused the removal of the pelitic and arenitic rocks overlying the Pre-Cambrian limestones, exhumation of the massif, its karstification and incision of the drainage system. Three stratigraphical units have been identified within infilling a rock shelter in the substantial Morro Furado canyon, incised into the Serra do Ramalho. The formation of these sediments is discussed. Radiocarbon dating has shown that the upper unit, which includes evidence for prehistoric occupation, is of Holocene age (8040-980 BP). The physico-chemical, mineralogical and palynological analyses has allowed the identification of the sedimentary characteristics and provenance of sediments. It has also indicate the contemporaneous climatic conditions : dry to very dry during the Pleistocene and less dry during the Holocene.

Boggiani,P.C. 1998. Stratigraphi analysis of the Corumbá (Neoproterozoóic) basin- Mato Grosso do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1881 **1998** *Date of presentation:* 19/1/1998

Paulo Cesar Boggiani *Advisor(s):* Coimbra,A.M.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Branco,F.S.R.T. 1998. Gondwanic tafoflore of the Triunfo member, Rio Bonito formation (EoPermian), in Figueira municipality, PR state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2246 **1998** *Date of presentation:*

Fresia Soledad Ricardi Torres Branco *Advisor(s):* Rösler,O.

Committee:

Subject of thesis: Palaeontology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Castellana,C.H. 1998. Age and origin of the Coronel João Sá pluton, Bahia, Brazil. PhD Thesis - University of Texas at Austin - USA; pp

University of Texas at Austin *Reference:*

DataBase Ref.: 1536 **1998** *Date of presentation:*

Christina Hansen Castellana *Advisor(s):* Long,L.E.

Committee:

Subject of thesis:

State: BA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The northeastern portion of Brazil was last reworked during the Pan African-Brasiliano-age (700 to 550 Ma) collision between the Congo-São Francisco Craton and the West African-São Luis Craton. This area comprises Archean and Paleoproterozoic cratonic blocks that are scattered within a network of Pan African-Brasiliano age metasedimentary fold belts.
Two possible interpretations of the tectonic evolution of NE Brazil have been forwarded. An intercratonic model states that NE Brazil and its African extension consist of a mosaic of terranes made of cratonic blocks, island arcs, and arc basins which were assembled during the Pan African-Brasiliano orogeny. An intracratonic model states that the fold belts originated as continental extensional basins that were later involved in the Pan African-Brasiliano collisional event. This study tests these models by examining the Brasiliano-age Coronel João Sá pluton that intrudes the Sergipano Fold Belt, a small segment of an ESE-WNW collision belt that wraps around the northern margin of the São Francisco and Congo Cratons.
The U-Pb zircon age of the pluton is 627 +/- 2 Ma with clear evidence of ca. 1760 Ma - 2240 Ma inheritance. This inheritance argues for a large continental component at the source of this pluton.
Initial Sr and Nd isotopic compositions at 627 Ma indicate that magma mixing had taken place. Trace element concentrations of the hypothetical endmembers rule out the involvement of a primitive (mantle or MORB) end-member as a contributing component. The Nd composition of this pluton may be accounted for by anatectic melting of available continental sources without the necessity of invoking a Brasiliano-age mantle or MORB component. Mixing of magmas derived from at least two continental crustal endmembers better explains the isotopic and trace element data. Petrographic and chemical evidence suggests that one source could have been dehydration melting of lower continental crustal amphibolite.
These data suggest anatexis of old continental crustal material, and support an intracratonic continental basin origin for the Sergipano Fold Belt.

Cavalcante,I.N. 1998. Hydrogeologic fundaments fora an integrated management of hydric resources in the Fortaleza metropolitan region, Ceará state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1998 **1998** *Date of presentation:* 13/4/1998

Itabaraci Nazareno Cavalcante *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* ' - 'W

Abstract

Citroni,S.B. 1998. Campo Alegre basin - SC state: Petrologic and stratigraphic aspects and geotectonic characterization. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 185 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1221 **1998** *Date of presentation:* 20/7/1998

Sérgio Brandolise Citroni *Advisor(s):* Basei,M.A.S.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Dani,N. 1998. Petrology of posmagmatic and meteoric alteration of alkaline rocks of Lages, SC - Brazil. PhD Thesis in cotutorship: Curso de Pós-Graduação em Geociências, Universidade Federal do Rio Grande do Sul, Brasil and Faculté des Sciences Fondamentales et Appliquées, Université de Poitiers, France; 228p.

Lages; Brazil; geochemistry; phonolite; geomorphology; bauxite; gibbsite; halloysite; nordstrandite; boehmite

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 1631 **1998** *Date of presentation:* 4/12/1998

Norberto Dani *Advisor(s):* Formoso,M.L.L. Decarreau,A.

Committee: Adolpho José Melfi - IGc/USP
Alain Baronnet - Univ_Marseille

Subject of thesis: Geosciences

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* 27 33 ' s - 50 13 ' W

Abstract

The specific objective of this work is to investigate the weathering process and genesis of bauxite deposits associated with alkaline rocks that outcrop in the region of Lages, Santa Catarina, South of Brazil. The model of bauxitization in Lages doesn't follow a classic way, because only some special substratum gathered the conditions to development of deposits, giving place to a typical process of selective bauxitization.
The Alkaline District of Lages is formed by isolated bodies of alkaline rocks, where dominate phonolites that belong to the feldspatic alkaline rocks group, in their majority without a bauxite profile. The reasons of this peculiar distribution of the deposits in the region was investigated in function of some external factors (climate, topography, geomorphology, erosion rate) and internal ones (composition of the parent rocks). The chemical and petrographic revision allowed to rearrange the feldspatic alkaline rocks group in south type and north type phonolites. In this last group is recognized and described the presence of a differentiated process of posmagmatic alteration. In some sections of the Alkaline District, the endogenetic alteration strongly modified the phonolite, preparing it for the subsequent supergenic alteration.
Consequently, among the factors normally considered in the bauxite genesis, it is important to stress in Lages the characteristics of the underlying rock. In this environment, the intensity of the endogenetic alteration was decisive in the formation of the deposits and this is one of the main causes of the concentrated distribution of bauxite in the north type phonolite.
It is proposed a review of the available data on regional and local geomorphology, as well as on the geological events responsible for the current landform modelization. This analysis, associated with a set of data obtained by the application of geochronology techniques, based in fission tracks of apatites separated from phonolites, demonstrate the difficulties of accept bauxite generation during the Early Tertiary. The results are specially consistent with the Late Tertiary as a probably age of this bauxite events, and using paleoclimatic curves, the Pliocene is considered as the most favorable period to the main development of the Lages bauxite. In this way, it is obtained a logical relationship between the brief available time for the bauxite formation and the high susceptibility to weathering of north type phonolites of Lages.
Additional difficulties were found in the study of the alteration of the alkaline rocks of Lages, and they are related to uncommon primary mineralogy and fine granulation of this substratum. The employment of selective sampling and a varied set of analytical methods were important to detail the secondary mineralogy and to establish mineral filiations.
In spite of the mineral complexity of the alkaline rocks, the products of meteoric alteration converge to a paragenese formed by a restricted group of secondary minerals, specially halloysite, aluminum, iron and titanium hydroxides and oxihydroxides. It is verified that the presence of gibbsite and halloysite, since the beginning of the alteration process, produce a buffering effect in the whole system.
The employment of a detailed study make possible the identification of phases with a low crystallinity, type Si-Al allophanes. They have a high reactivity and stay as intermediary phases between the primary minerals of felsic composition and the secondary ones as halloysite and aluminum compounds. Normally, the presence of allophanes is indicative of rocks with a high susceptibility to weathering. The existence of these poorly crystalline phases demonstrates the brevity of the bauxite event and enforces the Pliocene age of these deposits.
For the first time in Brazil is described the natural occurrence of the polymorph Al(OH)3, identified as nordstrandite. Along the work is inferred about the reasons of this speciation of aluminum compounds on this particular weathering profile. In the same way, the early nucleation of boehmite is in disagreement with the current models that explain the distribution of this phase in laterites around the world. Complementary it is investigated the reasons of the halloysite nucleation in these rocks, as well as the influence of the solution composition in the crystallinity and morphology of this phase.

Del Lama,E.A. 1998. Guaxupé granulitic terrains: Petrologic evolution of a segment of the low crust. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.188

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1485 **1998** *Date of presentation:*

Eliane Aparecida Del Lama *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Demetrio,J.G.A. 1998. Temperature profiles for the location of tubular wells in the brazilian northeastern crystalline: Research on technical feasibility and evaluation on equipments, materials and procedures. PhD Thesis, Departamento de Geologia, Universidade Federal de Pernambuco, pg.

Departamento de Geologia - Universidade Federal de Pernambuco *Reference:*

DataBase Ref.: 257 **1998** *Date of presentation:* 1/12/1998

José Geilson Alves Demetrio *Advisor(s):* Ellert,N.

Committee:

Subject of thesis: Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A poor water bearing Pre-cambrian basement outcrops on the major part of the Norteast Semi-arid Zone of Brazil, where water sortage is a permanent outcome. The prevalence of very high salt contents in its crystalline rocks reservoirs contributes to make this situation still worse. The installation of reverse osmosis desalting units is still incipient and so, those conditions keep affecting badly inhabitants, herds and crops as well.

Groundwater in crystalline rocks occurs in fracture zones. Water wells yields in these rocks usually range from 500l/h to values above 5000 l/h with average values about 1000 l/h, the later ones being found occasionally.

The possibilities of soil temperature profiles in the research of fracture zones were investigated, aiming primarily at the improvement of sucess scores in well positioning, which still remain today around 75%. The research work was also intended to get a better understanding a hard rock aquifers, with special interest on th variables concerned with the highest yields.

The design and development of reliable, strengthened and handy temperature probes took most of the time and effort in the research work. For this reason, no more than nine temperature profiles were run. This amount of experimental data, as small as it may appear at frist sight, brought nevertheless a great deal of new and significant information on the possibilities of the approach, pointing in addition new paths to be followed in the fortcoming steps.

Soil temperature profiles are expected to be in the near future one more tool, besides the ones already Known, to be used in the detailed research of water bearing fractures in hard rock territories of Northeast Brazil, aiming at the positionig of water wells. By now, the main procedure drawbacks are the small thickness and, in most case, the absence of soil, which barely leave room for the installation of the probes.

Duarte,B.P. 1998. Tectonic evolution of the orthogneisses of Juiz de Fora and Mantiqueira complexes in Juiz de Fora region, MG state: Geology, petrology and geochemistry. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 280 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1111 **1998** *Date of presentation:* 26/8/1998

Beatriz Paschoal Duarte *Advisor(s):* Campos Neto,M.C. Figueiredo,M.C.H.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Fernandes,L.A. 1998. Stratigraphy and geologic evolution of the oriental part of the Bauru basin (Ks, Brazil). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1884 **1998** *Date of presentation:* 6/7/1998

Luiz Alberto Fernandes *Advisor(s):* Coimbra,A.M.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Bauru Basin was formed in the Upper Cretaceous (Coniacian-Maastrichtian) as a result of the thermo-mechanical subsidence of the central-southern part of the South-American Platform. This inner continental basin spreads over an area ofapproximately 370,000 'km POT.2' and is filled by a sandy sequence with maximum thickness of 300 meters at present. Its substratum is constituted by volcanic rocks (mainly basalts) of the Serra Geral Fm. (ki) from which it is separated by aregional erosive surface. The area examined in this research corresponds to its eastern part of the basin (west of São Paulo, southwest of Minas Gerais, northwest of Paraná), with about 180,000 'km POT.2', and is located between the coordinates'18 GRAUS'S to '25 GRAUS'S and '47 GRAUS'W to '54 GRAUS'W. This research deals with the stratigraphy and sedimentary evolution of the Bauru Basin through analysis of the depositional systems, based on field data and mineralogical, petrographicand microchemical evaluation (optical microscopy, scanning electron microscopy with EDS, X-ray diffractometry of significant samples. Based on the distribution and interrelatons of facies associations a stratigraphic revision is proposed forthis part of the basin. In this area the neocretaceous sequence is now divided in two groups, partially contemporaneous: Caiuá Gr. (Rio Paraná, Goio Erê and Santo Anastácio formations) and Bauru Gr. (Uberaba, Vale do Rio do Peixe, Araçatuba, SãoJosé do Rio Preto, Presidente Prudente, and Marilia formations, with the Taiúva analcimites). Sedimentation in Bauru Basin occurred in two main phases: the first in an essentially desertic environment, the second with more water available, butstill under semi-arid conditions. The facies associations of the first depositional phase correspond, in lithostratigraphical terms, to the following deposits: sandsheets with low

dune fields, loess and wadi deposits (Vale do Rio do Peixe Fm.); dry sandsheets (Santo Anastácio Fm.); medium sized dunes and humid interdunes from peripheral zones of sand seas (Goio Erê Fm.); complex of large sized eolic dunes (draas), corresponding to the centralpart of an inland sand sea (Rio Paraná Fm.). The associations of the second phase correspond to: braided river system of low to medium sinousity (Uberaba Fm.); inland swamps (Araçatuba Fm.); distal parts of aluvial fans (Echaporã Mb.); braidedfluvial system, medium parts of alluvial fan (Ponte Alta and Serra da Galga members); braided sandy fluvial system (São José do Rio Preto Fm.); meandering fluvial system with fine sandy deposits of shallow channels (Presidente Prudente Fm.)

Fornari,A. 1998. Geology and metallogenesis of the Luís Alves craton meridional portion. PhD Thesis, Instituto de Geociências - Universidade de Campinas / SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:*

DataBase Ref.: 1716 **1998** *Date of presentation:* 27/11/1998

André Fornari *Advisor(s):* Schrank,A.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

In the Luis Alves Cráton, there are two litological groups. The first is composed of mafic-ltramafic associations, enderbites, and metasedimentary units that have undergone granulite facies metamorphism. The second group is made up of the Braço do Gavião Alkaline Suite, Pomerode Granitic Suite, and hornblendites dikes, postdating the granulite metamorphic event. The igneous sequences, that suffered high grade metamorphism, possess a bimodal composition: the maficultramafic association represents part of a layered complex which evolved by fractional crystallization of a tholeiitic magna, while the enderbitic association probably formed by partial melting of mafic rocks. In the study area three deformational events could be identified. The first event developed ductile shear zones, and is caracterized by a progressive deformation from granulite facies to anphibolite facies conditions, with a strike varying from N30°E to N40°W. The dip of foliation is variable with predominance to NW. The stretching mineral lineations dips 30° to subvertical, with a preferential azimuth of 310°. The second deformational event has left its mark in strips of two meters width, at the most. Its direction varies of E-W to N30°W with a plunge of 40°NW to subvertical. The third event is brittle in character, being represented by fault zones and fractures with preferential directions NNE and N-S. The temperature of the granulite metamorphism was estimated around 800 °C after the method of Berman (1988), and the pressure was estimated graphicaly at 5 to 6 kb, based on experimental curves from the literature. From the characteristics observed in the area, such as bimodal composition, crustal shortening and tectonic mixing, sediments transported to middle and lower crust, and wide prevalence of mafic enclaves, we suggest a combination of the hot spot and intro-continental subduction models to explain this diversity of characteristics. As in mafic-ultramafic complexes of the world, e.g. Bushveld, the magnetitites in the Santa Catarina Granulite Complex are mineralized in titanium and vanadium and are potential vanadium ores.

Gallo-da-Silva,V. 1998. Revision of the species of the Lepidotes agassiz, 1832 genus (Actinopterygii, semionotiformes) of the Mesozoic from Brazil, with comments on the filogenetic relationships of the Semionotidae family. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2249 **1998** *Date of presentation:*

Valéria Gallo-da-Silva *Advisor(s):* Rösler,O.

Committee:

Subject of thesis: Palaeontology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Imbernon,R.A.L. 1998. The iron gossans associated to Canoas (Pb-Zn-Ag), Adrianópolis (Pr) and O'Toole (Cu-Ni-EGP) deposits, Fortaleza de Minas (MG state): textural, mineralogical and geochemical characterization. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 120 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1108 **1998** *Date of presentation:* 23/4/1998

Rosely Aparecida Liguori Imbernon *Advisor(s):* Oliveira,S.M.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Lagoeiro,L.E. 1998. Mechanisms of deformation and preferred crystallographic orientation in tectonites of iron formations - Quadrilátero Ferrífero, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 160 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1220 **1998** *Date of presentation:* 20/8/1998

Leonardo Evangelista Lagoeiro *Advisor(s):* Egydio-Silva,M.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Leal,L.R.B. 1998. U/Pb (SHRIMP), 207Pb/206Pb, Rb/Sr, Sm/Nd and K/Ar geochronology of the granite-greenstone terrains - Gavião block: Implications on the archaean and proterozoic evolution of the São Francisco craton, Brazil. PhD Thesis, Institute of Geosciences, University of São Paulo, 178 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 286 **1998** *Date of presentation:* 23/10/1998

Luiz Rogério Bastos Leal *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

The Gavião Block (GB) in the northern portion of the São Francisco Craton - Northeast of Brazil, constitutes one of the oldest Archean fragments of the South American Platform Archean crust. GB underwent several events of juvenil accretion and reworking of continental crust along its evolutionary history, notably between the Archean and the Paleoproterozoic.

The set of information presented in this thesis, together with data from the literature, reveals that GB lithostratigraphic framework is mainly represented by three major geologic units: (i) granitic-gneissic-migmatitic terranes, corresponding to TTG plutonic associations (tonalites, trondhjemites and granodiorites) and Archean granites formed between 3.42 and 2.85 Ga; (ii) supracrustal sequences of greenstone belt type (e.g. Umburanas), evolved between the Archean and the Paleoproterozoic; (iii) Paleoproterozoic peraluminous to slightly metaluminous calc-alkaline granitoid rocks, intrusive in the TTG terranes and Archean greenstone belts, with ages varying between 2.0 and 1.9 Ga.

207Pb/206Pb isotopic analyses were carried out in two zircons populations from strongly migmatized TTG terranes found in the proximity of Brumado: the first population (7 crystals) is taken as representative of the crystallization period of the TTG terranes at 3300 ± 45 Ma; the second (2 crystals) represents the age of the first event of metamorphism/migmatization at 2910 ± 10 Ma. 207Pb/206Pb analyses in zircons from an outcrop of non-migmatized TTG in the area yielded a 3202 ± 15 Ma age (4 crystals), interpreted to be the crystallization period of the gneiss protolith.

Sm/Nd analyses on the TTG rocks of the Brumado region yielded TDM model ages varying between 3.26 and 3.36 Ga and e Nd(t) between -3.5 and +0.7. These data suggest the occurrence of juvenile accretions to the continental crust during the Archean, with differential involvement of crustal materials. The geochemical data of rare earth elements corresponding to the TTG terranes revealed moderate LRRE contents (LaN=83,5), low HREE contents (LaN=2,5) and a fairly fractionated pattern (La/Yb)N=34, besides lack of negative Eu anomaly, showing that these rocks have similar compositions to those TTG terranes of cratonic continents, as well as some Archean rocks from CSF (e.g. Sete Voltas, Boa Vista).

Chemical and isotopic [(Rb/Sr, Sm/Nd and 207Pb/206Pb(zircon)] analyses were carried out in samples from Archean granitoid plutons informally named Lagoa da Macambira and Malhada de Pedras, intrusive in the TTG terranes. The Lagoa da Macambira granitoid presents compositional pattern (SiO2, K2O, Al2O3, Rb/Sr, Th/U, Zr/Y) similar to the TTG terranes, differing from them in presenting positive Ta anomaly, negative Sr anomaly and more fractionated REE distribution pattern (La/Yb)N=48. The 207Pb/206Pb formation age of 3146 ± 25 Ma (5 zircon crystals). Sm/Nd analyses on Lagoa da Macambira granitoid yielded TDM model ages of 3.34 Ga and e Nd(t=3.15) = -1.5, indicating the involvement of primitive continental materials in the genesis of this granitoid. The Malhada de Pedras granitoid has a granodioritic composition and chemical nature (e.g. trace and rare earth composition) similar to Archean post-tectonic granitoids of another continents and differs from the TTG terranes and the Lagoa da Macambira granitoid in having higher values of K2O, Rb, Ba and lower Ca, Ta e Ce contents, besides higher LREE contents. A Rb/Sr whole rock isochron for the Malhada de Pedras granitoid yields ca. 2840 ± 134 Ma, interpreted as the emplacement age. On the other hand, initial 87Sr/86Sr ratio of 0.7061 ± 0,0005 and e Nd(t=2.85) = -5.1 show that this granitoid generated from recycling of continental protoliths with ages around 3.3 Ga, as pointed out by Sm/Nd TDM model age of 3.27 Ga.

The geochronological data indicate that GB had a major juvenile accretion period between 3.4 and 3.1 Ga. This accretionary process is marked by multiple intrusions of rocks from the TTG suite and medium- to high-K calc-alkaline granites. In regional scale, this plutonism is represented by episodes of juvenile crustal formation and/or crustal reworking, as evidenced by positive and negative e Nd(t) values. These processes resulted from the consolidation of an extensive continental platform ca. 3.1-3.0 Ga

ago.

In this Archean platform the Umburanas greenstone belt (UGB) was installed. U/Pb isotopic analyses by SHRIMP in detrital zircons from conglomeratic quartzites corresponding to the UGB lower unit yielded ages varying between 3335 and 3040 Ma. These ages represent contributions from different crustal materials to the UGB basin and point to a maximum sedimentation age of 3.0 Ga for this lower unit.

Additionally, 207Pb/206Pb isotopic determinations in zircons (8 crystals) from the felsic metavolcanic rocks corresponding to the UGB middle unit yielded 2744 ± 15 Ma, which represents the time of crystallization of these metavolcanic rocks. On the other hand, the Sm/Nd isotopic analyses for the mafic-ultramafic metavolcanic rocks of the lower unit and felsic rocks of the middle unit revealed crustal contamination processes during the UGB volcanism. This ratifies the ensialic character of this greenstone belf, in agreement with field relations. UGB was intruded by crustal calc-alkaline and alkaline granitoids dated at 2.6-2.5.

During the Paleoproterozoic, the TTG terranes of GB and Archean greenstone belts were targets for intense intrusive granite genesis. This magmatism is particularly represented by the peraluminous and metaluminous calc-alkaline granitoids from Rio do Paulo, Caculé, Espírito Santo, Iguatemi, Serra da Franga, Lagoa Grande-Lagoinha and Umburanas.

The geochronological data [Rb/Sr and 207Pb/206Pb(zircon)] obtained for the Rio do Paulo, Caculé, Espírito Santo and Iguatemi granitoids showed crystallization ages around 2.0 Ga, associated with the evolution of the Transamazônico cycle evolution. The Sr-Nd isotopic data (initial 87Sr/86Sr ratios in the 0.704-0.770 range and e Nd(t) = -6.1 to -13.4) are compatible with a crustal nature of these granitoids. Such involvement is also supported by the geological and geochemical data (e.g. LILE enrichment - K, Rb, Ba e REE) in relation to HFSE (Ti, Zr and Y), indicating that these rocks are products of recycling of the GB Archean continental crust, as also pointed by Sm/Nd model ages between of 2.6-3.5 Ga. Regarding tectonic setting, the geochronological, geochemical and isotopic data presented here, together with those available for other Transamazonic granitoids within GB, indicate that these plutons were formed during the collision between Gavião and Jequié crustal blocks.

Finally, the youngest ages present in GB rocks (ca. 1.2-0.45 Ga) represent the role played by tectonothermal events, which produced partial or total rejuvenation of the Rb/Sr and K/Ar isotopic systems during the Espinhaço and Brasiliano cycles. In particular, K/Ar ages illustrate the effect of younger regional cooling episodes related to the Brasiliano geotectonic cycle.

Lima Filho,M.F. 1998. Stratigraphic and structural analysis of Pernambuco basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 139 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1219 **1998** *Date of presentation:* 17/4/1998

Mário Ferreira de Lima Filho *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PE *1/1,000,000 sheet:* SC25 *Centroid of the area:* ' - 'W

Abstract

Machado,G.A.A. 1998. Esmerald deposits of Capoeirana and Belmont - MG state: geology, petrogenesis and metallogenesis. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,294 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1627 **1998** *Date of presentation:* 3/12/1998

Geysa Angelis Abreu Machado *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The esmerald mineralizations of the Capoeirana and Belmont area and pegamatic aquamarine occrurences were studied in the context of the regional Precambrian evolution. The area in question, in the extreme NE-Quadrilátero Ferrífero('IronQuadrangle'), is part of the SE-border of the São Francisco Craton (MG) in the transition zone to the Atlantic mobile belt. Its evolution comprises Archean stages represented by TTG grey gneisses and granite-greewnstone terrains andProterozoictectono-metamorphic overprintings of the Minas/ Espinhaço and Brasiliano cycles. The berylliferous mineralizations are due to Archean and Proterozoic processes. TTG gneisses, migmatizes and metagranitoids ate the oldest Archean rocks.They occuras relics in the Borrachudos Metagranitoids (GB) and Foliated Fluorite-bearing Metagranitoids (MGF) and also as mylonitic gneisses were they are in contact with the metavolcano-sedimentary Archean sequences (SVS). The TTG rocksarepolymetamorphic and experienced enrichments in alkalis (K, Rb) and other incompatible elements in the course of the Proterozoic orogenies. The SVS of Capoeirana and Belmont, an extension of the Rio das Velhas greenstonebelt, was disrupted andstrongly deformed during the main Proterozoic orogeny. It occurs in wedges beneath overthrusted granitic rocks in a zone of antithetic thrusts of a regional system of frontal imbrication; the SVS is overturned andsuffered complex refolding andthrust-related repetitions. The typical lithostratigraphic succession comprises, at the base, metaultramafic rocks of volcanic origin, amphibolites, talc-amphibole-chlorite schists (TACX),

chloritites (CLT) andchromitites. TACX and CLToriginated from protoliths that underwent premetamorphic chemical alterations. Metaultramafics have overall komatiitic characteristics with variable Cr and Zn due to chromise contents and types. They grade into phlogopitized/mineralized equivalents enriched in K, Al, Rb, Ba, Y and Be when involved in the regional deep-rooted crustal shear zones (ZC) that formed during the Archean orogeny at the end of the Rio das Velhas greenstonebeltcycle. Alkaline potassic hydrous fluids, rich in F and incompatible elements (Rb, Zr, Nb, Be, LREE, among others) due to degranitization/granulatization of the lower crust, infiltrated into the active ZC, transformed the TTG rocks into GBbysimultaneous processes of synmetamorphic mylonitization and hydrothermal-metasomatic fluid-rock interactions and phlogopitized/mineralized the metaultramafics of the SYS. The main, event of progressive regional metamorphism occurred during theMinas/Espinhaço orogeny in the Proterozoic. It transformed the GB into MGF of middle amphibolite facies and higher. This processs consisted essentially of mineralogical-textural changes and was isochemical with respect to the main elements.Smaller alterations however affected some of the incompatible trace elements (including LREE) and are consistent with the initial anatexis of the MGF. Geothermometric calculations considering intermediate pressure (P) gradients for paragenesesof stable minerals, like garnet-saturolite (metapelites) and garnet- amphinole (metabasic amphibolites), furnished maximum temperatures (T) of 600-670 and 600-630 degrees C, respectively. Additional indications from mineral zoning showed thehighest T of the metamorphic peak in the parageneses of the mineral-borders of late-syntectonic to post-tectonic growth. Retrometamorphic readjustments were indicated by border parageneses including less stable species, mainly biotites and bythe'two-feldspars' geothermometer (in GB and MGF). These furnished very low and largely variable T of 260-430 degrees C, indicating late-stage readjustments either of the main metamorphism itself during uplift and/or of the tectono-thermal processes of the Brasiliano cycle. The petro-metallogenesis of Be was also polycyclic and originated two main generations of mineralizations, including subtypes: (1) In the crustal shear zones the alkaline potassic fluids, richinincompatible elements, F and Be, also rich in Al due to the replacement of the TTG rock plagioclases (during GB-transformation), reacted with the metaultramafics of the SVS causing phlogopitization and emerald mineralizations of both theschisttypt (EX) and the polydeformed quartz-vein type (polydeformed EVQ) of Archean age. The mineralizing process is best described as hydrothermal-metasomatic metamorphism in an active shear zone, under middle greenschist to lower amphibolitefaciesconditions yet under fluid pressures that were variable and different from the solid and total pressures, as are typical for open systems. (2) The main Proterozoic metamorphism of late-syntectonic to post-tectonic thermal peak conditionsand ofhigher intensity in the Capoeirana region, produced there, by partial fusion of the MGF, little-deformed pegatoids and pegmatites commonly with aquamarine mineralizations; pegmatoids that intruded the metaultramafics of the SVS aremineralizedin emeralds (EVP-type). In Capoeirana there still occur little-deformed quartz veins mineralized with idiomorphic emeralds (little-deformed EVQ-type). Together they represent a Proterozoic event pf berylliferous mineralizations thatoccurred asa consequence of the initial anatexis of the MGF. Genetic relationship of the be berylliferous mineralizations (emeralds and aquamarines) with each other, with the GB and MGF, are indicated too by the trace element geochemistry, asfor instance,by the positive constant correlations of Y and 'sigma THREE', showing that the fluids were very similar in the two mineralizing cycles. This means that the second generation of berylliferous mineralizations was formed by reworking and remobilization of the fundamental chemical-mineralogical reservoir generated in the preceding cycle, without new contributions from external sources. The isotopic compositions 'delta'' 18 O' and 'delta' D of theesmeralds are well defined in the region of overlap of magmatic and metamorphic waters. Together with the REE data this suggest that the GB and the emerald mineralizations of the EX and polydeformed EVQ types formed jointly in associatedprocesses during the orogenesis of the Archean Rio das Velhas greenstone belt through the reactions of the deep crustal fluids with, respectively, large and small amounts of TTG and metaultramafic rocks. The very homogeneous and constantvaluesof 'delta'D of the channel fluids and of 'delta'18' of the crystalline structure of these esmeralds point to the fact that these variables may represent the systems most resistant to polymetamorphic/retrometamorphic alterations and maythuscharacterize the fluids of the first Archean mineralizing cycle. The later emerald generation of the little deformed EVP and EVQ types, related to the main Proterozoic metamorphism and initial anatexis of the MGF with little more variablevaluesof 'delta 18 O', confirms their origin through reworking/remobilization of the previous geochemical-isotopic system, without significant contributions of fluids from other sources

Mané,M.A. 1998. Application of geophysical methods (gammaspectrometric and well log) and TM/Landsat satellite images in the characterization of phosphate mineralized zones (case study : Irecê-Bahia state). PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 137 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1506 **1998** *Date of presentation:* 28/9/1998

Miguel Ângelo Mané *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Melo,O.O. 1998. Petrology and geochemistry of the gabbro-anortositic rocks and associated Fe-Ti mineralizations of Barro Vermelho, Custódia County, State of Pernambuco. PhD Thesis, Departament of Geologiy, University Federal of Pernambuco, pp.

Fe-Ti mineralizations, metamafic rocks, metagabbro, metatonalite, metaanortosite

Departamento de Geologia - Universidade Federal de Pernambuco *Reference:*

DataBase Ref.: 610 **1998** *Date of presentation:* 31/3/1998

Otaciel de Oliveira Melo *Advisor(s):* Beurlen,H.

Committee:

Subject of thesis: Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Barro Vermelho Fe-Ti occurrence is located at about 18km WSW of Custódia, State of Pernambuco, at the same structural and regional geophysical trend as the Fe-Ti ore bodies of Floresta (SW of the studied body) and Itatuba (NE of the Barro Vermelho). The main purpose of this work is to define the petrological nature of the mafic rocks in which the occurrence is associated. With this purpose, an area of about 50km2 was mapped in the vicinities of the ore body, at the 1:25,000 scale, during which a systematic sample collection was made. The geological mapping allowed the individualization of two distinct domains, ortho- and paraderived, to the south and north, respectively. The Fe-Ti orebody occurs in the orthoderived domain, as tabular, massif body of 1m width and 80m long. It is essentially composed intensely martitized magnetite and ilmenite, in a fine intergrowth. The orebody is concordant, interlayered in banded amphibolites and (meta)gabbro-anorthosites, although locally it occurs as apophysis crossing the host rocks. This set, ore body/mafic rocks, occurs as megaenclave in granitic to tonalitic orthogneisses, which constitute the majority of the orthoderived domain. Orebody-free banded amphibolite occurs as syn-plutonic dikes in the tonalitic orthogneisses, while gabbros and anorthosites occur as small xenoliths in the orthogneisses. The lithogeochemistry characteristics of the banded amphibolites and gabbro-anorthosites suggest that both are product of differentiation of a tholeiitic magma, by plagioclase fractionational crystallization, forming the gabbro-anortosites, while the amphibolites would have formed from the melt residue, in a magmatic arc of a continental margin. The Fe-Ti ore body could represent the final product of this differentiation process. The geochemical signatures, together with the plagioclase compostions, are similar to those for massif anorthositic complexes. However, Nd model age for the studied rocks indicates the boundary Archean/Lower Proterozoic, differing then from the Mesoproteroic Nd model age for other massif anorthositic complexes. Presence of garnet in large amounts in the mafic enclaves, sometimes together with ortopyroxene, suggest metamorphism in the granulito or amphibolite/granulite facies. The host orthogneisses are tonalitic and granitic in compositions, which form compositional banding. U-Pb isotopic data in zircons, indicate an age of 2.44 Ga for the tonalites, and of 2.2 Ga for the granites (compatible with the Transamazonian age for the syn-plutonic amphibolites), while Sm-Nd isotopic data point to Archean age for the source rock. In spite of these rocks are old and polideformed, making the using of discriminating diagrams recommended,. affinities of the tonalites with magmatic arc collisional granites and of the granites with syn-collisional intrusions are recorded. The rocks from the paraderived domain are sillimanite-cordierite-garnet-biotite gneisses, locally migmatized, with intercalations of calc-silicate and amphibolite rocks, derived from a metamorphosed pelitic/psamitic sequence in the amphibolite facies, medium-pressure. The contact of this domain with the older, orthoderived one, is tectonic.

Mestrinho,S.S.P. 1998. Study of geochemical behaviour of heavy metals in the sediments of the Rio Paraguaçu estuarine region - Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 158pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1107 **1998** *Date of presentation:* 22/6/1998

Suely Schuartz Pacheco Mestrinho *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis:

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Moura,M.A. 1998. The Matupá granitic massif and the Serrinha (MT) gold deposit: Petrology, hidrothermal alteration and e metallogeny. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Granite, gold, Mato Grosso, Hydrothermal alteration, metalogeny

Instituto de Geociências - Universidade de Brasília *Reference:* D024

DataBase Ref.: 24 **1998** *Date of presentation:* 11/12/1998

Márcia Abrahão Moura *Advisor(s):* Botelho,N.F.

Committee:
- Zara Gerhardt Lindenmayer - DG/UNISINOS
- Roberto Dall'Agnol - CG/UFPA
- Cristina Maria Wiedemann - IG/UnB
- Hardy Jost - IG/UnB

Subject of thesis: Mineralogy and Petrology

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Serrinha gold Deposit, northern Mato Grosso state (Brazil), is part of the Juruena-Teles Pires gold Province. The deposit is spatially and genetically related to the Matupá granitic Massif (1872 □ 12 Ma), part of the Ventuari-Tapajós geochronological Domain.

At the Serrinha Deposit, the Matupá Massif comprises a single biotite monzogranite, called Matupá Granite, which outcrops as

isotropic undeformed and little-fractured blocks. The Matupá Granite is subsolvus, medium to coarse grained, equigranular to porphyritic. Hornblende is very rare and magnetite, titanite, zircon, fluorapatite, allanite, monazite and ilmenite are accessory minerals. Comagmatic rhyolitic dikes and younger diabase dikes crosscut the granite.
The Matupá Granite is calc-alkaline, metaluminous to peraluminous, similar to I-type granites developed in orogenic terrains, specially volcanic arc and post-collisional settings. The biotite granite is characterized by 68-75 w.t.% SiO2, 13-14 w.t.% Al2O3, high MgO/TiO2 ratio (2.56), K2O/Na2O ratio higher than 1, 1-2 w.t.% Ca, high Ba and Sr, medium Zr and Rb, low Nb, Y, Ga, Zn, F, Sn, W, Cu, Mo, Ta, Cl and Li contents. □ETR = 250 ppm, La/Yb ratios □ 30 and Eu/Eu* ratio □ 0.35. The crystallization pressure of the Matupá Granite, based on hornblende geobaromether, was 3.3 to 4.5 Kb.
TDM values lie between 2.34 and 2.47 Ga and may represent the continental crust crystallizing age (□Nd(t) = -2.7 a -4.3), considering a unique source for the original granitic magma, but the hypothesis of mixing mantelic and crustal sources cannot be disregarded.
The Matupá Granite was submitted to a pervasive hydrothermal alteration at the Serrinha Deposit, beginning with an incipient hydrothermal alteration, followed by K-silicatic, sodic, chloritic, sericitic and pyritic alterations, with final carbonatization.
Considering Zr as having been immobile during the alteration, Al2O3 and TiO2 were less mobile while FeO, MnO, Fe2O3, CaO, MgO, K2O and Na2O were mobile, results compatible to the hydrothermal processes that took part in Serrinha.
Chlorite is a widespread secondary mineral at the deposit and comprises three different groups: group A, intermediary between clinochlore and chamosite; group B, clinochlore, and group C, chamosite with high manganese content (2 - 5.5 w.t.% MnO).
Three types of titanite were identified: magmatic (near 1.7 w.t.% Al2O3); hydrothermal titanite developed during the incipient hydrothermal alteration of the granite (Al2O3 > 2 w.t.%) and hydrothermal titanite associated to the sodic assemblage (near zero Al2O3 and 0.53 to 0.76 w.t.% Na2O). Two epidote types were formed during alteration: epidote from clinozoisite-epidote series, widespread, and epidote containing up to 3.5 w.t.% MnO, restricted to II.1 area.
H2O-NaCl-KCl fluids, interpreted to have been exsolved from the granitic magma, and entrapped at 423□C and 1.3 Kbar, were probably the earliest fluids that circulated through the Matupá Granite in the Serrinha Deposit. The early fluids were superimposed by lower temperature and pressure (330□C and 0.5 to 1.3 Kbar) H2O-NaCl-CO2-(CH4), CO2 e H2O-NaCl fluids, probably derived from imiscibility. The final evolution of the hydrothermal system was dominated by mixing of saline and meteoric fluids and by circulation of low temperature Ca-enriched fluids.
The gold mineralization is disseminated and restricted to the intense hydrothermal alteration areas where it is associated to pyrite, sericite, chlorite and/or albite. Hydrothermal magnetite and rutile occur with pyrite. Gold is in the native form, included or filling fractures in pyrite. LAM-ICP-MS analysis in pyrite grains show Au, Ag, Pd and Pt values below 10 ppm.
□34S data of pyrite (+1.3 to +3.5 ‰) together with fluid inclusion data are consistent with a mineralizing fluid exsolved from the crystallizing magma. Gold was iniatially transported as chlorine complexes in a hot, saline, acid and oxidized fluid. Decreasing in temperature during the fluid ascent, imiscibitity process or pH increase could have enhanced gold precipitation. Dilution and/or unmixing of the saline fluid can have been responsible for the deposition of the second generation of gold.
Serrinha gold Deposit is similar to disseminated deposits genetically related to granite magmas classified as porphyry gold. Nevertheless, the present deep erosion level in the region, probably located at the root of the hydrothermal system, does not favor the presence of a giant Au deposit at Serrinha.

Oliveira,W.J. 1998. Characterizatin of the hidrocarbon gaseous emanations in the Remanso do Fogo region (MG state), through the integrated usage of remote sensing, geochemistry, geophysics, structural geology and reflectance spectrometry. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:*

DataBase Ref.: 1719 **1998** *Date of presentation:* 29/6/1998

Wilson José de Oliveira *Advisor(s):* Crósta,A.P.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Hydrocarbon soil geochemistry and airborne spectrometry survey were integrated with Landsat Thematic Mapper - LANDSAT TM - imagery for an arca known asRemanso do Fogo, located in a portion of the São Francisco basin in Central Brazil, where hydrocarbon seeps were previously known. Digital image enhancement allowed the identification of spectrally anomalous arcas related to different soil color and geobotanical anomalias within an extensiva eucalyptus plantation. Soil geochemistry showed, in some placas, spatial correlation between high leveis of gaseous hydrocarbons and TM anomalias. Field checking of these anomalias revealed that eucalyptus specimens in the anomalous arcas were poorly developed, showing olear signs of nutritional deficiency. Furthermore, soils froco sitas corresponding to geochemical anomalias had a distintiva gray color differing froco the usual brownish-red color of surrounding superficial soils. Reflectance spectra were measured for soil samples froco the anomalous and non-anomalous arca and showed differences. Spectral data werecollected ovar anomalous and non-anomalous eucalyptus stands, using an airborne system operating between 400 and 1100 nm. The integration of these different data seis reveals the presente of a significant combined soil-vegetation anomaly, caused probably by long-terra hydrocarbon gasêeepage. The interpretation of field structural data and reflection seismic profiles shows that N30-40- ending thrust faults and two joint systems (N30E and N40-60W) control hydrocarbon gas seepage. To further investigate the phenomena and to understand the effects of hydrocarbon gas in soils and vegetation, we devised an environment-controlled (greenhouse) experiment. Three seis of vessels containing soilcollected in the study ares and two different vegetation assemblages (eucalyptus and grass) were used. Hydrocarbon gas was injected continuously throughout the experiment (8 weeks) finto two seis of vessels. The third set of vessels, in which no gas was injected, was used for comparison throughout the experiment. Physical, chemical and radiometric characteristics of soils and vegetation (leaves) were measured and evaluated for both sete. Radiometric measurements on vegetation were made periodically using a Spectron SE-590 handheld radiometer, operating in the 400 to 1,100nm range. The presente of hydrocarbon gas caused changes on the spectral and chemical pattems of the vegetation due to nutritional

deficiencies. Spectral curves of eucalyptus and grass leaves showed an overall increase in albedo within the visible and near infrared range. A shift of the vegetation red edge towards smaller wavelengths lias been observed (the "blue shift"). Changes on the relativa content of nutriente such as nitrogen, phosphorus, potassium, calcium, zinc and irou was also detected, which resulted in chlorosis of the leaves. Hydrocarbon gas also modified the spectral characteristics of the soils, which showed a decrease in albedo above the 550-nm region. The fact is supported by the observed soil color changes, ranging froco yellowish-brown tones in the original soils to brown tones in the gas-injected soils. We interpret this as an indication of chemical modification of the ferric ions, which have been reduced to ferrous ions.

Philipp,R.P. 1998. Geological and tectonic evolution of the Pelotas batolith in Rio Grande do Sul state. PhD Thesis, Institute of Geosciences, University of Rio Grande do Sul, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 263 **1998** *Date of presentation:* 24/9/1998

Ruy Paulo Philipp *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Pelotas Batholith, situated in the eastern part of the Sul-rio-grandese shield, is a 400 km-long, 80-120 km-wide framework of multi-intrusive, poliphasic plutonic rocks. It is mostly constituted by granitic plutons and suites, with minor occurrence of basic rocks and remnants of metamorphic host rocks. The time span of 70 Ma (620-550 Ma) involved in its evolution results from successive and distinct tectonic processes. Based on its internal constitution and stratigraphy, six intrusive suites have been described, namely the Pinheiro Machado Intrusive Suite (PMIS), the Viamão Intrusive Suite (VIS), the Encruzilhada do Sul Intrusive Suite (ESIS), the Cordilheira Granitic Suite (CGS) and the Dom Feliciano Granitic Suite (DFGS). Associated with granitic rocks from the Viamão, Encruzilhada do Sul and Dom Feliciano suites, small intrusions of basic to intermediate rocks have been described (the Capim Branco Diorite, Passo da Fabiana Gabbros and other non-denominated intrusions). Aditionally, acid volcanic and subvolcanic rocks are found as small, pyroclastic rock plateaus and dike swarms. The final assembly of the Pelotas Batholith results from three main magmatic cycles. The first one is related to the Neoproterozoic (620 to 605 Ma), represented by the medium to high-K, calc-alkaline magmatism which formed the PMIS through the crystallization of an expanded association of diorites to monzogranites. During the second magmatic cycle, referred to late Neoproterozoic (595-580 ma), syn- to late-transcurrence (D2) granites have formed, which are represented by the Erval, Viamão, Encruzilhada and Cordilheira suites. The contemporary character of the Viamão and Encruzilhada suites, as opposed to the contrasting geochemical nature of their magmas, establishes a zonation from calc-alkaline affinity granitoids (ESIS) in the west to a high-K, calc-alkaline magmatism (VIS) in the eastern part of the batholith. The Cordilheira Granitic Suite, of calc-alkaline affinity and peraluminous nature, is constituted two-mica leucogranites attributed to crustal-melting processes. The third magmatic cycle is represented in the granite massives of the Dom Feliciano Granitic Suite and late volcanic to subvolcanic episodes. This association, of cambrian age (570-550 Ma), reflects the final evolution period of the batholith, and is composed of high-K, calc-alcaline rocks, with minor amounts of alkaline granitoids. Alkaline and peralkaline terms are represented by the Bela Vista Granite and rhyolite dikes. Isotopic data, namely high Sr87/Sr86 rations and negative eNd values, indicate that the granitic suites which constitute the Pelotas Batholith have originated mainly though crustal reworking, with minor participation of mantelic sources. The successive emplacement of granitic rock associations is largely related to the activity of extensive, ductile to brittle-ductile shear zones. The constituent suites within the batholith have been affected by three successive deformational events, from which the first two are ductile (D1 and D2) and one is ductile-brittle to brittle (D3). Granitoids from the Pinheiro Machado Intrusive Suite register the oldest deformation event (D1), which is characterized by flat-lying shear zones with oblique stretching lineations indicating top-to-ESE movement. The remaining suites have been subjected only to D2 and D3, with the formation of steeply-dipping, left-lateral strike-slip shear zones. The structural evolution determined for this region is compatible with a transpressive tectonic model related to oblique plate convergence, giving rise to horizontal crustal shortening and vertical stretching within the main shear plane, thus developping positive (transpressive) and negative (transtensive) flower structures. The proposed transpressive model may be further dismembered in two stages, the first being dominated by subhorizontal movements and the last by directional ones. The transition from one stage to another may be attributed to deformation partitioning, implying a change in the regional kinematic picture, where the ascention of granitic magmas would be favoured by the vertical component induced by transpression. The granitic magmas would then ascend through the crust and be simultaneous or subsequently deformed in a dominantly transcurrent regime.

Pinheiro,S.O. 1998. Petrology of ultramafic rocks from Manso river, Minas Gerais state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D023

DataBase Ref.: 23 **1998** *Date of presentation:* 28/9/1998

Stelamaris de Oliveira Pinheiro *Advisor(s):* Nilson,A.A.

Committee:
José Caruso Moresco Danni - IG/UnB
Raul Minas Kuyumjian - IG/UnB
Maria da Glória da Silva - IG/UFBA
Maria Angela F.Candia - IGc/USP

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Ragatky,C.D. 1998. Contribution to the geochemistry and geochrronology of the São Roque domain and of the Socorro-Guaxupé Nappe in the Igaratá and Piracaia region, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 130 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1106 **1998** *Date of presentation:* 26/1/1998

Célia Diana Ragatky *Advisor(s):* Tassinari,C.C.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Rodriguez,S.K. 1998. Urban geology of the metropolitan region of São Paulo. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2247 **1998** *Date of presentation:*

Sergio Kleinfelder Rodriguez *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Santoro,E. 1998. Precambrian geolgical evolution in the Santo Antônio do Pinhal region, SP state: Tectonic importance of the shearing zones. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 153 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1240 **1998** *Date of presentation:* 7/4/1998

Edgard Santoro *Advisor(s):* Egydio-Silva,M.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Sato,K. 1998. Crustal evolution of South American platform based on Sm-Nd isotopic geochemistry. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 297 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1099 **1998** *Date of presentation:* 29/5/1998

Kei Sato *Advisor(s):* Cordani,U.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Scheel-Ybert,R. 1998. Ecosystems stability in the south-eastern coast of Brazil during the upper Holocene (5500 - 1400 years bp) - The fisher-gatherer-hunters and the vegetal environment: contribution from charcoal analysis. PhD Thesis, University of Montpellier II - Montpellier, France; pg

Palaeoenvironment; palaeoethnology; charcoal analysis; archaeobotany; methodology; sambaquis; charcoal; tubers; restinga; mangrove; forest; Rio de Janeiro; Brazil

Université Montpellier II - Montpellier, França *Reference:*

DataBase Ref.: 244 **1998** *Date of presentation:* 14/12/1998

Rita Scheel-Ybert *Advisor(s):*

Committee:

Subject of thesis: Palaeoecology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Charcoal analysis of seven sambaquis from the southeastern Brazilian coast allowed palaeoenvironment reconstruction as well as an evaluation of the relationship between human occupation and environment. We have observed that, in spite of some fluctuations, especially on the mangrove vegetation, and notwithstanding the record of some climatic variations, no major changes of the vegetal ecosystem has taken place during the second part of the Holocene. This is probably due to the edaphic character of coastal environments. Different restinga physiognomies were present during this period; restinga forest was much more abundant than nowadays. Dry forest from the rocky coasts of the Cabo Frio region was also well represented, as well as the Atlantic Forest inland. Our interpretations are based on multivariate analysis applied to both charcoal assemblages and the results of phytosociological analysis of the extant vegetation. Samples validity was tested by the analysis of saturation and Gini-Lorenz curves. Charcoal identification was facilitated by the assembling of an important reference collection and by the elaboration of a computerized program specially conceived for charcoal analysis, coupled to a data bank of anatomical features from extant and ancient charcoal. We propose that environmental stability has been a decisive factor in the maintenance of the fisher-gatherer-hunters sociocultural system and that it has contributed to the existence of a stationary culture for more than 6000 years. We formulate also some palaeoethnological considerations on wood use and on the fisher-gatherer-hunters' alimentation. Aleatory gathering of dead wood constituted the main source of firewood. Nevertheless, our results suggest that Condalia sp was specially selected for cultural reasons still impossible to determine. This species, which is very rare in the restinga in the present day, was probably much more common during that period. Gathering of vegetables was certainly much more significant for the fisher-gatherer-hunters' alimentation than is usually recognized. Indeed, all the archaeological sites studied presented carbonized palm fruits, seeds and fragments of tubers, the later found for the first time in the material from sambaquis.

Sgarbi,P.B.A. 1998. Mineralogy and petrology of kamafugites of the Santo Antônio da Barra region, southwest of Goiás state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D022

DataBase Ref.: 22 **1998** *Date of presentation:* 7/8/1998

Patricia Barbosa de Albuquerque Sgarbi *Advisor(s):* Gaspar,J.C.

Committee:
- José Caruso Moresco Danni - IG/UnB
- Nilson Francisquini Botelho - IG/UnB
- Joel Gomes Valença - DG/UFRJ
- Excelso Ruberti - IGc/USP

Subject of thesis: Mineralogy and Petrology

State: GO *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

The Iporá province is part of the vestiges left by the Cretaceous alkaline magmatism of the northern border of the Paraná Basin. This province includes Santo Antônio da Barra lavas and pyroclastic rocks (Gaspar, 1977; Gaspar & Danni, 1979, 1981; Moraes,1984,1988), and the sub-volcanic intrusive rocks of the Amorinópolis region (Danni,1985; Danni & Gaspar, 1994). This work focuses on the alkaline mafic lavas from Santo Antônio da Barra.

The Santo Antônio da Barra volcanic mafic alkaline rocks are classified as kamafugites due to the presence of kalsilite and relics of leucite in analcime-rich leucite pseudomorphs. Two lithological types are found, according to Holmes' (1942) classification, recommended by Wooley et al.(1996): mafurites and ugandites.

These rocks contain olivine, clinopyroxene, leucite (pseudomorphs), kalsilite, nepheline, titanomagnetite, perovskite, phlogopite. Variation of lithological types are present and defined by the absence or presence in certain modal amounts of some of these minerals.

Olivine occurs always as phenocrysts and microphenocrysts. The analyzed samples have mg values in the range of 0.84 - 0.89. Some phenocrysts show inverse zoning (1 - 2%). Average CaO content is 0.4 wt% (0,01 Ca cation per formula) and NiO content is 0.2 wt% (0,004 Ni cations per formula). Cr2O3 content (wt%) is in the range of 0 - 0.1%.

Clinopyroxenes are diopsidic to salitic in composition. Al2O3 content of diopsides varies in the range of 7.4 to 2.1 wt %) ; TiO2 (wt %) ranges from 4,3 to 0,9% , average 2.1%. SiO2 content ranges from 45.5 to 52.9 (wt%). In SAB mafurites pyroxenes present no systematic difference in composition between phenocrysts and groundmass grains . In SAB ugandites groundmass pyroxenes present higher contents in FeO, TiO2, Na2O and MnO and lower contents in MgO, when compared with the corresponding phenocrysts.

All micas are phlogopites, occurring mainly in the groundmass and also as a component of olivine pseudomorphs. The mafurite micas present higher MgO and lower FeO and TiO2 contents when compared with the ugandite micas.

The feldspathoids of the SAB kamafugites are leucite, analcime, kalsilite and nepheline. In mafurites the dominant feldspathoid is kalsilite or nepheline, occurring interstitially. The presence of kalsilite in SAB lavas is an important fact, confirming the kamafugitic nature of these rocks. The SAB kalsilites are richer in Fe and Ba than the ones occurring in kamafugitic rocks of the Mata da Corda formation (MC), MG (Sgarbi & Valença, 1993). In ugandites leucite was originally an essential phase, further almost totally replaced by secondary minerals: accordingly these SAB ugandites were transformed in analcimites. In samples in which the analcimization process was not completed, it is still possible to identify leucite relicts.

In the composition of spinel, molecules of ülvospinel, magnetite and other less frequent components are found. They are therefore titanomagnetites. Spinels occurring as inclusions in olivine are in general enriched in chromium.
Perovskite is a relatively rare mineral in SAB lavas, occurring only in one of the 17 rock samples chosen for a detailed petrographic study. Its composition is near the end member (CaTiO3), with relatively low contents of REE, Sr and Na.
The rocks investigated are ultrabasic, in general, with high contents (wt%) of CaO (11.5 - 14.9), FeO (10.4 - 13.1) and TiO2 (2.8 - 4.1), high to moderate contents of Al2O3 (7.4 - 11.8), alkalis (2.4 - 6.6) and P2O5 (0.45 - 0.88) and low contents of MgO (5.6 - 15.2). Higher values of MgO correspond to lithological types with a larger modal percentage of olivine. The alkaline characteristic of the rocks is reflected in TiO2, K2O and Na2O contents and in the frequent presence of normative nepheline and leucite.K2O contents are not primary since most of the leucite were replaced by analcime. The importance of normative (CIPW) leucite in some mafurites studied reflects the presence of kalsilite in these rocks. In the norms of the ugandites, albite and nepheline are present instead of leucite and/or orthoclase, indicating replacement of leucite by analcime. SAB and MC kamafugites are similar but deuteric and/or post magmatic alterations are richer in sodium in SAB and in barium in MC rocks.
Oxygen isotope analyses were made on magnetites and clinopyroxenes of SAB and of MC kamafugites. Based on the results, temperatures obtained for SAB ugandites were 1050 o C and 1060o C. These temperatures are probably near the crystallization temperatures for those minerals, since their host rocks are fine grained. Temperatures for these MC minerals are in the range of 690o C to 1140o C. The d 18O for clinopyroxenes in SAB and MC rocks (5.1 to 6.3 % o) are in the range of magmas derived from the primitive mantle (5.5 to 7.5 %o).
U - Pb analyses for perovskites were obtained in samples of SAB and MC kamafugites. The ages obtained indicate that SAB kamafugites (88,3 - 89,6 Ma) are slightly older than the MC ones (68 - 81 Ma).

Silveira,E.G. 1998. Quicksilver and other elements mobilization in the Madeira river/RO state between Teotônio and Santo Antônio waterfalls. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.93

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1484 **1998** *Date of presentation:*

Ene Glória da Silveira *Advisor(s):* Bonotto,D.M.

Committee:

Subject of thesis: Regional Geology

State: RO *1/1,000,000 sheet:* SC20 *Centroid of the area:* ' - 'W

Abstract

Tandel,R.Y. 1998. Contribution to the study of pollution produced in the freatic aquifer and in the controlled landfill soil of the Rio Claro town, SP state. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 255 **1998** *Date of presentation:* 5/11/1998

Roque Yuri Tandel *Advisor(s):* Szikszay,M.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This thesis gives strong evidence showing, that the controlled landfill can be a possible environmental solution for the disposal of the domestic waste. This conclusion is based on a study carried out in the Rio Claro District of the state of São Paulo. The terrain of the studied area, where a dump existed since 1982, is constituted of sandstones and argillaceous rocks.

This dump was tranformed into a controlled landfill at the end of 1988 and was closed in September 1997. In order to study the pollution provoked in the water by the landfill, the water of three monitoring wells and the landfill leachate were analyzed throughout the year of 1996. These analyses determined the traces of zinc, lead, cadmium, copper, pH, COD, BOD, electric conductivity, toxicity (Daphnia similis) and the bacterial counting.

A series of physical and chemical analyses of landfill leachate and of the landfill gas, between October, 1990 and July, 1992, was also studied.

The soil, where the landfill leachate has been flowing throughout years, was sampled untill the water level was reached. With the aim of measuring the contamination caused by the landfill leachate, grain-size determination, mineralogical and chemical characteristcs of the soil at several levels were carried out. Several geoelectric methods (resistivity, induced polarization and electromagnetic induction) were utilized in order to establish the plume of contamination and the direction of the water flow. Seismic refractions were also made to determine the landfill geometry.

Although the landfill leachate has enormous potential of pollution, the results indicated that the groundwater is not being contamined on a large scale , and also that the landfill leachate, in the soil, has been largely degraded. The plume contamination was found only in the landfill. Therefore the environmental impact has been small and restricted.

Albino,J. 1999. Processes of actual sedimentation and morphodynamic of Bicanga to Povoação beaches, ES state. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 262 **1999** *Date of presentation:* 1/8/1999

Jacqueline Albino *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Sedimentary Geology

State: ES *1/1,000,000 sheet:* SE24 *Centroid of the area:* ' - 'W

Abstract

The central northern state of Espírito Santo coastal plain exhibits a sector with well developed quaternary deposits, corresponding to the Doce river deltaic plain, and another sector with narrow stretch of quaternary sediments limited by the Barreiras Formation sea cliffs.

The grain size analysis of bottom sediments rivers flowing to the coastline, the morphology and sedimentology of adjacent inner continental shelf, as well as topographic, sedimentologic and energetic changes measured during one year revealed that the studied bachs are supplied by distinct sources, and they are subjected to distinct hydrodynamic processes. The beaches associated to the Doce deltaic plain are voluminous, due to the abundant lithoclastic terrigenous sands deposited through marine and fluvial processes, propitiated by the Doce river mouth groin effect. The steep slope of the continental shelf allows entrance of high energy waves, which promotes efficient transport and distribution of sediments, along and normally to the coast, and giving rise to seasonal topogrphic oscillations of the beach profiles. The beaches present reflexive and intermediate typologies with constructional tendency.

The beaches situated in front of the Barreiras Formation sea cliffs are composed by a mixed sand (quartzose and biodetrital fragments). The most important source of the biodetrital sands are the calcium carbonate build-ups, covering the lateritic crust of the inner continental shelf bottom, with are wrenched and crushed by waves. The biodetrital farctions are mostly composed of coraline algae, mollusk and briozoan fragments.

The ferruginous crusts of the inner continental shelf and foreshore dissipate wave energy, and consequently the beaches acquire dissipative and intermediate characteristics. The differentiation among these types is determinated by the arrangement of the crusts in the foreshore, and the diversity of mixed sands in the beaches, developing peculiar hydrodynamics processes. The scarcity of biodetrital sediments in the coastal plains, situated in front of the Barreiras Formation sea cliffs, may be explained by the greater susceptibility of the biodetrital fragments to disintegration and solution by waves.

Anelli,L.E. 1999. Neocarboniferous invertebrates of Piauí (Parnaíba basin) and Itaituba (Amazonas basin) formations: Taxonomy; cladistic analysis of the Oriocrassatellinae (Rassatellacea, bivalvia) and Neospiriferinae (Spiriferoidea, brachiopoda) subfamilies. PhD Thesis, Institute of Geosciences, University of São Paulo, 184 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 259 **1999** *Date of presentation:* 18/5/1999

Luiz Eduardo Anelli *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present thesis covers the systematic paleontology of the invertebrate fauna from the Piauí Formation (Late Carboniferous, Parnaíba Basin). Additionally, two brachiopods and one bivalve species, from the Itaituba Formation (Late Carboniferous, Amazon Basin) are also described.

The invertebrate marine assemblage from the Piauí Formation is the second most diversified and abundant in the Brazilian Neopaleozoic. With the inclusion of the bivalves studied by Anelli (1994, Master Dissertation), 51 species are recognized. Among the molluscans, the bivalves are the best represented group, including 30 species (58%), followed by nine species of gastropods (17%), and one of cephalopods (2%). The brachiopods, the second best group represented, include nine species (17%), attributed to the acrotretids (1 species), strophomenids (1 species), productids (5 species) and spiriferids (2 species). One species of trilobite and one of the bryozoa are also described in the Piauí assemblage.

Among the 25 species from the Piauí Formation treated here, three species, Bellerophon (Pharkidonotus) sp. n. (gastropod), Pteronites sp. n. (bivalve) and the combination, Palladin plummeri n. comb. (trilobite), are new to science. Two new species of brachiopods, Neospirifer sp. n. 1, Neospirifer sp. n. 2 and a new bivalve, cf. Edmondia sp., are identified in the Itaituba Formation.

The geological distribution of the recognized species indicates a Pennsylvanian age for the Piauí assemblage, corroborating the age determination based on conodonts (Atokan-Morrowan, including the lower part of the Desmoinesian) for the Piauí Formation and on conodonts and fusulinids for the Itaituba Formation.

The faunas from the Piauí and Itaituba Formations show close taxonomic similarity, supporting the contemporaneity and probable geographic link between the two basins in the Middle Pennsylvanian. Other faunas showing close taxonomic similarities with the Brazilian ones are those from the American Mid-Continent, including faunas from the Amsden Formation, from Wyoming, and the Desmoinesian sequence of southeast Missouri. South American Pennsylvanian faunas showing affinities to the Piauí Formation include those of the Cerro Prieto Formation (Amotape Mountains, Peru) and the La Jagua Series and Palmarito Formation, Venezuela.

In addition to the traditional taxonomic approach, this study also includes the cladistic analysis of some well-represented groups. Taxons analyzed include the subfamily Oriocrassatellinae (Bivalvia, Crassatellacea) and the Productidina and Spiriferoidea (Brachiopoda). Results of the analysis led to the recognition of problems related to the systematics of these groups.

The unweighted analysis of the subfamily Oriocrassatellinae Boyd & Newell (1968) revealed the phylogenetic relationships of 16 species of the genus Oriocrassatella and identified two monophyletic groups, thus corroborating the paleogeographical reconstructions during the late Paleozoic. According to this analysis, part of the taxons of the superfamily Crassatellacea are not in agreement with the traditionally accepted systematics of the group. The weighted analysis, although not corroborating the paleogeographical groups, is consistent with the groupings of families and subfamilies of the Crassatellacea as traditionally understood. The cladistic analysis also helped in the identification of monophyletic and paraphyletic species.

A preliminary analysis of the productids based on a list of characters presented in the literature was carried out to test the systematics of species from the Itaituba Formation as well as the preliminary systematics of the material from the Piauí Formation. The systematics previously proposed for the Itaituba productids only partially agrees with results of the cladistic analysis and needs revision. Specimens from the Piauí Formation, although preserved as moulds, show sufficient characters for grouping species into superfamilies.

Cladistic analysis indicates that the subfamily Neospiriferinae is paraphyletic. Preliminary results for most of the taxons of the superfamily Spiriferoidea show the Trigonotretidae, as well as Neospiriferinae and Trigonotretinae, as paraphyletic groups. All specimens from the Itaituba Formation assigned by Mendes (1966) to Neospirifer dresseri may be polyspecific, as indicated in the cladograms.

Bergamaschi ,S. 1999. Stratigraphic analysis of siluro-devonian (Furnas and Ponta Grossa formations), Apucarana sub-basin, Paraná basin, Brazil. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 269 **1999** *Date of presentation:* 1/9/1999

Sérgio Bergamaschi *Advisor(s):*

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Silurian-Devonian record of the Apucarana sub-basin, Paraná basin (Furnas and Ponta Grossa formations) is constituted by six 3rd order depositional sequences. Sequence "A", of presumed Pridolian to Early Lochkovian age; encompasses the Furnas Formation deposits in which shallow-marine and transitional deposits can be recognized. This succession marks a transgressive-regressive cycle that configures the transgressive and highstand systems tracts. Sequence "B" (? Late Lochkovian to Emsian age) overlies the transgressive surface that limits the Furnas and Ponta Grossa formations, being constituted by a storm-dominated shoreface and shallow-marine deposits. The maximum flooding surface of this sequence, formed close to the Pragian/Emsian limit, presents maximum COT values around 1.7% and relatively low Zn and Mn contents, showing an anoxic conditions interval. The basal portion of the Sequences "C" (Late Eifelian to Early Emsian age), "D" (Eifelian age), and "E" (Late Eifelian to Late Givetian age) are constituted by shoreface sand bodies. These were deposited in response to the forced regressions displacing the shoreline towards offshore. This process allowed the emplacement of sequences boundaries that truncated the previous shelf pelitic deposits. Sequence "F" is constituted by shallow outer shelf deposits, and displays a regressive tending towards the top. In terms of 2nd order cycles, the deposits of the Furnas and Ponta Grossa formations could be grouped into the same depositional sequence. The Furnas Formation deposits constitute the lowstand systems tract. The deposits of Ponta Grossa Formation located below the maximum flooding surface; of Late Givetian/Frasnian age, constitutes a thick transgressive systems tract. The Frasnian regressive deposits, located above the maximum flooding surface, constitute a high systems tract. The abrupt basal limit between the Furnas and Ponta Grossa formations represents the main transgressive surface into a 2nd order cycle, assumed as formed close to the Lochkovian/Pragian limit.

Bittar,S.M.B. 1999. Piancó-Alto Brígida belt: Tectono-stratigraphic terrains under contrasting metamorphic and deformational regimes. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 258 **1999** *Date of presentation:* 8/4/1999

Sheila Maria Bretas Bittar *Advisor(s):* Campos Neto,M.C.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PE PB *1/1,000,000 sheet:* SB24 SC24 *Centroid of the area:* ' - 'W

Abstract

The Piancó-Alto Brígida Belts is located in the Rio Pajeú Tectonic Domain. It comprises various tectono-stratigraphic terranes, which were developed under contrasting metamorphic and deformational conditions, and put together during the Brasiliano Orogeny (750 to 580 Ma).

The following stratigraphic sequence has been defined: Serra Talhada Complex, comprising Paleoproterozoic orthogneisses and migmatites, reworked during the Brasiliano Orogeny; Riacho Gravatá Complex, comprising a metavolcano metasedimentary sequence, developed during a Mesoproterozoic crustal extensional regime, showing characteristics of both platform and continental slope sedimentation; Cachoeirinha Complex, comprising a Neoproterozoic metavolcano metasedimentary sequence with a magmatic arc affinity; Serra do Olho D'Água Sequence, comprising by a Late Neoproterozoic molasse; Sertânia Shists, comprising by a metavolcano metasedimentary sequence correleted to the Mesoproterozoic Setânia Complex. These sequences show the same main metamorphic foliation, originally sub-horizontal, which was generated during the second deformational phase.

Six plutonic suites have been identified in the study area: five of them show Brasiliano age (Itaporanga-type, Catingueira-type, Triunfo-type, Taperoá-type, S-type and Conceição type granitoids) and the other comprised by orthogneisses of Cariris Velhos age.

The Piancó-Alto Brígida Belt structural frame is related to a system of transcurrent shear zones which define differen structural domains. These shear zones overprint older structures related to the generation of the sub-horizontal foliation (S2), during the second deformational phase. The peak of metamorphism occurred synchronously to the genesis of the S2 foliation. Locally the S2 foliation is milonitic, with S-C type arrangement, developed in the subhorizontal shear zones, which define thrust systems with transport to the southeast. These were also deformed during a third phase which folded the S2 foliation, transposed it locally, generating local sub-vertical shear zones. These later structures gain a regional importance and a transcurrent character delimiting the above mencioned terranes.

Geothermometry and geobarometry suggest contrasting metamorphic conditions, pointing to different tectonic environments, and suggesting different deformational regimes and large transportation of crustal segments during the escape tectonic and juxtaposition of the various tectono-stratigraphic terranes.

The low thermal gradient printed in the Riacho Gravatá Complex rocks (Amêndoa Macacos-Piaus) shows values which are compatible with metamorphism above subduction zones. On the other hand, in the Amêndoa Piancó and the Sertânia Schists the metamorphic conditions suggests the occurence of compressed paleogeotherms and abrupt thermal gradients. These thermal regimes are typical of thin crusts under high thermal heat flow which allow, on a regional scale, the ascension of heat to higher crustal levels, commonly found in extensional basins. The record discussed above, which is preserved in the Macacos-Piaus, is typical of subduction related environmental, and suggest na underthrust process of cold continental crust to a deepness of 30 Km and towards the NW.

Blum,M.L.B. 1999. Processing and interpretation of airborne geophysical data in Central Brasil and its application to regional geology studies and to mineral exploration. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Applied Geophysics, Gravity, Airborne Magnetometry, Airborne gamma spectrometry, Regional Geology, Mineral Prospection

Instituto de Geociências - Universidade de Brasília *Reference:* D030

DataBase Ref.: 30 **1999** *Date of presentation:* 3/9/1999

Marcelo de Lawrence Bassay Blum *Advisor(s):* Moraes,R.A.V. Pires,A.C.B.

Committee:
- Reinhardt Adolfo Fuck - IG/UnB
- Vasile I. Marza - IG/UnB
- Luiz Fernando Santana Braga - GEOMAG
- Carlos Alberto Mendonça - IGc/USP

Subject of thesis: Prospection and Economic Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

In an attempt to shed some light on the regional geology, data of airborne geophysics of the Brazil - Canada Geophysical Project (PGBC) were used. Those data were evaluated, processed and interpreted in the light of the geological knowledge of the studied area which is located in the central and northwestern region of Goiás and in the southwestern region of Tocantins, Brazil, involving lands of the Tocantins Structural Province.
In the evaluation of the data of PGBC, a method was proposed for the determination of spikes in the original recording of the magnetic data that revealed to be an efficient technique. Following this, the data were interpolated in regular grid using the method of bi-cubic splines. The data were microleveled using a developed algorithm, which showed efficiency in treating bad-leveled data among flight lines.

Large part of the filters applied on the aeromagnetic data were in the wave number domain. The reduction to the pole filter was used to obtain the pseudo-gravity map, allowing the comparison to the Bouguer map of the area.
The application of enhancement techniques of magnetic sources (horizontal gradient, amplitude of the analytic signals of first and second orders, phase of the analytic signal and terracing), proved to be efficient in the determination of physical discontinuities, translated in geological units. The amplitude of the analytic signal of second order showed better results than the amplitude of the analytic signal of first order in revealing the limits of the causative magnetic bodies and in discriminating mafic and ultramafic rocks.
The application of terracing on the amplitude of the analytic signal of second order allowed placing the anomalous answer on the plan of the outcrops in map, defining the magnetic units better in relation to the well-known geology.
The phase of the analytic signal exhibited an entangle of linear structures (lineaments and limits of magnetic property) showing the complexity of the structural framework and in its interpretation and correlation to the geology.
For estimation of the Curie surface depths in the studied area, specific programs were developed, with routines that turned it more efficient and to recover the data on the borders. A routine was included for subtraction of a first-degree trend surface. The focused estimates, together with some punctual geothermal data, allowed the extrapolation and interpolation for the whole studied area. This shows the importance of the Curie depth estimates.
The analysis of the magnetic images for the anomalous field and its transformed ones made it possible to define four main types of magnetic relief: smooth, rough and uncorrelated, rough and correlated, and very rough.
The analysis of the main magnetic structures interpreted in the images of the phase of the analytic signal, of the amplitude of the analytic signal of second order and of the anomalous magnetic field, together with the geological information available, suggest that these structures must be tied up to an event with main tension, ?1, in the direction approximately E-W.
The use of color composition of the type CMY inverted in the gamma-ray spectrometric ternary maps showed good results. The best combination is K in the cyan (C), Th in the magenta (M) and U in the yellow (Y). This allowed the identification of the limits and subdivisions of the orthogneissic complexes of Caiçara, Anta and Uvá.
A detailed gravity survey (some 400 stations over 100,000 km2) was accomplished in the area of Crixás to study the local greenstone belts. The gravity grid showed better each of the three greenstone belts than available gravity data. Algorithms for terrain correction together with another for indirect determination of densities were developed.
A 2-D modeling (starting models) and 2,5-D and 3-D inversions were made on the greenstone belts using the gravity data and models based on the local geology. These inversions allowed the construction of vertical sections with the probable geology for them. The depths to the base obtained in two inversion methods are compatible and gave indication of about 2 km.
The integrated analysis of the ternary images of K, Th and U, together with the transformed magnetic maps, the Bouguer map, the map of anomalous potassium and the magnetic and gamma-ray spectrometric integration map, using the geological knowledge for the area, suggests that the area has been affected by a sequence of events, beginning with the formation of the granitoid-greenstone belt terrain, the Brasiliano collisional Cycle and finishing with more recent events.
Using the gamma-ray spectrometric data it was possible to estimate what is called anomalous potassium, which revealed lineaments that coincide with some occurrences of primary gold. These same occurrences were added to the interpretative maps. They are associated to magnetic structures, including lineaments picked up in the phase of the analytic signal, and along some contacts between different lithologic units. This fact, allied to the lineaments found in the anomalous potassium, can indicate shear zones, mainly in the directions N55W and N65W, in which there would be possibility of the occurrence of hidrotermal minerals.
Maps of magnetic interpretation, gamma-ray spectrometric interpretation and of integration of the study area represent regional sketches of geological units and structural elements. The validity of these interpretations should be verified in field.

Brod,J.A. 1999. Petrology and geochemistry of the Tapira alkaline complex, Minas Gerais state, Brazil. PhD Thesis, University of Durham - Department of Geological Sciences pg.

Carbonatite, bebedourite, kamafugite, liquid immiscibility, Tapira, Salitre, Alto Paranaiba

University of Durham - Department of Geological Sciences *Reference:*

DataBase Ref.: 60 **1999** *Date of presentation:* 8/3/1999

José Affonso Brod *Advisor(s):* Thompson,R.N. Gibson,S.A.

Committee: J. B. Dawson -
D. G. Pearson -

Subject of thesis: Prospection and Economic Geology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

The Tapira alkaline complex is the southernmost of a series of carbonatite-bearing intrusions occurring in the Alto Paranaíba region, western Minas Gerais State, Brazil. Together with kamafugites, lamproites and kimberlites, these complexes form part of the Late-Cretaceous Alto Paranaíba Igneous Province (APIP). The Tapira igneous complex is emplaced into rocks of the Late-Proterozoic Brasília mobile belt, adjacent to a major cratonic area (the São Francisco craton).
The complex is formed by the amalgamation of several intrusions, comprising mainly ultramafic rocks (wehrlites and bebedourites), with subordinate syenite, carbonatite and melilitolite. At least two separate units of ultramafic rocks (B1 and B2) and five episodes of carbonatite intrusion (C1 to C5) are recognised. The plutonic rocks are crosscut by fine-grained ultramafic and carbonatite dykes. Two varieties of ultramafic dykes are recognised: phlogopite-picrites are the most primitive rocks in the complex; low-Cr dykes are more evolved, and typically lack olivine. The ultramafic dykes are carbonate-rich, and may contain carbonate ocelli, indicating that immiscibility of carbonatite liquid occurred early in the evolution of the complex. The ultramafic dykes are chemically similar to the APIP kamafugites.
The primitive Tapira magmas underwent some differentiation in the crust, before their final emplacement. Crystal fractionation from the phlogopite-picrite magma may have produced olivine and chromite-rich cumulates, but these rocks are under-

represented in the complex. Crystal fractionation from low-Cr dykes may have produced the bebedourites. The Tapira complex contains examples of carbonatites that originated by either liquid immiscibility or crystal fractionation. These contrasting petrogenetic mechanisms have produced distinct geochemical and mineralogical signatures, which have been used to pinpoint specific events in the evolution of the complex, and to test the consanguinity of carbonatites and associated silicate rocks.

Buoro,A.B. 1999. Confrontation of geostatistics inversal methods applied to the hydrogeologic modelling based in the semi-quantitative uncertainty analysis by the analysis of principal components and Q-fatorial processes. PhD Thesis, Institute of Geosciences, University of São Paulo, 141 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 260 **1999** *Date of presentation:* 25/6/1999

Alvaro Bueno Buoro *Advisor(s):* Amaral,G.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

As an answer to the needs for the generation of more complex simulated conductivity fields, inverse geostatistical methods can now be constrained by head and conductivity data to generate equiprobable solutions. These techniques use not only the structural characteristics of the data, but also the physical information (flux), that allows the modifications of the original simulation for a better adjustment of the inverse problem solution. This gives an insight to the uncertainty of the model since hundreds of equiprobable simulations (an ensemble), all conditioned by the available data, answer satisfyingly to the inverse problem.

Searching for an easier way to visualize this uncertainty we have looked for a method able to work with the main characteristics of the ensemble. Therefore we have made an analysis by Empirical Orthogonal Functions EOF which builds an orthogonal decomposition of the empirical covariance matrix. Determining the sub-domain where the first eigenfunction is of larger influence is equivalent to finding the spatial location of larger uncertainty in the ensemble. This location is related to the specific hydraulic characteristics of the problem, and to the distribution of the available data. Alternatively, for comparison, we have made a Q-factorial decomposition, which is less restricted by linear relations between the parameters of the model.

Both methodologies were used on the data of 6 ensembles of inverse geostatistical methods, on two synthetic test problem, and one real problem. The results shows that with few exceptions both methodologies access the same zone as the more uncertain. Moreover the EOF can be used to compare in a qualitative way the different models through their energy or the spreading of the ensemble in the parameters space.

The EOF also permits, as a by-product, the generation of more and faster new simulations. The latter are calculated by a random composition of the weight of each eigenfunction given by the EOF. These new simulations keep the main structural characteristics of the initial ensemble. They were successfully used to explore new regions of the parameters space and to aggregate new conditioning information in the simulations. In the real field problem these simulations were successfully used as a new initial field in the inverse solution by the Pilot Point inverse method .

We discuss also some difficulties due to the relative limited amount of data for the analysis and propose some alternatives as sampling the data, and kriging the eigenfunctions.

Other methods as the bivariate entropy for the calculation of the energy or the Minimum Volume Elipsoide for the outlier detection, were also presented.

Celino,J.J. 1999. Compositional variation in neoproterozoic granitoid suites and implications on the Araçuai (Brasil)-west Congo (africa) orogen evolution. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

magmatic cordierite, magmatic epidote, granitoids, calc-alkaline, charnockites, petrogenesis, proterozoic

Instituto de Geociências - Universidade de Brasília *Reference:* D027

DataBase Ref.: 27 **1999** *Date of presentation:* 30/4/1999

Joil José Celino *Advisor(s):* Botelho,N.F.

Committee:
Márcio Martins Pimentel - IG/UnB
Reinhardt Adolfo Fuck - IG/UnB
Alcides Nóbrega Sial - DG/UFPE
Antônio Carlos Pedrosa Soares - IGC/UFMG

Subject of thesis: Mineralogy and Petrology

State: BA MG *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Granite suites are groups of plutons possessing characteristic features that are a result of their derivation from source material of a specific composition. Variation within suites has been ascribed to a variety of processes.
The results of geological mapping for the SB.24-V-B and SB.24-V-D sheets, established on radar images (SLAR) interpretations, comprises an area of 35,400 square kilometers, involving southern Bahia and northeastern Minas Gerais. It is limited by the parallel 16 and 18 south latitude and the meridian 39 and 40 30' WGr. longitude.
It was identified in the region the Mantiqueira structural province, strongly renewed on Brazilian Cycle, which was insered Araçuaí Subprovince.
In chronostratigraphical terms, it was recognized an Archean basement, of medium to strong metamorphic grade, represented by Caraíba-paramirim Complex, of policyclic characteristic, deflected by the performance of events related to Transamazonic and Brazilian Cycles. In the beginning of Lower Proterozoic occurred the deposition of Paraíba do Sul Complex sediments, fatherly metamorphosed (about 2,200 m.y. ago), due to the implantation of important geodinamic event, responsible for the generation of directional and thrusting faultings, followed by intense transposition, with curve to west, by the formation of Itagimirim Gneiss (Transamazonic Mobile Belt).
After a period of stabilization during Medium Proterozoic succeeds the deposition of supracrustals related to Brazilian Cycles, typified by Macaúbas Group from sea environment. About 760 to 700 m.y. ago occurred the main phase of metamorphism from Brazilian Cycle, with medium to weak grade, that reached the supracrustals referred, under pressure condition of Barrovian type (Brazilian Mobile Belt). Diachronously occurred the emplacement of sin to tardi-tectonic plutonytes (G1 and G2). During the past period from 700 to 650 m.y. it happened the emplacement of post-tectonic plutonytes (G3 and G4) related with reactivated zones, of sub-meridian posture.
This work deals with the bulk compositions and mineral chemistry compositions of granitoids in the southernmost State of Bahia, northeast Brazil, in the Araçuaí belt. These granitoids are usually classified both as calc-alkalic or as peraluminous in nature.
In these granitoids the decrease of the differentiation index (DI = Fe + Mg + Ti) is generally correlated with an increase of the Fe/(Fe+Mg) ratio and the aluminous index (AI = Al – (K+Na+2Ca)).
The fundamental differences between the granites are theirs physical characteristics of the emplacement (P – T – H2O – fO2).
The general mechanism of fractionation is fractional crystallization.
The production of variation by differential separation of melt from residual solid source material (restite), must be favored for many of the granite suites of this region.
This magmatism is characterized by one main feature: within a single pluton, there are two or three coeval associations. The telescoping of several granitoid associations within a single plutonic body na their geochemical and isotopic signatures provide evidence for an anatectic origin from various protoliths induced by the ascent of mantle-derived magmas.
Even showing relatively high values, the granitoids (87Sr/86Sr)i and low values (eNd) - ratios can not be explained by simple recycling of Transamazonian-age or even older crustal material without considerable addition of magmas directly or indirectly derived from the upper mantle.

Centurione,S.L. 1999. The clinquer portland mineralization and its technological benefits. PhD Thesis, Institute of Geosciences, University of São Paulo, 156 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 271 **1999** *Date of presentation:* 26/11/1999

Sérgio Luiz Centurione *Advisor(s):*

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Most abundant mineral component of Portland clinker, alite is responsible for cement mechanical strength development, especially in the 1-to-28 day period of curing. Out of the seven alite polimorphs, the most reactive, high-temperature rombohedra crystals do not form in conventional clinkers, but can be stabilized through the use of mineralizers, like the pair F- and SO3.

The beneficial effects the Portland clinker mineralizing process with fluoride and sulfate can bring to the manufacturer and customer are related to economical (fuel consumption), strategic (longer raw materials mine life), ecological (NOx emission reduction, valorization of industrial waste) and technical (higher performance of the product), among others.

Experimental work was carried out in three parts. The first one, the elaboration of laboratory clinkers. The second, evaluation of industrial supposedly mineralized clinkers produced before 1999. Finally the third, analysis of industrial clinkers produced along the year 1999.

The results allowed to verify that the mere addition of F- and SO3 to the system do not guarantee the generation of rombohedral alite crystals and consequently the clinker mineralization. Industrial mineralized clinkers showed higher mechanical performance than those not mineralized, reaching up to 50% higher compressive strengths at 1-day curing. F- and SO3 contents in clinker vary - as a function of other chemical components, especially alkalis - around 2 to 2.5% SO3 and 0.2 to 0.3% F-.

The analytical techniques selected to characterize rombohedral alite were X-ray diffratometry and electron scanning microscopy. Reflected-light microscopy alone does not distinguish alite crystal structure, but is an important complementary tool to help to understand the clinker manufacture process.

Costa,R.D. 1999. Determination of Cenozoic tension fields in the southern region of Minas Gerais state. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, pg.135

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GR029

DataBase Ref.: 911 **1999** *Date of presentation:* 1/8/1999

Ricardo Diniz da Costa *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Diniz Filho,J.B. 1999. Underground hydric resources in the middle and low course of the Rio Ceará Mirim river hydrographic basin/RN state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2035 **1999** *Date of presentation:* 16/12/1999

João Braz Diniz Filho *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: RN *1/1,000,000 sheet:* SB25 *Centroid of the area:* ' - 'W

Abstract

Gasparetto,N.V.L. 1999. The surficial formations in northwestern of Paraná state and their relationships with Caiuá sandstone. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 172pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1199 **1999** *Date of presentation:* 1/9/1999

Nelson Vicente Lovatto Gasparetto *Advisor(s):* Carvalho,A.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PR *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Gloeden,E. 1999. Management of contaminated areas in the Guarapiranga hydrographic basin. PhD Thesis, Institute of Geosciences, University of São Paulo, 225 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 267 **1999** *Date of presentation:* 13/12/1999

Elton Gloeden *Advisor(s):* Pacheco,A.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The main purpose of this study was to introduce and develop the methodology of contaminated areas management, aiming its utilization at the elaboration of specific legislation to deal with this issue.

The established procedures provide a better understanding of the extend of the contaminated areas problem and allow the planning and implementation of the most suitable intervention forms required by each specific area.

The contaminated areas management is composed by several steps: identification of the areas where there is potential to occur soil and groundwater contamination; assessment and investigation procedures to confirm or not the contamination of the area; risk assessment methods to evaluate the risks to the goods to protect; elaboration of proposals of remediation to recuperate the areas that are contaminated. The procedures used to collect the information as well as the database used to store it are also described in this methodology.

In order to evaluate the feasibility of its utilization it was selected the Guarapiranga reservoir basin as the region of concern for the application of the initial steps of the contaminated areas management, due to its importance as a water supply source for the Metropolitan Region of São Paulo.

Potentially contaminated areas were identified in the selected region as the areas which activities were determined to have a potential to cause soil and groundwater contamination. Through the application of a priority criteria, activities of waste disposal, manufacture of chemical substances (chemical industries) and retail trade of fuel (gas stations) were selected, mainly for their location in the most important regions of the basin, in terms of geologic characteristics and closeness to the urban area.

The preliminary assessment of the areas was done initially by a survey of the existing information and recognition inspection to the areas. Most of them were classified as suspected of being contaminated because of inadequate handling of substances and inadequate forms of construction. The results of this work indicate that further investigation must be conducted in order to confirm the contamination in those areas.

Another priority criteria was applied to select the most important suspected areas. They were ranked using a method which takes into account the risks to the goods to protect. This methodology uses the information gathered during the preliminary assessment, such as the characteristics of the sources of contamination, the pathways of contaminants and the importance of the goods to protect.

In the areas where the initial stages of the management were performed, it was noticed the need to develop corrective, preventive and proactive actions to avoid the aggravation and the appearance of new contaminated sites. Some proposals of such actions are presented in this study.

The data obtained during the identification of potentially contaminated areas, the first priorization, preliminary assessment, and the second priorization, were stored in the inventory of contaminated areas and may be used to continue the execution of the next stages of the management to subsidize proposals of corrective and preventive actions. This information was gathered in a simple and fast way, showing that the application of this methodology is feasible.

Godoy,M.A.M. 1999. Mineralogy of oxidated products under pressure bacterial of the gold ore of the São Bento mine, Minas Gerais state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

jarosite bearing arsenium, scorodite, bacterial oxidation, pressure oxidation, FTIR, Mössbauer, electron microprobe, DSC/TG, XRD, SEM/EDX.

Instituto de Geociências - Universidade de Brasília *Reference:* D031

DataBase Ref.: 31 **1999** *Date of presentation:* 26/11/1999

Marco Antônio Marques Godoy *Advisor(s):* Gaspar,J.C.

Committee:
Sara Lais Rahal Lenharo - IG/UnB
Paulo de Tarso Ferro de Oliveira - IG/UnB
Paulo Roberto G. Brandão - IGC/UFMG
Helmut Born - IGc/USP

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A mineralogical characterization of samples from the oxidation and alkalinization system and CIL tailings from the São Bento gold mine (MG) was performed. Samples were collected in four different dates: one sample from the flotation concentrate, four from the bacteria oxidation system (BIOX) (TK2, TK4/TK68 bioreactors and TK28 thickener), two from the pressure oxidation (PRESSOX) (M800 reactor, M40 thickener), two from alkalinization (M630 tank and F1 sample), and one from the CIL tailings (M1000).
Pyrrhotite was completely oxidized in the BIOX. Arsenopyrite, pyrite, and chalcopyrite behave similarly and were only slightly oxidized in the BIOX, and nearly completely oxidized in the PRESSOX. Siderite occurs in small concentration in BIOX samples but has completely disappeared in PRESSOX samples. Quartz and muscovite were little affected along the process while chlorite has completely disappeared during PRESSOX.
In BIOX, amoniumjarosite, and hydroniumjarosite in lower abundance, are the main phases formed. Native sulfur was detected in significant concentrations. Goethite and hematite are the main oxyhydroxides and an unidentified hydroxide containing up to 10wt% MgO was observed. Subordinate phases in BIOX samples are fibroferrite, zykaite, bukovskyite, sarmientite, tooeleite, alunite, and gypsum.
In PRESSOX, hydroniumjarosite is the most abundant product. Ferric hydroxysulfate (Fe(OH)(SO4) was detected by XRD in significant amounts. Hematite and maghemite also occurr. XRD identified accessory phases are: butlerite, bukovskyite, zykaite, tooeleite, orpigment, hydrated Al hydroxycloride [AlCl(OH)2·2H2O], Al2(OH)6·H2O, dickite, hydrobassaluminite), anhidrite, and dolerofanite.
Alkalinization products and CIL taillings contain the same PRESSOX mineralogy, except for significant amounts of gypsum, anhidrite, and bassanite in the former. The main phases found in the F1 alkalinization sample were: scorodite, gypsum/bassanite, hematite, maghemite, goethite, composite grains very rich in gold crystals, amorphous silica, and an unidentified 1Al:1Si phase, which is apparently anhydrous (B phase).
Chemistry of the iron sulfates shows that there are two amoniumjarosites in the BIOX and two hydroniumjarosites in the PRESSOX; high and low-As jarosites in both environments. Low-As amoniumjarosite contains 10wt%As2O5 in average; while the high-As one contains 20wt%As2O5 in average. Low-As hydroniumjarosite contains 2wt%As2O5 in average; while the high-As one contains 28wt%As2O5 in average. As to S substitution ratio is 1:1 suggesting a solid solution series toward an “As jarosite”. Their crystallization seems to be controlled by a solvus.

Godoy,M.C.T.F. 1999. Hydrogeologic study of the saturated and non-sturated zones of the Adamantina

formation, in Presidente Prudente, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2259 **1999** *Date of presentation:*

Manoel Carlos Toledo Franco de Godoy *Advisor(s):*

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Gontijo,A.H.F. 1999. Morphotectonics of the medium Rio Paraiba do Sul valley: Serra da Bocaina region, São Paulo and Rio de Janeiro states. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.259

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D028

DataBase Ref.: 784 **1999** *Date of presentation:* 1/8/1999

Ambrosina Helena Ferreira Gontijo *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* 41 15 's - 12 30 'W

Abstract

Iritani,M.A. 1999. Tridimensional mathematical modelling for the protection of underground water capture. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2251 **1999** *Date of presentation:*

Advisor(s): Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Juchem,P.L. 1999. Mineralogy, geology and genesis of the ametist deposits in high Uruguai river region, Rio Grande do Sul state. PhD Thesis, Institute of Geosciences, University of Rio Grande do Sul, pg.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 268 **1999** *Date of presentation:* 1/9/1999

Pedro Luiz Juchem *Advisor(s):*

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

The Rio Grande do Sul State located in southern Brazil is famous by the huge occurrences of amethyst associated with the basalt flows of the Serra Geral Formation, a late jurassic-early cretaceous volcanic sequence of the Paraná Basin. The amount and the quality of the gem materials mined has turned that State into the main worldwide supplier of amethyst to the international market.

The main deposits of amethyst are located at the Alto Uruguai region (north of Rio Grande do Sul) within a 300 km2 area which encloses more than 300 mine fronts (diggings or garimpos). Currently, the minning sites are distributed along the municipalities of Ametista do Sul, Planalto, Iraí, Frederico Westphalen, Alpestre and Rodeio Bonito. The prospection is conducted mostly by local people (garimpeiros) in open pits as well as in underground galeries of 50-100 m long opened in the basaltic fresh rock. Currently the whole production of rough material including amethyst, agate, calcite and gypsum ranges around 100 tons per month.

The amethyst occurs filling geodes in an aphanitic to aphiric basalt displaying seriated to porphiritic hollocrystalline or sometimes hemicrystalline textures. Labradorite, augite, opaques and remnants of olivine or vitreous matrix comprise the mineralogical

composition. Four to five amethyst bearing basaltic flows have been identified and seem to share a common structural and lithological pattern all over the region.

As for the geodes, they range in shape and size from some centimeters up to metric dimensions. Whithin the mineralized central level of the flows, cilindric geodes are common and may reach three meters in lenght. The majority display the following mineral sequence: 1) a millimetric to centimetric wide microcrystalline massive quartz or agate layer, 2) a centimetric wide layer with incomplete crystallized and fractured colorless to milky quartz, 3) a centimetric layer of amethyst showing progressive color zonning which goes on from the last colorless quartz layer to the purple quartz. Euhedric rose quartz may occur with amethyst. Late minerals are represented by calcite and less commonly by gypsum (selenite variety) and baryte which occur over the silica minerals. Usually the geodes are covered by a fine grained layer of greenish celadonite produced by hydrothermal alteration of the basaltic rock.

The main crystalline inclusion in amethyst is goethite usually developed along internal plains of growth zones. Other less conspicous phases include calcite and chalcedony. Fluid inclusions in amethyst are predominantly monophasic aqueous type. Although biphasic inclusions have been observed too, they are very rare and usually secondary. Both types enclose metastable fluids. Therefore, even the biphasic types could not be used for temperature and pressure determinations. Microthermometric analysis showed the presence of Na, K, Ca, Mg and Fe in the aqueous system. Moreover, the salinity is low ranging from 0,7 to 9,0 equivalent weight % of NaCl.

Chemical analysis revealed that silica minerals contain small amounts of impurities including Al, Fe, Na, Mg, K, Ca, Ti and P (< 1% up to 0,01%), as well as Ba, Y, Zr, Cu and Li which occur only as ppm elements. Main impurities include Mg and Mn in calcite, Si, Mg and K in gypsum and Ca, Si, Al, Sr and P in baryte. Data of X-ray diffraction and infrared spectroscopy confirmed that the analysed minerals are essencially pure phases.

Isotopic oxigen analysis performed on agate, colorless quartz and amethyst have not revealed any significative variation among the mineral phases analysed. In addition, it has not been observed variations concernig the different sampled geodes. Mean value obtained ranges arround d 18O= +29,320/00 (SMOW). As a result, the silica mineral phases might have crystallized from an original fluid which was characterized by a constant d 18O value in a narrow gap of temperature under stable geological conditions.

The mineral assemblages that occur inside the geodes coupled with crystalline and fluid inclusions, suggest that the amethyst from the Alto Uruguai has been deposited in epithermal conditions, at temperatures around 1000 C or even less. Using the calibration expression of oxygen isotope fractionation between water and silica, temperatures of 40 to 500 C have been obtained for the crystallization of the silica minerals. Concerning calcite a mean value of d 18O= +25,60/00 (SMOW) points out to a 300 C crystallization temperature.

Knauer,L.G. 1999. Meridional Espinhaço Range: Considerations on the stratigraphy and analysis of the deformation of the proterozoic unities. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.324

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D032

DataBase Ref.: 782 **1999** *Date of presentation:*

Luiz Guilherme Knauer *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Lima Filho,F.P. 1999. The permo-pennsilvanian sequence of the Parnaíba basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2250 **1999** *Date of presentation:*

Francisco Pinheiro Lima Filho *Advisor(s):* Rocha-Campos,A.C.

Committee:

Subject of thesis: Sedimentology/Sedimentary Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Manzini,F.F. 1999. Formacao Marilia redefined in its type-locality: Stratigraphy, sedimentation environment and palaeogeography. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.119

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D030

DataBase Ref.: 783 **1999** *Date of presentation:* 1/10/1999

Flávio Fernando Manzini *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Martinelli,C.A. 1999. Petrography, structural and fluids of the Araés gold mineralization - Nova Xavantina - MT. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, pg.183

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D024

DataBase Ref.: 788 **1999** *Date of presentation:* 23/4/1999

Cesar d` Abronzo Martinelli *Advisor(s):* Batista,J.J.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Martins,E.S. 1999. Petrography, mineralogy and geomorphology of lateritic regoliths of the Distrito Federal. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Mineralogy, soils, geomorphology, lateritic regoliths

Instituto de Geociências - Universidade de Brasília *Reference:* D026

DataBase Ref.: 26 **1999** *Date of presentation:* 12/3/1999

Eder de Souza Martins *Advisor(s):* Gaspar,J.C.

Committee:
Marcel Auguste Dardenne - IG/UnB
Maria Leonor Ribeiro Casimiro - IG/UnB
Sônia Maria Barros de Oliveira - IGc/USP
Baile Kotschoubey - CG/UFPA

Subject of thesis: Mineralogy and Petrology

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

This Thesis presents geomorphology, petrography and mineralogy of laterite regoliths from the Distrito Federal. The studied profiles include three lithosequences, two vertical sequences, and one toposequence.
Ferruginous duricrusts occur at the borders of high-altitude plateaus (1050-1150m), over metapsamo-metapelitic rocks of the Paranoá Group, and recovering the low-altitude plateaus (900-1000m), over metapelitic rocks of the Canastra Group. The saprolite is thick, usually larger than 100 m in plateau. Duricrust profiles are truncated.
Dehydrated aggradation facies, characteristically massive, was formed between Paleocen and Lower Mioceno, in medium positions of the regoliths. It presents hematite and kaolinite as cardinal minerals. During Lower Miocen, tectonic reactivation and drier climate stripped the lateritic regolith top, leveling the ferruginous duricrust. The hydrated degradation facies, characterized by nodular and pisoidal structures, were formed by transformation of the massive facies under more humid and hot climates. The nodular facies present goethite as cardinal mineral. The pisoidal facies presents kaolinite as cardinal mineral.
The pedologic cover of the lateritic regoliths on planned surfaces was formed by duricrust transformation. The high biological and climatic activity is responsible for the iron removing and aluminum accumulation in the gibbsite form.
In the interfluves, downhill from the plateaus, they happen gutters filled out by sediments. Those gutters are considered as paleo-voçorocas or paleo-valleys developed during Upper Pliocen. This period is characterized by tectonic reactivation and dry climate. The gutters were formed by lineal erosion and they were filled out in events of torrential rains.
The short climatic oscillations during the Quaternary alternated the domain of pedogenetic and erosive processes. The soil sequences are in equilibrium with the current climate.

Matos,S.L.F. 1999. Depositional history and age of coal bearing level in Rio Bonito formation, Permian of Paraná basin, in the coal deposit of Candiota, RS state. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 254 **1999** *Date of presentation:* 4/8/1999

Sérgio Luís Fabris de Matos *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

The Candiota Coal Field, located in the southernmost part of Rio Grande do Sul State, covers an approximate area of 210 km2, in which the largest coal reserves known in Brazil are enclosed. This deposit is composed of a coal-bearing interval belonging to the Rio Bonito Formation, a permian unit of the Paraná Basin.

The study of the distribution of the facies recognized in the Rio Bonito Formation using geomathematical methods allowed tracing the deposition evolution for the whole deposit, locating the preferential areas of deposition for each facies and the depositional system.

The coal-bearing interval has its greatest significance in the northeastern part of the area, where it had its best development as well preservation, thanks to a barrier island system. In the southern and southeastern parts, the sandy and heterolithic deposits predominate, indicating conditions of open sea and a better development of the shallow shelf system.

The coal-bearing interval in the middle part of lithostratigraphic unit marks the return of the transgressive process, prevailing during throughout the Permian, after an insignificant regression followed by fluvial deposits progradation. This retaking takes place after the formation of a barrier island-lagoon system, where accumulation and preservation of organic matter was possible, thus originating coal. The continuous transgressive process allowed an advance of the shore system terminating the formation of peat.

The tonsteins present in the coal beds were recognized as altered tuffs intercalations, evidenced by mineralogical composition and stratigraphic behavior. Light colour beds with constant thickness spreading for tens of kilometers and the presence of pyroclastic minerals as zircon, beta quartz pseudomorphs and apatite were the main evidences of the origin of tonsteins as a result of accumulation of volcanic ash and dust.

The zircon from the tonsteins was dated by means of the U-PB method, yielding a radiometric age of 267.1 ± 3.4 Ma, corresponding to the Artinskian, Early Permian. This is the first absolute age obtained for a sedimentary interval of the Paraná Basin and is of great value in the calibration of palynomorphic zones. The time of tonsteins deposition coincides with the peak of volcanic activity in the southwestern part of Gondwana, now central-northwestern part of Argentina. The tonsteins from Candiota are also correlated with other tuff beds found in South American and South African basins where the Karoo Supergroup occurs.

Medeiros,S.R. 1999. Mineralogical, petrological, geochemical and isotopic study of the Várzea Alegre Intrusive Complex - ES state. PhD Thesis, Institute of Geosciences / Departament of Geology, University Federal of Rio de Janeiro, Brazil, pg.

Mineralogy; Petrology; Isotopic studies

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 2006 **1999** *Date of presentation:* 14/1/1999

Silvia Regina de Medeiros *Advisor(s):* Wiedemann,C.M. Sial,A.N.

Committee:

Subject of thesis: Regional Geology and Economic Geology

State: ES *1/1,000,000 sheet:* SF24 *Centroid of the area:* ' - 'W

Abstract

The Várzea Alegre Intrusive Complex is an example of a late to post-tectonic bimodal magmatism in the central-southern portion of the Costeiro Mobile Belt, State of Espírito Santo, Southeast Brazil. It has an outer charno-enderbitic ring that is enclosed in high amphibolite to granulitic metamorphic grade rocks, and was intruded by two different calc-alkalic rock series: a medium-K, represented by opx-gabbros, monzogabbros, quartz-diorites and quartz-monzodiorites, and a high-K, represented by megaporphyritic granitic rocks.
The almost circular shape of the complex shows a concentric distribution of the rocks surrounding a central portion of a gabroic lithotype (Medeiros, 1993).
The contact between the quartz-dioritic to quartz-monzodioritic rocks and the megaporphiritic granite of the inner domain is characterized by net-veined and/or schlieren structures, resulting in mingling zones with variable proportions of the involved lithotypes.
The charno-enderbites (hypersthene-quartz diorites to monzonites) represent the first magmatic pulse. They have a dark green color and a megaporphyritic texture, and were crystalized under high CO2 and low H2O fluid pressure (Mendes, 1996 and 1997). They show well developed foliation, close to the contacts (as with the host rocks as the inner lithotypes of the complex). Their principal mineralogical constituents are: plagioclase (An32-An40), perthitic/mesoperthitic alkali-feldspar, Opx, biotite, hornblende and minor quantities of ilmenite, magnetite, pyrite, apatite and zircon.
The gabbros and monzogabbros have the highest modal proportions of pyroxenes. Orthopyroxene grains (hypersthene) are partially replaced by amphibole and biotite and show clinopyroxene exsolution lamella (salite/augite), and vice-versa. These characteristics were not observed among the intermediated rocks, where the Opx composition vary from hypersthene to Fe-hypersthene and the Cpx are salite.
After the pyroxenes, biotites are the most abundant mafic mineral in the basic to intermediated rocks. In the granites they are the only mafic phase. Microprobe analysis indicate FeO enrichment followed by MgO depletion from the basic to the intermediated lithotypes. The biotites have high TiO2 contents, varying from 2.23 to 5.63% within all the investigated samples.

Primary amphiboles were only observed in the quartz-diorites and quartz-monzodiorites, where they are included in the mafic aggregates.
In the basic lithotypes the plagioclase composition vary from An40-An60 and they grade to An25-An40 in the quartz-diorites and quartz-monzodiorites. They exhibit a hypidiomorphic shape, a tabular habit and tend to have a preferential orientation in the gabroic rocks.
In the studied rocks the K-feldspars are hypidiomorphic to xenomorphic and variable perthitic. They represent the megacrysts found in the megaporphyritic granite.
Quartz is xenomorphic, showing amoeboidal shape, undulatory extinction and locally subgrains. It also occurs as intergrowths with amphibole and bitite in the basic and intermediated rocks.
The most common opaque phases are magnetite, ilmenite and Ti-magnetite, and apatite and zircon were the other accessory minerals observed in all the rocks.
Crystallization temperatures were obtained through the following minerals pairs: Opx-Cpx, amphibole-plagioclase, ilmenite-magnetite and plagioclase-K-feldspar. The pyroxene geotermoter yielded temperatures of approximately 8500C. This result is compatible to subsolidus reequilibrium temperatures found in the literature (Linsley & Munoz, 1969). In the intermediate lithotypes, the pair plagioclase-amphibole yielded temperatures around 750 0C, which could be considered as equilibrium temperature. Lower temperatures, ranging from 305-550 0C, were obtained for the pairs ilmenite-magnetite and plagioclase-alkali feldspar, probably related to reequilibrium magmatic processes, as pointed out by some authors in the literature.
Probable crystallization pressures obtained through the empirical calibration method of Al-content in amphiboles were around 5.9 Kbar. Pressures varying from 7 to 8 Kbar have been reported for the regional gnaissic rocks.
Geochemical data from the medium-K calc-alkalic rocks, cogenetic to gabbros, show an incompatible element enrichment, mainly of Ba, Sr, La, Ce and Pb. The HFS elements are partially depleted and Zr, Hf and Ti show similar concentrations to N- type MORB rocks. The parallel REE pattern exhibited by the basic and intermediate rocks, associated to the gradual increase of REE-contents in the late point towards less evolved fractional crystallization processes. The petrogenetic modelling using major and trace elements, considering pyroxene, plagioclase, biotite and ilmenite as fractionated assemblage, confirms such hypothesis.
The medium-K calc-alkalic series shows REE patterns compared to magmatites from anomalous portions of the middle-ocean ridge and basanites, which were probably originated from an enriched mantle (E-type MORB magmatism). A similar pattern, with a small positive Eu anomaly, was observed for the charno-enderbites.
Rb-Sr and Sm-Nd isotopic data also point towards a enriched mantle reservoir for the basic and intermediate rocks from Várzea Alegre. The calculated CHUR model age (related to the lenght of time the magma has been separated from the mantle) was around 1.0 Ga, and it can reflect an episode of mantle enrichment.

Montanheiro,T.J. 1999. Prospection and characterization of pozzolanes in the Paraná basin, São Paulo state. PhD Thesis, Institute of Geosciences, University of São Paulo, 226 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 264 **1999** *Date of presentation:* 25/8/1999

Tarcísio José Montanheiro *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This thesis presents the results of a systematic survey aiming at natural pozzolans in the Paraná Basin, São Paulo State. All possible geological resources with pozzolanic characteristics like diatomaceous earth, opaline sandstones, kaolinitic clays and basalts were considered in this study. Laboratory work following systematic field work was carried out in two steps: first, chemical and petrographic analysis, X ray diffraction and scanning electron microscope for a general characterization of samples; after this step, only the samples with interesting features for pozzolanic activity were chosen for further analysis to confirm their pozzolanic properties (strength measurement in mortar made with lime and cement, respectively, after 7 and 28 days). A total of 350 samples were characterized during the first step, from which 32 samples were chosen for further analysis.

The pozzolanic properties of diatomaceous earth, opaline sandstones, clays and basalts were confirmed. Diatomaceous earth and opaline sandstones cannot, however, be considered for further economical use in view of their scarcity. Abundant clays of sedimentary formations of the Paraná Basin as well as basaltic rocks from Serra Geral Formation, on the other hand, present a great potential as pozzolanic material.

Clays belonging to the sedimentary formations, especially those named Franca, Itaqueri and Corumbataí showed high reactivity after thermal activation at 800o C during 1 hour.

A single sample from 16 samples of intermediate to acid basaltic rocks presented higher pozzolanic reactivity with lime at 7 days. Other samples 4 presented values in the range between 3 and 6 MPa, and 11 samples lesser than 3 MPa. The fact that just one sample presented higher values of strength does not mean that basalts cannot be explored, it actually means that basalts are potentially favorable. Volcanic glass from basaltic rocks is known to be very susceptible to hydrothermal alteration as well as to weathering. Such alteration totally destroys volcanic glass in basalts. Basaltic regions around Piraju-Timburi-Ipauçu and Paraguaçu Paulista were delimited as potential for pozzolanic use. These occurrences are aligned along the Guapiara Lineament, evidencing a possible tectonic control. Obviously, future exploration in these regions should include diamond drilling to better evaluate these occurrences in three-dimensions.

Neumann,R. 1999. Technologic characterization of the rare earth elements potential ores of Catalão I, GO state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2255 **1999** *Date of presentation:*

Reiner Neumann *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: GO *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Penteado,H.L.B. 1999. 2d compositional modeling of petroleum generation, expulsion and migration in the southern compartment of the Recôncavo basin, Brazil. PhD Thesis, University of Pierre et Marie Curie - Paris VI, pg.

Université Pierre et Marie Curie (Paris VI) *Reference:*

DataBase Ref.: 237 **1999** *Date of presentation:* 7/1/1999

Henrique Luiz de Barros Penteado *Advisor(s):* Dercourt,J.

Committee:

Subject of thesis: Earth Sciences

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

The Recôncavo Basin is part of a rift formed between the Late Jurassic and the Early Cretaceous in northeastern Brazil. The objective of this thesis was the compositional modeling of petroleum generation, expulsion and migration along a cross-section in the Southern Compartment of the basin with the Temispack basin simulation software.
A geochemical study of the lacustrine shales of the Gomo Member (Candeias Fm.) has been performed to determine their petroleum potential, the evolution of maturation with depth and changes in petroleum composition. Hydrogen indices of immature kerogens (400-850 mg/g TOC) were shown to be higher than those of whole rocks, thus indicating a retention of Rock-Eval pyrolysis products in the mineral matrix. Saturates (30-50% of organic extracts in the immature zone) increase both in absolute and in relative (60-80%) terms in the main interval of petroleum generation (2000-2600 m) because of a partial secondary cracking of NSOs and aromatics.
After having tested several scenarios of geodynamic evolution, a variable thickness of post-rift sediments (maximum of 1200 m) has been shown to be necessary to calibrate maturity parameters. Petroleum migration has been modeled to understand migration pathways as well as the role of faults as drains. Thus, two petroleum migration systems have been identified for the Dom João and Cexis accumulations.
Petroleum compositional variations have been modeled by coupling the processes of retention and secondary cracking. A good calibration of compositions was obtained with secondary cracking parameters for NSOs and aromatics which are close to those of the main primary cracking reaction of a type I kerogen, coupled with a retention of 50% of NSOs within the source rocks.

Remus,M.V.D. 1999. Metallogeny of base-metal and Au hydrothermal deposits of Brasiliano Cycle in the São Gabriel Block, RS. PhD Thesis, PPGeo, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, 170p.

metallogeny; base-metal deposits; Cu-Au deposits; orogenic gold; U-Pb in zircon by SHRIMP; Pb and Sr isotopes; sulphur isotopes, metal source

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 1806 **1999** *Date of presentation:* 3/5/1999

Marcus Vinicius Dornelles Remus *Advisor(s):* Hartmann,L.A.

Committee:

Subject of thesis: Geochemistry

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* 30 30 's - 53 30 'W

Abstract

The most important gold (Bossoroca) and base-metal (Camaquã, Santa Maria and in Passo Feio Formation) deposits of Rio Grande do Sul state were formed in the Brasiliano cycle during three distinct events, related to the contemporaneous magmatism and metamorphism (700, 594 and 562 Ma). The metals for these deposits were derived from different sources – the juvenile volcanic arc at 700 Ma and from old basement crust at 594 and 562 Ma ago. The Bossoroca gold deposit (700 Ma) consists of veins and stockworks of quartz-gold ores with minor pyrite, chalcopyrite, galena and tellurides and is classified as an orogenic epizonal Au-deposit. The ore shoots are contained in calc-alkaline pyroclastic andesites and dacites with minor basalts and epiclastic rocks of Campestre Formation. SHRIMP U/Pb investigations of zircon show that the host island-arc volcanogenic sequence was formed ca. 760 m.y. ago in the early Brasiliano cycle and metamorphosed into transitional greensc hist/amphibolite facies of low-pressure regional metamorphism at ca. 700 Ma. The Camaquã Cu (Au, Ag) and Santa Maria Pb-Zn (Cu, Ag) deposits, hosted by Neoproterozoic clastic sedimentary rocks of Bom Jardim Group, are interpreted to be of distal magmatic-hydrothermal origin, linked to the post-collisional magmatism of Dom Feliciano Orogeny, at 594 Ma, late in the

Brasiliano Cycle. The Cu (Au) and Pb mineralization hosted by meta-volcanosedimentary Passo Feio Formation are hydrothermal epigenetic in origin and were formed at 562 Ma ago during the intrusion of nearby Caçapava Granite. Pb isotope composition of sulphides from the Camaquã and Santa Maria deposits indicate that the metals were derived from a largely crustal source with very primitive Pb at the end of the Brasiliano Cycle. The sulphur isotope composition of sulphides from these deposits (~ 0‰ CDT) indicates an external magmatic-hydrothermal related source of sulphur. The metal of the epigenetic deposits in the Pa sso Feio Formation also were derived from a largely crustal source with important contribution from host meta-volcanosedimentary rocks. The total sulfur isotopic composition of sulphides from these deposits is explained by mixing between fluids from a magmatic source (Caçapava Granite) and sulphur derived from leaching of metasedimentary host rocks of the Passo Feio Formation. The metals concentrated in the Bossoroca lode-gold deposit were mobilized during regional dynamothermal metamorphism by deeply derived fluids that ascended through the volcano/sedimentary Campestre Formation, scavenged lead and gold, and later deposited the metals in structurally controlled sites at higher crustal levels. Also, the metals were derived from the same deep source region of volcanic arc rocks. The O-C stable isotope evidence is compatible with a deeply derived ore fluid. The most important gold (Bossoroca) and base-metal (Camaquã, Santa Maria and in Passo Feio Formation) deposits of Rio Gr ande do Sul state were formed in the Brasiliano cycle during three distinct events, related to the contemporaneous magmatism and metamorphism (700, 594 and 562 Ma). The metals for these deposits were derived from different sources – the juvenile volcanic arc at 700 Ma and from old basement crust at 594 and 562 Ma ago. The Bossoroca gold deposit (700 Ma) consists of veins and stockworks of quartz-gold ores with minor pyrite, chalcopyrite, galena and tellurides and is classified as an orogenic epizonal Au-deposit. The ore shoots are contained in calc-alkaline pyroclastic andesites and dacites with minor basalts and epiclastic rocks of Campestre Formation. SHRIMP U/Pb investigations of zircon show that the host island-arc volcanogenic sequence was formed ca. 760 m.y. ago in the early Brasiliano cycle and metamorphosed into transitional greenschist/amphibolite facies of low-pressure regional metamorphism at ca. 700 Ma. The Camaquã Cu (Au, Ag) and Santa Maria Pb-Zn (Cu, Ag) depos its, hosted by Neoproterozoic clastic sedimentary rocks of Bom Jardim Group, are interpreted to be of distal magmatic-hydrothermal origin, linked to the post-collisional magmatism of Dom Feliciano Orogeny, at 594 Ma, late in the Brasiliano Cycle. The Cu (Au) and Pb mineralization hosted by meta-volcanosedimentary Passo Feio Formation are hydrothermal epigenetic in origin and were formed at 562 Ma ago during the intrusion of nearby Caçapava Granite. Pb isotope composition of sulphides from the Camaquã and Santa Maria deposits indicate that the metals were derived from a largely crustal source with very primitive Pb at the end of the Brasiliano Cycle. The sulphur isotope composition of sulphides from these deposits (~ 0‰ CDT) indicates an external magmatic-hydrothermal related source of sulphur. The metal of the epigenetic deposits in the Passo Feio Formation also were derived from a largely crustal source with important contribution from host meta-volcanosedimentary rocks. T he total sulfur isotopic composition of sulphides from these deposits is explained by mixing between fluids from a magmatic source (Caçapava Granite) and sulphur derived from leaching of metasedimentary host rocks of the Passo Feio Formation. The metals concentrated in the Bossoroca lode-gold deposit were mobilized during regional dynamothermal metamorphism by deeply derived fluids that ascended through the volcano/sedimentary Campestre Formation, scavenged lead and gold, and later deposited the metals in structurally controlled sites at higher crustal levels. Also, the metals were derived from the same deep source region of volcanic arc rocks. The O-C stable isotope evidence is compatible with a deeply derived ore fluid.

Resende,M.G. 1999. Evolution of the archaean supracrustal metassedimentary rocks from the Goiás-Faina region, Goiás state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Greenstone Belts, Metasedimentary Rocks, Stratigraphy, Archean, Geochemistry, Sedimentar Provenance, Basin Evolution

Instituto de Geociências - Universidade de Brasília *Reference:* D025

DataBase Ref.: 25 **1999** *Date of presentation:* 5/2/1999

Marcelo Goncalves Resende *Advisor(s):* Jost,H.

Committee:
Roberto Ventura Santos - IG/UnB
Carlos José Souza de Alvarenga - IG/UnB
Cláudio de Morrison Valeriano - IG/UERJ
Carlos Maurício Noce - IGC/UFMG

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Goiás and Faina Greenstone Belts are two low grade metamorphic Archaean volcanosedimentary sequences that build up two elongate synforms trending N50o-70oW and N30o-50oW, respectively, separated by NE-trending strike-slip fault located near the town of Buenolândia. Together, the belts are 150 km long and in the average 7 km wide and are confined between the granite-gneiss Itapuranga and Uvá Complexes. The contact of the granite-gneiss terranes with the supracrustal rocks is either tectonic or intrusive, which together with the allochtonous nature of the belts indicate that the complexes are not the original basement of the volcanosedimentary sequences.

Both belts are made up of a lower package of metavolcanic rocks (Serra Santa Rita Group) that begin with metakomatiites (Manoel Leocádio Formation) and culminate with metabasalts (Lower member of the Digo-Digo Formation), eventually felsic metavulcanics (Upper Member of the Digo-Digo Formation). The metavolcanic sequence is followed by thick sequences of metasedimentary units.

In the Goiás belt, the metasedimentary sequence is grouped into the Fazenda Paraíso Group, which is subdivided, from the base to the top, into the Fazenda Limeira and Fazenda Cruzeiro Formations. The former contains a Lower Member of carbonaceous schist and an Upper Member consisting of metachert, banded iron formation, calcschist, and marble. The Fazenda Cruzeiro Formation consists of a Lower member of siliciclastic metarhythmites and an Upper Member of quartzites.

In the Faina belt, the metasedimentary record is represented by the Furna Rica Group, subdivided, from base to top, into the Fazenda Tanque, Serra São José, and Córrego do Tatu Formations. The Fazenda Tanque Formation rests unconformably on metavulcanic rocks of the Serra Santa Rita Group and it contains a Lower Member of orthoquartzites with lenses of metaconglomerate made up of mafic and ultramafic clasts, followed by metapelites of the Intermediary Member, and carboanceous schists and iron formations of the Upper Member. The Serra São José Formation rests uncoformably on rocks of the Fazenda Tanque Formation and contains a Lower Member of quartzites and an Upper Member of metapelites with rare quartzite layers. The Córrego do Tatu Formation is made up of a Lower Member of marbles and an Upper of banded iron formations.

The original palaeogeographic relationships between the Goiás and Faina belts are still not completely understood. In spite of being similar in their metavolcanic content, they contrast in their upper metasedimentary sequences. So far, the structural, stratigraphic, and geochemical data do not allow to conclude if the juxtaposition of these belts is an original feature or results from tectonic transport. However, the contrasting sedimentary record indicates that the belts evolved under distinct palaegeographic and depositional regimes. In the Goiás belt, the sedimentation took place under high standing sea level, and in the Faina belt it occurred under the influence of two retrogradational shelf cycles.

Mineralogical, mineral chemistry, and lithogeochemical data show that in both belts the sedimentary protoliths belonging to the lower units (Fazenda Limeira and Fazenda Tanque Formations) were formed at the expenses of a clastic load derived from a source area containing abundant mafic-ultramafic and minor felsic rocks. In contrast, the protoliths of the upper units (Fazenda Cruzeiro and Serra São José Formations) formed by clasts derived from a source area dominated by felsic rocks.

Carbon and oxygen stable isotopes show that the marbles of the Fazenda Limeira Formation upper section correlate well with those of the Serra São José Formation, and those of the Crixás belt, located about 100 km to the north. These marbles are rich in heavy carbon and allow the tracing of the first time-stratigraphic correlation among the greenstone belts located in the southern and northern portions of the Archaean terranes of the Goiás Massif. Sm/Nd isotopes of the detrital units yield a model age of the source area that varies, from the base to the top of the sequences, between 3,2 and 2,8 Ga.

Saes,G.S. 1999. Tectonic evolution and paleogeography of the Aguapeí aulacogen (1.2-1.0Ga) and of its basement terrains in the southern portion of the Amazonic Craton. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2260 **1999** *Date of presentation:*

Gerson S.Saes *Advisor(s):* Fragoso César,A.R.S.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Salamuni,E. 1999. Tectonics of the Curitiba (PR) sedimentary basin. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.214

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D025

DataBase Ref.: 787 **1999** *Date of presentation:* 30/4/1999

Eduardo Salamuni *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Sant'Anna,L.G. 1999. Geology, mineralogy and genesis of smectites from the Paleogenic deposits of the continental rift in southeastern Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2254 **1999** *Date of presentation:*

Lucy Gomes Sant'Anna *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Santos, M. 1999. Mantiqueira range and Alto Rio Grande palteau: The Aiuruoca Tertiary basin and morphotectonic evolution. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, vol.1-134 pp; vol.2 - 91pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D026

DataBase Ref.: 786 **1999** *Date of presentation:* 28/5/1999

Marcilene dos Santos *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Seer,H.J. 1999. Tectonic evolution of Ibiá and Araxá groups in the Araxá synform, Minas Gerais state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Metamorphism; structural geology; Petrology; Geochronology; Geotectonics; Geochemistry

Instituto de Geociências - Universidade de Brasília *Reference:* D028

DataBase Ref.: 28 **1999** *Date of presentation:* 29/7/1999

Hildor José Seer *Advisor(s):* Dardenne,M.A.

Committee: José Oswaldo de Araújo Filho - IG/UnB
Márcio Martins Pimentel - IG/UnB
Marco Antônio Fonseca - DEGEO/UFOP
Luiz Sérgio Amarante Simões - IGCE/UNESP

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

The present work is concerned with the geological description and interpretation of the evolutionary history of the Araxá Synform, in an area with approximately 2300 Km2, in the southern segment of the Brasilia Fold and Thrust Belt, Minas Gerais State, Brazil. Geological mapping, structural analysis, petrography, whole rock geochemistry, mineral chemistry and geochronology were the main methodological procedures.
The Araxá Synform is a regional fold, with WNW trending limbs, dipping to the NNE and SSW and with gently plunging hinges to WNW. The outcrops of Araxá, Ibiá and Canastra Groups take place at their limbs. The region represents the type locality of these geologic units. These groups are ordered in three tectonic thrust sheets, separated by major gently deeping and subvertical shear zones: inferior, intermediate and superior.
The lower thrust sheet is a psamo-pelitic metassedimentary sequence, metamorphosed at greenschist facies (chlorite and garnet zones) with Sm-Nd model age of 2,2 Ga. It represents a sedimentation on a marine platform environment, possibly belonging to a regressive marine cycle. It is formally designed as the Canastra Group.
Over these thrust sheet, is a pelitic metasedimentary sequence, arranged in fine grained rythmites, of the middle thrust sheet. Their Sm-Nd model ages are between 1,1 and 1,3 Ga. and they were metamorphosed to chlorite zone at greenschist facies. Their origin is linked to the erosional processes of neoproterozoic magmatic arcs, and it was possibly deposited through distal turbiditic currents. It constitutes the Ibiá Group.
The upper thrust sheet comprise an igneous mafic sequence, with fine and coarse amphibolites, which is transitional to pelitic metassedimentary rocks with minor psamitic rocks.
All rocks were metamorphosed under amphibolite facies conditions and were intruded by granitoid rocks. The amphibolites represent original basaltic and gabroic rocks, with minor ultramafics (serpentinites/ amphibole-talc schists). The basalts are high FeO tholeiítes, with REE signatures that resemble E-MORB and BABB. Therefore they could represent an oceanic crust, evolved from an asthenospheric and lithospheric magma mixing process. The metasedimentary rocks could be represent marine deep water sediments. They have Sm-Nd model age of 1,9 Ga. The granitoid bodies are mainly two-mica leucogranites, with peraluminous affinity, and with a collisional geochemistry and mineralogic signature.
The deformational and metamorphic history of the Araxá Synform could be described as a succession of events, which PTt path points to geological processes occurred at progressively shallower crustal levels. The main metamorphic phase, dated 630 M.a., is represented by the M1/D1 event, characteristically of barrovian type. A coarse S1 schistosity, with obscure origin, was developed during this event. A retrometamorphic RM1 event, without deformational imprint, followed the first event, and was recorded only in the lower and upper thrust sheets. The following event, D2/M2, was divided into an early (D2p), and a later stage (D2t). Both developed in a collisional tectonic environment, with gently deeping shear zones that promoted the collage of the thrust sheets, in retrograde greenschist facies metamorphic conditions. On their initial stages, D2p was accompanied by the intrusion of granitic bodies. Kinematic criteria indicate that the thrust sheets were transported from southwest to northeast.
D2t deformation began, apparently in continuity to D2p, however with a SE tectonic transport, accompanied by a SW-NE secundary compressional field. This deformation is found in the majority of outcrops and represents the main deformational event in the region. This was responsible for the development of the Araxa Synform.
The final event, M3/D3, was responsible by the development of wrench sinistral shear zones, in low greenschist facies

metamorphic.conditions. Their stress field distribution is similar to that of D2t event, but their deformation occurred at higher crustal levels.
The final chapter is concerned with a synthesis about the evolution of Araxá Synform and employ the Terrane Tectonostratigraphic Analysis (Howell, 1993) to promove a background for the interpretation of the Brasilia Fold and Thrust Belt geological processes. The three thrust sheets of the Araxá region are described like tectonostratigraphic terranes, with distinct stratigraphy that characterizes particular geological settings generated at different geographic positions.
The metamorphic and deformational history of the Araxá Synform reflect a regional tectonic framework based on the interaction of three major crustal segments: the Amazonas, São Francisco and Parana continents. The first interaction was represented by the collision between São Francisco and Parana continents. During this collisional process, another collision began between these continents and the Amazonas continent. All processes developed during 630 M.a. and 580 M.a., therefore during the Brasiliano Orogenic Cycle. This history is part of the final collage of Gondwana continent.

Seoane,J.C.S. 1999. Geology of epithermal gold of Castro, PR state: Use of georreferenced information system for the evaluation of a geologic-geochemic data base. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:*

DataBase Ref.: 1718 **1999** *Date of presentation:* 15/10/1999

José Carlos Sícoli Seoane *Advisor(s):* Silva,A.B.

Committee:

Subject of thesis: Metallogenesis

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Castro is an extensional, Eocambrian to Eordovician late to post-Brasiliano foreland basin. Plug and dyke bodies of andesite cut pelitic and rudaceous sequences of well-bedded red to green siltstone and sandstone, with subordinate ignimbrite. A dome complex of massive to highly flow-banded rhyolite from several pulses, tuff and epiclastics, fill the basin nearby the town of the same name, in central-eastern state of Paraná. The basin is host to lowsulphidation epithermal gold mineralization, the first of its type and age to be reported in Brazil. Gold is found in both intermediate and felsic volcanic rocks. Sediments are virtually barren, but rhyolite / sediment contacts are known sites of silicification and mineralization. Carbon replacement is a common vein texture and cinnabar and arsenopyrite occur in small quantities. Chalcedony, calcite, illite and barite are typical gangue minerals. Also present are hematite, limonite and goethite, usually in fractures and/or cavities, fluorite, sericite and epidote. Stibnite, zeolite, and garnet occur locally and in small quantities. The integration, validation and analysis at different scales of the great diversity of data suitable for the exploration of commodities associated with epithermal systems, are met by the implementation of a Geographic Information Systems (GIS). Data used in deposit modeling includes multielementary geochemistry in various media and regional and detail geological mapping. Multielementary geochemistry of 750 stream sediment samples in two sieve fractions (above and below 80#), plus color count for gold in pan concentrates collected nearby the stream sediment stations, were captured from lab result spreadsheets and associated by their corresponding sample number to sample site location obtained from GPS. Topo sheets in 1:50.000 scale were digitized in CAD to provide a base map and edited in the GIS to become seamless; catchment basins were delimited and each basin was assigned its corresponding sample. Geology maps and photointerpretation of structures were also digitized, georeferenced and edited for consistency in the GIS. Modeling by GIS, using both knowledge driven and data driven pathfinder associations for multielementary geochemestry, lead to selection of four clusters of eleven catchment basins, which are related to structures or lithological boundaries, to be investigated for surfacing and non-surfacing orebodies. Weighting gold values based on sinuosity of the streams, to filter out the effects of physical dispersion and accumulation of gold, results in a modified anomaly map which more closely represents the original chemical distribution of gold in rocks, and thus anomalies related to mineralization.

Shimada,H. 1999. Impact of the geologic explration in the optimization of the Portland cement production process in the Votoran cement factory, Votorantin, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2262 **1999** *Date of presentation:*

Helio Shimada *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Silva,A. 1999. Geological evolution of São Paulo basin: Contribution of geophysical acquisition. PhD Thesis; Astronomical and Geophysical Institute, University of São Paulo, São Paulo, 102 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1229 **1999** *Date of presentation:* 13/4/1999

Adalberto da Silva *Advisor(s):* Mantovani,M.S.M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,A.M. 1999. Geophysical and geological data integration using a new statistical approach for mineral target selection applied to the Rio das Velhas greenstone belt, Quadrilátero Ferrífero. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

data integration; gold; Quadrilátero Ferrífero

Instituto de Geociências - Universidade de Brasília *Reference:* D029

DataBase Ref.: 29 **1999** *Date of presentation:* 27/8/1999

Adalene Moreira Silva *Advisor(s):* Pires,A.C.B.

Committee: Paulo Roberto Meneses - IG/UnB
Claudinei Gouveia de Oliveira - IG/UnB
Fernando Pellon de Miranda - CENPES/Petro
Francisco José Fonseca Ferreira - DG/UFPR

Subject of thesis: Prospection and Economic Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This thesis focuses mainly the development of the probability ratio mapping technique and its application on predicting the distribution of Archean greenstone-hosted gold deposits in the Rio das Velhas Greenstone Belt, Quadrilátero Ferrífero. The probability ratio models use the spatial distribution of host rocks and mineral occurrences to calculate different multi-map signatures for gold mineralization. The same geologic unit can host several deposits, or mineralized environments, and these deposits, although geologically and geochemically similar, may have different geophysical characteristics.
The ability of the models to predict regions favorable for economic gold mineralization was verified by comparing them with the occurrences of Archean-greenstone-hosted gold deposits and host rocks. Several models that delineate highly prospective areas were determined. From the regional perspective, the predictive geophysical models convincingly define the majority of host rocks. Most importantly, the predictive models generated for the different mineralized environments delineate prospective areas mapped outside the known mines. These areas have the potential to contain similar mineralization.
The predictive models presented in this thesis lead to a consideration about the future mineral exploration efforts in the Rio das Velhas Greenstone Belt. The characterization of favorable host rocks and several of the large current and past-producing gold mines in the area provide tools for this discussion. If the veracity of these predictive models is ground truthed and accepted, then the results will help focus and priories new exploration activities in the region. This focus should consider high-potential host rocks, such as areas of highly prospective nature and potential targets mapped by this technique. The new target mapped with probability ratio mapping technique, and ground truthed with geologic fieldwork in 1998, is a good validation that encourages ground follow-up studies in the Rio das Velhas Greenstone Belt and may significantly increase the odds of exploration success in the area.

Souza,M.A.T.A. 1999. Tectonic and magamtic evolution of the Ribeira belt in the moutain region of Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 221 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1528 **1999** *Date of presentation:* 30/8/1999

Miguel Antonio Tupinamba Araujo Souza *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Souza,W.S.T. 1999. Mapping of genetic stratigraphic unities of inter-regional character in Chapada Diamantina, Bahia state: Fundament for the stratigraphy, geological structure and surface shape studies. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.307

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D027

DataBase Ref.: 785 **1999** *Date of presentation:* 11/6/1999

Walter Siqueira Tavares de Souza *Advisor(s):* Gama Jr,E.G.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Surita,C.A. 1999. Evaluation of intersticial waters and soil contamination, cause by the disposal of tanning effluents in surface - A field case study. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2045 **1999** *Date of presentation:* 26/4/1999

Celia Alves Surita *Advisor(s):* Ellert,N.

Committee:

Subject of thesis: Environmental Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Teixeira,N.P. 1999. Contribution to the study of granitoid rocks and assocated mineralizations of the Velho Guilherme intrusive suite, tin province of the southern of Pará state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1952 **1999** *Date of presentation:* 27/10/1999

Nilson Pinto Teixeira *Advisor(s):* Bettencourt,J.S.

Committee:

Subject of thesis: Mineralogy and Petrology

State: PA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Tupinamba,M.A. 1999. Tectonic and magmatic evolution of the Ribeira belt in the mountinous region of the Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2258 **1999** *Date of presentation:*

Miguel Antonio Tupinamba *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Vasconcelos,S.M.S. 1999. Recharge of dunes/palaeodunes aquifer, Fortaleza-CE state. PhD Thesis, Institute of Geosciences, University of São Paulo, 100 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 265 **1999** *Date of presentation:* 24/8/1999

Sônia Maria Silva Vasconcelos *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* ' - 'W

Abstract

In an area located in the northeastern part of the Municipality of Fortaleza / Ceará – Brazil, we used the water balance for determining effective infiltration and water level observations for the determination of direct recharge. Data use compose temperature, precipitation and water level from six observations wells. Physical-chemistry of the groundwaters was monitored in order to detect changes through recharge.

Climatic conditions are characterized by a dry period, from July to December, and a rainy season from January to June. Mean annual precipitation is about 1500 mm monthly medium temperatures varying between 26,1 and 27,5oC.

The aquifer system is constituted by quaternary sediments: dunes, paleo-dunes and alluviums, considered as an only system for effects of regionalization of the recharge estimate. This system, that extends to all coastal line of Fortaleza, assumes a strategic importance during periods of drought when surface reservoirs that supply water to the city are falling dry.

Direct recharge calculated for the observation point from piezometric data for 1996 and 1997 amounts 10% and 16% of the effective infiltration determined through the water balance. In 1998, a year with very reduced rainfall, recharge surpassed effective infiltration.

Physical-chemistries parameters increasing salinity with depth. Recharge causes a slight mixing that reduces the salt concentration in the deep waters.

The criterion L was used for the calculation of the total recharge over all the potentiometric surface: 6,59 Mm3; 4,04 Mm3 and 1,20 Mm3 respectively for the years 1996, 1997 and 1998. Effective infiltration for the same years was 17,51 Mm3; 6,84 Mm3 and 0,18 Mm3.

Volkmer,S. 1999. Mineralogy and morpholgy of alteration overburdens developped on acidic volcanic rocks: The examples of Palmas and Pinhão, PR state. PhD Thesis, Institute of Geosciences, University of São Paulo, 189 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 270 **1999** *Date of presentation:* 14/12/1999

Susana Volkmer *Advisor(s):* Carvalho,A.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Palmas (ATP) and Chapecó (ATC) type acid volcanic rocks of riolitic and riodacitic general composition sparsely found in Paraná Basin developed respectively in the area of Palmas and Pinhão, center-southern region of the state of Parana, differentiated alteration covers.

A bidimensional investigation of weathering covers in some alteration cuts and profiles in the aforementioned areas was carried out in this thesis. The aim of this study was to analize the origin and evolution of these materials and verify the types os soils and the geochemical processes through mineralogical, morphological and micromorphological characterization.

The clay fraction mineralogical analysis revealed the presence of kaolinite, goethite and hematite in Palmas and of kaolinite, gibbsite and hematite in Pinhão. In the first case, preferably brown-yellowish covers associated to Litossol (CPa I) and Cambissol (CPa II), from subtropical highlands, were found. The Pinhão profiles present more reddish colors associated to Cambissol (PPi III), Brown Soil (PPi I) and Brown Latossol (PPi II).

In the Palmas region, plain fields and rocky soils distributed on the top of the slopes, were verified; in the planaltic region of Pinhão the soils are relatively deeper, founded generaly on the top of the long slopes. In these profiles decrease of lithoremains (less alterable primary minerals), caolitine and gibbsite association and clay fraction increase, were observed.

Discontinuities such as parallel-flat-band and fissure-fracture-flat structures represents a way to hydrics circulation that caused absolute losses in all elements of varied rates. Relative Al, Si and Fe accumulations were observed through the occurrence of silicon-iron nodules and pedotubules with aluminum-iron crusts (in PPi III profile) and silica plaques (in CPa cuts and PPi I and PPi II profiles).

Mineral association and geochemical behavior of chemical elements characterize the weathering processes as Bissialization-Monossialitization in Palmas cuts and Alitization in profiles of Pinhão.

Almeida,J.C.H. 2000. High grade ductile shearing zones in the medium Rio Paraíba do Sul valley. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.150

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D045

DataBase Ref.: 773 **2000** *Date of presentation:* 20/12/2000

Julio Cesar Horta de Almeida *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Almodovar,M.L.N. 2000. The natural origin of pollution by chrome in the Adamantina aquifer, Urânia municipality (SP state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 199 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1117 **2000** *Date of presentation:* 24/11/2000

Marta Lúcia Nunes Almodovar *Advisor(s):* Hirata,R.C.A.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Araújo,A.L.N. 2000. Petrology of the kimberlitic and kamafugitic pipes from the Alto Paranaíba Alkaline province , Minas Gerais and Goiás states.. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

kimberlites, kamafugites, alkaline, petrology

Instituto de Geociências - Universidade de Brasília *Reference:* D036

DataBase Ref.: 36 **2000** *Date of presentation:* 11/5/2000

Ana Lúcia Novaes de Araújo *Advisor(s):* Gaspar,J.C.

Committee:
- José Affonso Brod - IG/UnB
- Márcio Martins Pimentel - IG/UnB
- Joel Gomes Valença - DG/UFRJ
- Mabel Norma Costas Ulbrich - IGc/USP

Subject of thesis: Mineralogy and Petrology

State: MG GO *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Ultra-mafic rock-types that are thought to be representatives of the alkaline magmatism of the Alto Paranaíba Province, in southwestern Minas Gerais and southeastern Goias, were studied by means of petrography, mineral chemistry, whole-rock geochemistry and isotope geochemistry with the objective of better understanding this Cretaceous magmatism and its source characteristics. Because of the variety and complexity of lithotypes taken into consideration in this research and because of the paucity of detailed studies in the literature, this study also aimed at establishing parameters that allow for a clear distinction between kimberlites, mafurites and ugandites.

Fifty two occurrences were described and classified as kimberlites or kamafugites (sensu latu). Kimberlites, ca 15% of the studied occurrences, are comprised of two populations of macro and phenocrysts of olivine set in fine grained matrix of olivine, ilmenite, phlogopite, spinels, perovskite, carbonate, monticellite, apatite and serpentine. Both mantle-derived xenoliths (spinel-lherzolites, wehrlites and dunites) and crustal xenoliths were identified in the kimberlites.

Kamafugites (s.l.), ca. 85% of the studied occurrences, consist of olivine, clino-pyroxene and phlogopite phenocrysts set in a fine grained matrix of clinopyroxene, olivine, phlogopite, kalsilite and/or leucite, espinels, perovskite, carbonate, apatite and serpentine. Among the kamafugites, both ugandite (characterized by presence of leucite as a dominant felsic phase) and mafurite (with kalsilite as a dominant felsic phase) end-members have been characterized. Mantle-derived xenoliths comprising wehrlites, dunites and piroxenites were identified in the kamafugites. Cognate phases and crustal xenoliths have also been recorded.

Mineral chemistry was found to be efficient in distinguishing kimberlites, mafurites and ugandites in the present study. Phlogopites in the kimberlites have low TiO2 contents (ranging between 0,41 and 1,94 wt%) and Al2O3 (ranging between 11,41 and 12,64 wt%). In mafurites, the phlogopites have TiO2 contents ranging from 0,46 to 4,97 wt% and Al2O3 ranging from 2,74 to 12,65 wt%. In ugandites, the phlogopites have higher TiO2 contents (ranging between 4,35 and 8,65 wt%) and Al2O3 contents (ranging between 5,14 and 11,38 wt%). Forsterite contents in the olivines from kimberlites range from Fo82 and Fo92. The olivines from the mafurites display a range between Fo81 and Fo92 and the olivines from the ugandites between Fo79 and Fo92. Pyroxenes (diopsides) have only been identified in the mafurites and ugandites. The nature of the spinel group minerals depends on the rock-

type. Kimberlites have titanomagnetite phenocrysts and chromium-spinel xenocrysts; mafurites have titanomagnetite phenocrysts and chromite xenocrysts; and ugandites have titanomagnetite phenocrysts and chromite and hercinite xenocrysts. Ilmenite has only been observed in kimberlites, with MgO contents ranging from 8,53 to 17,71 wt%; FeO ranging from 18,54 to 29,81 wt%; and e MnO ranging from 0,34 to 0,86 wt%. Perovskites observed in both kimberlites and kamafugites have a high CaTiO3 component (70 to 96% in the kamafugites and 80% in the kimberlites).
The Re-Os isotope systematics allowed for a better understanding of the sub-lithospheric mantle source to the magmatism in the region. Kimberlites, mafurites and ugandites have different 187Os/188Os ratios (0,117 to 0,129; 0,127 to 0,145 and 0,142 to 0,147; respectively). The Rb-Sr and Sm-Nd isotope systematics failed to indicate first-order differences between kamafugites and kimberlites, whilst 206Pb/204Pb ratios for the kimberlites are higher than those for the other rock types. It would appear as if kimberlites and kamafugites were related to the mixture of at least two dominant mantle components: one with an isotopic signature similar to that of lithospheric peridotites, i.e. with 187Os/188Os ratios of the order of 0,118, similar to those observed in mantle-derived xenoliths entrained in kimberlites intruded in the Kaapvaal, Wyoming, and Siberian cratons; and another with higher 187Os/188Os ratios of the order of 0,135, within the range of ratios reported for pyroxenite veins in alpine-type peridotites and ocean island basalts).
The evolution of the alkaline magmatism in the Alto Paranaíba Province and the rock types in this study are both compatible with petrogenetic models involving the interaction between lherzolitic and wehrlitic protoliths and carbonatitic, kimberlitic and melilititic liquids (eg. Wyllie & Lee, 1999). Kimberlites would represent an explosive phase, rich in CO2, with source characteristics typical of a hazburgitic protolith. Kamafugites would represent magmas with high volatile content generated at shallower levels, following the melting of lherzolite-wehrlite protoliths. Second-order petrologic variations would happen as a consequence to changes in CO2 solubility and content as well as variations in K contents.

Bacci,D.C. 2000. Vibrations generated by explosive use in rocks crashing: Evaluation of the terrain physical parameters and of environmental effects. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 205 pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA056

DataBase Ref.: 945 **2000** *Date of presentation:* 8/12/2000

Denise de La Corte Bacci *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bertoldo,A.L. 2000. Evaluation of the geological surveying activities and of the national geoogical surveys: An international comparative approach. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:*

DataBase Ref.: 1717 **2000** *Date of presentation:* 27/11/2000

Arno Luís Bertoldo *Advisor(s):*

Committee:

Subject of thesis: Mineral Resources Administration and Politics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The scientific and technical activies of gological survey, or geologic mapping, provides the necessary information to exploitation of mineral, energetic and water resources, to prevention of natural hazards and to protection of the environment. These activities are not a simple data collection task but a highly specialized and interpretative work. All over the world , its execution has been done by public agencies normally called “geologic survey”. This work discussed and comparatively analyzes the evaluation mechanisms of the geologic mapping activities currently adopted by the nacional geological surveys (GSs) of England, United States, Canada, France, Finland, South Africa, Australia and Brazil, and also the evaluation programs which these organizations have been submitted. In the same way as other scientific and technological activities, the geological surveys activities are complex and very hard to be evaluated. While European research institutions began to be evaluated in late 70’s, the GSs started to be evaluated in 80’s, however most of the evaluation programs were established in the 90-decade. The initiative for the evaluation/review of the GSs has been arisen from government or agencies of publics policies at high level hierachy, i.e.,from top to bottom, and from outside to inside the corporation. On the trail of the evaluation programs the GSs organizations have been restructured to be adapted to new reality and social demands. One common recomendation of these evaluation programs has been to establish or to strenght a Board,Advisory Councils or Advisory Committees with representatives from the privete sector, universities and other governmental agencies.
The specificevaluation of the geologic mapping activities is also a recent practice that the GSs of developed countries startedin the late 80’s na which steel is under way. The mechanisms and processes utilized, such as peer review process, and the establishment of advisory councils or advisory committees, are essentially qualitative.
The establishement of advisory council and/or advisory committees including representatives from the clients, users and stakeholders, in the planning, monitoring and evaluation of the geologic surveys projects and programs, constitutes a current and future trend in the management of the GSs organizations that approaches to the first primary tenet of the Total Quality

Management – the customer is the ultimate determiner of quality. The presence of regional GSs, advisory councils/committees, universities, as well as associations of mineral and oil producers, or entities, as the American Association of States Geologists, in interaction with nacional GSs, characterize the existence of a heavy net of social relationship. This "social network" is clear in GSs of developed countries, while in GSs of developing countries like Council for Geoscience (South Africa) and Geological Survey of Brazil (CPRM) this social network may be considered incipient.

Brito,R.S.C. 2000. Geology and petrology of the mafic-ultramafic Rio Jacaré sill, Bahia state, and study of the associated de Fe-Ti-V and platinoids mineralizations. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Rio Jacaré Sill; Layered Intrusion; Mafic-Ultramafic Complex; Magnetite; Ilmenite; Vanadium; Platinum-Group Metals; Platinum-Group Minerals; Gavião Block and Contendas-Mirante-Belt

Instituto de Geociências - Universidade de Brasília *Reference:* D039

DataBase Ref.: 39 **2000** *Date of presentation:* 22/9/2000

Reinaldo Santana Correia de Brito *Advisor(s):* Nilson,A.A.

Committee:
Cesar Fonseca Ferreira Filho - IG/UnB
Claudinei Gouveia de Oliveira - IG/UnB
Maria da Glória da Silva - IG/UFBA
Vicente Antônio V. Girardi - IGc/USP

Subject of thesis: Prospection and Economic Geology

State: BA *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

A volcanic, plutonic and sedimentary fold belt occurs in the southwestern part of the State of Bahia, Brazil, along the northeastern border of the Contendas-Mirante Belt, which is a part of the Contendas-Jacobina Lineament. The latter defines the limit between the Jequié and Gavião Blocks in the central-northern part of the São Francisco Craton.
The R.J.S. is a layered intrusion emplaced in folded and metamorphosed basaltic and andesitic rocks of the Mirante Formation (FMt), which is the Intermediate Unit of the Contendas-Mirante Group. R.J.S. is a 70 Km long and about 1Km wide sheet, striking N10oE and dipping 50o-70o southeast.
R.J.S. is divided up into two broad zones: a Lower Zone (LZ) that is 300m thick and an Upper Zone (UZ), which is 600 to 1000m thick. The Lower Zone is made up of clinopyroxene and plagioclase-bearing massive medium-grained gabbro. The Upper Zone consists of two subzones (I and II); the first is gabbroic to pyroxenitic and the second is gabbroic and leucogabbroic to anorthositic. Fine-grained gabbroic rocks occur along the contact between the sill and FMt; these were interpreted as the chill border of the LZ. A Transition Zone (TZ) occurs between LZ and UZ where layered mafic and ultramafic rocks are associated with vari-textured rocks.
The Lower Zone consists of medium-grained gabbros. TZ is made up of ultramafic cumulates consisting of cumulus olivine, clinopyroxene, magnetite and ilmenite. Mafic cumulates is made up of cumulus plagioclase and clinopyroxene with minor hypersthene. Magnetiteis is the cumulus phase. Monomineralic and bimodal cumulates define a microrythmically layered sequence of pyroxenite and gabbros with variable amounts of magnetite. Vari-textured medium-grained gabbroic rocks may contain enclaves of fine-grained gabbros. The Upper Zone I (UZI) is a rhythmically banded sequence of micro-layered gabbro-pyroxenite-magnetite pyroxenite-ferro-gabbro and magnetite-bearing anorthosite. The Upper Zone II (UZII) consists of modally layered medium-grained leucogabbro, coarse-grained leucogabbro and medium to coarse-grained anorthosite. Metamorphic minerals are magnesium hornblende in the Lower Zone, cummingtonite, tremolite-actinolite and chlorite in TZ, ferro-tschermackite in UZI and pargasite-hastingsite in UZII.
Pyroxenes are aluminum-poor (0,3 <Al2O3< 1,5%) and compositions are Wo45-52, En24-41 and Fs8-32. Orthopyroxene is ferro-hypersthene (Wo5-10, En45-55 and Fs40-65). Olivines are iron-rich, Fo55-Fo42 (hyalosiderite to hortonolite). The amphiboles can be metaphorphic and igneous. The metamorphic ones are of calcium-type (Ca>1,5 e Ca+Na>2) and exhibit a continuous trend from magnesium-hornblende to Fe-tschermackite. Igneous amphiboles have ferro-pargasitic to Fe-hastingsitic composition and show intercumulus texture in association with cumulus plagioclase. The iron-titanium-vanadium oxides are titanium magnetite and ilmenite that represent magnetite and ilmenite solid solutions (X'usp<10%) and X'ilm> 90%), respectively.
The volcanic and the fine-grained gabbroic rocks have both siliceous high-magnesium tholeiitic (SHMT) signatures. Fractionation indexes such as normative feldspar and #Fm show decreasing and increasing trend towards the top (east) of the intrusion, respectively. Volcanic rocks and ZI show similar rare earth element (REE) patterns pointing to fractionation of light rare earths (LREE) relative to heavy rare earths (HREE). Mafic cumulates show higher LREE/HREE ratios and a strong Eu anomaly that indicates plagioclase accumulation, whereas ultramafic cumulates show an almost flat REE pattern with discrete HREE enrichment relative to LREE denoting olivine and magnetite fractionation. ZS REE patterns are similar to those of TZ mafic cumulates but exhibit a stronger Eu anomaly, especially for the anorthosic rocks. Border rocks show almost flat REE patterns suggesting they are the least fractionated rocks of R.J.S.
Isotopic data show that the sill has an Sm/Nd age of 2,841±68Ma, ÎNd (T)=-1.3 and MSWD=6.8 for a 20 point isochron. A four point Rb/Sr isochron yielded an age of 2,757±187Ma (Ro= 0.70491±0.0007, MSWD=1.5). R.J.S. Metamorphic recrystallization time is indicated by an isochronic diagram which yielded an age of 1,863±26Ma, (MSWD=5,55, Ro=0,709454±0, 000057. This metamorphism is related to Transamazonian Cycle (2,200-1,900 Ma). R.J.S. 144Nd/147Ndd ratios are related to a slightly depleted contrite mantle source and 86Sr/87Sr ratios indicate continental related magmatism. Isotopic systematics show that both Lower and Upper zones have almost the same ÎNd(T) and Sr(o) that evolved sympathetically with cryptic variations, probably indicating they are magma batches from the same isotopic reservoir that underwent fractional crystallization and host-rock assimilation.
Titanomagnetite and ilmenite are the main cumulus phases of the iron ores. Magnetite displays oxi-exsolutions of ilmenite and ulvospinel lamellae. Ilmenite sometimes exhibits hematite oxi-exsolutions lamellae. Cumulus magnetite controls whole rock

vanadium contents, characterizing high and low vanadium ore types. The high V orebody (Alvo A) consists of magnetite with average 2.2-4.5% V2O5 that yields magnetitites averaging 2.2% V2O5. The low vanadium orebodies from Alvo B and Novo Amparo targets contain magnetite with 0,3 a 2.5 % V2O5 are responsible for 1.5 to 0.5 % V2O5 in the magnetitites. These low vanadium ore bodies contain 0.3 to 0.5 %Cu in 2 to 4 meter thick intervals.
Magnetitite contains Platinum-Group Minerals – PGM associated with arsenides and sulphides. PGM are sperrilite, gversite, cabriite, isoferroplatinum and Pt-Pd-Fe-Ni-Cu-Sn alloys. Arsenides are orcellite, maucherite, westerveldite and cobaltite and the sulphides are pentlandite, chalcopyrite, millerite, pyrrhotite and bornite. PGM occur as tiny particles poikiliticaly included within cumulus Fe-Ti oxides, in alteration rims of intercumulus arsenides and in fracture-filling arsenides.
PGE are mainly Pt and Pd and their contents vary according to the ore type. High vanadium orebodies show 300 ppb Pt, (up to 2,000ppb de Pt) and up to 1,200ppb Pd. Low vanadium orebodies from Alvo B show three anomalous EGP highs of aproximately 600ppb Pt and 240ppb Pd and 150ppb Au. The Novo Amparo ore body displays EGP intervals (Pt> Pd>>Au) with maximum grades of 700ppb Pt, 350ppb Pd and 200ppb Au. PGM chemistry was related to the R-Factor (mass of magma/mass of sulphide liquid) probably implying similar conditions to those related to the formation of economic PGE deposits worldwide. The proposed model for R.J.S. noble metal magnetite-related minerallization is partially equivalent to those used to explain PGE and PGM concentrations related to sulfide-bearing chromitites in other layered intrusions.
Finally it is suggested that a mantle plume has intercepted a mid-continental rift at 2,85 Ga allowing SHMT-type basaltic magmas to migrate to shallow magma chambers and feed volcanic flows that became interbedded with the sediments of the basin. Rapid magma ascent is believed to have prevented sulphur saturation, which might have favored PGE solubility during magma transport. A model consisting of magma mixing combined with a low degree of crustal assimilation and fractionation (AFC) is used to explain R.J.S. differentiation and the observed metallic minerallizations.

Carvalho Jr,O.A. 2000. Evaluation and development of hyperspectral images processing methods: Analysis in a nickel deposit (Niquelândia, Goiás state).. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Hyperspectral Data Processing, A VIRIS and nickel.

Instituto de Geociências - Universidade de Brasília *Reference:* D037

DataBase Ref.: 37 **2000** *Date of presentation:* 28/6/2000

Osmar Abilio de Carvalho Junior *Advisor(s):* Meneses,P.R.

Committee:
Augusto Cesar Bittencourt Pires - IG/UnB
José Affonso Brod - IG/UnB
Alvaro Penteado Crósta - IG/UNICAMP
Lênio Soares Galvão - INPE

Subject of thesis: Prospection and Economic Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The imaging spectroscopy technology, in which spectral high resolution sensors require with a large spectral bands number, with magnitude in the order of nanometers, establishes methodological changes in the digital processing of optical image where the main study is related with a subpixel level. The aim of this work was to evaluate and test the Hyperspectral Data Processing (HDP) different methods, to put in a hierarchical order the procedures and verify for each algorithm its advantages and limitations. In this framework it was built a sequential methodology structure that contemplated several methods and part of the HDP: a) pre-processing, b) spatial analysis, c) spectral identification and d) semi-quantification. The methods were tested at the "Fazenda" mine, Niquelândia (GO), over nickel supergenic mineralization ores. Radiometric studies were done with weathering profile samples identifying the pimelite, that still does not exist at USGS and JPL spectral libraries. In the pre-processing stage the Green's and Atmosphere Removal Program (ATREM) methods were used to atmosphere corrections and over them also applied Empirical Flat Field Optical Reflectance Transformation (EFFORT) method. Best results were obtained from Green method. Concerning to the noise treatment it is proposed the Sequential Minimum Noise Fraction (MNF) that allows eliminating different kinds of noise. In order to detect the final members it was applied the methodology composed of: MNF, Pixel Purity Index (PPI) e N-dimensional Visualization. In the spectral classification, the mapping by Spectral Correlation Mapping, the Method of Spectral Identification, and the analysis positioning of the central band of absorption were proposed. The developed methods present advantages compared to others, one of these its the capacity to detect areas with negative correlation. An adaptation of Multiple Endmember Spectral Mixture Analysis (MESMA) methodology was applied to the mineral abundance study in addition to morphometric data of the absorption feature emphasizing the depth band. From these procedures it was possible to separate the main horizons from the weathering profile showing the spatial distribution of its constituent minerals. The results attest that the methodological sequence developed describes the minerals in the study area.

Castro,V.L.L. 2000. Underground waters in the low course of the Rio Doce basin/RN state : subsides for an integrated management. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1996 **2000** *Date of presentation:* 15/12/2000

Vera Lúcia Lopes de Castro *Advisor(s):* Pacheco,A.

Committee:

Subject of thesis: Hydrogeology

State: RN *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Celligoi,A. 2000. Hydrogeology of the Caiuá formation in the Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2000 **2000** *Date of presentation:* 17/3/2000

André Celligoi *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Hydrogeology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Cerqueira,M.R.S. 2000. Geochemistry of waters and sediments from Garimpo da Lavra region, Crixás municipality, Goiás state: parameters of dispersion and retention of metals.. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

"garimpo"; mine tailings; sediments; mercury; acid mine drainage metals dispersion; geochemistry

Instituto de Geociências - Universidade de Brasília *Reference:* D035

DataBase Ref.: 35 **2000** *Date of presentation:* 28/4/2000

Márcia Regina Silva Cerqueira *Advisor(s):* Santos,R.V.

Committee:
José Eloi Guimarães Campos - IG/UnB
Raul Minas Kuyumjian - IG/UnB
Bernadino Ribeiro de Figueiredo - IG/UNICAMP
Sambasiva Rao Patchineelan - DG/UFF

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Mina Inglesa Garimpo, situated in Crixás Greenstone Belt, northwest of Goiás State, is one of the most important gold garimpos of the region. Most of the activity of this garimpo occurred between 1984 and 1992, when total gold production reached almost 1000 Kg. One of the environmental concerns of this artisanal mining activity refers to the spreading of metals to the Vermelho river basin related to acid mining drainage from the tailings of the garimpo and the dispersion of mercury used in the amalgamation process of gold recovery. Sediments accumulated in the tailings of Mina Inglesa, stream sediments, and of water from Vermelho river and tributaries, were collected in two sampling periods, being one in dry season and the other in rainy season. Mineralogical and chemical studies of these samples pointed to high concentrations of Mg, Ni, Cr, Zn, Co, Cu, Mn, Hg and As in the tailings of Mina Inglesa and in the tailings-derived fluvial sediments. Intersticial water sampled in the tailings and in the creek coming from the garimpo area presented high conductivity (average of 2290 mS cm-1 in the tailings) and high concentrations of Ca, Mg, Sr, Ba, Ni, Co, Cr, Pb, Co, Cu, Zn, Mn, P and SO42-. The data presented here show that the dispersion of these elements to the Vermelho river is not significant and decreases rapidly downriver and far from the garimpo and its tailings. Besides the physical attenuation, the alkaline behaviour of the region waters and the presence of carbonate minerals on the tailings play an important hole on the metals dispersion control. Chemical and mineralogical features in garimpo tailings indicate that the neutralization of the acid mining drainage is accompanied by precipitation of hydroxide and sulphate minerals. The highest mercury content was found in the Mina Inglesa mine tailings, corresponding to 13,86 mg/kg. Mercury determination in stream sediments from the Vermelho river also showed that dispersion away from the garimpo is also not significant and decreases rapidly downriver and far from the garimpo and its tailings. Chemical and mineralogical statistical analyses of the data indicate that mercury is poorly associated with quartz and strongly associated with iron-magnesian phyllosilicates, mainly talc and chlorite.

Chaves,N.S. 2000. Cimentation mechanism in Recent marine sediments, Example Beachrocks of Pernambucano state Litoral. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 199 pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA057

DataBase Ref.: 944 **2000** *Date of presentation:* 11/12/2000

Núbia Siqueira Chaves *Advisor(s):* Kiang,C.H.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Conde,R.P. 2000. Geostatistic applied to the reserves evaluation and minning control in the mina de Cana Brava mine (GO state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2271 **2000** *Date of presentation:*

Rita Parisi Conde *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Cosin,S. 2000. Introduction of alternative materials in the production of special ... in substitution of the compositions normally used. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg. 97

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D041

DataBase Ref.: 777 **2000** *Date of presentation:* 14/9/2000

Shirley Cosin *Advisor(s):* Moreno,M.M.T.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Danderfer,A. 2000. Sedimentary geology and tectonic evolution of the Setentrional Espinhaço Range, Bahia state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Espinhaço Basin, Espinhaço Supergroup, Proterozoic, Tectonics, Stratigraphy, São Francisco Craton

Instituto de Geociências - Universidade de Brasília *Reference:* D034

DataBase Ref.: 34 **2000** *Date of presentation:* 31/3/2000

André Danderfer *Advisor(s):* Dardenne,M.A.

Committee:
Carlos José Souza de Alvarenga - IG/UnB
José Eloi Guimarães Campos - IG/UnB
Carlos Schobbenhaus - DNPM
Alexandre Uhlein - IGC/UFMG

Subject of thesis: Regional Geology

State: BA *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The stratigraphic sequence of the Espinhaço basin, located in the center-oriental portion of the Atlantic shield, is represented in two great fisiographic domains: the Espinhaço Range and the Diamantina Plateau. The sedimentary evolution of this basin dates from the Staterian to the Tonian. In this thesis the sedimentary geology and the tectonic evolution of the northern prolongation of the Espinhaço Range, located between the 11°45 ' and 14°00'S parallels, were investigated as well as their geological relations with other segments of that basin.
This research was motivated by several problems regarding the evolution of the Northern Espinhaço Range, some of which are: the insufficient knowledge of its tectonostratigraphic framework, the absence of sedimentologic and stratigraphic studies in the area, the lack of knowledge on the basin formation events and on the inversion tectonic processes that lead to its configuration and the absence of an thorough and multidisciplinary basin analysis. These aspects were approached and partly solved in this work by using 'Synthem Stratigraphy' concepts, along with sedimentary and structural geology conventional methods. The research involved a reanalysis of published data, field activities, the elaboration of a map in a 1:250000 scale and of several geologic sections as well as stratigraphic and structural studies, besides discussion and proposition of geological models.
The sedimentary geology investigations enabled the organization and rebuilding of the stratigraphic framework pertaining the Northern Espinhaço Range in a systematic way through the recognition and characterization of eight synthems that are equivalent to units bounded by unconformity, or stratigraphic discontinuities with regional extension over the basin. These synthems are: Algodão, São Simão, Sapiranga, Pajeú e Bom Retiro (lower interval), São Marcos and Sítio Novo (intermediate interval) and Santo Onofre (upper interval). For each interval the sedimentary processes, the depositional systems, the filling style of the basin and the tectonic settings were evaluated, based mainly on the facies association characteristics and their lateral/vertical changes.

The synthems are considered here as the first order stratigraphic cycles, with a time duration that depends on the type of tectonic subsidence mechanisms (mechanic or passive) involved in the generation of the basin. The Bom Retiro and São Marcos synthems correspond to intracontinental sag basins. The Pajeú, Sítio Novo and Santo Onofre synthems are compatible to the evolution of rift basins; the first two generated by extensional tectonics, and the last one by transcurrent events. The Algodão and Sapiranga synthems are interpreted as rift-sag basins. Finally, the São Simão Synthem is related only to a taphrogenesis, without the formation of an associated sedimentary basin.
Based on the described context, the author concludes that the 'Espinhaço Supergroup' and 'Espinhaço Cycle' denominations should be abandoned or, at least, deeply revised. Instead, the author suggests the use of the term 'Espinhaço Basin', considering that this basin is polycyclic, multi-temporal and polyhistoric. As an initial estimate the author considers that the unconformities represent almost two thirds of the period of time involved in the basin evolution, implying that the studied geological records are significantly discontinuous in time.
Under the structural geology approach, it was possible to visualize a new cinematic model to explain the deformed framework of the investigated area based on inversion tectonics concepts. The relations between pre-inversion and post-inversion geometry of the basin are evident and represent a typical case of tectonic inheritance. In this model, the crustal blocks nucleated in previous basin formation episodes had a fundamental role in deforming the sedimentary cover. From west for east, four blocks are recognized: the Guanambi-Correntina, Ibotirama, Boquira and Paramirim Blocks, with their limits being the Muquém, Santo Onofre and Carrapato faults, respectively. The inversion of the original structures of the basin favored the unipolar extrusion to the west of the sedimentary cover in the Ibotirama block, or bipolar to the east and west in the Boquira block, as well as the penetrative deformation and the associated metamorphism with variable intensity. Also in this model, the author proposes that the blocks moved along an intracrustal fault, being raised in a passive way inside the basin under inversion. There is no field evidence to support that the Paramirim block overthrusted the Espinhaço cover westward, as supported by other models. Instead, the Espinhaço cover, which settled over the Paramirim block, was backthrusted against the block along a detachment situated on the contact. The radiometric data allow the positioning of the described deformation in the end of the Neoproterozoic age and relate it with the Brazilian tectonometamorphic event. There is no evidence of any positive inversion event before the generation of the Espinhaço Basin.
In the end of this thesis, the author emphasizes that the cratonic block models which exist in the literature should be reevaluated in order to better explain the evolution of the Proterozoic basins in the Atlantic Shield context. In a more general way, the São Francisco Craton can be maintained. Yet it's limits should be modified in a way as to contemplate the new information contained in this study.

Dauga,C. 2000. Impact of the industrial waste disposal rich in heavy metals (Mn, Cu, Pb, Zn) and Mg over a ferralitic cover in tropical climate (SP state, Brazil): Mineralogy, petrography and geochemical transfers. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 266 **2000** *Date of presentation:* 1/3/2000

Christine Dauga *Advisor(s):*

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work presents a study about contamination due to a solid industrial waste deposit, rich in Mg, Zn, Cu, Mn and Pb, that is undergoing tropical alteration (Brazil). The objectives are to determine the impact on the environment due to heavy metals deposition and their transfer mechanisms within the soils. A chemical, mineralogical and petrographical characterisation, as well as a quantitative and qualitative monitoring of the waters that circulate within the soil system (rain and soil drainage waters), were performed.

The waste forms a compact layer of 20-25cm thick, presenting heterogeneous structure. Its principal mineral phases are well-crystallised silicates, hydroxides and carbonate of Mg. As a general feature, the metals are not associated with these minerals, but they are found as oxides, hydroxides or sulphates forms, concentrated in localised zones.

The soils in the area are mainly red-yellow ferrasol, constituted by kaolinite, iron oxyhydroxides and quartz. Although the soil presents high porosity (c.a 40%), the water drainage movement is low. A high amount of Zn in the first 5 cm of the soils is observed, which is attributed to the high Zn input through rainfall. However, in the soil profile underneath the waste, no contamination is observed, what can be explained by the soil compaction, due to the disposition procedure, and by the waterproofing role of the compacted waste.

Over the slope below the waste deposit, the surface horizons and the deeper lateritic horizons are contaminated. The surface contamination is forming colluvions rich in waste particles that were transported dowhill, which corresponds to an erosion rate of 0,4cm/year on the waste top. In the deeper lateritic horizons, a heavy metals migration is observed and can bee explained by the dissolution of these particles. The dissolution occurs under more acidic and redox conditions than those existed into the waste. Reactivity experimental tests (soxhlet) performed on the waste, confirms the importance of pH and Eh conditions for the metals mobility. In the contaminated ferrasol, the metals show high affinity with the <20µm fraction, but none with the natural Fe oxyhydroxides, nor with waste Mn oxyhydroxides or with the organic matter. The anthropogenic Zn, Cu and Mn seemingly bond to the kaolinite by surface phenomena.

Duvallet,L. 2000. Crystallochemical evolution of zirconium during hydrothermal and supergene processes of

alteration in alkaline rocks: Example of the Poços de Caldas massif, Minas Gerais state, Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 262 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1116 **2000** *Date of presentation:* 28/6/2000

Laure Duvallet *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Etchebehere,M.L.C. 2000. Neo Quaternary terraces in the Rio do Peixe valley, occidental Paulista Plateau: Stratigraphic and tectonics implications. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg. 336

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D040

DataBase Ref.: 778 **2000** *Date of presentation:* 4/9/2000

Mario Lincoln de Carlos Etchebehere *Advisor(s):* Saad,A.R.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Faccincani,E.M. 2000. Morphotectonics of teh Paulista peripherical depression and basaltic cuesta: São Carlos, Rio Claro and Piracicaba, SP regions. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D037

DataBase Ref.: 781 **2000** *Date of presentation:*

Edna Maria Faccincani *Advisor(s):* Morales,N.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Ferrari,VC. 2000. Primary and secondary phosphates in the weathering profiles on the Juquiá (SP state), Anitápolis (SC state) and Tapira (MG state) alkaline-carbonatitic massifs. PhD Thesis, Institute of Geosciences, University of São Paulo, 241 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 272 **2000** *Date of presentation:* 30/6/2000

Viviane Carillo Ferrari *Advisor(s):* Toledo,M.C.M.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

SC

MG

Abstract

This research investigates the mineralogy, geochemistry and crystalochemistry of primary and supergene phosphates in lateritic profiles developed over Alkaline-carbonatites Complexes of Juquiá (SP) Tapira (MG) and Anitápolis (SC). The study applies micromorphology techniques (MEV, ME, MR, CL) and mineralogical identification DRX and ATD. The obtained data can contribute with studies of technological characterization. Otherwise the data had been correlated with the genesis controls of the phosphates (litologic types and its relative distribution, associations of primary phosphates, geochemistry sources, climate and relief).

The phosphate mineralogy in lateritic profiles developed over Alkaline-carbonatítes Complexes is marked by the presence of residual apatite, that presents some alteration features. Fresh primary apatites of composition hidroxyfuorapatite, alter during weathering by losses of substitute calcium cations (Sr and Na) and by a carbonate increase accompanied by the increase in F, with a trend to compositions near the carbonate flluorhydroxyapatite. Evidences of this behavior were observed in Tapira and Juquiá. In Anitápolis a smaller variation was observed in the compositions of the primary apatites along the profile, which shows a differential evolution comparing to the other areas. The porosity increase due to mineral weathering leads to the formation of supergene phosphate apatites and mainly the aluminous phosphates of the crandallite series. It was observed that supergene apatites are carbonated and more F enriched than the primary ones, showing that in the supergene condition the carbonatefluorapatite is more stable. Weathering causes also physical and chemical modifications in primary apatites, which may be responsible for problems in industrial procedures to the concentration of phosphatic ore in Tapira, the only area where apatite is mined, between the three areas here treated.

The crandallitic phases are present in materials of supergene origin where apatite was partially or totally dissolved. They dominates the weathering products of alkaline-silicatic rocks. This situation was observed in Juquiá and Tapira. In Anitápolis these phosphates are rare. The phosphate composition of crandallite series shows, at Tapira, a variation in Ba, Ca, Sr and ETR in site A; there were found intermediary varieties between gorceixite and goyazite (with ETR) in ferruginous material, and among the crandallite and the gorceixite in apatitic material. In materials where primary apatite is still present, this variation can be related to geochemical differences of the profile where they were formed. Juquiá presents smaller variation in the composition of minerals from crandallite series in the cationic site, which is dominated by Ba (except for the type in phlogopite pseudomorphs, where there is more Ca than Ba and larger irregularities in site occupation).

The occurrence of other phosphates in the studied profiles is more restricted and limited in each area: turquoise and wavellita in Juquiá and rhabdophane in Tapira. These minerals have been interpreted as supergene neoformation; they fill fissures in the well developed materials of the profile. Rhabdophane was found in rich anatase materials. Wavellita and turquoise were found in the alterite formed on transition zone between carbonatite and alkaline-silicatic rocks. The composition of analyzed phosphate supergene minerals, crandallite, wavellite, turquoise, and rhabdophane, showed to be controlled by geochemical availability of the profile where they were formed.

Florencio,R.V.S. 2000. Clays from Itararé subgoup: potenciality as ceramic basic substance and as inertious of industrial residua. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2266 **2000** *Date of presentation:*

Raquel Valerio de Sousa Florencio *Advisor(s):* Valarelli,J.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Freitas,M.E. 2000. Greisen and tin mineralizaton evolution of the Morro da Laranjinha, granitic massif of Mangabeira, Goiás state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

topaz-albite granite, greisen, tin, Li-mica, helvite, cassiterite, indium, In

Instituto de Geociências - Universidade de Brasília *Reference:* D032

DataBase Ref.: 32 **2000** *Date of presentation:* 25/2/2000

Monica Elizetti de Freitas *Advisor(s):* Botelho,N.F.

Committee:
- Jose Carlos Gaspar - IG/UnB
- Roberto Ventura Santos - IG/UnB
- Milton Luiz Laquintinie Formoso - IG/UFRGS
- Silvio Roberto Farias Vlach - IGc/USP

Subject of thesis: Mineralogy and Petrology

State: GO *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The Morro da Laranjinha hill in northern Goiás comprises the southern portion of the apophysis related to the Mangabeira Granitic Massif, Paranã Tin Province. The Morro da Laranjinha granites, named G2d and GAT, represent the most evolved magmatic series in the region. The country rocks are schists (Ticunzal Formation) and gneisses (Granite-gneissic Complex). The G2d and GAT granites contain essential quartz, perthitic K-feldspar, albite and mica. However, the presence of topaz and zinnwaldite characterizes the GAT while siderophyllite is typical of the G2d.

The G2d and GAT granites underwent hydrothermal alteration which started in the post-magmatic stages, resulting in a great variety of greisens and hydrothermal products. The partially metasomatized granites reflect variable overprinting of albitization, silicification and greisenization features. The final products are topaz-bearing zinnwaldite greisens. During hydrothermal alteration several elements were remobilized by F-bearing fluids able to transport and leach REE , Zr and Y.

Minerals formed during hydrothermal alteration are F-topaz, micas, quartz, secondary albite and fluorite. Accessory minerals

include beryllium (genthevilte and phenakite), wolframite, sphalerite, arsenopyrite, löllingite, magnetite and garnet. These minerals provide information about the physical-chemical conditions during their crystallization. Cassiterite is the only tin ore identified and contains important indium concentrations. Micas occur in different generations, presenting chemical differences that allowed the reconstruction of the greisenization path. The formation of early zinnwaldite suggests an environment with high activity of F and Li, where Fe was abundant. The presence of phengite in the final stages can be related to the entrance of F-, Fe- and Li-poor fluid in the system, interpreted as meteoric water. Intermediate micas show the beginning of the re-equilibrium to lower acid and salinity conditions.

An hydrothermal evolution model put forward in which fluids are concentrated in the cupola during the crystallization phase of G2d and GAT granites. The most likely interpretation is that the hydrothermal alteration has initiated with an interaction between the granites and F- and Li-rich fluids containing Fe, Zn, As, Mn, Sn, In, Rb, Nb, Ta, W e S. For the first stages were estimated temperatures close to 500ºC and pressure values below 0.5 Kbar. The F-rich fluid leached Zr, Y and REE. During the greisenization evolution, the hydrothermal mineralogy was continuously transformed and re-equilibrated until the formation of F and Li-poor late phases, related to the entrance of meteoric water in the system.

Gallas,J.D.F. 2000. Main geo-electric methods and their applications in mineral prospection, hydrogeology, engineering geology and environmental geology. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 174 pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA047

DataBase Ref.: 948 **2000** *Date of presentation:* 15/9/2000

José Domingos Faraco Gallas *Advisor(s):* Malagutti Filho,W.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Gandini,A.L. 2000. Aspects of mineralogy, geochemistry, genesis and economic potentiality of the Marilac pegmatitic field, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 261 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1113 **2000** *Date of presentation:* 15/3/2000

Antonio Luciano Gandini *Advisor(s):* Svisero,D.P.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SE24 *Centroid of the area:* ' - 'W

Abstract

Geraldes,M.C. 2000. Geochemistry and geochronology of the mesoproterozoic granitic plutonism of southwestern Mato Grosso state (SW of Amazonic craton). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 193 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1114 **2000** *Date of presentation:* 7/4/2000

Mauro Cesar Geraldes *Advisor(s):* Teixeira,W.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MT *1/1,000,000 sheet:* SD21 *Centroid of the area:* ' - 'W

Abstract

Gomes,L.C.C. 2000. Dynamic evolution of the Itabuna-Itajú do Colônia Neoproterozoic shearing zone and of the associated alkaline fissural magmatism (SSE of Bahia state, Brazil). PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 963429

DataBase Ref.: 386 **2000** *Date of presentation:* 29/2/2000

Luiz Cesar Correa Gomes *Advisor(s):* Oliveira,E.P.

Committee:

Subject of thesis: Metallogenesis

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

The Bahia State, Brazil, hosts a number of tholeiitic and alkaline dyke swarms that evolved within several geologic periods spanning from the Archaean-Paleoproterozoic to the Phanerozoic. The alkaline provinces are restricted to the Meso-Neoproterozoic interval and are usually associated with brittle shear zones such as the Itabuna-Itajú do Colônia Shear Zone (IICSZ), the focus of this thesis. The IICSZ is a N45°-trending, 30km wide, intracratonic shear zone, extending for some 150km through the SSE portion of the Bahia State. The IICSZ is closely related to dykes and syenites of the Southern Bahia Alkaline Suite and its southwestern extension is cut by the N140°trending, ductile-brittle Potiraguá Shear Zone (PSZ). The PSZ is located in the tectonic limits between the Neoproterozoic Araçuaí Mobile Belt and the Archaean-Paleoproterozoic Sao Francisco Craton. The study of kinematic indicators in faults, fractures and dykes planes of both the IICSZ and PSZ indicated that two tectonic phases were responsible for their present structure. The first phase was connected to a N-S compression that triggered reverse faulting in the PSZ e sinistral transpressional shearing in the IICSZ. The second phase was akin to a E-W compression that resulted in sinistral and dextral transtension strains in the PSZ and IICSZ, respectively. The alkaline dykes were emplaced later in the first phase and throughout the second phase. Palaeostress fields in both the IICSZ and PSZ were controlled by the orientation of the far-field stress, disturbances in field stress around re-actived shear zones, 3D-geometry of shear zones, tension canalization along shear zones, position of secondary faults and fractures and orientation of shear zones in relation both to the limit of the Araçuaí Mobile Belt and the Sao Francisco Craton and to the site of intersection between the IICSZ and the PSZ (where tension vectors converged to). Magmatic flow patterns associated with the shear zones were yielded from 524 dykes in the IICSZ. These were divided into two distinct groups: (i) a radial pattern, related to magmatic fracturing and displaying centre-divergent flow sense and (ii) a linear pattern, arranged in parallel to sub-parallel position to the shear zone. Alkaline dykes comprised in linear patterns were emplaced during active shearing. They were modelled in this study in order to simulate all possible orientation of magma flow indicators that might be produced within a vertical dyke emplaced under coeval internal and external stresses. The effect of magmatic driving pressures were portrayed in terms of magma flow velocities (MFV) and the external stresses in terms of wall motion velocities (WMV) divided by two (WMV/2). Using these assumptions, five cases were proposed: MFV>>WMV/2, MFV>WMV/2, MFV=WMV/2, MFV<WMV/2 e MFV<<WMV/2. The model was tested in the field using dykes hosted in the central portion of the IICSZ. Comparisons of features predicted in the model with those observed in the field showed a remarkable equivalence, improving on aspects of paleostress analysis of dykes emplaced under similar tectonic environments. The IICSZ and PSZ dynamic evolution along the Paleoproterozoic and Neoproterozoic was accessed from new Sm/Nd, Ar/Ar e Pb/Pb isotopic data stemming from a number of plutonic bodies in the region. Among the results, the following Pb/Pb ages are highlighted: (i) the 2089±4 Ma Pau Brasil anorthosite; (ii) the 2087±1 Ma to 2079±4 Ma Potiraguá granite; (iii) the 688±10 Ma Ibicaraí and the 732±3 Ma Potiraguá syenites and (iv) the 676±15 Ma Potiragud and the 551±36 Ma Itabuna felsic dykes.

Gonçalves,J.C. 2000. Methodological proposal to use Mogi Guaçu (SP) region caolinitic clays in the production of monoporose ceramics plates. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D042

DataBase Ref.: 776 **2000** *Date of presentation:* 14/9/2000

José Claudino Gonçalves *Advisor(s):* Moreno,M.M.T.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Guimaraes,G.B. 2000. The granitoid rocks of the Cunhaporanga granitic complex, Paraná state: Geological, geophysical, geochemical and mineralogical aspects. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 230 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1066 **2000** *Date of presentation:* 15/9/2000

Gilson Burigo Guimaraes *Advisor(s):* Ulbrich,H.H.G.J.

Committee:

Subject of thesis: Mineralogy and Petrology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Iwata,S.A. 2000. Genetci aspects and mineralogical characteristics of the chrysoberil of the esemrald minings from Ferros and Hematita - MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1866 **2000** *Date of presentation:* 27/11/2000

Sandra Akemi Iwata *Advisor(s):* Madureira Filho,J.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Kikuchi,R.K.P. 2000. Evolution of reefs and hermatypic coral communities of the northern continental shelf of Bahia during Holocene. PhD Thesis; Institute of Earth Sciences, University Federal of Bahia - UFBA, Salvador; pp

reefs, corals, Holocene, community structure, relative sea-level changes

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 1507 **2000** *Date of presentation:* 20/12/2000

Ruy Kenji Papa de Kikuchi *Advisor(s):* Leão,Z.M.A.N.

Committee: Alberto Figueiredo - UFF
Viviane Testa - IG/UFBA
José Maria Landim Dominguez - IG/UFBA

Subject of thesis: Sedimentary Geology

State: BA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Models of reef evolution and reef building community succession during the Holocene are proposed. The study area is located in the northern continental shelf of the state of Bahia, Brazil. This work is based on the distribution of the present community in reef banks which tops are found in different depths, and a the sub-fossil coral community structure found in the flats of bank reefs attached to the coast. This sub-fossil corals are 3 to 4 ka (thousands of years) old.
The main reef types found in the area are the shelf edge reefs, bank reefs detached from the coast and bank reefs attached to the coast. Flats of the latter developed with the coalescence and sub-aerial exposure of the reef tops in the last 3-4 ka BP (before present). Three stages of reef development were recognized. The drowning stage, from the beginning of the Holocene until about 7 ka BP, when reefs established in the continental slope and shelf edge could not follow up sea level rise. During this stage, reefs may have grown during short periods of sea level stillstand. The second stage occurred from 7 ka BP to 3 ka BP, when the ecosystem developed plainly and reef building coral community reach the maximum complexity level. The third, the decline stage, occurred after 3 ka BP, with the beginning of the sea level drop phase and when reefs were exposed to atmosphere, their tops were eroded, reef flats developed and the coastline prograded burying parts of the reefs. Simultaneously with their attachment to the coast, new bank reefs in the inner shelf started to develop. In these newly developing reefs, a initial stage coral community is now found.
The proposed model to the succession of reef-building organisms during a complete cycle of reef growth is composed by 3 associations: the pioneer, formed by coralline algae and the coral Mussismilia hispida; the transitional, which is formed by the latter added to the coral species Siderastrea stellata, Agaricia agaricites e Favia gravida; and the third, the climax, which is formed by the coral species Siderastrea stellata e Mussismilia braziliensis.
The top of reef bank detached from the coast are at depths greater than 5 m, up to 15 m, relative to the mean low water level (MLWL). If considered relative to the mean water level (MWL), their depths of occurrence are from 6.5 to 16.5 m. Reef coral cover is lower than 3%, in average, and reduces in greater depths, reaching lesser than 0.5% at depths greater than 10 m. Light compensation depth for reef growth is 5 m. If depths relative to MWL are taken into consideration, all reefs are drowned.
Although the direct influence of river discharge on turbidity seems to be negligible during summer, it is probable that a mechanism, operating on an annual scale on the rivers of the northern coast is responsible for the total suspended material found on the coastal environment. This mechanism must contain the runoff of large quantities of fine sediment during the rainy season, the trapping of sediment in the reefs and resuspension and removal of the sediment during the following summer season.

Lacerda,C.M.M. 2000. Structural and petrogenetic evolution of the Ambrósio granodioritic dome, Bahia state: Implicatons on the mechanism of emplacement. PhD Thesis, Instituto de Geociências - Universidade de Campinas / SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 925579

DataBase Ref.: 389 **2000** *Date of presentation:* 21/11/2000

Carla Maria Mendes Lacerda *Advisor(s):* Oliveira,E.P.

Committee:

Subject of thesis: Metallogenesis

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

The Ambrosio Dome is a 40 km long, up to 8 km thick eliptic body emplaced into volcanic-sedimentary rocks of the Palaeoproterozoic Rio Itapicuru greenstone belt. Geologic mapping of the dome allowed us to distinguish three main igneous suite, namely (i) granodioritic to tonalitic orthogneisses, (ii) monzogranite and porphyritic to equigranular granodiorites, and (iii) granitic-, pegmatitic and aplitic dykes, and quartz veins. In addition to these rock units, the dome comprises large domains of migmatic gneisses, migmatites and undifferentiated granites to granodiorites, with complex field relationships. The region underwent two events of deformation of NW-SE direction. The first (En) is a low-angle thrust which is marked by down-dip strechting lineations on the western border of the dome and its country-rocks. The second one (En+l) is a left-sense transcurrent tectonics that wipe out most of the early structure. This event comprises three progressive deformation phases with the following characteristics: (i) the first was responsible for the development of N-S oriented, high- to moderate dipping, solid-state and magmatic planar structures, as well as subhorizontal mineral lineations; (ii) the second is marked by the intrusion of granitic and pegmatitic dykes, (iii) whereas the third is illustrated by folds with subhorizontal axis paralleling the strechting and (or) mineral lineations. The Ambrosio dome was emplaced syn-tectonically during the second deformation event (En+l) as evidenced by (i) widespread mylonitic foliation and strechting mineral lineations at the dome edges parallel both magmatic layering and mineral lineations on the dome centre, (ii) s-c relationships of biotite and quartz ribbons observed on the dome margin are identical to those in magmatic biotite of the dome central portion, (iii) oblique fabric of schlieren layering are concordant with solid-state fabrics of pegmatititc dykes, (iv) the emplacement age (2,080 Ma, U-Pb on xenotime) of granitic rocks of the dome is consistent with the metamorphic age (2,080 Ma, ArAr on hornblende) of host-rock amphibolite, (v) changes of magmatic textures into subsolidus ones ate hightemperature, (vi) magmatic segregation (leucossome or schlieren layering) parallel to solid-state foliations, (vii) foliation refraction from host-gneiss into granite dyke, and (viii) and dyke off shoots with magmatic fabric paralleling solid-state structures of the host gneiss. Furthermore, petrofabric studies of quartz c-axis on several rocks of the Ambrosio dome yielded a temperature range of 650-750 °C for planar structures nucleation. The crystalization age of rocks from the Ambrosio dome (2,080 Ma) coupled with inherited zircons (up to 3,160 Ma), Nd model ages between 3,059-2,586 Ma and negative epsilon Nd values (-10.67-4.35) indicate a significant contribution of older, basement rocks in the genesis of the dome. Whole-rock major and trace element geochemistry reflects a syn-collisional to volcanic arc signature, which is interpreted as inherited mostly from the basement protoliths. The presence of dykes, migmatite leucossomes and schlieren layering paralleling the major N-S axis of the dome, as well as the existence of left-lateral shear zones on both eastern and western margins of it, and the lack of high-angle lineations usually associated with diapyric ascent of magmas, strongly support a model of dome formation during the escape tectonics that followed a regional shortening from NW to SE.

Machado Jr,D.L. 2000. Structural constraints and tectonic context of the "Guapiara alignment". PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 143 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1136 **2000** *Date of presentation:* 22/9/2000

Delzio de Lima Machado Jr *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SG23 *Centroid of the area:* ' - 'W

Abstract

Martins,G. 2000. Lithogeochemistry and geochronological controls of the Algodões-Choró metamorphic suite. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 963466

DataBase Ref.: 387 **2000** *Date of presentation:* 10/5/2000

Guttenberg Martins *Advisor(s):* Oliveira,E.P.

Committee:

Subject of thesis: Metallogenesis

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

This thesis proposes an interpretation of the tectonic evolution of the AlgodoesChoro Metamorphic Suite (ACMS) - a paragneiss-amphibolite association intruded by granite-tonalite orthogneisses that crops out in the central region of the Ceara State, NE Brazil. The geological data support the division of this suite in the following units: 1) Algodões amphibolite - garnet-bearing and garnet-free amphibolite found in the homonymous village of the Quixeramobim district; 2) Choro meta-sedimentary unit - biotita-gneisses with quartzites and metaconglomerate horizons croping out around the Choro Limão dam; and 3) granite-tonalite orthogneisses - intrusive bodies into the older units as stocks, dikes and sheets.
The fine grained garnet-free amphibolite of ACMS was interpreted as tholeiite lavas having flat chondrite-normalized rare earth element patterns (REE), and negative Nb-Ta anomalies and positive Sr anomaly on primitive mantle normalized multi-elements diagrams. These rocks yielded a whole-rock Sm-Nd age of 2,240±50 Ma with Nd model
ages (TDM) varying between 2,403-2,257 Ma with positive ENd values. Petrogenetic modelling suggests the derivation of these rocks from a Depleted Morb Mantle source. The Choró meta-sedimentary unit was characterized as dominantly feldspar-rich metagraywackes made up of fragments of mafic and felsic-intermediate igneous rocks. The enrichment in Sc and Co relative to La and Th supports this assumption. The REE-patterns are fractionated without prominent Eu-anomalies. Isotopic data indicate

Nd model ages (TDM) in the interval 2,449-2,216 Ma and positive ENd values. In general the granitetonalite orthogneisses of ACMS have a calc-alkaline geochemical signature, strong fractionation between the large ions lithophile and high field strenght elements, positive ENd values and low 87Sr/ Sr initial ratios (0,7013-0,7018). A small stock of high-alumina tonalite orthogneiss located in the Algodoes village yielded a precise single grain zircon UPb age of 2,131±12 Ma and single grain zircon Pb-Pb evaporation age of 2.123±20 Ma. Similarly, a meta-andesite dike and a granitic sheet respectively yielded a poor single grain zircon U-Pb ages of 2.137±34,8 Ma and 2.056±164 Ma, as well as a single grain zircon Pb-Pb evaporation ages of 2.153±5 Ma and 2107±16Ma. Petrogenetic modelling admits the generation of the tonalite orthogneiss through partial melting of garnet-amphibolite. Structural data demonstrate that the tectonic units of the studied area, i.e., ACMS, Quixeramobim metapelitic unit and Quixadá-Quixeramobim Granitic Complex have their tectonic evolution significantly controlled by movements of the Sen. Pompeu, Quixeramobim, and Custodia ductile shear zones. The clockwise kinematics characterized in the shear zones coupled with progressive change from mylonitic to regional scale foliation suggest that the structural evolution was largely achieved under transpressive conditions. However, the late stage of tectonic evolution was characterized by inversion of the transpressive regime to a transtensional one. Finally, it is suggested that the supracrustal sequence of ACMS was generated in a back-arc basin around 2,24 Ga, followed by emplacement of tonalite-granite bodies between 2,17-2,05 Ga. As such, the AlgodoesChoro Metamorphic Suite constitutes a juvenile segment of the Transamazonian/Eburnean orogeny (ca. 2,1±0,1 Ga). However taking into account the 40Ar/39Ar ages of the literature it is admitted that the above referred to units have been reworked between 580 Ma and 530 Ma, during the formation of Western Gondwana.

Mello,E.F. 2000. Isotopic studies of the Rio Itapicuru Greenstone Belt, BA state: Crustal evolution and gold metallogeny. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 956466

DataBase Ref.: 388 **2000** *Date of presentation:* 25/8/2000

Edson Farias Mello *Advisor(s):* Xavier,R.P.

Committee:

Subject of thesis: Metallogenesis

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

The Itapicuru River greenstone belt of the (IRGB) is outstanding as one of the most important Paleoproterozoic belts in the northeastern portion of the Sao Francisco Craton. Various small and medium-sized deposits of mesothermal gold occur in this belt, located in the central-northern (Maria Preta district) and southern (Fazenda Brasileiro district) sectors of the greenstone belt. U-Pb SHRi P dating on zircons, monazite and xenotime derived from felsic intrusive rocks from both districts, indicate that the granite-greenstone terrain of the River Itapicuru developed in two stages between 2152 - 2080 Ma. The first was characterized by the generation of magmas derived from the mantle (2152 - 2130 Ma), and the second by the production of syntectonic granitoids (2130 - 2080 Ma) as a result of reworking of archean basement rocks. The older intrusions are indicated by ages of 2152 ± 6 Ma in monazite, and 2155 ± 9 Ma in zircons derived from the Trilhado granodiorite in the northern region of the belt, and by the ages of 2130 ± 7 Ma and 2128 ± 8 Ma in zircons derived from tonalite, and by Teofilândia quartz-feldspar porphyry in the southern region of the belt. The ENd(t) and 87Sr/86 Sri signatures provided by these granitoids are compatible with a depleted mantle, the less radiogenic 87Sr/%6Sr; (0.70167) and more positive sNd(t) (+ 2.65) values being provided by the Trilhado granodiorite. The evolution trajectories of these rocks and the andesites show that they are cogenetic. A common source is indicated by their TDM ages of around 2.2 Ga. This data is consistent with the development of a magmatic arc, whose progressive tectonic accretion must have occurred during the subsequent closure of the back-arc basin. The predominance of inherited zircons and the abundance of gneiss inclusions in the granodiorites of the Ambrósio dome suggest that the basement of the supracrustal rocks was composed of continental crust rocks with components of 2937 ± 16 Ma, 3111 ± 13 Ma and 3162 ± 13 Ma. This legacy suggest an important crustal reworking phase succeeding the formation of the magmatic arc and mark the period of highest thermal and tectonic activity in the orogenic belt. The emplacement age of the Ambrósio dome is indicated by few zircons in the granodiorites dated at 2077 ± 22 Ma and 2063 ± 55 Ma, and by xenotime grains derived from a granite dyke, which provided an age of 2080 ± 2 Ma. The latter is the best estimate of the crystallization age and probably marks the end of the felsic magmatism. This age shows good agreement with the Ar-Ar plateau age of 2080 ± 5 Ma obtained in homblendes from an amphibolite occurring close to the edge of the Ambr6sio dome, and with a U-Pb SHRIMP age of 2076 ± 10 Ma obtained in overgrowths of detrital zircons from a quartzite occurring close to Vila de Monte Santo, interpreted as the age of the metamorphism. This data suggests that the metamorphism must have reached maximum intensity around 2080 Ma. The Ar-Ar plateau ages of 2050 ± 4 Ma and 2054 ± 2 Ma provided by the hydrothermal muscovite samples were interpreted as the minimum ages for gold mineralization in the Fazenda Brasileiro district and must be close to the true age of gold deposition. The Ar-Ar data indicate that the mineralization must have occurred until 30 Ma after the peak of the metamorphism. The isotopic composition of the mineralizing fluids in the Fazenda Brasileiro mine is compatible with deep sources, either the depleted mantle or lower crust reservoirs, as indicated by the Sr-Sri ratios (0.70238 and 0.70260) and sNd(t) values (1.68 to 6.61) in scheelite and calcite, and by the S 34S values in pyrite and pyrrhotite (-1.11 %o and +1.23 %o). However, these fluids must have interacted with more evolved reservoirs, as indicated by: (1) isotopic Pb data, which suggest a mixed (orogenetic) or upper crust reservoir; (2) the higher values of de b 34S (+0.90 and +5.47 %.o) at Fazenda Maria Preta, and (3) the Sr-Sr ratio in calcite from Fazenda Maria Preta (0.70328), more radiogenic than the calcite and scheelite from Fazenda Brasileiro. The mineralizing fluids do not demonstrate a temporal relationship with the juvenile magmatism of the orogenic belt (2152 - 2130). Possibly, they were produced at depth by the metamorphism of the ocean crust subducted between 2130 and 2090 Ma. They ascended during the uplifting and exhumation of the orogenic belt, between 2080 and 2050 Ma, through conduits with a high inclination angle and along old shear surfaces reactivated by the extensional tectonics.

Mello,F.M. 2000. Lithogeochemistry and mineral chemistry of the Aimorés charnockitic massif - MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 217 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1115 **2000** *Date of presentation:* 5/4/2000

Fernando Machado de Mello *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SE24 *Centroid of the area:* ' - 'W

Abstract

Migliorini,R.B. 2000. Hydrogeology in urban environment: Cuiabá and Várzea Grande region - MT state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2264 **2000** *Date of presentation:*

Renato Blat Migliorini *Advisor(s):* Silva,A.A.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Mincato,R.L. 2000. Metallogeny of the platinum element group based on the stratigraphy and geochemistry of the continental igneous province of Paraná. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 915582

DataBase Ref.: 385 **2000** *Date of presentation:* 24/2/2000

Ronaldo Luíz Mincato *Advisor(s):* Schrank,A.

Committee:

Subject of thesis: Metallogenesis

State: PR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The platinum-group elements metallogeny of the Paraná Continental Igneous Province is evaluated from new geochemical (major, trace, rare-earth and platinum-group element) and geochronological eoAr--39Ár) data. The Paraná rocks vary widely in chemical composition but can be categorised into five basic units (Gramado, Esmeralda, Paranapanema, Pitanga and Urubici) and three acid units (Ca)ias do Sul, Santa Maria and Chapecó). The low-Ti and low-P basic units (Gramado and Esmeralda) and the associated lowTi acid units (Caxias do Sul and Santa Maria) are located at the south - southeast of the province. The basic units of Ti and P intermediate (Paranapanema) and high (Pitanga) and the associated high-Ti acid unit (Chapec6) dominate in the north-northwest. The Urubici unit (high-Ti and -P) occurs interbedded with Gramado unit at the eastern border of the province in Santa Catarina state. This observed preferable distribution of the magmatic units does not confirm the geochemical subdivision of the province in three main zones: North, Central and South. Also, the Rio Uruguai and Rio Piquiri lineaments have no obvious control on the nature and distribution of the magmatic units. The distinct geochemical signatures of the basic units can be related to different grades of partial melt of the continental lithospheric mantle, with the crustal contamination playing an important role in the evolution of the Gramado unit (Th/Ta - 8,2). The genesis and evolution of acidic units were related to the evolution of the basaltic units, to which they occur associated. The geochronological data indicated that the magmatism of the Paraná province lasted about 3,5 My (between 133,90 and 130,36 My) with a mean eruption rate of 0,23 km3.yrl and was linked to northward opening of South Atlantic ocean. From the PGE geochemistry, the Paraná basalts were characterised as highly fractionated (Pd/Ir = 75), and that were generated from S-undersaturated magmas. This favourable condition together with the geological controls of Ni-Cu-PGE ore deposits in CFB provinces allows to indicate the Gramado unit (low-Ti and -P) at the eastern border of the province, as the principal target for this kind of deposit. However the potentiality of the other basic units of the province cannot be ignored, because the low PGE abundance of some flows of the Pitanga unit might be related to the segregation of sulphides during the ascension of those magmas.

Moraes,C.F. 2000. Geophysical prospection essays in gold deposit in Poconé-MTstate. PhD Thesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 60 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1503 **2000** *Date of presentation:* 4/8/2000

Cristina Ferreira Moraes *Advisor(s):* Mendonça,C.A.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Moro,R.P.X. 2000. Proposals about the origin, evolution and geological context of Camarinha formation - Neoproterozoic-Eocambrian transposition - Paraná state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 167 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1249 **2000** *Date of presentation:* 20/7/2000

Renata de Paula Xavier Moro *Advisor(s):* Brito Neves,B.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Motta,J.F.M. 2000. The ceramics raw material and the three case studies of melting rocks. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.208

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D043

DataBase Ref.: 775 **2000** *Date of presentation:* 22/9/2000

José Francisco Marciano Motta *Advisor(s):* Zanardo,A.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Nogueira Neto,J.A. 2000. Geodynamic evolution of the Granja and Cariré granulitic belts, extreme northwest of the Borborema province. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg. 171

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D039

DataBase Ref.: 779 **2000** *Date of presentation:* 25/8/2000

José de Araújo Nogueira Neto *Advisor(s):* Legrand,J.M.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Oliveira,O.M.C. 2000. Geoenvironmental Diagnostic in Mangrove Zones of the Camamu Bay - BA. PhD Thesis, Universidade Federal Fluminense, Niterói - RJ; 249 pp

Mangrove; sediments; superficial water; leaves; geochemistry; metals; mineralization; Camamu Bay; Bahia

Departamento de Geologia - Universidade Federal Fluminense *Reference:* 84648

DataBase Ref.: 1771 **2000** *Date of presentation:* 29/5/2000

Olívia Maria Cordeiro de Oliveira *Advisor(s):* Damasceno,R.N.

Committee:

Subject of thesis: Environmental Geochemistry

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* 13 51 's - 38 50 'W

Abstract

The Camamu Bay is located in the south seashore of the state of Bahia. It is bordered by an exuberant forest of mangrove. Recently this ecosystem has been the subject of a series of environmental studies, which have been carried out to search for the local social and geoenvironmental situation. The main purpose of these studies is to subsidize projected actions in order to contribute with the fishering, mining and touristics activities that are planned aiming the development of the region. The present

study is part of the geoenvironmental diagnostic of the Camamu Bay that has been carried on since 1996. It is based on data collected from 13 stations the location of which considered the local peculiarities of the bay. Five (05) stations are set nearby the mining prospect areas – bay's island and eight (08) at the mouth of the main fluviatile drainages – continental seashore. The data presented are from the bottom sediments, waters and plant's leaves and they
are the results of a planned investigation on granulometry, mineralogy, soil nutrients, nature of the organic matter, distribution of selected metals (Pb, Zn, Cr, Cu, Cd, Ba, Mn, Fe e Al) and anatomic studies. There is an important heterogeneity in each investigated compartment of this marine ecosistem. The data from the bays's island compared with those from the continental seashore, and that were obtained from the representative samples of these compartments (sediment, water and plants) suggest the mining operations as the main contributor to the environmental changes which are mainly reported in the bay's islands.

Paiva Filho,A. 2000. Stratigraphy and tectonics of the porphyritic riodacites level of the Serra Geral formation. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.185

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D044

DataBase Ref.: 774 **2000** *Date of presentation:* 6/10/2000

Augusto Paiva Filho *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Regional Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W
SC SG22
PR

Abstract

Paranhos Filho,A.C. 2000. Multitemporal geo-environmental analysis : A case study of Coxim and Taquarizinho Basin (Mato Grosso do Sul - Brazil). PhD Thesis. Curso de Pós-Graduação em Geologia - University Federal of Paraná. 2000. 213 p.

Land Cover, Multitemporal Analysis; CORINE Legend; Landsat Images, USLE

Departamento de Geologia - Universidade Federal do Paraná *Reference:*

DataBase Ref.: 1630 **2000** *Date of presentation:* 7/4/2000

Antônio Conceição Paranhos Filho *Advisor(s):* Fiori,A.P.

Committee: Paulo Roberto Meneses - IG/UnB
Paulina Setti Riedel - IGCE/UNESP
Tomoyuki Ohara - INPE
Elvo Fassbinder - DG/UFPR

Subject of thesis: Environmental Geology

State: MS *1/1,000,000 sheet:* SE21 *Centroid of the area:* 19 00 's - 54 45 'W

Abstract

The main goal of this thesis is the application of a working method for the multitemporal analysis and geo-environmental evaluation of natural areas. In this work, which focuses on a humid area context (Pantanal Sul Mato-grossense), analysis of the Coxim pilot area (Coxim sheet - 1:250.000 - DSG, 1982b) was carried out. For the land use legend development, data on the Camapuã sheet (1:250.000 - DSG, 1982a) was also analyzed. Multitemporal analysis of the Coxim sheet area was carried out over in three separate
moments: 1966, 1985 and 1996. The data from 1966 have been taken from the DSG/IBGE (Geographic Division of Brazilian Army and Brazilian Institute for Geography and Statistics) sheets. The 1985 and 1996 land cover data sets have been obtained from Landsat TM images interpretation. The entire process of acquiring information for the creation of a geocoded basis data bank for multitemporal analysis is described, from the digitalization process, image classification, GIS data integration to the final interpretation. Moreover, a digitizing methodology that discards the digitizing table is presented. An accuracy test on image classification has been carried out and the resulting data bank has been applied in a case study which integrates the Universal Soil Loss Equation (USLE) over a sample area inside the data bank (Taquarizinho Basin, near Rio Verde do Mato Grosso - MS). Changes in land use have been great. During the 60s, forests and "cerrado" covered about 89% of the Coxim sheet surface. In 1985, this value has been reduced to 30 % of the surface, shifting to 40 % in 1996. The results have shown that the land use has shifted from a natural system to grazing and agricultural systems, with a consequent increase in laminar soil erosion. The USLE application has shown that deforestation has led to 50 time increase on soil laminar erosion index.

Pereira,E. 2000. Tectonic-sedimentary evolution in ordovician-devonian intermission of Paraná basin with emphasis in the Alto Garças sub-basin and Paraguai Oriental. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 276 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1134 **2000** *Date of presentation:* 13/4/2000

Egberto Pereira *Advisor(s):* Fúlfaro,V.J.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Picanco,J.L. 2000. Isotopic composition and hydrothermal processes associated to the gold veins of the Passa Três granitic massif, Campo Largo, PR state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 166 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1135 **2000** *Date of presentation:* 29/9/2000

Jefferson de Lima Picanco *Advisor(s):* Tassinari,C.C.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Prado,R.L. 2000. Shallow seismic reflection and soil penetration radar in the geological-geotechnical investigation in urban environments: A study of São Paulo city - SP, Brazil. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 174 pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA048

DataBase Ref.: 947 **2000** *Date of presentation:* 22/9/2000

Renato Luiz Prado *Advisor(s):* Malagutti Filho,W.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Queiroz,C.L. 2000. Tectono-structural evolution of granite-greenstone belt terrains of Crixás, Central Brasil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

greenstone belt, Archaean, getectonics, geochronology, structural geology

Instituto de Geociências - Universidade de Brasília *Reference:* D033

DataBase Ref.: 33 **2000** *Date of presentation:* 17/3/2000

Claudia Lima de Queiroz *Advisor(s):* Jost,H.

Committee: Reinhardt Adolfo Fuck - IG/UnB
Márcio Martins Pimentel - IG/UnB
Benjamim Bley de Brito Neves - IGc/USP
Fernando Flecha de Alkmim - DEGEO/UFOP

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Granite-Greenstone Belt Terranes of Crixás are located in the northern portion of the Archaean Terranes of Goiás, and display typical supracrustal belts, named from west to east, the Crixás, Guarinos and Pilar de Goiás Greenstone Belts. Granite-gneissic complexes, from west to east, the Anta, Caiamar, Hidrolina Complexes and the Moquém Block, surround these greenstone belts. The geochronology of granite-gneissic complexes (U-Pb/SHRIMP and Sm/Nd) revealed four phases of sialic accretion, as well as three metamorphic events. The first phase of sialic accretion occurred between 3.3 and 2.9 Ga, is expressed by inherited zircon xenocrysts, and had a juvenile nature. The second phase of sialic accretion, also juvenile, occurred between 2.84 and 2.79 Ga, and can be divided in three episodes: ca. 2.84 Ga, ca. 2.82 Ga and ca. 2.79 Ga. In the Caiamar Complex, the Tocambira Tonalite (2.842 ± 6 Ma, e Nd = +2.41) and the Águas Claras Gneisses (2.844 ± 7 Ma, e Nd = -0.63) are related to the first episode. Examples of the second episode are observed in the Anta (granodiorite, 2.820 ± 6 Ma, e Nd = +0.12) and Caiamar (Crixás-Açu Gneisses, 2.817 ± 9 Ma, e Nd = +0.66) Complexes. The third episode is present in the Anta (granite, 2.792 ± 7 Ma, e Nd = +0.01) and Hidrolina (granodioritic gneiss, 2.785 ± 5 Ma) Complexes. After ca. 80 Ma, the granites and granodiorites of the

Moquém Block were generated (2.711 ± 3 Ma to 2.707 ± 4 Ma), presenting crustal derivation (e Nd between –2.00 e –2.20), which represents the third phase of sialization in the area. The fourth phase of sialic crust generation was restricted in volume, but is interpreted as representative of crustal nature magmatism, during the Palaeoproterozoic (albite granite intrusive in Pilar de Goiás Greenstone Belt, 2.145 ± 12 Ma, e Nd = -3.22). The metamorphic events were dated at ca. 2.7 Ga (Crixás-Açu Gneisses, 2.772 ± 6 Ma in zircon, and 2.711 ± 34 Ma in titanite, both metamorphic), ca. 2,0 Ga (Crixás-Açu Gneisses, 2.011 ± 15 Ma in metamorphic titanite), and ca. 0,6 Ga (granodioritic gneisses of the Moquém Block, 590 ± 10 Ma in metamorphosed zircon). The structural analysis of the area allowed the definition of five deformational phases, from Archaean to Neoproterozoic. The first phase (Dn-3, Archaean) was responsible for the generation of the main metamorphic foliation, Sp = Sn-3, and the first stratigraphic inversions of the area, overturning part of the supracrustals. The second phase (Dn-2, Archaean) was diachronic and related to the polydiapiric ascension of the granitoids (second and third phases of granitogenesis), generating a dome-and-keel structure, and the gneissification of some of these bodies (ca. 2.7 Ga). The third deformational phase (Dn-1, Palaeoproterozoic) recorded the transport of younger supracrustals over the Archaean substratum, with main vergence to the north, and progressed from tangential to directional movements. The forth deformational phase (Dn, Neoproterozoic) is characterized by a tangential transport from NW to SE, towards the São Francisco Craton, and evolved to a directional regime, which is related to the last deformational phase (Dn+1). It is suggested that the Granite-Greenstone Belt Terranes of Crixás had been generated in a back-arc environment. The initial deformation of this region (phases Dn-3 e Dn-2) is related to basin closure and development of an orogen. During the Palaeoproterozoic, these terranes were submitted to epicratonic deformation and magmatism, with the younger supracrustals being transported to the north. During the Neoproterozoic, the Archaean Terranes of Goiás were amalgamated to the Brasília Fold Belt, contributing to the closure of the Goianides Ocean and thus participating of the Brasiliano Collage.

Rodrigues,R.M. 2000. Study and characterization of the physical environment of the Rio Camboriú/SC basin, aiming the geo-environmental zoneography. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg. 71

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D038

DataBase Ref.: 780 **2000** *Date of presentation:* 14/9/2000

Rosana Maria Rodrigues *Advisor(s):* Mattos,J.T.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* 27 00 's - 38 42 'W

Abstract

Rosolen,V.S. 2000. Transformation of a lateritic cover by hydromorphy: Case study of a toposseqüence of the Brazilian Amazonia (Humaitá-AM state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2270 **2000** *Date of presentation:*

Vania Silvia Rosolen *Advisor(s):* Melfi,A.J.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: AM *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Sameshima,R.H. 2000. Geostatistic modelling applied to the Araxá apatite deposit, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2272 **2000** *Date of presentation:*

Roberto Hisayoshi Sameshima *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Santos,A.C. 2000. Strategies for the use and protection of underground waters in Recife Metropolitan area-Pernambuco state- Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2265 **2000** *Date of presentation:*

Almany Costa Santos *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: PE *1/1,000,000 sheet:* SC25 *Centroid of the area:* ' - 'W

Abstract

Silva,E.L. 2000. Influence of relict structures and weathering in the slopes instability of roads cutting in Jundiaí-SP region. PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 179pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA051

DataBase Ref.: 946 **2000** *Date of presentation:* 27/10/2000

Edival Lopes da Silva *Advisor(s):* Queiroz,R.C.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Souza,P.A. 2000. Palinobioestratigrafia do Subgrupo Itararé, Carbonífero/Permiano, na porção Nordeste da Bacia do Paraná (SP/PR, Brasil). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2275 **2000** *Date of presentation:*

Paulo Alves de Souza *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Sedimentary Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W
SP

Abstract

Teixeira,A.L. 2000. Analysis of the Proterozoic-Phanerozoic transition basins in the São Paulo state and neighborhood. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1608 **2000** *Date of presentation:* 8/12/2000

Antonio Luiz Teixeira *Advisor(s):* Petri,S.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Villa Orduña,F.A.A. 2000. Cinematics of waves propagation in anisothropic media. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Anisotropy, Kinematic Ray Tracing, Cracked media

Instituto de Geociências - Universidade de Brasília *Reference:* D038

DataBase Ref.: 38 **2000** *Date of presentation:* 14/8/2000

Fredy Alex Villa Orduña Artola *Advisor(s):* Rosa,J.W.C.

Committee: Augusto Cesar Bittencourt Pires - IG/UnB
Roberto Alexandre Vitória de - IG/UnB
Wilson Mouzer Figueiró - IG/UFBA
Martin Heinz S. Schimmel - IGc/USP

Subject of thesis: Prospection and Economic Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The more important kinematics aspects of body waves propagation in anisotropic media are described and discussed. Specifically, we study the more relevant characteristics of seismic response of the media associated to monoclinic, orthorhombic, cubic and hexagonal elastic symmetries. These symmetries are present at very important tectonic environments of the crust (mainly, in the upper crust). These symmetries are conditioned for periodic thin-stratigraphic layers or for the configuration of crack systems embedded the rocks. In this sense, monoclinic symmetry is represented by two sets of vertical cracks with different spacing, intersecting by an angle different from or . The orthorhombic symmetry is represented by two sets of vertical cracks with different spacing intersecting at or by fractured formations, such as those containing two orthogonal crack systems. Finally, the cubic symmetry is represented by orthogonal triplanar-systems of cracks with equal crack-densities, and the hexagonal symmetry is represented by rocks containing one set of vertical cracks or by horizontal fine layering rocks.

Using the ray method (high-frequency approximation), we yield asymptotic solutions of the elastodynamic equation and deduce the expressions with interest on the kinematics of wave propagation. Then, using the canonical equations for kinematic ray tracing, we study the propagation properties of body waves through media with anisotropic elastic symmetry involved. The kinematics equations for body wave propagation through media with monoclinic, orthorhombic and hexagonal elastic symmetries are obtained using the corresponding Christoffel matrix for each elastic configuration.

These equations allow us to study the body wave propagation through the symmetry plane and along the symmetry axis or principal directions. This way, using the elastic tensors algorithms established for anisotropy induced by the presence of cracks, we calculate several tensors for special cases involving the monoclinic, the orthorhombic and the hexagonal elastic symmetries. Using these tensors, we study the anisotropic response of the several rock cracked configurations with the purpose of improving the understanding of the wave propagation in cracked media and to attempt to use the , and special properties in reservoir characterization.

Accioly,A.C.A. 2001. Geology, geochemistry and tectonic meaning of the Passira meta-anorthositic complex, Borborema province - Northeastern Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 168 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1070 **2001** *Date of presentation:* 16/3/2001

Ana Cláudia de Aguiar Accioly *Advisor(s):* McReath,I.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PE *1/1,000,000 sheet:* SB25 *Centroid of the area:* ' - 'W

SC25

Abstract

Argollo,R.M. 2001. Chronology of recent of heavy metals sedimentation and deposition in the Todos os Santos bay using Pb210 and Cs137. PhD Thesis; Instituto de Geociências, University of Bahia, Salvador; pp

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 1532 **2001** *Date of presentation:* 28/2/2001

Roberto Max de Argollo *Advisor(s):* Azevedo,A.E.G.

Committee:

Subject of thesis: Geophysics

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Eight sediment cores from northern Todos os Santos Bay were analysed for 210Pb, 137Cs, 226Ra and the heavy metals Cd, Co, Cr, Cu, Pb and Zn. In four sediment cores, the 210Pb concentrations were practically constant with the depth suggesting that their materials were recently mixed. In the others four sediment cores, two of them with predominance of fine sand followed by very-fine sand athem with predominance of fine sand followed by very-fine sand and mud and in the others two ones with predominance of mud, we determined the sedimentation rates. The recent mass sedimentation rates vary between 3.8 and 8.6 kg m-2 y-1, with a mean of 6.4 kg m-2 y-1. The recent linear sedimentation rates vary between 3.8 and 10 mm y-1, with a mean of 6.9 mm y-1. The cores y-1, with a mean of 6.9 mm y-1. The cores BTS-2 and BTS-7, both of them collected alongside a channel, presented weight means for these two rates of 3.87 ± 0.11 kg m-2 y-1 and 4.45 ± 0.12 mm y-1; these same means for the cores BTS-8 and BTS-9, coming from a lower energy área, were 7.73 ± 0.11 kg m-2 y-1 and 9.60 ± 0.22 mm y-1. Near to Oy-1 and 9.60 ± 0.22 mm y-1. Near to Oratório place, in Maré Island, were verified na increase in the sedimentation rate in the last 32 years, from 2.9 to 10 mm y-1, probably due to changes induced by the deforestation of the margin of the Bay on that place. The 137Cs were detected in those sediments with activity levels that do not exceed 5 Bq kg-1, value correspondent to 20 % of those ones found in Europe and some cities of United States as New York and equivalent to the ones observed in the Alaskan Arctic. In the core BTS-9, the 137Cs had its activity peak (4.90 Bq kg-1) in the depth of 32.5 cm, corresponding to the middle of 1965 and was detected up to a depth of 40.5 cm, year of 1958, suggesting that the 137Cs did not migrate to the lower layers after its deposition. We do not know of such profile having been obtained before in the southern hemisphere. The sediment inventory varied between 1.3 and 10.1 kBq m-2, with a mean of 7.8 kBq m-2. The 137Cs sediment inventory varmean of 7.8 kBq m-2. The 137Cs sediment inventory varied between 274 and 1002 Bq m-2, with a mean of 474 Bq m-2. The constancy of the Co contents in the cores and, in a less view, Cd and Ni, suggest that the sedimentation material did not change on the last 100 years. The other metals showed concentration increase in the last 60 years, probably due to anthropogenic contributions. However, the contents obtaindue to anthropogenic contributions. However, the contents obtained for all metals in the core tops are yet very below the levels considered as requiring any remediation. In the core BTS-9, mainly the Cu, Pb and Zn showed an expressive gradiente increase in 34 cm depth, the same depth were was found an increase of sedimentation rate.

Augusto Filho,O. 2001. Hazard map of landslides quantified in GIS environment as an aid for insurance plans in urban areas: An essay in Caraguatatuba (SP). PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 196pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA058

DataBase Ref.: 943 **2001** *Date of presentation:* 11/1/2001

Oswaldo Augusto Filho *Advisor(s):* Cerri,L.E.S.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Baptista,G.M.M. 2001. Mapping and quantification of the mineralogical ratio caolinite/(caolinite+gibbsite) of tropical soils using hyperspectral AVIRIS sensor (JPL/NASA) data. PhD Thesis, Institute of Geosciences, University of Brasília, 139 pp.

AVIRIS, IMAGING SPECTROSCOPY, SOIL MINERALOGY, SPECTRAL ANALYSIS

Instituto de Geociências - Universidade de Brasília *Reference:* D041

DataBase Ref.: 41 **2001** *Date of presentation:* 11/5/2001

Gustavo Macedo de Mello Baptista *Advisor(s):* Madeira Netto,J.S.

Committee: Paulo Roberto Meneses - IG/UnB
José Wilson Correia Rosa - IG/UnB
Antônio Roberto Formaggio - IGc/USP
José Alexandre Melo Demattê - IGc/USP

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work had the purpose of determining the potentiality of the airborne hyperspectral sensor AVIRIS (Airborne Visible/InfraRed Imaging Spectrometer) for the mapping and the quantification of spectral characteristics of some soils spots mineralogical components imaged in 1995 in the Cerrado region.
The mineralogical mapping and the quantification of those relationships was only possible starting from the application of the spectral index IKi (Madeira Netto et al., 1995) and the spectral indexes development - IText (quantification of the soils clay contents), RCGbscale (kaolinite/(kaolinite+gibbsite) relationship by means of the Spectral Feature Fitting algorithm) and RCGb (kaolinite/(kaolinite+gibbsite) relationship based on specific points of the spectra) - based on the spectral absorption features of the studied minerals. The models were validated with soils samples obtained in the same imaged areas by AVIRIS and their respective spectra, besides the mineralogical quantification processed in laboratory.
This work showed that time and resources can be minimized in the recognition and mapping soils process. For such, scenes of two different geologic contexts were used. The São João D'Aliança, Goiás, image's soils are derived of metamorphic rocks with no opaque minerals presence, while Niquelândia image's soils has the mafic and ultramafic complex amphibolit, rich in opaque, as its main rock. To understand the space variability of the minerals in those two areas, it would be necessary the adoption of sampling bars with regular spacing covering the whole surface, which makes the project to much expensive.
The differentiated application of input could also be contemplated with that methodology, with a much more inferior cost than the one of a Precision Agriculture project. So that methodology can be used in wide scale, it is necessary an available hyperspectral sensor in orbital platform in order to provide time series.
The use of the lab spectroscopy is fundamental for the spectral indexes construction and also for their posterior validation. This is the most important methodological aspect used in this thesis, because if the purpose of this study is to derive indexes starting from the analysis of AVIRIS data or from any other hyperspectral data, the spectral analysis of the data obtained in laboratory can be used in the study of themes for whom which there is no image data yet.
New researches should be motivated for a better understanding of the factors that influence the spectral features and also for new mineral relationships discovery, in order to improve the spectroscopy as identification method and mineralogical quantification for tropical soils.

Barberi,M. 2001. Paleoenvironmental changes in the cerrados region of Central plateau during Late Quaternary: study of the Lagoa Bonita lagoon, DF. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 210 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1928 **2001** *Date of presentation:* 16/8/2001

Maira Barberi *Advisor(s):* Suguio,K.

Committee:

Subject of thesis: Palaeoecology

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Barroso,C.M.R. 2001. Characterization of the Barreiras/Marituba aquifer system in the Maceió/AL area. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.117

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D066

DataBase Ref.: 797 **2001** *Date of presentation:* 20/6/2001

Carlos Maurício Rocha Barroso *Advisor(s):* Kiang,C.H.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bastianon,D. 2001. Development and tests of induced polarization measure system inthe frequency domain (0,13Hz a 11,11kHz) for application in soils/rocks samples. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2289 **2001** *Date of presentation:*

Douglas Bastianon *Advisor(s):* Taioli,F.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bernardi,J.V.E. 2001. Quantitative study of the vegetation structure in the Ilha do Cardoso state Park - SP. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.174

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GMA-D072

DataBase Ref.: 791 **2001** *Date of presentation:* 4/12/2001

José Vicente Elias Bernardi *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bertolo,R.A. 2001. Hydrodynamics and hydrogeochemistry of the non saturated zone of the Adamantina Aquifer in Urânia - SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1950 **2001** *Date of presentation:* 24/8/2001

Reginaldo Antonio Bertolo *Advisor(s):* Hirata,R.C.A.

Committee:

Subject of thesis: Hydrogeology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bistrichi,C.A. 2001. Stratigraphic and Geomorphologic analysis of the Cenozoic in the Atibaia-Bragança Paulista region, São Paulo state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.184

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D047

DataBase Ref.: 771 **2001** *Date of presentation:* 23/2/2001

Carlos Alberto Bistrichi *Advisor(s):* Saad,A.R.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Campos,V. 2001. Chemical behaviour of arsenium, phosphorus and heavy metals (Cr, Cu, Pb and Hg) in soils exposed to fruit cropping, Jundiaí municipality, São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1984 **2001** *Date of presentation:* 10/7/2001

Valquíria de Campos *Advisor(s):* Hypolito,R.

Committee:

Subject of thesis: Environmental Geochemistry

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Capovilla,M.M.G.M. 2001. Uranium in the potassic hydrothermalites ("potassic rock") of the Osamu Utsumi mine, Poços de Caldas alkaline complex, MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 149 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1118 **2001** *Date of presentation:* 26/4/2001

Maria Manuela Galvão Monteiro Capovilla *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Carpi Jr,S. 2001. Erosional processes, hydric resources and environmental hazards in the Rio Mogi-Guaçu basin. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.169

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D064

DataBase Ref.: 799 **2001** *Date of presentation:* 16/5/2001

Salvador Carpi Junior *Advisor(s):* Perez Filho,A.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Carrasco,B.N. 2001. Studies of sedimentologic heterogeneities and their impacts on the behaviour of flow in petroleum reservoirs. PhD Thesis, Departament of Geology, University Federal of Rio de Janeiro, Brazil, pg.

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 2442 **2001** *Date of presentation:* 1/11/2001

Benjamim Novais Carrasco *Advisor(s):* Becker,M.R.

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cassiano,A.M. 2001. Study of contamination by metals in the Ribeira de Iguape river basin (SP-PR states): Strategies for the amendement of the reject disposal area in Rocha mine. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 147 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1123 **2001** *Date of presentation:* 12/11/2001

Andréia Márcia Cassiano *Advisor(s):* Calijuri,M.L.

Committee:

Subject of thesis:

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

PR SG23

Abstract

Chaves,A.O. 2001. Mafic dike swarms of the southern sector of the São Francisco craton - MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 153pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1119 **2001** *Date of presentation:* 19/6/2001

Alexandre de Oliveira Chaves *Advisor(s):* Coutinho,J.M.V.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Consoni,A.J. 2001. An automotive environmental audit as a proceeding for a better environmental and waste landfill management in the São Paulo state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.337

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D065

DataBase Ref.: 798 **2001** *Date of presentation:* 25/5/2001

Angelo José Consoni *Advisor(s):* Cerri,L.E.S.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cordoba,V.C. 2001. The Jandaíra carbonatic platform evolution during the Neo Cretaceous in the Potiguar Basin: Palaeoenvironmental, diagenetical and stratigraphic analysis. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.238

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D048

DataBase Ref.: 770 **2001** *Date of presentation:* 11/5/2001

Valéria Centurion Cordoba *Advisor(s):* Castro,J.C.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Corrêa Neto,A.V. 2001. Structural analysis in the southern and southeastern sectors of the Fundão-Cambotas shearing system, Quadrilátero Ferrífero, Brazil. PhD Thesis, Departament of Geology, University Federal of Rio de Janeiro, Brazil, pg.

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 2441 **2001** *Date of presentation:* 1/4/2001

Atlas Vasconcelos Corrêa Neto *Advisor(s):* Pires,F.R.M. Dayan,H.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Cruz,E.L.C.C. 2001. Genesis and tectonic context of the Córrego Paiol mine, Almas-Conceição terrain: A gold deposit hosted in amphibolite of the basement of the Brasilia fold belt. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Orogenic gold deposits; Brasília Fold Belt; hydrothermal alteration; isotopic geochemistry; geochronology; paleoproterozoic terranes

Instituto de Geociências - Universidade de Brasília *Reference:* D042

DataBase Ref.: 42 **2001** *Date of presentation:* 15/6/2001

Emílio Lenine Carvalho Catunda da Cruz *Advisor(s):* Kuyumjian,R.M.

Committee: Marcel Auguste Dardenne - IG/UnB
Sylvia Maria de Araujo - IG/UnB
Moacir José Buenano Macambira - CG/UFPA
Roberto Perez Xavier - IG/UNICAMP

Subject of thesis: Prospection and Economic Geology

State: TO *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

The Almas-Conceição Terrane composes most of the basement of the northern segment of the External Zone of the Brasília Fold Belt and hosts several gold showings, and small deposits as well. The most important is the Córrego Paiol mine, hosted by high-Fe amphibolites of the Córrego Paiol Formation. Granitoid plutons with age raging from ~2,45Ga to ~2,2Ga (U-Pb SHRIMP) intrude the Córrego Paiol Formation composing large granite-gneiss complexes that form multiplutonic batholiths of magmatic arc setting. These granitoids are grouped into ~2,2Ga metaluminous low-K calc-alkaline plutons (Suite 1) originated from the mantle and ~2,2 (Suite 2) to ~2,45Ga (Ribeirão das Areias Complex) peralumious low-K calc-alcaline plutons (Suite 2), yielded by partial melting of metabasalts. TDM ages as low as 2,26Ga obtained from BIF of Morro do Carneiro Formation indicate that this monotonous sequence of sericitic phyllites, locally carbonaceous, with interlayers of chemical and detritic sedimentary rocks and felsic volcanic rocks is much younger than the Córrego Paiol Formation. The Morro do Carneiro Formation is most likely related to other Paleoproterozoic sequences, such as the Ticunzal Formation and the São Domingos Sequence. Additionally, Sm-Nd data suggest that source regions external to the Almas-Conceição Terrane contributed components to the BIF.
The Córrego Paiol mine can be classified as a mesozonal orogenic type gold deposit, formed by mineralizing fluids with very low XCO2, temperatures between 320 and 400°C and pressure around ~2Kbars. Hydrothermal assemblages were controlled by increasing XCO2 toward the inner parts of the related alteration halo. High-grade mineralised bodies display high angles with stretching lineations and are controlled by bends in the internal foliation of the dextral N20°E/70°NW host shear zone. Host amphibolites retained two argon reservoirs, related to the Transamazonian (~2.0Ga) and Brasiliano (~700 to ~535Ma) orogenies. Geothermobarometric calculations and Ar-Ar age spectra showed that mineralization (563±15Ma) took place during near isobaric cooling stage that followed the isothermal decompression (started around ~700Ma) of the host terrane, which are part of a collisional clockwise P-T-t trajectory developed during the Brasilano Orogeny.
Whole rock and pyrite lead isotopes indicate that two main reservoirs contributed with lead, and gold, to the Córrego Paiol deposit: i) lower crustal lead with a delayed decay history, lower U/Th and high 238U/204Pb ratios; ii) upper crustal lead, with higher U/Th and high 238U/204Pb ratios. The lower crustal delayed lead may be linked to the cratonic-scale granulitic events that affected the São Francisco Craton around ~2,1Ga. The ~2,2Ga peraluminous low-K calc-alkaline granitoids (Suite 2) are the most likely local donator of lead to the Córrego Paiol lead. Stable isotopes in carbonate suggest a mixture of deep seated carbon and oxygen, originated in the host terrane, and carbon and oxygen from Meso-Neoproterozoic covers (Natividade?, Paranoá and Bambuí Groups). The isotopic, field and petrographic data gathered in this work, and compared with data from literature, allow for placing the Córrego Paiol gold mine as an element of a cratonic-scale metallogenetic event developed in the western margin of São Francisco Craton during Braziliano Orogeny. This event reflexes in the cratonic interior, and to which are also related other Au deposits, or yet that could have reworked reservoirs that have also supplied metals to lead and zinc deposits.

Dehaini,J. 2001. Detection of the hydrocarbons contamination subsuperface by the penetration radar method. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2028 **2001** *Date of presentation:* 7/8/2001

Jamile Dehaini *Advisor(s):* Taioli,F.

Committee:

Subject of thesis: Geophysics

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Dias Neto,C.M. 2001. Tectono-thermal evolution of the Costeiro Complex (Ribeira fold belt) in São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 160 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1137 **2001** *Date of presentation:* 2/8/2001

Coriolano de Marins e Dias Neto *Advisor(s):* Tassinari,C.C.G.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SG23 *Centroid of the area:* ' - 'W

SG22

Abstract

Geochonological, petrographic and litochemical data have been used to characterize the crustal evolution and the thermochronology of the Costeiro Complex in the state of São Paulo This part of the Ribeira Folded Belt is composed of paraderived rocks on the east and orthoderived rocks on the west, which are organized in a ductile shear zone forming a positive flower structure, whose axis runs ENE-WSW. Main amphibolite occurrences are found within predominant kinzigitic gneisses along this axis. The intrusive basic rocks which originated the amphibolites have a 580 Ma (U-Pb SHRIMP) age of crystallization. They formed tabular intrusions and a secondary magmatic chamber. The amphibolite occurrence at Boissucanga still preserves its continental tholeiitic characteristics. The U-Pb SHRIMP method on zircons, Sm-Nd and Rb-Sr of both whole rock and mineral concentrations and K-Ar of minerals yielded the age of magmatic crystallization and the age of the highest metamorphism which affected this complex. The above methods also permitted interpretation of the regional cooling history after the peak in metamorphism.The close proximity of the basic magmatism and the peak in the metamorphism is evident from the 570 Ma, U-Pb age determination of overgrowths on detritic zircon crystals of the paragneisses. This determination suggests tectonic environment of a back-arc sedimentary basin over continental crust. The source areas were probably rocks differentiated from the mantle between the Paleoproterozoic and Neoproterozoic.The convergent dynamics responsible for the Ribeira montains reached temperatures of 800 °C and pressures around 5,5 Kb in the Costeiro Complex. The P-T-t path of this process was established by geothermobarometric studies.At the maximum of compressive shortening of the orogen, the continental collision process evolved into directional shear movements with the presence of transpressive flower structures.
Despite the predominant dextral kinematics of the Ribeira Belt, this study found several sinistral kinematic markers, observed mainly along the flanks of the flower structure, associated with rocks representative of the metamorphic peak and later stages. The distribuition of amphibolitic bodies along the axis of the flower structure, as well as the positioning of the Mesozoic magmatism, in this region, imparts special significance to this structure, as evidencing recurrent geologic events due to strong tectonic inheritance of an older master structure. According to thermochronologic studies, the temperatures of this crustal segment were high between 580 and 480 My, decreasing from 800 °C to 450 °C (a rate of around 3 °C/My). This rate is coherent with the cooling rate indicated by the Fe-Mg diffusion between garnets and their biotite inclusions. After this period, the data indicate a strong increase in the cooling process of this complex, interpreted as an important regional uplift phase, concordant with a period of pegmatitic activity which strongly affected the study area.The penecontemporaneity and localization of the orogenic uplift and development of the Neoproterozoic-Eopaleozoic molassic basins followed by the sedimentary sequences of the Paraná Basin suggest that these geological processes are closely related.

Ferrari,A.L. 2001. Tectonic evolutio of the Guanabara graben. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 412 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1251 **2001** *Date of presentation:* 25/9/2001

André Luiz Ferrari *Advisor(s):* Riccomini,C.

Committee:

Subject of thesis: Sedimentary Geology

State: RJ *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Ferrari,M.A.D. 2001. Controls of auriferous mineralization in Córrego Paiol mine of Almas volcano-sedimentary sequence -TO state. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 936008

DataBase Ref.: 390 **2001** *Date of presentation:* 24/5/2001

Márcio Anselmo Duarte Ferrari *Advisor(s):* Chouduri,A.

Committee:

Subject of thesis: Metallogenesis

State: TO *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Abstract: Gold mineralization at the Córrego Paiol mine is hosted by rocks of the Almas volcano-sedimentary sequence (SVSA) in the Almas-Dianópolis greenstone belt, Tocantins State, Brazil. The SVSA is a metavolcanic unit, the CórregoPaiol Formation, with meta-andesite, metadacite and metabasic rocks such as metadiabase and amphibolite. On top is the metasedimentary Mono do Carneiro Formation that consists of sericite phyllites, quartzites, banded iron formation and tourmalinites. Intrusive granitic rocks of the Serra das Areias Batholith and a TTG association are the country rocks of the SVSA. Chemical compositions show that meta-andesite and metadacite belong to a calc-alkaline t group; the metabasics follow a tholeiitic trend. Besides, the fresh, unaltered metabasics cluster in the field of continental basalts. These rocks are enriched in LILE, LREE and HFSE, and it is c therefore possible that they originated in an extensional setting, or rifted magmatic arc, close to an active continental margin. The granitic rocks are peraluminous and follow a calc-alkaline trend. Their strongly fractionated LREE and a Yb anomaly suggest that they may have formed as syncollisional bodies in a volcanic arc. Two deformation events have been identified at the Córrego Paiol mine. The older D„ affected the TTG and the volcanic rocks, and reached middle amphibolite facies conditions. The

structures related to D„ are transtensional, having formed in an oblique to directional ductile regime. The later ductile-brittle D,+1 deformation took place progressively in a compressional regime, giving rise to directional shear zones. This event resulted in retrogression of the rocks from amphibolite to greenschist facies, and also the emplacement of the intrusive granites in transtensional zones. The Dn+1 deformation enabled the passage of fluids in directional shear zones. The deformation events culminated in brittle Dn+2 shear zones that affected both the SVSA and the granitic rocks. The main structural elements of Dn+2 are faults and fractures of the type T-extensional, synthetic and antithetic R and R', and synthetic P. Gold mineralization at the Córrego Paiol mine is hosted by metabasic rocks and controlled by D.+1 shears, whereas the mineralization in the granitic rocks is controlled by Dn+2 shears. Nevertheless, there appears to have been a remobilization of gold from Dn+1 to Dn+2, as can be inferred from the intersection of the two shear zone systems that were favourable sites for gold deposition. This process led to the higher gold grades in ore shoots at the mine site. Fluid inclusion analysis revealed that the fluids associated with the ore at the mine are aqueous and saline with Na, Ca, Mg and Fe. Those in the granitic rocks are aqueous with K, Mg and Na salts. These fluids have moderate to high salinity, up to 40% NaCl for the rocks at the mine, and Thtotn, on the order of 450° C. These are related to mineralization along the Dn+1 shear strike of the rocks. Lower temperatures around 100° C were recorded for brittle structures that contributed to the second pulse of mineralization and the formation of ore shoots. In summary, Gold mineralization is most probably related to the intersection of S-C foliations in dextral shear zones Dn+1 with Dn+2 brittle fault planes, opening transtensional zones through which large volumes of fluids could easily pass, resulting in ore shoot zones. Fluid inclusion studies show that gradual dilution of high salinity fluids accompanied by decreasing temperature may have been responsible for the mineralization.

Ferreira Neto,J.V. 2001. Climaticly homogeneous regions in Alagoas state based on pluviometric space-temporal analysis. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.215

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D063

DataBase Ref.: 800 **2001** *Date of presentation:* 15/5/2001

José Vicente Ferreira Neto *Advisor(s):* Barcelos,J.H.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Florencio,C.P. 2001. Geology of the Paripueira evaporites in the Maceió sub-basin, Alagoas state, Northeastern of Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 160 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1120 **2001** *Date of presentation:* 20/7/2001

Claudio Pires Florencio *Advisor(s):* Ribeiro Filho,E.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: AL *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Garcia,M.G.M. 2001. High pressure metamorphic associations: Neoproterozoic nappes at south of São Francisco craton. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 199 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1069 **2001** *Date of presentation:* 5/4/2001

Maria da Gloria Motta Garcia *Advisor(s):* Campos Neto,M.C.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG SP *1/1,000,000 sheet:* sf23 *Centroid of the area:* ' - 'W

Abstract

Goraieb,C.L. 2001. Contribuition to the genesis of polymetallic primary deposit (Sn, W + - Zn, Cu, Pb) Correas, Ribeirão Branco (SP state). PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,215 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1628 **2001** *Date of presentation:* 31/8/2001

Claudio Luis Goraieb *Advisor(s):* Bettencourt,J.S.

Committee:

Subject of thesis: Metallogenesis

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Harara,O.M.M. 2001. Mapping and petrologic and geochronologic investigation of the lithotypes of high Rio Negro river (PR-SC states): An example of successive and distinct magmatic activities during Neoproterozoic III. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 206 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1122 **2001** *Date of presentation:* 6/11/2001

Ossama Mohamed Milad Harara *Advisor(s):* Basei,M.A.S.

Committee:

Subject of thesis:

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

SC

Abstract

Laranjeira,N.P.F. 2001. Microtectonics and cathodoluminescence in the study of the source of quartzitic grains: The example of the Furnas Formation sandstones, Paraná basin. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

cathodoluminescence; microtectonics; provenance; quartzitic sandstones; Furnas formation

Instituto de Geociências - Universidade de Brasília *Reference:* D040

DataBase Ref.: 40 **2001** *Date of presentation:* 16/3/2001

Nina Paula Ferreira Laranjeira *Advisor(s):* Alvarenga,C.J.S.

Committee: Edi Mendes Guimarães - IG/UnB

Jose Carlos Gaspar - IG/UnB

André Ribeiro -

Renato Rodolfo Andreis -

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The objective of this work is to develop methodology for characterizing source areas of quartzitic sandstone. For this purpose the Silurian sandstone of furnas formation, from Paraná Basin, outcropping in two different regions in Brazil (Paraná State and Goiás/Mato Grosso) have been studied. As a working method microstructures of quartz grains from the sandstone and colors of these grains obtained by cathodoluminescence (CL) were analyzed. The result of this research is a classification concerning microtectoniscs aspects based upon analyses of colors obtained by CL, which was applied to the above mentioned sandstone. The statistic analysis of the data obtained by the counting of 32 thin sections has made it possible to characterize different source areas to the sandstones of the two different locations. The technical limitations of the CL equipment did not make it possible for the data obtained in these analyses to be used quantitatively, but rather qualitatively, in supporting microtectonics analysis and the interpretations concerning source. Attention should be made to the that CL is an auxiliary method in the study of metamorphism and deformation, as well as to the thermal history of plutonic bodies. Considering microtctonics characteristics 8 groups of CL colors and 10 types of grains of quartzitic sand were identified. The colors have been classified by using the colors themselves (or mixture of colors), and by their relative intensity (low, medium, high): blue and rose of high intensity (1 and 2), blue of high intensity mixing to violet (3) blue-violet of medium intensity (4), brown of medium intensity (5), violet of low intensity (6), blue-violet of medium and low intensity mixing to brown (7), and brown intensity (8). The microtectinic types are 10 and defied by their characteristic microstructures, which sometimes clearly indicate genetic conditions. From the 10 microtectonic types only 9 were utilized because the tenth is neither numerically expressively important nor referring to the characteristics of the source area, but instead registering the level of compactation of the sandstone and the tectonic of the sedimentary basin. The nine types are: I) monocrystalin with or without ondulating extinctio (1 and 2); ii) polycrystalline with 2 or 3 crystals: with crystals: with crystals approximately equidimensionals with contacts between non-deformed crystals and lightly deformed ones(types 3 and 4); with crystals of different size, bimodal (type 5); iii) polycrystalline with many crystals, uni or bimodal, deformed by meddle pressure and temperature around 400-450°C (type 6), high pressure and temperature around 300-350°C (type 7), and high pressure and temperature up to 300°C (types 8 and 9). CL and microstructures were analyzed separately, by ternaire diagrammes grouping together the 9 types and colors, according to the different possibilities of genetic associations between them. The analyses of data showed the difference in composition of furnas Sandstones from the two outcropping regions (GO/MT and Paraná). The

contribution of sediments with policyclic histories, possible anchimetamorphic metasediments coming from Brasília and Paraguaí Fold Belts (to the area of GO/MT) and Ribeira (to the area of Paraná), as well as that of the underlyina sandstones and diamictites (formations Vila Maria and Iapó), has been made clear in the two locations. The contribution of primary rock sources was different between the two regions. For GO/MT, the composition of quartzitic grains, extremely rich in monocrystalin and polycrystalline types with few crystals, and with the colors of CL predominately presenting tonalities of medium intensity blue and violet, the distinction between these two tonalities being hard to be established, and showing a tendency to brown, suggest a strong contribution of granito-GNAISSES sources. In the area of Paraná, the contribution of SUPRACRUSTALS (low to medium degree of metamorphism) was more expressive, taking into account the higher percentage of polycrystalline grains and mixing colors of low intensity. The difficulty in working quartzitic grains in the study of source is increased by the similarity of microstructures engendered within different environments. Considering the CL of quartz, the difficulty is related to the fact that it shows a low intensity and sensibility to the in the conditions of analyze, and for this reason it is necessary more precise equipment than those available nowadays. The presence of secondary source also makes difficult the study. For this reason, it is yet not possible to quantify the contribution of different source to the composition of quartzitic sandstones.

Lupinacci da Cunha,C.M. 2001. The relief cartography in the context of environmental management. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.128

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GMA-D071

DataBase Ref.: 792 **2001** *Date of presentation:* 22/11/2001

Cenira Maria Lupinacci da Cunha *Advisor(s):* Sanchez,M.C.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Macedo,E.S. 2001. Elaboration of an inventory of immediate hazard related to landslides: Evaluation based on professional experience, academic formation and subjectivity. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.206

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D068

DataBase Ref.: 795 **2001** *Date of presentation:* 17/9/2001

Eduardo Soares de Macedo, *Advisor(s):* Zuquette,L.V.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Magini,C. 2001. PreCambrian evolution of Borborema province: The potiguar far west. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.218

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D051

DataBase Ref.: 768 **2001** *Date of presentation:* 8/11/2001

Christiano Magini *Advisor(s):* Hackspacker,P.C.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Maria Netto,S. 2001. Crystallochemical characterization of the copper (II) ions incorporation in syntetic goethite (FeOOH). PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 972046

DataBase Ref.: 391 **2001** *Date of presentation:* 13/6/2001

Silvania Maria Netto *Advisor(s):* Enzweiler,J.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The crystallochemical characterization of Cu(II) ions incorporated in synthetic goethite (a-FeOOH) was studied to define the structural local environment of copper in this mineral The samples were prepared under highly alkaline conditions and characterized chemistry and mineralogically with emphasis in Rietveld refinement using X-ray diffraction (XRD) data and X-ray absorption spectroscopy (XAS) with synchrotron light source. Results from differential thermal analysis (DTA) showed a decrease of the temperature of the second endoterma (296,3 - 290,3 °C) with substitution, interpreted as a structural instability. Transmission electron microscopy (TEM) of the Cu-goethite samples showed acicular crystallites (0,7<Cu<1,6 mol%) and star shaped particles (2<Cu<3,9 mol%) in the elapsing of incorporation. The application of the Rietveld method showed that this morphological modification of the crystallites affects, directly, the preferential orientation of the crystallographic plans (100), (010) and (001), producing a structural instability along the axes a and c. The local variation in Cu(II) sites, observed by XAS, showed distortions in the copper octahedra, but the polymeric linkages Fe(III) and Cu(II), preserve the structural environment of iron. The electron density diagrams (Fourier difference) confirmed the copper-iron isomorphous substitution in goethite. The generated electronic unbalance was, stoichiometrically, compensated by an increase in water content, through hydroxyl insertion, confirming the structural proposed formula (a-(Fel_XCu.)I_y/30,_y(OH)i.ty]. The chemical and mineralogical analysis showed, however, that this isomorphic substitution is limited to 3,9 mol%,
G approximately. With higher Cu values, hematite (a-Fe203) was identified as a second mineralogical phase beside goethite. These results, applied to the formation of I lateritic deposits, suggest that these would be enriched in copper, by limited isomorphic substitution Fe-Cu in goethite structure, immobilizing the metal in the superficial environment.

Marques,J.C. 2001. Petrology and metallogenesis of the Ipueira-Medrado sill chromite deposit, valley of the Jacurici river - Bahia state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Petrology, Metallogeny, Mafic-ultramafic rocks, Chromite, Microprobe, Geochemistry, Sm-Nd and Re-Os isotopes

Instituto de Geociências - Universidade de Brasília *Reference:* D043

DataBase Ref.: 43 **2001** *Date of presentation:* 20/8/2001

Juliana Charão Marques *Advisor(s):* Ferreira Filho,C.F.

Committee:
Jose Carlos Gaspar - IG/UnB
Raul Minas Kuyumjian - IG/UnB
Leo Afraneo Hartmann - IG/UFRGS
Elson Paiva Oliveira - IG/UNICAMP

Subject of thesis: Prospection and Economic Geology

State: BA *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Ipueira-Medrado mafic-ultramafic sill hosts the largest chromite deposit in Brazil. The sill is a 7 km-long and 300 meters-thick elongated body consisting mainly of interlayered dunite and harzburgite with minor mafic rocks. The most distinctive feature of the Ipueira-Medrado sill is the continuous 5-8 meters-thick massive chromitite layer that is currently mined. The anomalous thickness of this chromitite layer sets severe constraints for current genetic models for the origin of massive chromitites.

The sill is subdivided in three zones: Marginal, Ultramafic and Mafic Zones. The Marginal Zone consists of sheared gabbro and orthopyroxene-rich harzburgite. The Ultramafic Zone is subdivided in the Lower Ultramafic Unit (LUU), the Main Chromitite Layer (MCL) and the Upper Ultramafic Unit (UUU). The LUU consists of dunite with minor harzburgite and chain-textured chromitite, the MCL is composed by chain-textured and massive chromitites and the UUU consists mainly of harzburgite with minor chain-textured chromitite, dunite and orthopyroxenite. The Mafic Zone consists of leuco- to melanorites that are partially transformed by amphibolite facies of metamorphism.

The variation of olivine and orthopyroxene compositions throughout the stratigraphy revealed the existance of two intervals with distinct magmatic evolution. The interval located below the MCL (Regime 1) is characterized by slow evolution of mineral compositions toward more primitive compositions. The interval located above the MCL (Regime 2) is characterized by fast evolution toward more fractionated compositions in the direction of the top of the sill. The magmatic evolution of regime 1 suggests that crystallization occurred in a dynamic magma chamber undergoing frequent replenishment with primitive magma. The magmatic evolution of regime 2 suggests that crystallization occurred in a mainly closed magma chamber.

The trace elements and REE signatures are very consistent throughout the stratigraphy, being only slightly affected by fractionation, which strongly suggest that the parental magma of the mafic and ultramafic rocks was enriched in LILE, LREE and strongly depleted in Nb. The general characteristics of the parental magma of the Ipueira-Medrado Sill argue for either a metasomatized subcontinental lithospheric mantle source, enriched in LREE and LILE and depleted in some HFSE, or a convecting mantle source subsequently contaminated by crust.

The Sm-Nd systematic is consistent to a Proterozoic crystallization age and the negative eNd in all samples suggests either that the parental magma was derived from an old metasomatically subcontinental lithospheric mantle or has originally suffered crustal contamination. The stronger negative eNd of the amphibole-rich intervals and margins and variable Archean model ages argue for a crustal contamination, although the negative eNd of the amphibole-free samples (mean = -4.37) do not preclude an origin from a subcontinental lithospheric mantle.

The Os isotopic composition of the chromite separates give gOs range from slightly negative (~ -3) to slightly positive (~ 3) values. The Os isotopic data from chromite separates probably are revealing the isotopic characteristics of the their parental magmas. The negative gOs of some samples of chromites do not suggest crustal contamination. Nevertheless, the primitive character of the parental magma of the sill could induce the Os isotopic system to be very insensitive to crustal contamination.

The small amount of crust contribution that can explain both negative gOs and negative eNd from LUU cannot produce the observed enrichment in LREE and LILE if the source of the magma was a convecting mantle. An integrated assessment of the Ipueira-Medrado Sill data suggests that the most likely source for the very high-Mg magma (U-type or picritic) parental magma of

the sill would be an old subcontinental metassomatized lithospheric mantle. The magma was subsequently contaminated with variable, but no large, amounts of an old crust (Archean ?) or crustal fluids.

Mass balance assessments suggest that an enormous volume of magma (> 10,000 meters-thick) was associated to the formation of the MCL at the Ipueira-Medrado sill. Such volume of magma is obviously not represented at the stratigraphy of the Ipueira-Medrado sill, suggesting that the sill acted as a conduit where a large volume of magma flowed. Regarding the mechanism capable to shift the crystallization path to chromite-only stability field, our data ruled out the magma mixing models and suggest that crustal contamination has triggered the single chromite crystallization. The composition of chromite in massive chromitites of the Ipueira-Medrado sill is comparable with other stratiform deposits.

The primitive characteristics of the parental magma of the sill with undepleted Ni content indicate that the sill could be a promising target for PGE mineralization. However, no sulfide-bearing intervals have been intercepted, suggesting that this sill has no potential for hosting economic deposits of Ni-Cu (-Co-PGE) sulfides or stratiform deposits of PGE associated to magmatic base metal sulfides. Nevertheless, Jacurici Complex have many other similar intrusions that could represent targets for this types of deposits.

Marujo Ferreira,M.F. 2001. Geomorphology and morphotectonic analysis of the high Sapucaí valley, Pouso Alegre (MG). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.279

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GMA-D074

DataBase Ref.: 789 **2001** *Date of presentation:* 19/12/2001

Marta Felicia Marujo Ferreira *Advisor(s):* Pires Neto,A.G.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Matos,B.A. 2001. Assessment of occurrence and transport of microorganisms in the unconfined aquifer of Vila Nova Cachoeirinha cemetery, city of São Paulo. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

cemeteries; contamination; groundwater

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1610 **2001** *Date of presentation:* 30/5/2001

Bolivar Antunes Matos *Advisor(s):* Pacheco,A.

Committee: Luiz Roberto Cottas -
José Eloi Guimarães Campos - IG/UnB
Samuel Murgel Branco -
Vivian Helena Pellizari -

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work assessed occurrence and transport of microorganisms in the unconfined aquifer of Vila Nova Cachoeirinha cemetery, located on pre-cambrian terrains at the northern zone of the city of São Paulo The applied methodology was divided in laboratory and field stages. In the lab, cemetery soil columns were designed; chemical and biological tracers were injected in the columns and the effluent was monitored. A numerical model was used to simulate the tracers' transport through the columns. In the field, several investigations were done to characterize the unconfined aquifer; water quality was monitored to study occurrence and transport of chemicals, bacteria and viruses in groundwater.

In Vila Nova Cachoeirinha cemetery, the depth to the bedrock is about 9.0 m at small elevation areas and 20.5 m at the top of the hill. The depth to the water table varies from 4 to over 16 m. The soil is formed by the weathered material of the granite rocks, clay content of 43%, pH = 5,0, cation exchange capacity between 10.2 and 109.0 mmolc/kg. The hydraulic conductivity of the aquifer varies from 2.90 x 10-8 to 8.41 x 10-5 m/s. The hydraulic gradient at the western part of the study area is about 0.07 m/m; considering a homogeneous and isotropic medium and an effective porosity of 2%, the average linear velocity was estimated in 8 cm/day.

The water samples of the unconfined aquifer of Vila Nova Cachoeirinha cemetery presented, mainly, heterotrophic bacteria (53 x 103 UFC/mL), proteolitic bacteria (31 NMP/100 mL) and clostridium perfringes (45 NMP/100 mL). We have also found enterovirus and adenovirus in groundwater. The main sources of contamination are the within-a-year-graves located at the low elevation areas, close to the water table. At these sites, the occurrence of bacteria is greater and there is a greater consumption of oxygen in the water due to oxidation of organic matter. Moreover, the graves cause an increase in salts and electrical conductivity of the groundwater. There seems to be an increase in major ions: hydrogen carbonate, chloride, sodium, calcium; and metals: iron, aluminium, lead and zinc, next to the graves.

The bacteria traveled a distance of a few meters, decreasing in concentration with increasing distance to the graves. The viruses seem to be more mobile than bacteria, they traveled distances of tens of meters at the Vila Nova Cachoeirinha cemetery. The viruses were transported at least 3.2 m through the unsaturated zone before reaching the unconfined aquifer.

Matos,J.B. 2001. Petrography and mineral chemistry of the alkaline occurrences of the Alto Paraguai Province, Brazil-Paraguai. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2278 **2001** *Date of presentation:*

Joao Batista de Matos *Advisor(s):* Ruberti,E.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MS *1/1,000,000 sheet:* SF21 *Centroid of the area:* ' - 'W

Abstract

Nummer,A.R. 2001. Geometry and cynematic of the emplacement of Arrozal granitic massif, southwest of Rio de Janeiro state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 169 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1208 **2001** *Date of presentation:* 28/3/2001

Alexis Rosa Nummer *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* 24 30 's - 41 20 'W

Abstract

Okida,R. 2001. Application of remote sensing and aerogammaspectrometry to the study of structural control of Rondônia state tin bearing granites. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 251 **2001** *Date of presentation:* 1/10/2001

Rosana Okida *Advisor(s):*

Committee:

Subject of thesis:

State: RO *1/1,000,000 sheet:* SC20 *Centroid of the area:* ' - 'W

Abstract

Tin Province, one of the most important tin provinces in a global scale. Remote sensing, airborne gamma-ray spectrometrics, geochronologics, petrographics, geochemistrics and tectonic-structural data, as well as field data, were used here. The techniques employed were, basically, remote sensing, with interpretation of TM-Landsat-5 images and integrated products of TM-5, RADARSAT-1 and airborne gamma-ray spectrometrics. The results showed a good correlation between pre-existent geologic mapping with the airborne gamma-ray spectrometric and field data. The radiometric anomalies are the granitic bodies mineralized and non-deformed of ductile-brittle mode, and the litotypes with hydrothermal alteration. The RADARSAT-1 image was not efficient, specifycally in the study area, because the area shows a raze relief, plane tophography, extensive use of soil (farming and cattle raising) and humidity in the date of this acquisition (05/july/97), producing specular behaviour. The TM images, on the other hand, were very useful for the definition of the main shear zones, because they are older than RADARSAT (years 84, 85 and 86) and, consequently, do not show such a large use of the soil. The interpretation of those images together with field data, made possible to establish the hierarchy of transpressive-transtensive movements which actuated in the region, in three stages of progressive movimentation, related to periods of time: before 1.69 Ga, 1.69 to 1.41 Ga and 1.40 Ga to Paleozoic. The Stage 2 controlled the emplacement of the Union Massif, while the Stage 3 controlled massifs belonging to Santa Clara Intrusive Suite and Younger Granites of Rondônia. These emplacement occurred in releasing bends and rhombo-chasms structures, formed by main lines of crustal weakness. In the second stage, lines with orientation towards +/- NNW-SSE and +/- NW-SE, caused the crustal thinning. Afterwards it was followed by the emplacement of younger suites. The third stage was controlled by the directions WNW-ESE and NE-SW. The secondary mineralization is in low structurals, showing as source-areas the granitic massifs hydrothermaly altered, found in high structurals. The primary mineralization is found in the same directions of crustal weakness that conditioned the emplacement of granitic massifs. The systematic used here is very efficient, due to the low price of the field work and mainly because it offers a regional integrated vision, that makes easy the identification of tectonic controls and allows the choosing of key-points that will be examined in the field work.

Oliveira-Galvão,A.L.C. 2001. Recognition of the susceptibility to the development of desertification processes in the brazilian northeastern, based on the integration of environmental benchmarks. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Desertification, Environmental Indicators, Environmental Analysis, Susceptibility, Geoprocessing, Geographic Information Systems (GIS), Spatial Modeling, Semi-arid, Northeastern region, Seridó, Rio Grande do Norte, Brazil

Instituto de Geociências - Universidade de Brasília *Reference:* D046

DataBase Ref.: 46 **2001** *Date of presentation:* 20/12/2001

Ana Lucia Costa de Oliveira-Galvão *Advisor(s):* Saito,C.H. Meneses,P.R.

Committee:
Edson Eyji Sano - EMBRAPA
Eduardo Delgado Assad - EMBRAPA
Vitor Celso de Carvalho - INPE
José Wilson Correia Rosa - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: RN *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

This work intends to provide spatial and georeferenced information related to the susceptibility of the Brazilian lands to desertification. Such information is especially requested by the communities (academic, technical, and political) that are involved in the discussions related to the United Nations Convention to Combat Desertification. In this sense, the analysis and integration of geo-environmental variables and the creation of environmental indicators associated with the development of the desertification process was performed, based on the use of spatial modeling procedures applied to data from the semi-arid portion of the Northeastern region. Among the variables used in this investigation, geological aspects (lithology, lineaments, and mineral ore occurrence), shape of the relief, dominance of soil types, vegetation (cover and fragmentation) and land management practices were considered. The selected environmental indicators were divided into two groups. The first group was composed of human activities that could cause desertification (cattle raising, agriculture, irrigation, forest resource exploration, urbanization, and mining). The second group was associated with the risk of environmental degradation by processes that were more directly related to the development of the desertification (erosion, salinization, and loss of biodiversity). The integration of the georeferenced data, related to these indicators, allowed the identification of five different levels of susceptibility to desertification (very high, high, moderate, low and very low), and the geographic domain of each class. Validation of the results, derived from the spatial modeling at regional scale, was performed at a semi-detail scale in a study area locally known as the “Núcleo de Desertificação do Seridó Norte-rio-grandense”. It was based on the analysis of the dynamics of the vegetation cover (represented by orbital imagery) and on the evaluation of field data. The results allowed a direct association between the different levels of susceptibility and environmental management practices. They indicated that areas with “very high susceptibility” were associated with practices of land degradation reclamation. Areas with “high susceptibility” were related not only to these practices but also to techniques and procedures to control and to combat desertification. Areas with “moderate susceptibility” were related to prevention, control and combat of desertification processes. Finally, areas with “low and very low susceptibility” were associated with the adoption of initiatives to prevent the development of the desertification processes.

Ordoñez,O. 2001. Rb-Sr and Sm-Nd Isotopic Characterization of the Main Magmatic Events in the Colombian Andes. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Colombian Andes, Quetame, Retiro, Arquía, Sonsón

Instituto de Geociências - Universidade de Brasília *Reference:* D044

DataBase Ref.: 2501 **2001** *Date of presentation:* 31/8/2001

Oswaldo Ordóñez-Carmona *Advisor(s):* Pimentel,M.M.

Committee:
Reinhardt Adolfo Fuck - IG/UnB
Hardy Jost - IG/UnB
Colombo Celso Gaeta Tassinari - IGc/USP
Umberto G. Cordani - IGc/USP

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Rb-Sr, Sm-Nd isotopic data and the U-Pb SHRIMP ages together with data available in the literature, indicated that the rocks of the Colombian Andes display the effects of seven orogenic events, in which metamorphic, and late, syn to post-tectonic igneous rocks were generated. These events are chrono-correlated with orogenic events as old as the Grenville, and define the following intervals:
1. Between ca. 1200 and 900 Ma. Occurred at the eastern flank of the Central Cordillera, the Santander Massif and the SE region of the Sierra Nevada de Santa Marta. The rocks of this event have model ages between 1.0 and 1.92 Ga.
2. Between ca. 425 and 390 Ma. Occurred at the eastern flank of the Central Cordillera, and Quetame and Santander Massifs, and called the Quetame event.
3. Between ca. 320 and 280 Ma. Occurred in the northern part of the Central Cordillera and called the Puquí event. The model ages, between 1.33 and 1.53 Ga, reveal a Precambrian age for the source of the original sediments.
4. Between ca. 260 and 220 Ma. Occurred in the Central Cordillera, near the city of Medellín, and called the Retiro event. The metamorphic rocks have TDM values between 0.93 and 1.6 Ga. The associated intrusions associated have initial 87Sr/86Sr ratios >0.70572 and values of eNd(226 Ma) between -3.44 and -5.90 which indicate the predominantly crustal character of these rocks. The TDM ages between 1.23 and 1.31 Ga would indicate that the sources are Mesoproterozoic.
After this event, and between 190 and 140 Ma, a significant igneous activity is observed at the eastern flank of the Central Cordillera, in which is possible to distinguish two types of Sr-Nd isotopic units. One of crustal character with eNd(175 Ma) values

between -3.13 and -15.29, initial 87Sr/86Sr ratios >0.70535 and TDM model ages between 0.88 and 1.34 Ga. The other unit displays a more primitive nature with eNd(175 Ma) values between +0.98 and +4.01, present-day 87Sr/86Sr ratios between 0.70469 and 0.70640 and TDM values between 0.47 and 0.82 Ga.
5. Between ca. 140 and 105 Ma. Occurred along the Romeral fault system, and referred to as the Arquía event, which characterizes the collision between the Central proto-Cordillera and the Cauca-Patía graben.
After this collision the intrusions generated display isotopic characteristics, which indicate the predominance of mantle-derived magmas with some participation of crustal contamination. The intrusions of the Central Cordillera have eNd(100 Ma) values between -2.39 and +10.2, and the TDM model ages between 0.6 and 1.04 Ga.
6. Between ca. 80-60 Ma. Occurred in the Western Cordillera and referred to as the Dagua event. This event caused the deformation of Dagua Group rocks and is associated with the collision between the Western Cordillera and the unit formed by the Cauca-Patía graben and the Central Cordillera.
After the collision a magmatic arc originating the Sonsón magmatism occurred in the northern of the Central Cordillera. This magmatism is the result of the mixture between juvenile magma and crustal material as suggested by the model ages between 0.4 and 1.02 Ga, the eNd(60 Ma) values between -3.02 and +3.33 and the initial 87Sr/86Sr ratios between 0.70429 and 0.70526.
7. Between ca. 25 and 0 Ma. Associated with the Cenozoic magmatism and with the final uplift of the Andes and called Andean orogeny.
Besides the formation of the Andes, in this event intrusions and volcanic rocks in the Central and Western Cordilleras and in the graben Cauca-Patía were generated. The Sr-Nd isotope data suggest a mantle origin for the magmatism with some contamination with crustal as suggested by the TDM model ages as old as 0.87 Ga, some negative eNd values and of some present-day 87Sr/86Sr ratios >0.7045.

Palermo,H.F. 2001. Economic and environmental analysis of leather tanning and finishing activities in Franca region, São Paulo state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.146

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GMA-D073

DataBase Ref.: 790 **2001** *Date of presentation:* 14/12/2001

Helil Ferreira Palermo *Advisor(s):* Rueda,J.R.J.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Passarelli,C.R. 2001. Structural and geochronological characterization of the tectonic domains in southeastern São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 254 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1138 **2001** *Date of presentation:* 18/9/2001

Claudia Regina Passarelli *Advisor(s):* Campos Neto,M.C.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W
SG23

Abstract

Penha,U.C. 2001. Geology of the Serra da Água Fria cretaceous conglomerates and the Jequitai diamond deposits - MG. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.148

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D046

DataBase Ref.: 772 **2001** *Date of presentation:* 19/2/2001

Ulisses Cyrino Penha *Advisor(s):* Angeli,N.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Perez Aguilar,A. 2001. Petrology and lithogeochemistry of rocks from mesoproterozoic oceanic

hydrothermal palaeosystems of the Serra do Itaberaba group metavolcanic sequence, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 223 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1121 **2001** *Date of presentation:* 19/10/2001

Annabel Perez Aguilar *Advisor(s):* Juliani,C.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Pires,F.A. 2001. Palaeoenvironmental and stratigraphi analysis of Itararé subgoup in the medium Tieté river region, São Paulo state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.113

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GR-D049

DataBase Ref.: 769 **2001** *Date of presentation:* 7/6/2001

Fernando Alves Pires *Advisor(s):* Gama Jr,E.G.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Ponte Neto,C.F. 2001. Contribution to the study of Occidental Gonsdwana formation: New palaeomagnetic data. PhD Thesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 105 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1478 **2001** *Date of presentation:* 20/6/2001

Cosme Ferreira da Ponte Neto *Advisor(s):* Ernesto,M.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Rolim,S.B.A. 2001. Geophysical answer of gold deposits of Quadrilátero Ferrífero central portion, MG state. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 956676

DataBase Ref.: 392 **2001** *Date of presentation:* 27/7/2001

Silvia Beatriz Alves Rolim *Advisor(s):* Mendonça,C.A.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The Quadrilátero Ferrifero is the most intensively studied area in Brazil due to its metallogenic potential and its comple? geological evolution. One of the most important investigations of this region was the aerogeophysical survey of the Rio da: Velhas Project (gamma-ray, magnetic and electromagnetic data). The high-resolution characteristics of this project have provides several studies in this region. However, some of the outlined goals haven't been reached, because it is possible to recognize nevi relationships between geophysical features and mineralization environments. Analysis of gamma-ray data from a selected are: where a series of gold deposits are associated with a NW/SE-trending shear zone has identified an association with mineralizatior processes and intense hydrothermal alteration. Electromagnetic anomalies are shown as a line bodies with significant electric conductivity. In addition, magnetic anomalies are associated with higher amplitudes, despite the interferences caused b) anomalies from deeper sources in the region. The present research was aimed at investigating the geophysical response of the gold deposits in suitable environments with the use of aerogeophysical data supported by studies of background geology. A review of the geological and geophysical knowledge of the area and an evaluation of the possibilities of the processing of the

aerogeophysical data where made. During the processing of the magnetic data, the truncated anomalies prevented the characterization of the deep sources, masking the interpretation of the shallow sources due to overlapping of anomalies. The effec of the truncation restricts the use of the reduction-to-pole, which generates features that do not correspond to reality. From this two questions could be answered. First is related to the origin and characterization of the truncated anomalies that was solves through processing and interpreting magnetic regional data from the Brazil-Germany Geophysical Covenant. The second is related to the forecast of the response of magnetic data to general processing that was based on simulation studies using magnetic models. Once the magnetic response in this area was understood, anomalies interference problems could be resolved using information derived from the application of techniques, such as vertical gradient maps and amplitude of the analytical signal. The vertical gradient was particularly useful in the delimitation and characterization of a portion of the Sao Vicente Shear Zone tha presents compatible anomalies to sources with total magnetization of strong remanence and, in this case, associated witt concentrations of gold. The analytical signal has reinforced the interpretation of the vertical gradient map that shows a greater magnetization degree to the mineralization. The gamma-ray responses obtained have demonstrated the existence of a relationship between structural control, host rock, mineralization, metamorphic grade and hydrothermal alteration. Out of these, hydrothermá alteration, associated to relative enrichment of Potassium, was of great help to map areas of favorable gold concentration Thorium was depleted under these this conditions and Uranium presented a varied behavior. Responses of the electromagnetic system (frequencies of 935, 4175 and 33000 Hz) were influenced by the effect of weathering cover (up to 100 m thick) in almos all units of the region studied. The amplitudes of the electromagnetic field (20 ppm for higher frequencies) were much lower thar the expected and the apparent calculated conductivity maps permitted only a superficial mapping of the area. The horizonta: coplanar array (4175 Hz) permitted a higher grade of penetration and was most sensitive to the presence of the horizonta conductors, compensating the lower penetration grade and the noise interferences in high frequencies. Medium to high values o: apparent conductivity have been observed, corresponding to mafic-ultramafic and metapelitic rocks from Nova Lima Group Similar values are found along the Sao Vicente Shear Zone, represented by a "conductivity corridor" with high values in it, nmthem sector and medium to high in its southern sector. Finally, considering the significant number of gold occurrences along the southern São Vicente lineament, it can be considered that mineralization processes are associated with the specific geologica event, which aligned the magnetic material with reminiscence features along the fault zone. This possibility, as suggested by the magnetic anomaly signature, is re-enforced by its close correspondence with the electromagnetic and gamma-ray anomalies Therefore, it must be considered in prospective and tectonic studies about the genesis of the mineralization.

Santos,R.N. 2001. Implantation of 'alfa' spectrommetric methodology for the determination of U and Th isotopes in igneous rocks: Aplication to the study of radioactive disequilibrium in Ilha da Trindade island. PhD Thesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, 129 pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 1480 **2001** *Date of presentation:* 11/5/2001

Rosana Nunes dos Santos *Advisor(s):* Marques,L.S.

Committee:

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,F.A. 2001. Prototype for the monitoring of rotative drilling and aplication in geologic-geotechnical prospection. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2286 **2001** *Date of presentation:*

Flávio Almeida da Silva *Advisor(s):* Taioli,F.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,V.C. 2001. Evaluation of actual and potential erosion and of sediment incoming in the Rio Paracatu basin: States of Minas Gerais, Goiás and Distrito Federal. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Universal Soil Loss Equation, USLE, erosion, R factor, K factor, L factor, S factor, LS factor, C factor, P factor, GIS

Instituto de Geociências - Universidade de Brasília *Reference:* D045

DataBase Ref.: 45 **2001** *Date of presentation:* 3/12/2001

Valtercides Calvalcante da Silva *Advisor(s):* Chaves,H.M.L.

Committee: José Wilson Correia Rosa - IG/UnB

Detlef Hans-Gert Walde - IG/UnB
Sérgio dos Anjos Ferreira Pinto - INPE
Gláucio Roloff - DG/UFPR

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: MG GO DF *1/1,000,000 sheet:* SE23 SD23 *Centroid of the area:* ' - 'W

Abstract

The Universal Soil Loss Equation (USLE) is widely used all over the world in the prediction of soil loss and in the definition of best management practices of single slopes. However, despite its potential of application, a few factors of the equation are difficult to obtain, such as the slope length factor (L factor), particularly in watersheds.
The purpose of the present thesis was to apply the USLE (Wischmeier and Smith, 1978), which was originally developed for individual slopes, to large watersheds. In order to achieve that, a methodology for automatic calculation of the slope length factor (L factor) developed by Desmet and Govers (1996), using GIS, was developed. This methodology was used to estimate the actual erosion, the potential erosion and the sediment delivery in selected areas of Paracatu River Basin, on regional level. Existing thematic maps, in association with ancillary information (soil, land use, relief and climate) were used in order to obtain GIS coverages. These coverages were overlaid in the GIS and maps of potential and present erosion were generated.
It was concluded that 67,2% of the total area of the Paracatu River Basin are within the soil loss tolerance limit (<10 t/ha.yr). The most critical areas in relation to soil loss are associated with high slopes, erodible soils, misuse and inappropriate management of the soil. With respect to maximum erosion (worse case scenario), it was observed that 80% of the area would experience severe degradation by erosion. In addition, the slope length factor (L), as developed by Desmet and Govers (1996), which accounts for accumulated flow, showed satisfactory results in the scale studied. However, an accurate Digital Elevation Model (DEM) was required.
The proposed methodology was validated with sedimentometric data, in two sections of the watershed, showing a good agreement between measured and calculated sediment yield data.

Silveira,H. 2001. Modifications in the structure and hydrophysics behaviour of latosoils developped by use and management at Cidade Gaúcha - Paraná municipality. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.97

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* GMA-D069

DataBase Ref.: 794 **2001** *Date of presentation:* 26/9/2001

Helio Silveira *Advisor(s):* Carvalho,W.A.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* 23 22 's - 52 41 'W

Abstract

Souza,M.L. 2001. Geomorphology and morphotectonic analysis of high Sapucaí valley - Pouso Alegre (MG). PhD Thesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 279 pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA062

DataBase Ref.: 941 **2001** *Date of presentation:* 10/4/2001

Marta Luzia de Souza *Advisor(s):* Zuquette,L.V.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Souza,S.C.A. 2001. The Hermida, Alumínio and Pirapora do Bom Jesus amphibolitic bodies petrology, SP. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

1.Petrology 2. Geocronology 3.Metamorphism 4.Mineral Chemical 5.Litochemical 6. Thermobarometry

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1863 **2001** *Date of presentation:* 31/10/2001

Stella Cristina Alves de Souza *Advisor(s):* Oliveira,M.A.F.

Committee: Antonio José Ranalli Nardy - IGCE/UNESP
Elson Paiva Oliveira - IG/UNICAMP

Caetano Juliani - IGc/USP
Ciro Teixeira Correia - IGc/USP

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Hermida Amphibolitic Occourence (HAO) and the Alumínio and Pirapora do Bom Jesus Amphibolitic Bodies (AAB and PBJAB, respectively) are old igneous rocks, with basic to intermediary, tholeiitic, subalkaline affinity, they are metamorphosed since greenschist (PBJAB) to amphibolite facies (AAB and HAO). The AAB shows two metamorphic progressive peaks (450-550°C, 2-4kbar, 7km deep burial in M1 peak to 550-700°C, 5-7kbar, 18km deep burial in M2 peak), while HAO and PBJAB show only one (700-830°C, 6-7kbar, 22km deep burial, HAO and 390-550°C, 2-4kbar, 7km deep burial, PBJAB). Also The AAB shows an instrusive to hipoabissal characteristics. The amphibolites are old dolerites or gabbros, but PBJAB was extrusive and correspond to old basalts. AAB and PBJAB both suffered magmatic diferentiation. The Positive eNd values and 87Sr/86Sr, 147Sm/144Nd and 143Nd/144Nd ratio are nearest chondritic values, and indicate protolite mantle source. Geocronological Pb/Pb, TDM and U/Pb results point out ages with the range from 1700Ma to 3600Ma, suggesting the age of the mantle region where the magma was extracted. The tectonic environment was an island arc (back arc basin) and the metamorphism-deformation is conditioned by strike slip Dn+3.

Tonetto,É.M. 2001. Hydrochemistry in aquifers of Rio Claro(SP) region and neighbourhood. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.107

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D067

DataBase Ref.: 796 **2001** *Date of presentation:* 29/6/2001

Érica Martini Tonetto, *Advisor(s):* Bonotto,D.M.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Vieira, A.C. 2001. Fractal analysis of the deformation of basement of the Pantanal basin, Brazil. PhD Thesis, Departament of Geology, University Federal of Rio de Janeiro, Brazil, pg.

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 2440 **2001** *Date of presentation:* 1/11/2001

André Calixto Vieira *Advisor(s):* Dayan,H.

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Vilas Boas,S. 2001. Soils discrimination using drainage net parameters of hydrographic basins and circulars samples. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.66

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* MGA-D070

DataBase Ref.: 793 **2001** *Date of presentation:* 21/11/2001

Sergio Vilas Boas *Advisor(s):* Carvalho,W.A.

Committee:

Subject of thesis: Geosciences and Environment

State: *1/1,000,000 sheet:* *Centroid of the area:* 22 48 's - 48 23 'W

Abstract

Almeida,S.H.S. 2002. Tectonics and gravimetry of the Ribeira belt in the limits of São Paulo and Rio de Janeiro states. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.203

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* gr-d072

DataBase Ref.: 1498 **2002** *Date of presentation:*

Sergio Henrique Sousa Almeida *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

RJ

Abstract

Araújo,D.P. 2002. Mineralogy of diamonds from Juína Kimberlitic Province (state of Mato Grosso, Brazil). PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Amazon Craton, diamonds from alluvial and primary, cathode luminescence (CL) features

Instituto de Geociências - Universidade de Brasília *Reference:* D047

DataBase Ref.: 47 **2002** *Date of presentation:* 18/3/2002

Débora Passos de Araújo *Advisor(s):* Gaspar,J.C.

Committee:

José Affonso Brod	-	IG/UnB
Sylvia Maria de Araujo	-	IG/UnB
Luiz Augusto Bizzi	-	CPRM
Roberto Ventura Santos	-	IG/UnB
Kenneth Melbourne Tainton	-	De Beers

Subject of thesis: Mineralogy and Petrology

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Juína Kimberlite Province in the southwestern border of the Amazon Craton intrudes the Rio Negro-Jurema Province (1.8 – 1.55 Ga) and sediments of the Parecis Basin (Permo-Carboniferous). The Province is well-known due to the occurrence of diamonds originated in the transition zone (TZ) and lower mantle (LM).

Two hundred and thirty four diamonds from alluvial and primary sources in the Juína Province were investigated for their cathode luminescence (CL) features, spectral classification (FTIR), C and N isotope and N content. Diamond colors are mainly gray and brown, with a lesser amount of colorless and yellow stones. Diamonds are mostly resorbed fragments, thogh regular octahedral, aggregates and macles are reported. Octahedral layering, step-wise growth, resorption features, and evidence for plastic deformation were recorded both by microscopy and CL, though most of the diamonds are homogeneous and blue-sky under CL. Internal feature recorded by CL are not common. They are octahedral growyh, concentric zonation, zig-zag patterns and resorption during formation and after growth. Corrosion features as trigons, lamination lines, serrated lamination, hexagons, tetragonal pits, hillocks, etch channels, shagreen- and frosting-like features are common.

Type II diamonds (N-free) predominate among alluvial and primary samples (82%). Type I diamonds (24 stones) present low-N (up to ~ 300at. ppm, except for one sample whitch presents 613 at. ppm) and are highly aggregated (over 90%, except for 3 samples). The δ13 C for Type II diamonds ranges from – 3 to - 26,3%° and for Type I from _ 3,4 to 13,8%° . The δ15 N for Type I samples ranges from -2,1 to – 14,0%° and the N content from 3,85 to 613,74 at. ppm.

Results obtained here compare favorably to alluvial diamonds derived from the Juína Kimberlite Province, suggested to be originated in the deep mantle, and contribute with new characteristics. δ13 C for such deep assemblages clusters around -5%°, ranging from -13 to -4%° , the heavier signatures being ascribed to the LM and lighter values to the TZ. Our results allow for the definition of four groups with signatures clustering around -5%°, -13%° , -18%° and -25%°, and type I diamonds being restricted to the first two groups. Previous results for alluvial diamonds in terms of δ15 N yield -5.2%° and -6%° for LM samples and +1.3%° and +1.2%° foe TZ stones. The δ15 N data interval obtained here (+2,1 to – 14,0%°) encloses these values, with wider compositional intervals being observed for single stones (-2,9 to + 14%° and -9,2%° to +1.4%°).

Type II diamonds studied here could be attributed to the deep mantle and it is suggested that the TZ bellow the SW border of the Amazon Craton may be characterized by lighter δ13 C then previously reported. Isotopic composition of the TZ could be related to subductions during the formation of the Rondoniana-Santo Ignácio and Sunsás Provinces, that is in accordance to 1.0 to 1.7 ages for Juina xenoliths.

A core-mantle plume is envisaged to have been the transport media for deep diamonds from the Juína Province. It is suggested that isotopic fractionation and changes of fO2 temperature and local isotopic composition could have produced the compositional patterns registered for these diamonds.

Assunção,J.C.B. 2002. Geochemical, mineralogical and textural evaluation of residual mud generated at the Barueri drain treating station - SP state: influence in the soil and in the underground water. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1923 **2002** *Date of presentation:* 20/3/2002

José Carlos Branco de Assunção *Advisor(s):* Sigolo,J.B.

Committee:

Subject of thesis: Engineering and Environmental Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Avelar,V.G. 2002. Geochronology Pb-Pb in zircon and Sm-Nd total rock of the center-north portion of the Amapá state-Brazil: Implications for the geodynamical evolution of the oriental section Guyana shield.. PhD Thesis, Center of Earth Sciences, University of Pará, pg.

Geochronology; Geodynamical Evolution; Guyana Shield; Pb and Nd isotopes; Magmatism; Archean-Paleoproterozoic; Transamazonian Orogeny; Amapá Center-north.

Centro de Geociências - Universidade Federal do Pará *Reference:*

DataBase Ref.: 248 **2002** *Date of presentation:* 13/9/2002

Valter Gama de Avelar *Advisor(s):* Lafon,J.M.

Committee:
Márcio Martins Pimentel - IG/UnB
Roberto Dall'Agnol - CG/UFPA
Claude Delor -
Candido Augusto Veloso Moura -

Subject of thesis: Geology

State: AP *1/1,000,000 sheet:* NA22 *Centroid of the area:* ' - 'W

Abstract

The Guyana Shield is an extensive Paleoproterozoic domain whose main evolution is related to the Transamazonian orogenic event (2.2-1.9 Ga). However, registrations of on Archean history were obtained in metamorphic and igneous rocks of the Imataca Complex in Venezuela (>3.0 Ga). The Rb-Sr and Sm-Nd ages, obtained for granulitic and orthogneissic rocks of the central area of the Amapá State (2.45 Ga and 3.0 Ga), are other evidences of the presence of Archean relics in that shield.

The eastern Guyana Shield includes the Amapá State, in Brazil and French Guyana. This portion of the shield belongs to the Maroni-Itacaiúnas Province, considered a Paleoproterozoic mobile belt added to an Archean block (Central Amazonian Province), between 2.20 and 1.95 Ga. Recent works provide a model of the Transamazonian geodynamical evolution between 2.20 and 2.08 Ga for this part of the Guyana Shield. A first period is related to early- to middle-Transamazonian crustal growthing by magmatic accretion (2.20-2.13 Ga) and a second one consists of crustal recycling (2.10-2.08 Ga).

The main geological units found in Amapá consist of Achean tonalitic orthogneisses, migmatites and granulites (3.1-2.6 Ga), Paleoproterozoic greenstones belts (2.26 Ga) and, predominantly, Transamazonian granitoids and orthogneisses, of calc-alkaline to syenogranitic composition. In the northern area, an age of 2.15 Ga was defined for a tonalite, while in the central region, migmatitic rocks are associated to a potassic magmatism which happened at 2.06 Ga. Felsic (1.76 Ga) and alkaline (1.68 Ga) post-Transamazonian intrusions have also been recognized in Amapá.

In this work a set of 41 isotopic data was obtained by Pb-Pb on zircon (18) and Sm-Nd on whole rocks (23) methods for 25 samples of orthogneiss rocks, metassedimentary rocks and granitoids from central and north Amapá. These data permitted to bring new chronological references for some key units of Amapá and to establish a chronology of the thermo-tectonic events during the Transamazonian orogeny. The data also allowed to investigate the nature and extension of reworked Archean crust and newly accreted Paleoproterozoic crust in that part of the shield.

In central Amapá, in the vicinity of Tartarugal Grande city, zircon crystals of felsic granulites yielded a Pb-Pb age around 2.6 Ga. Still in that area, Pb-Pb zircon age of 2053 ± 1 Ma was obtained for a charnockitic pluton. In the surroundings of Cupixi village, zircon crystals from a tonalitic gneiss defined an age of 2849 ± 6 Ma, while ages ranging from 2.13 to 2.07 Ga was defined by the zircons of an associated granitic mobilized. Zircon crystals from a monzogranite gave a crystallization age of 2055 ± 6 Ma and ages up to 2.56 Ga for an inherited component. The Nd T(DM) ages for all these rocks ranged between 2.70 Ga and 3.29 Ga.

In northern Amapá, several syenogranites provided crystallization ages of 2107 ± 2 Ma, 2098 ± 2 Ma and 2087 ± 3 Ma. However, for one syenogranite and an alkali-feldspar granite the Pb-Pb zircon ages defined an interval of 2.13-2.05 Ga and 2.10-1.95 Ga, respectively. The latter granite also presented zircons with an inherited component of 2.60-2.54 Ga. Zircons from a diorite, defined a Pb-Pb crystallization age of 2181 ± 2 Ma. The Nd T(DM) model ages for that group of rocks spread in the interval of 2.75 Ga to 2.18 Ga. At the border area with French Guyana, along the Oyapock river zircons of a syenogranite and of a gabbroic intrusion yielded crystallization ages of 2096 ± 2 Ma and 2099 ± 1 Ma, respectively. Pb-Pb data on zircons from a quartzite, associate to the Paramacá Group, gave ages between 3.19-2.77 Ga, for the sources of the sediments.

Two main magmatic episodes were identified by the Pb-Pb zircon data. A calk-alkaline one (dioritic and tonalitic), early- to middle-Transamazonian between 2.18-2.14 Ga, is associated to magmatic accretion. Another alkaline-potassic magmatic episode, among 2.11-2.09 Ga, which prevails in northern Amapá, is characterized by transcurrent tectonics and crustal anatetic processes. The emplacement of a charnockitic pluton at 2.05 Ga, in the central Amapá, suggests a late-Transamazonian age for the high-grade metamorphism identified, in this same area, in granolithic rocks with Archean protolith (2.6 Ga). This high-grade event is related to the late-Transamazonian (2.07-2.06 Ga) UHT (ultra high temperature) event identified in Surinam. The post-orogenic regional cooling was registered by the K-Ar, Ar-Ar and Rb-Sr methods on minerals between 2.05-1.80 Ga.

In central and northern Amapá, the Nd T(DM) model ages and Pb-Pb zircon ages indicate a main period of mantle-crust differentiation during Middle-archean, among 3.0-2.9 Ga, with possible relics of crust of up to 3.29 Ga. Two magmatic episodes

were recognized, one at around 2.85-2.79 Ga, defined by the tonalitic gneisses of Cupixi, and the other at around 2.62-2.58 Ga, constituted by the igneous precursors of the Tartarugal Grande granulites. These results confirm the presence of preserved Archean nuclei, with similar age to those of the Archean crust of the Carajás Province. However, for the latter area there is not an outstanding registration of a Neoarchean episode, among 2.62-2.58 Ga, suggesting that the Carajás Province behaved as a stabilized area, while the Archean crustal segment of the southeast of the Guyana Shield was reactivated at the end of Neoarchean.
In the northern Amapá and at the border with French Guyana witness of an Archean crust are only registered in detrital zircons (3.19-2.77 Ga) of metassediments and as inherited zircons in Pelaoproterozoic granitoids and orthogneisses (2.6 Ga to 2.9 Ga). The Nd T(DM) model ages among 2.75-2.40 Ga of the Paloproterozoic rocks (2.18-2.05 Ga), indicate a mixture between a reworked Archean crust and a Paleoproterozoic juvenile crust in the source of these rocks.
The Pb-Pb data and Sm-Nd ages obtained in this work confirm a Transamazonian evolution for the central and northern Amapá, similar to that of the French Guyana, in the period between 2.20-2.08 Ga. However, the geological evolution of Amapá differs from the evolution of French Guyana by the presence of reworked Archean crust and by the existence of a late-Transamazonian high-grade magmatic-metamorphic event.
Three domains were recognized in southeast Guyana Shield. A northernmost domain, in French Guyana, displays simatic juvenile characteristics. The southernmost domain, in central Amapá, possesses ensialic characteristics, being formed by midle- to neoarchean nuclei, reworked during Transamazonian orogeny. A transitional domain between those two domains has been identified in the north portion of Amapá. In French Guyana the limit between the transitional and simatic domains is probably WNW-ESE oriented, while the limit between the transitional and the Archean reworked domain is located nearby the at north of granolithic complex of the Tartarugal Grande region.

Azevedo,A.A. 2002. The incorporation of geological uncertainty in the project and construction of urban tunnels: metodological propposal based on the decision theory. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1877 **2002** *Date of presentation:* 3/9/2002

Adalberto Aurelio Azevedo *Advisor(s):* Taioli,F.

Committee:

Subject of thesis: Engineering and Environmental Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

This study focuses on the potential of several techniques used to identify depositional geometries and paleogeographical investigation on the SW border of the Potiguar Basin. Three areas were selected for an integrated geological, geophysical and geochemistry study. The main used techniques were facies analysis, remote sensing, ground penetrating radar (GPR) and gamma-ray in outcrops, as well as petrographic microscope observations and the using of scanning eletronic microscopic (SEM), and Carbon and Oxygen Isotopic study in the carbonate tufa. These methodological approaches were very efficient in the facies analysis of 2D geometries. The GPR profiles carried out in Quixeré identified important geological reflectors which allowed to the identification of depositional geometries of tufa. However, GPR profiles were not able to identify geological reflectors in the Apodi and Olho d´Água da Bica outcrops. Gammaray profiles also presented good results, which justify their use in 1D and 2D geometric analysis. Carbon and Oxygen Isotopic analyses were also used to investigate paleoenvironmental setting of tufa deposits. It is important to remark the excellent results of GRP using in the identification of depositional geometries of tufa and their contact relationships with the underlying rocks. Field analysis of faults indicate a vertical sigma-1 orientation which was associated to normal faults.

Barrueto,H.R. 2002. Petrogenesis of the Teofilândia and Barrocas composed granitic intrusions, Rio Itapicuru greenstone belt, Bahia state, Brazil. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 936088

DataBase Ref.: 380 **2002** *Date of presentation:* 26/8/2002

Hector Rolando Barrueto *Advisor(s):* Oliveira,E.P.

Committee:

Subject of thesis: Metallogenesis

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

The Rio Itapicuru Greenstone Belt (RIGB) is a Paleoproteozoic sequence situated in the northern portion of the São Francisco Craton, Bahia state, Brazil. Overlying a basement consisting of gnaisse and migmatites, this volcanic-sedimentary belt is intruded by several granitoid intrusions of different chemical compositions. Two of the most important intrusive bodies, the Barrocas (BGr) and the Teofilandia granitoids (TGr), which are early Proterozoic in ages (2130 and 2127 Ma, respectively), are located in the southern portion of the RIGB, and display E-W and NE-SW trending orientation, in contrast with the N-S trend of most of the remaining intrusions related to the supracrustal pile. Even being considered time- and spatial-related granitoids, the field relationships reveal the TGr as the earlier intrusion. It has a granodioritic to quartz-monzodioritic modal composition, and associated with a quartz-porfiritic sub-volcanic rock. The BGr has a granodioritic modal composition and rare transitions to

tonalite. Both belong to the calc-alkaline and I-type suites and have metaluminous signatures, characteristic of felsic igneous rocks of orogenic environments. The TGr displays SiO2 (64%-71%), Na2O (4,02% -5,92%), CaO (2,32% - 4,44%) and TiO2 (0,28% - 0,48%), with low to moderate Rb/Sr, Rb/K and Sr/Y ratios. The BGr has higher SiO2 values (up to 73,57%), and lower Rb/Sr, Rb/K and Sr/Y ratios and Na2O, CaO, TiO2, Sr, Ba and Y. Although both granitoids have juvenile arc signatures, characterized by low 87Sr/86Sr isotopic ratios (0,69964-0,70177) and positive □Nd2130Ma (>+2.03), their initial isotopic ratios indicate different sources, revealing a likely intra-oceanic tectonic setting for them. Geochemical modellings point to their being the result of partial melting of a basaltic protoliths of the RIGB sequence (oceanic crust) under amphibolite-eclogite facies conditions. All these features, in addition to the whole-rock O isotope data (> 7.5‰), preclude the accretion of recycled materials, suggesting a pervasive alteration of their basaltic protoliths before melting. Fine to medium-grained microdioritic enclaves having metaluminous and calc-alkaline compositions are scattered in the TGr, as well as more restricted coarse-grained varieties, formed by mafic mineral accumulation from the host granitoid. Another coarse-grained enclave type resulted from the mixture with more primitive magmas. Neither the TGr nor the BGr has xenoliths of the surrounding regional rocks. Small and irregular granodioritic bodies cut the TGr;, which are characterized by high Rb and K values and narrow negative isotopic variation (□ Nd2130Ma = -8.49 to - 9.38), indicating partial melting of an ancient crustal material. Of the two deformational events documented in RIGB, the D1 tectonic event directly affected the granitoids. This event, characterised by a NW-SE dextral transpression movement, was responsible for an expressive curved fault along the contact of the BGr with the basalt units of the supracrustal RIGB in the north, and for another one along the contact plane of the TGr with the basement in the south, representing a possible suture zone. The ongoing transpression developed E-W planes, E-NE mineral and stretchting lineation trends, as well as kinematic indicators in the TGr, whereas imprinted a high (medium) angle dipping S-C foliation structures in the BGr granitoid. Open upright folds with low NW-trending angle axes nucleated in a northeastern sector within the area determined by these two main faults, which gradually became closed-like folds in the central sectors, with their axes uprighting westward according to an apparent clockwise rotation. The dextral movement culminates in the two expressive upright mylonitic segments which form the wedge of a delta-like megastructure. Notwithstanding, as expected in syn-tectonics granitoids bodies emplaced in transpressional domains, the movement not inferred sigmoidal patterns to the geometric elements of the TGr and BGr intrusions. All these features indicate the folding as the dominant movement instead of rotation. These relationships support the suggestion that both igneous bodies are sheet-like intrusions, and provide evidence for the interplay between the TGr and BGr and the D1 tectonic event. The young D2 event locally affected the TGr and BGr through dominantly brittle features with many parallel N-S trending faults.

Bascou,J.F.L. 2002. Relationships between microstructures, deformation mechanisms and anysotropic physical properties in metamorphic high grade rocks: Study of some granulites and eclogites. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 193 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1193 **2002** *Date of presentation:* 12/11/2002

Jérome Fernand Louis Bascou *Advisor(s):* Egydio-Silva,M. Vauchez,A.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Borba,R.P. 2002. Arsenium in surficial environment: Natural and anthropogenic geochemical processes in a gold minning area. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 945864

DataBase Ref.: 384 **2002** *Date of presentation:* 19/4/2002

Ricardo Perobelli Borba *Advisor(s):* Figueiredo,B.R.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Quadrilátero Ferrifero, located in the state of Minas Gerais, is the most famous Brazilian gold district, and has educed 1.3 million tonnes of gold during the last three centuries. Given the As/Au ratios of the ores, it is estimated that at ad 390000 tonnes of As were liberated in the environment, mainly due to the dumping of wastes in the drainages. This Ph.D. thesis focussed on: (i) the distribution of As in water and sediments from fluvial basins under influence of the major ng districts of the Quadrilátero Femfero, and test the biological availability of As in sediments; (ii) the development of a method of As - •n in water; (iii) the description of processes and products related to the supergene alteration of arsenopyrite from gold ores; and the hydrogeochemicai modeling of groundwater in mines. The results indicated that the gold districts sited in the basins of the das Velhas, Carmo and Conceição rivers, contain high . •ns of As in the sediments, with values up to 4.000 mglkg As. Tests of bioavailability of As in sediments indicate = -'ins below 4% of the total grades, thus representing a potential risk in certain areas. Concentrations of up to 350 µg/L As were obtained in samples of filtered surface water, whereas ground water collected in gold in the Ouro Preto and Marian region, indicate values as high as 2.800 µg/L of total arsenic. The development of a method able tD the different species of inorganic As (Asp e Ask), via the combination of hydride generator and atomic absorption - , allowed the identification of different inorganic species of As in surface and groundwater, with [As3*]4As5] ratios ranging 1.10-1 to 4.10-2. The

original distribution of the inorganic arsenic species in water samples remained unaltered until 10 days after regardless the method of sample preservation. Although, after 30 days, the conservation of samples containing HCl or HNO3 recoveries above 80% of the original Asp concentration. The geochemical processes that guide the supergene alteration of gold deposits were studied in detail via X-ray diffraction, ng electron microscopy, chemical analyses of groundwater from mines, and via hydrogeochemical modelling. It was noted that the oxidation of arsenopyrite from quartz veins (without carbonate minerals) originated scorodite, while the oxidation of quartz- nopyrite veins generated low-crystallinity Fe-Ca-arsenates, and minor scorodite, kolfanite, yukonite and farmacossiderite. iteration of As into surface and ground water occurs according to the following stages: (i) during the oxidation of arsenopyrite part of As is soluble and part is incorporated in Fe-arsenate or scorodite; (ii) during the total or incongruent dissolution of secondary As- part of the As is soluble, and part is adsorbed and retained in Fe-oxides. The presence of carbonate minerals in sulfide ores acidic waters derived from the oxidation of sulfide minerals. Although, neutral to alkaline pH induces the liberation of As via of Fe-arsenates and scorodite. Collectively the geochemical studies performed in the Quadrilátero Ferrifero indicate that concerns regarding the ulation health must be present. It is recommended a periodical monitoring of surface waters, particularly in areas to gold mines or waste dumps, and the adoption of methods that prevent waters contaminated by As to be d. The highest possibility of contamination of wells, springs and groundwater, relate to groundwater hosted by that bear sulfide-rich gold mineralizations or to sites impacted by solutions contaminated by As, derived from waste or water from contaminated sediments.

Borghi,L. 2002. Facies, depositional architecture, tempestites and the Devonian of the Paraná basin. PhD Thesis, Universidade Federal do Rio de Janeiro, pp.

tempestites; facies; depositional architecture; devonian; parana basin

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 419 **2002** *Date of presentation:* 19/2/2002

Leonardo Fonseca Borghi de Almeida *Advisor(s):* Mussa,D.

Committee:
Jorge Carlos Della Favera -
André Ribeiro -
Ismar de Souza Carvalho -
Ciro Jorge Appi -
Nilo Chagas de Azambuja Filho -

Subject of thesis: Regional Geology and Economic Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* 24 30 's - 50 20 'W

Abstract

This thesis discusses conceptual aspects of the facies analysis, particularly from the "depositional architecture" point of view, in way for the study of tempestite facies (storm deposits), facies models and their genesis. The Devonian of the Paraná Basin (Furnas and Ponta Grossa formations), in Southern Brazil, is a proposed case of study. Initially, the main problem identified in the modern facies analysis is concerned to the concept and to the recognition practice of a facies relationship. Traditionally, facies relationships are proposed on the gradational aspect between them; or on geostatistical tests; either on the Walther Law, which recognise a facies relationship unless unconformities split them. All these criteria are shown to be falible, as facies seldom show gradational contacts; geostatistical tests can only specify probable relationships, but not verify them; and unconformities do falsify these relationships among two facies, but are a very matt er of interpretation. So, a new postulate (Facies Relationship) is proposed to establish these relationships ("Facies contained between bedding surfaces of the same hierarchical order, in one stratigraphic succession, without the intervenience of a bedding surface of greater magnitude, are genetically related to each other, and may be conceived in association"). The hierarchization of bedding surfaces seems to be the better method for that practise, and a three-fold classification is proposed for the diagnosis of an architectural element, the smallest unit for any facies model (architectural units of greater magnitude are parasequences, system tracts and depositional sequences). The state-of-art of tempestite knowledge points to three aspects of debate: agents (hurricane, winter storm, tsunamis and internal waves), transport mechanisms (ebb currents, geostrophic currents, turbiditic flows, and hyperpicnal flows), and sedimentary processes during deposition (unidirectional cu rrents, turbidity currents, and oscilatory currents). These are defended through purley oceanographic (Recent) or geological (past) opinions, still without consensus. Unidirectional and oscilatory currents (waves) are simulated in laboratory (flumes) with reasonably accepted results for the comprehention of some tempestites. Faciologically, tempestites are commonly identified by the presence of the HCS (hummocky cross-stratification), and their facies models emphasize vertical variations of textures and sedimentary structures as analogues of the Bouma Sequence of turbidites. These are known as classical tempestites. Nevertheless, many other tempestites mentioned in the literature do not fit in this concept. Indeed, it seems to be impossible to circunscribe a tempestite to any descriptive concept. It is actually an interpretative concept of the geological agent. In architectural element terms, very few efforts of analysis were made, and these are particularly restricted to s andstone/shale successions. Shales are very important for the definition of the architectural element boundaries. Furnas Formation (sandstones, lower unit of the Devonian in the Paraná Basin) presents a full spectrum of tempestite lithologies (textures) and sedimentary structures that complemented by those typical of the Ponta Grossa Formation (shales, upper unit of the Devonian) allowed a new facies classification for tempestites. This classification is based on 14 lithofacies, genetically organized in four association of facies. Two, treated as facies tracts (facies are process-derived), are produced by the interplay of oscilatory currents (waves) with turbiditic flows (A1-B1-C1-C2-D facies tract or turbidity–oscilation tract) or unidirectional currents (A2-B2-C2-D facies tract or current–oscilacion tract). Liquefaction of the substrate by wave loading evolving to turbiditic flows and catastrophic flooding in the shore allow a third tract facies (A-B-C-D facies tract or tu rbidity current tract). The last, treated simply as an association of facies, is resulted only by oscilatory currents (A3-C3-E-F facies association). In this facies model, named "tempestite plex", the turbidite facies model (tract) of E. Mutti approach for the facies classification – as suggested earlier by J.C. Della Fávera – and some particular sedimentological mechanisms (turbulent difusion flow-transformation and bypassing) are conspicuous. Also, only the Furnas Formation permitted to discuss two new kinds of architectural elements due to favorable

outcropping: channels filled up with sandstones (CAN) and vertically accreted sandstones (AVA). The former result from storm ebb current excavation of the upper shoreface, followed by filling-up by facies of the turbidity tract; and the latter by the turbidity–oscilation or current–oscilation tracts. Both kinds are poorly discussed in the literature, and are also innovative architectural elements.

Braga,I.F. 2002. Tectonic structuration and metamorphism of the Cristina/Itajubé region-MG state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.197

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* gr-d070

DataBase Ref.: 1500 **2002** *Date of presentation:*

Iramaia Furtado Braga *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Buchmann,F.S.C. 2002. Bioclasts of marine and terrestrial organisms in the Rio Grande do Sul beach and shoreface: nature, distribution, origin and geology. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Rio Grande do Sul; oceanography; Pleistocene; shoreface; megafauna

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 2015 **2002** *Date of presentation:* 20/12/2002

Francisco Sekiguchi de Carvalho Buchmann *Advisor(s):* Tomazelli,L.J.

Committee: Rodolfo José Angulo - DG/UFPR
Lauro Júlio Calliari - FURG
Jorge Ferigolo - PUC

Subject of thesis: Marine Geology

State: RS *1/1,000,000 sheet:* SI22 *Centroid of the area:* ' - 'W

Abstract

Coastal and marine facies associated to transgressive and regressive events throughout the Quaternary are present along the southern Brazilian coastal plain and inner continental shelf. While the coastal plain facies present a siliciclastic composition, the inner shelf submerged facies are mainly carbonatic. Formed by strongly cemented coquinas and sandstones, these features are present as topographic highs over the seafloor, which has been supplying marine bioclasts and sediments to the beaches in the study area. Such bioclasts are characterized as an Heterozoan Association, a cool water carbonate, composed by: mollusks, irregular equinoderms, annelids, decapod crustaceans, skeletal remains of fish, turtles, whales and birds similar to present day ones. Abundant skeletal remains of extinct terrestrial mammals (Edentada, Notoungulada, Liptoterna, Proboscidea, Artiodactila, Perissodactila, Carnívora e Rodentia) occur. The spatial density of the bioclasts alon g the beach results from direct action of hydrodynamic processes acting in the region (storm waves, longshore drift, currents, etc). The submerged outcrops can be divided in holocenic and pleistocenic. The pleistocenic bioclasts taphonomy allows the argument that after 120 ky, part of the lagoon deposits remained under sub aerial exposure, not being under marine influence, while another part of these deposits was. Coquina deposits present terrestrial mammal bones, indicating surf zone reworking. After 120 ky, the coquinas were exposed allowing a differentiated dissolution of carbonate components within the deposits as well as their recrystallization in fresh water environments (coquina type 1). After 18 ky, marine transgression reworked the deposits, recrystallizing once again the carbonate components. Due to their lithification level, these deposits resisted to erosion and are presently outcropping at the shoreface and foreshore. At 8 ky, another carbonate precipitation eve nt occurred (coquina type 2). The holocenic bioclasts taphonomy interpretation suggests two depositional facies: (a) foreshore and (b) upper shoreface. Modern coastal dynamics reworks again unconsolidated sediments, while sedimentary rocks partially resist and constitute the submerged topographic highs described in this work.

Cardoso,F.B.F. 2002. Properties and Mechanical Behaviour of Soils of the Brazilian Central Plateau. PhD Thesis - G.TD-009A/02, Departamento de Engenharia Civil e Ambiental, Universidade de Brasília, Brasília, 357 p.

Soils Physics; Soils Micromorphology; Soils Mineralogy; Soils Chemistry; Brazilian Central Plateau

Departamento de Engenharia Civil - Universidade de Brasília *Reference:* G.TD-009A/02

DataBase Ref.: 2343 **2002** *Date of presentation:* 4/2/2002

Fabrício Bueno da Fonseca Cardoso *Advisor(s):*

Committee:

Subject of thesis: Engineering geology

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

There are few research works on the geotechnical behaviour of tropical soils in Brazil aiming to study the relations between soil mechanical behaviour and its mineralogical and chemical properties, particularly for soils of the Brazilian Central Plateau. Researchers in this region usually employ "imported theories" from other regions of the country, or the world, where soils in general are formed under very different weathering conditions. Thus, this thesis aims to relate physical, chemical and mineralogical properties of soils from the Federal District, with the objective to approach real conditions of soils of the Brazilian Central Plateau. To accomplish that, a large variety of laboratory tests was conducted and their results analysed using statistical tools to identify existing relationships between soil properties. Besides these relationships, a relation between weathering level and soil physical properties is also introduced.

Carmelo,A.C. 2002. Characterization of fractured aquifer through the integration of geological and geophysical informations. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

hydrogeology, geophysical eletromagnetic data (VLF and EM-34), fracture domain, vertical fractures, fractured aquifer, groundwater resources, recharge áreas

Instituto de Geociências - Universidade de Brasília *Reference:* D053

DataBase Ref.: 53 **2002** *Date of presentation:* 14/6/2002

Adriana Chatack Carmelo *Advisor(s):* Moraes,R.A.V. Araújo Filho,J.O.

Committee:
Augusto Cesar Bittencourt Pires - IG/UnB
Paulo Roberto Meneses - IG/UnB
Alberto Pio Fiori - DG/UFPR
Francisco José Fonseca Ferreira - DG/UFPR

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The use of data integration for geological mapping, structural analysis, groundwater and environmetal resources, mineral exploration, provides the geologist with a powerful tool. The advantage of this technique is that the analysis of different types of data, and their treatment them separately, generates a hybrid final products that improve the accuracy of ground information.
In this thesis, I used this approach as an important tool to integrate lithologic, structural and geophysical especially eletromagnetic, data that carry significant information of hydrogeological setting in the Federal District (FD), in which Brasília, is located. The target for aquifer is the fracture domain in the study area. The opening of fracture are the nature conduite for recharge, control and support of the hydrogeological system studied.
Public consumption of potable water in FD will duplicate the next decade and thepresent supply of water is good for half of today´s consumption. So, the Government of FD stimulates research on groundwater to avoid a future colapse and maintain the sustainability of water supply.
The study area was chosen for being a populated area with critical problems of water supply, where groundwater research would rendes feasible to mitigate a near future water supply colapse. The study area is located in the Northeast corner between 15º´30´00´´S and 15º45´00´´S latitudes and 47º20´00´´W and 47º40´00´´W longitude.
We present a new methodology of integrated data that led to the identification of three main directions of vertical fractures (NS, EW e N60-70W) which are indicated as fractured potential aquifer. The geologic setting is located the external zone of the Brasília fold-thrust belt in the realm of the Paranoá and Bambuí Groups. These groups low metamorphic grade Meso/Neoproterozoic and Neoproterozoic folded quartzite, slate, phyllite, and arkoses. Psamitic-bearing sequence of both groups are controled for hydrological setting because they present brittle reologic characterisctics.
VLF (Very Low Frequency) and EM-34 was the survey used in this study to penetrate soil cover and identify fracture zones with water because of the highest yields obtained from these fractures with electromagnetics anomalies. The dome and basin structural interference pattern reflects on the topography and displays strongly fractured hinge zones important for water storage. The recharge volume infiltrated in study area with base in data from hidric balance.
Integrated final product display indicators to located fractured aquifers and identify recharge areas that is supplied by water of the aquifer from rainy season. These results render the hydrogeology and litho-structural knowlodge in Federal District. We present a new methodology proposal to manage groundwater resources in a quick, and efficient way by means of identifying water-bearing fractures that lead to potential aquifers.

Castañeda,C. 2002. Mineralogic characterization of natural and treated tourmaline and morganite samples from Araçuai pegmatitic district, state of Minas Gerais, Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

tourmaline, beryl, color precursor, Mössbauer, Raman, EPR

Instituto de Geociências - Universidade de Brasília *Reference:* D049

DataBase Ref.: 49 **2002** *Date of presentation:* 7/5/2002

Cristiane Castañeda *Advisor(s):* Botelho,N.F.

Committee:
Márcia Abrahão Moura - IG/UnB
Jose Carlos Gaspar - IG/UnB
Antonio Claret Soares Sabioni - IGC/UFMG

Maria Cristina F. Lara - IF/UnB

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

It is reported a comparative study of natural and treated green, blue and pink tourmalines from Minas Gerais, Brazil, using electron paramagnetic resonance (EPR), optical detec tio n of electron paramagnetic resonance (ODEPR), optical absorp tio n, Mössbauer, infrared, and Raman spectroscopy. Chemical analyses indicate that all samples belong to elbaite-schorlite series with high Fe and Mn contents. EPR spectra of green and blue tourmalines indicate the presence of high concentra tio ns of iron with EPR line widths of about 1000 Gauss. The unusual broad lines are probably due to spin-spin interac tio ns caused by high concentra tio ns and structural disorder. From Mössbauer spectra at room temperature Fe2+ is dominantly and is incorporated in two (green) or three (blue) different Y sites. EPR spectra of natural pink elbaite indicate the presence of Mn2+. Optical absorp tio n measurements show three dominant absorp tio n bands centered at 460, 520, and 680 nm in pink tourmalines. In the blue species, it has been detected three dominant bands at 1050, 800 and 640nm and two subordinate at 520 and 460 nm. They are related to optical transi tio ns of Fe2+ and Mn2+, respectively. Different defects produced by g-irradia tio n, like Mn2+, Fe3+, H0, and O- , have been identified by EPR, in pale pink elbaite. The last one is a hole trap of O- and is here considered a color center. It shows mainly supe rh yperfine interac tio n with two Al nuclei. Atomic hydrogen H0 is an electron trap whereas Fe3+ is an electron precursor. From irradia tio n and heat treatments we conclude that Mn2+ is the precursor of pink color in elbaites. On the other hand, in Fe-Mn tourmaline, high degree of disorder can cause blue color whereas smaller disorders can create green color. Irradia tio n intensifies pink color whereas heat treatments at about 4500C decolorize pink tourmaline. At about the same temperature, dark green tourmalines tend to be light in color and the blue ones loose their color. On the other hand, heat treatments at 700oC in oxidant environment yield red color in blue samples whereas a reduced environment intensifies slightly blue color.

Natural and irradiated pink morganites from Araçuaí, Minas Gerais, have also been investigated by electron paramagnetic resonance (EPR), optical absorp tio n, infrared, and Raman spectroscopy. Electron microprobe analysis of two different samples show that beryl samples are rich in Cs (3.30%) and contain low concentra tio ns of transi tio n metal ions, in total (~0.03%) Fe and (~0.05%) Mn. These samples show absorp tio n in the visible spectral range at about 375 and 455 nm, attributed in the literature to Fe3+and Mn, respectively. However, their loca tio n in the beryl structure and their charge states responsible for colors are still controversially discussed. In addi tio n to the transi tio n metal ions, beryl accommodates many molecules and alkalis in its channels. Polarized infrared absorp tio n and Raman scattering measurements in different species of beryl indicate presence of three types of water together with OH-. The Na2O contents are responsible for the orienta tio n of C2||C2 of site into 2a site. The other ones are into 2b site and present orienta tio ns C2||C2 and C2^C2 of the site. Some molecules with C2||C2 of the site can be rota tio nally disordered in many types of species. Other molecules in channels, not observed in infrared absorp tio n, are NO3 and CO3, which have been observed by EPR. In natural pale pink samples EPR spectra indicate presence of Mn2+ in octahedral Al sites and Fe3+ in channel sites. These ions are responsible for pale pink and pale yellow colors in these species. After g-irradia tio n pale pink samples turned steel blue. Many free molecule radicals have been observed by EPR, i.e., the CO3- as well as NO30 centers, which have been called earlier Maxixe-type and Maxixe center. In addi tio n, also atomic hydrogen, H0, appeared in the EPR spectra after irradia tio n which is correlated with the reduc tio n of the Raman scattering of one type of water. The hole center CO-3 and the electron trap H0, recombine at annealing temperatures above 150°C. The structure and nature of other not yet known paramagnetic species is discussed and interpreted as NO2.

Cavalcanti,M.A.M.P. 2002. The mathematical modelling associated to geographic information system as an instrument for the preview of hydrologic impact of reservoirs. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

aquifer;dam reservoir;Geographic Information System;groundwater modeling;hydrogeologic impact;hydrogeology;lake

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 247 **2002** *Date of presentation:* 4/9/2002

Malva Andrea Mancuso Paraiso Cavalcanti *Advisor(s):* Pacheco,A.

Committee: Jose Luiz Albuquerque Filho -
José Eloi Guimarães Campos - IG/UnB
Jorge Kazuo Yamamoto -

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The purpose of the current research was to demonstrate the viability of using Geographic Information System – GIS associated to mathematical models as a methodological option to be applied in the study of the water table elevation induced by dam reservoirs after their impoundment.
The chosen area was the drainage basin of Biritiba-Mirim river, located in Alto Tietê area, in São Paulo State.
The understanding of the hydrogeological system was acquired through geological, hydrogeological and climatological data. The surveys executed in the area, also allowed the construction of the conceptual model.
In the area, two aquifers types were identified: the Sedimentary, restricted to the fluvial plains, and the altered Crystalline, due to the weathering.
The regional groundwater flow was toward Biritiba-Mirim river, while the secondary drainage was a local groundwater discharge area.

The conceptual model data was, initially, organized in a Geographic Information System and later transferred to the mathematical model.
A mathematical model was built on the Biritiba-Mirim drainage basin using MODFLOW, a three-dimensional program of finite differences developed by McDONALD & HARBAUGH.
The model calibration was executed through successive trial-error process, using Geographic Information System as a input data and MODFLOW to evaluate results.
After the conclusion of the calibration process, the Biritiba-Mirim reservoir impoundment was simulated using Geographic Information System to input the new variable.
The simulation, also accomplished in MODFLOW, made possible to limitate the main areas that will be impacted on their ground water levels. Using that map were located the monitoring wells.
From the monitoring data, collected in a year period, it was possible to verify the model.
The reservoir impoundment simulation was repeated. From the resulted potenciometric map, the groundwater final depths map was elaborated. In that map, named Predictional Influence Map, two influence zones were defined (0-5 m and 5-10 m), and a zone without the reservoir influence or with final water table level more than 10 m depth.
Finally, an aquifer monitoring program was defined, in order to follow the water table impact after the reservoir impoundment. According to this program, two weeks after the impoundment should be made the first field measurement. The periodicity should be monthly until the first three months, and, after that, quarterly until the end of the first year.
The present study showed the viability of using Geographic Information System associated to mathematical models to predict modifications induced on the water table levels after a reservoir impoundment.
This methodology is recommended as an important tool to be applied in other cases with the same problem.

Chaves,J.M. 2002. Lithotype discrimination based on synthetic aperture radar data and radar/optic system synergism. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Remote Sensing, SAR, geology

Instituto de Geociências - Universidade de Brasília *Reference:* D052

DataBase Ref.: 52 **2002** *Date of presentation:* 14/6/2002

Joselisa Maria Chaves *Advisor(s):* Sano,E.E.

Committee: Maria Leonor Ribeiro Casimiro - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: GO *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The remote sensors data have been tested since the last two decades as an optional tool with great potential in many research areas (agriculture, geology, cartography, hydrology). The advance of the researches in this area is mainly due to the capability of the sensor to collect information in different portions of the electromagnetic spectrum and the computational evolution that made the developing of the many acquisition and processing digital data methods possible. On of the area of remote sensing that has been rising is the use of activated sensor systems (radar images). The major advantage of the radar is its capability to acquire data regardless of cloud or smoke cover. Regarding the Brazilian savanna (Cerrado) region, which represents about ¼ of the national territory, few researches using radar data has been developed. This thesis investigates the potential of synthetic aperture radar (SAR) data for geological mapping in the Brazilian Cerrado region. The geological study is located in the Bezerra-Cabeceiras region, Goiás State.
The general methodology consisted in using digital processing techniques of images to enhance spectral characteristics associated with the geological lithologies and structures and its comparison with the geological map that had already existed in the region. This research used some satellite images, such as: a) Landsat-TM, orbit 221, point 071, acquired in 30/05/97, bands 1,2,3,4,5, and 7; b) Radarsat image, decreasing orbit, standard S-2, an incidence angle from 24 to 31o, acquired in 13/1/99; c) Radarsat image, ascending orbit, standard -7, an incidence angle from 45 to 49o, acquired in 23/5/00, and; d) JERS1 image, acquired in 3/10/94. Image processing techniques includes the following steps: (1) atmospheric corrections in the Landsat-TM image based on the method of subtraction of the dark pixel; (2) geometric correction in the Landsat-TM image using topographic maps; the SAR images was corrected geometrically through the Landsat image that was already registered; (3) SAR imagery filtering for speckle reduction; (4) the use of some techniques to process images (band combination, arithmetic combination and statistical transforms); 5) recognition in field of the geologic units in the studied area; and (6) Integration and visual interpretation of optical images and SAR data, and comparison with the vetorial geologic map.
The different combinations analyzed were used to provide a better discrimination of the lithologies and geological structures in the studied area.

Coriolano,A.C.F. 2002. Reevaluation of structural criteria for hydrogeology in crystalline terrains, with emphasis in neotectonics and remote sensing. PhD Thesis, Department of Geology, University Federal of Rio Grande do Norte; pp

Departamento de Geologia - Universidade Federal do Rio Grande do Norte *Reference:* 002/PPGG

DataBase Ref.: 1009 **2002** *Date of presentation:*

Ana Catarina Fernandes Coriolano *Advisor(s):* Jardim de Sá,E.F. Amaro,V.E.

Committee:

Subject of thesis:

State: RN *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Costa Jr,C.N. 2002. Chemical dissolution and biogeochemistry of magmatic apatite. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Apatite, dissolution, biogeochemical, weathering

Instituto de Geociências - Universidade de Brasília *Reference:* D056

DataBase Ref.: 56 **2002** *Date of presentation:* 26/9/2002

Carlos Nogueira da Costa Junior *Advisor(s):* Gaspar,J.C.

Committee:
José Affonso Brod - IG/UnB
Maria Cristina Toledo Motta de - IGc/USP
Sara Lais Rahal Lenharo - IG/UnB
Arnaldo Alcover Neto - CETEM/RJ

Subject of thesis: Prospection and Economic Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Apatite grains from the C1 sovite carbonatite from the Jacupiranga Alkaline Complex have been attacked with the Mehlich III solution and citric acid solution in laboratory (closed, open and semi-open systems) and were buried in soils. The experiments in soils were conducted under greenhouse and field conditions. For the greenhouse experiments, soil samples were collected in areas under native vegetation and under a no-till corn/soybean rotation. In order to obtain soils with high and low biological activities, in both areas the sampling depths were 0 to 5cm and 50 to 70 cm, respectively. The soil samples were placed in plastic containers and kept at 100% of their field capacity during the whole experiment. To evaluate the biochemical dissolution under field conditions, the apatite grains were buried (5 cm deep) in an area which had been for 8 years under a no till management system with a corn/soybean rotation. In the greenhouse and also in the field experiments, apatite grains measuring about 5 by 1.5 mm were placed inside nylon screens and buried in the soil. After specific time intervals the grains recovered from the soils and from the Mehlich III closed system were analyzed by SEM/EDS, AFM and XPS. The analytical procedure aimed to investigate single apatite grains subjetected to different degrees of acid attack. In laboratory the dissolution of apatite chemical components was monitored in the accompanying solutions. The dissolution of apatite is incrongruent and the behavior of the different chemical elements depends on the solution used. For most experiments the largest dissolution rate occurs in the 20th day of attack. Several dissolution features were observed but the most abundant is the development of voids in the form of trigonal dipyramide with its c axis coincident with the apatite c axis. These voids increase in abundance as the time increases and form small rows aligned along the a apatite crystallographic axis, which grow, coalesce and give rise to tabular voids parallel to (0001). These features indicate that the dissolution of apatite is strongly controlled by its structure and that the basal parting, which is characteristic of this mineral, provides the atomic environment with the highest surface energy, where dissolution starts. Almost one year since the beginning of the experiment in the soil no evidence of biochemical dissolution were observed on the surface of the grains buried from 50 to 70 cm deep. However, the apatite grains buried in the field and also in the greenhouse with soil samples collected at the 0 to 5 cm depth presented intense bacterial and fungal activities on their surfaces. It is possible to observe depressions on apatite surfaces caused by the bacterial activity. Features characteristic of chemical dissolution were also observed in the grains extracted from the soils indicating that soil solution had also attacked the apatite. Further studies are necessary to evaluate the potential of magmatic apatites as a source of slow-release P fertilizers in agriculture.

Costa Neto,M.C. 2002. Structural, metamorphic and geochemical characterization of the rocks adjacent to a possible suture zone at southern of Goiás state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.134

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1492 **2002** *Date of presentation:*

Manoel Corrêa da Costa Neto *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

Costa,A.C.D. 2002. Sm-Nd, U-Pb geology and geochronology in the Lineamento Patos region: Limits between crustal blocks of Rio Grande do Norte domain and the Transversal zone, Borborema province. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.109

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1496 **2002** *Date of presentation:*

Ana Claudia Dantas da Costa *Advisor(s):* Hackspacker,P.C.

Committee:

Subject of thesis: Regional Geology

State: PB *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Costa,W. D. 2002. Characterization of the use conditions and preservation of the underground waters of the Belo Horizonte municpality - MG state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2014 **2002** *Date of presentation:* 9/10/2002

Walter Duarte da Costa *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Hydrogeology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Crozera,E.H. 2002. Identification ofs contaminated areas in the Ribeirão Pires municipality- São Paulo state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2294 **2002** *Date of presentation:*

Ero Hermínio Crozera *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Dehler,N.M. 2002. Oblique tectonic extrusion in transpressive regime in the Paraibides belt, RJ state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 161 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1205 **2002** *Date of presentation:* 9/8/2002

Nolan Maia Dehler *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Duarte,C.R. 2002. Natural radioelements in the Rio Preto project area (GO state). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.169

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1494 **2002** *Date of presentation:*

Cynthia Romariz Duarte *Advisor(s):* Bonotto,D.M.

Committee:

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SC22 *Centroid of the area:* ' - 'W

Abstract

Fernandes,N.H. 2002. Origin and evolution of banded iron formations in southwestern of Minas Gerais state. PhD Thesis, Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP, Sao Paulo; 184 pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1475 **2002** *Date of presentation:*

Nedson Humberto Fernandes *Advisor(s):* Carvalho,S.G.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Fernandes,T.M.G. 2002. Petrographic, chemical and technological characterization of the quartzites from São Thomé das Letras producein center in the Southwestern of the Minas Gerais state. PhD Thesis, Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP, Sao Paulo; 140 pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1474 **2002** *Date of presentation:*

Tania Maria Gomes Fernandes *Advisor(s):* Godoy,A.M.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Fiori,C.O. 2002. Geomorphology and time-space dynamics at Itiquira basin: Pantanal Matogrossense - MT, MS states. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.209

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1495 **2002** *Date of presentation:*

Chisato Oka Fiori *Advisor(s):* Hasui,Y.

Committee:

Subject of thesis: Regional Geology

State: MT *1/1,000,000 sheet:* SE21 *Centroid of the area:* ' - 'W

MS

Abstract

Hoff,R. 2002. Geological, remote sensing, spectrorradiometric and geophysical data integration applied for hydrothermal fluorite veins prospection in southeast Santa Catarina State, Brazil. PhD Thesis; Institute of Earth Sciences, University of Rio Grande do Sul , IGEO-UFRGS. Porto Alegre, 235 p.

data integrated; geological remote sensing; prospecting mining applied geophisic; spectrorradiometry; hydrothermal alteration; Mining Fluorine District of Santa Catarina

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 1101 **2002** *Date of presentation:* 18/3/2002

Rosemary Hoff *Advisor(s):* Bastos Neto,A.C.

Committee: Luiz Henrique Ronchi - DG/UNISINOS

José Leonardo Silva Andriotti - CPRM

Nelson Amoretti Lisboa - IG/UFRGS

Subject of thesis: Geochemistry

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* 28 00 's - 49 00 'W

Abstract

Digital image processing in orbital images by remote sensing techniques generated qualitative textural information (morfo-structures). These allowed (1) the recognition of areas in different structural patterns with different fluorite search potentialities, (2) identification new structures potentially fluor-bearing and (3) evidence of extensive increase from the principal mineralized structures, (4) It's associated a great number of structures, before ignored, that have great prospective potential. The accuracy of techniques of digital classification on products of ratio analysis by principal components showed the alteration associated to the structures, incorporating new criteria for the fluorite search. Searching for quantify the alteration, the spectral analysis of the rocks in fluor district was employed. Integrating reflectance information with TM LANDSAT 5 data, obtained the classification of the orbital images, identifying smaller structures in detai l. Geophysical data processing supplied results on structures

(magnetometric) and granites alteration affected (aerogamaspectrometric). These products were integrated with TM LANDSAT 5 data, associating textural attribute in orbital image to radiometric behavior of the rocks. The Grão-Pará lineament was diagnosed as the principal into district. Tectonic blocking data, facies zonation in granites (F source rock) and alteration associated to the granite magmatism. This allowed to understanding regional distribution of the fluorite deposits, and defined new criteria to fluorite prospecting, spatial relationship by mineralization and rock source of fluor. This one is the external granitic facies of Pedras Grandes Massif.

Hollanda,M.H.B.M. 2002. Geodinamic evolution of the continental lithospheric mantle in the Seridó Domain, Borborema Province, northeastern of Brasil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

continental lithospheric mantle, isotopic geochemistry, Borborema Province

Instituto de Geociências - Universidade de Brasília *Reference:* D054

DataBase Ref.: 54 **2002** *Date of presentation:* 21/6/2002

Maria Helena Bezerra Maia de Hollanda *Advisor(s):* Pimentel,M.M.

Committee:
Elton Luiz Dantas - IG/UnB
José Affonso Brod - IG/UnB
Alcides Nóbrega Sial - DG/UFPE
Leila Soares Marques - IGc/USP

Subject of thesis: Regional Geology

State: PB *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

The geochemical and isotopic compositions of mafic rocks ranging in age from Proterozoic to Tertiary in northeastern Brazil (Borborema Province) reflects episodic incompatible element enrichment in the continental lithospheric mantle, recording periodic interaction between this latter and the convective asthenosphere and mantle plumes. This interaction took place during major geological events such as subduction, orogenic delamination, rifting and development of Brazilian passive margin.
Late-Neoproterozoic (ca. 580 Ma) high-K gabbros and diorites are representative of the voluminous bimodal magmatism in the Borborema Province. These rocks show chemical signature that reflects derivation from a subduction-modified lithospheric mantle source: (i) enrichment in large-ion lithophile (Rb, Ba, K, Th) and light rare-earth elements (La/YbCN = 11 to 70), (ii) pronounced negative Nb anomaly and (iii) strongly radiogenic Sr (0.71202 to 0.7059) and unradiogenic Nd (Nd from –9.3 to –20.1) isotopic compositions. TDM model ages indicate a paleoproterozoic (mostly between 2.2 and 1.9 Ga) age for this metasomatic event, coincident with the Transamazonian/Eburnean tectonic processes in the region. REE modelling point out to 10-20% of partial melting of a metasomatised garnet lherzolite to produce these enriched compositions. Asthenosphere was the catalyst to promote partial melting of this mantle source in the Neoproterozoic, and we presume that lithospheric delamination was responsible for putting it in contact with lithospheric mantle at end of the Neoproterozoic. Beyond heat supply, asthenosphere probably contributed with some mass as suggested by the nonradiogenic Pb ratios (206Pb/204Pb = 16-17.3, 207Pb/204Pb = 15.1-15.6 and 208Pb/204Pb = 36-37.5), contrasting with the enriched Sr and Nd compositions and suggesting decoupling of Rb-Sr, Sm-Nd and U-Pb systems at time of intrusion of the basic magmas into the crust. This evidence shows that lithospheric mantle beneath the northeast Brazil was preserved of significant chemical modifications (except perhaps for Pb compositions) after the Transamazonian/Eburnean tectonics, until Neoproterozoic.
Chemical signature of the continental lithospheric mantle at the Mesozoic was given by Rio Ceará Mirim magmatism. Its geological expression is a 400 km long juro-cretaceous dyke swarm in northeastern Brazil, formed in association with the opening of the Atlantic Ocean, during Gondwana break-up. The main dyke swarm is dominated by both high- and low-TiO2 tholeiitic basalts, which show chemical characteristics compatible with an enriched mantle source, such as: (i) strong enrichment in each large-ion lithophile and moderate enrichment in light rare-earth (La/YbCN = ca. 7 to 9) and high field strength elements, and (ii) strongly radiogenic initial Sr (0.710 to 0.7047) and unradiogenic Nd (Nd from –0.6 to –9) isotopic compositions. From a mantle end-member mixing modelling, the isotopic compositions can be explained by the strong involvement of both EM 1 and EM 2 end-members, and a depleted component. This one is especially identified in alkaline basalts that constitute a second order dyke swarm, to the south of the main swarm, which have 87Sr/86Sr as low as 0.703 and Nd as high as +5.
The range of isotopic compositions of the Rio Ceará Mirim magmatism (including tholeiites and alkaline basalts) is compatible with interaction between a plume-related depleted source and an ancient enriched mantle source. The enriched component identified from the tholeiite isotopic compositions can be modelled to be lithospheric mantle, which had their Rb/Sr and Nd/Sm ratios increased due to subduction in Proterozoic times. Involvement of an old component is confirmed by the TDM model ages ca. 1.0 Ga. St. Helena plume, presently recognised as HIMU-like composition in oceanic island basalts, was probably the depleted component encountered in alkaline basalts.
A narrow genetic link is observed when the Sr-Nd isotopic compositions and incompatible element ratios of the mezosoic tholeiitic basalts are compared with those of some tertiary alkaline basalts. These latter, as well as the older (neoproterozoic and mesozoic) mafic rocks, equally exhibit typical enrichment in incompatible elements and strongly fractionated REE patterns. Two groups with distinct major element, LILE and LREE characteristics are identified: (i) low-SiO2 (= 40%) basalts, having mg# = 72, the highest LILE contents and (La/YbCN) ranging from 32 to 41, and (ii) high-SiO2 (= 43%) basalts, mg# between 62 to 70, lowest LILE contents and (La/YbCN) varying from 11 to 21. Initial 143Nd/144Nd ratios in the alkaline basalts as a whole exhibit variation from 0.512181 to 0.512583, values quite comparable to those from oceanic island basalts. The initial 87Sr/86Sr range between 0.70571 and 0.70322 and are anti-correlated with the Nd isotopic ratios.
REE modelling points that the alkaline basalts were produced by 5-20% partial melting of a metasomatically enriched garnet-bearing peridotite. The isotopic compositions exhibited essentially by the high-SiO2 basalts show that this enriched mantle source was initially similar to that of the mesozoic tholeiites. However, a noteworthy inverse correlation between 143Nd/144Nd and TDM model ages for the alkaline basalts (ranging from ca. 1.2 to 0.3 Ga) suggests that the mesozoic enriched lithospheric mantle was

thermally eroded and progressively converted to asthenosphere, coeval with basaltic extraction at Tertiary.
From the geochemical and isotopic constraints, we presume that the upper lithospheric mantle beneath northeastern Brazil was submitted to three pervasive enrichment events in incompatible trace elements along of a period of ca. 2.0 Ga, between Paleoproterozoic to Miocene. These enriched heterogeneities were imprinted during tectonic processes that widely affected the crust, and had been each long-term preserved due the isolation of the lithospheric mantle from convective asthenospheric flow.

Jelinek,A.R. 2002. Geologic evolution of the Fluoritic district of Santa Catarina state, Integrated study of Mineralogy, Geochemistry and Tectonica term throug Fission trecks in Apatite. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 2439 **2002** *Date of presentation:* 1/10/2002

Andréia Ritter Jelinek *Advisor(s):* Bastos Neto,A.C.

Committee:

Subject of thesis:

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Kitajima,L.F.W. 2002. Mineralogy and petrlogy of the Peixe alkaline complex - State of Tocantins, Brazil). PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Undersaturated alkaline complexes, Peixe, Tocantins, Brazil, corundum, zircon, allanite, mineralogy and petrology

Instituto de Geociências - Universidade de Brasília *Reference:* D051

DataBase Ref.: 51 **2002** *Date of presentation:* 29/5/2002

Luiz Fernando Whitaker Kitajima *Advisor(s):* Gaspar,J.C.

Committee:
Nilson Francisquini Botelho - IG/UnB
Reinhardt Adolfo Fuck - IG/UnB
Herbet Conceição - IG/UFBA
Alcides Nóbrega Sial - DG/UFPE

Subject of thesis: Prospection and Economic Geology

State: TO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

The Peixe Alkaline Complex is a plutonic rock body in intrusive contact with Serra da Mesa Group metasediments. The complex is mainly composed of banded and foliated to massive biotite-nepheline syenite and lesser taramite-nepheline syenite. Diopside/biotite granite and ferroedenite-/quartz-ferroedenite-alkali feldspar syenite occur at the borders while ferroedenite-alkali feldspar granite, biotite-alkali feldspar syenite, ferropargasite- alkali feldspar syenite, hedenbergite-alkali feldspar syenite and ferroedenite-alkali feldspar syenite occurs in the SSE border of the Complex. There are pegmatites and host rocks xenoliths. Feldspar is mainly albite (An0-10) or orthoclase end-members; nepheline has a composition near to the Morozewicz-Buerguer composition; mica is mainly Fe-rich biotite and pyroxene and amphibole are Ca-rich. Complex rocks are alkaline, miaskitic to agpaitic. The undersaturated magmas are evolved from metasomatized mantle-derived sources, and crystallized by 1.5 Ga (U-Pb zircon age). Saturated and oversaturated rocks (granites and alkali feldspar syenites) are independent magmas formed at different depths and distinct degrees of metasomatism or different partial fusion percentages. Biotite-alkali feldspar syenite represents metasomatized biotite-nepheline syenite. The complex underwent deformation during later Brasiliano Orogeny, which formed structures and textures like foliation and subhedral crystals with triple point contact , with a new igneous activity that emplaced corundum-bearing diorite pegmatite (0.6 Ga, U-Pb age in zircon).

The Complex presents several mineral occurrences of economical importance, including corundum, allanite and zircon, the latter is still exploited today. Corundum occurrences are in biotite-nepheline syenite, in diorite pegmatites and as detrital crystals, the latter related to pegmatite corundum. Corundum in nepheline syenite is millimetric, black or dark blue, Fe- and Ti-rich (7000 ppm Fe / 3500 ppm Ti) and anhedral. Corundum in diorite pegmatite is centimetric, anhedral, prismatic or barrel-like, white to deep blue or gray, and is poorer in Fe and Ti (3000 ppm Fe / 1000 ppm Ti) than the monzodiorite corundum. All types of corundum presents zoning related to different Ti and Fe contents. Ga contents are 100 to 200 ppm for pegmatite and diorite corundum. Muscovite and/or nepheline corona occur around pegmatite and monzodiorite corundum and are related to sub-solidus reequilibration (600 - 650°C, £2 kbar).

Zircon megacrysts (mostly 1 mm to 5 cm) are dipyramidal, optically zoned and occur as detritic mineral or in biotite-nepheline syenite and nepheline syenite pegmatite. Zircon also occurs as millimetric (<2mm) and prismatic inclusions in pegmatitic corundum. Chemical analyses were done in both zircon types with electron microprobe and ICP-MS. Zircon included in corundum is richer in Hf (2 wt% HfO2) and U (>2900 ppm) and has lower Th/U (0.1) and Zr/Hf (30) than zircon megacrysts (<1.67 wt% HfO2, >960 ppm U, Zr/Hf >40 and Th/U > 1.5). Chemical zoning is present in the megacrysts as a decrease in trace elements towards the crystal rim. The REE content is similar to both zircon types, with absence of Eu anomalies and LREE enrichment. Peixe Complex zircons are chemically similar to zircons from several and contrasting rock types (like carbonatites, granites and mafic rocks), which argues against the use of zircon as a tracer, except for cogenetic rocks. Zircon megacrysts were an early

crystallized phase in a mantle-derived nepheline syenite magma enriched in fluids (F, CO2 and H2O) and with low fO2. Zircon in corundum crystallized in a diorite magma from a similar or common, but more metasomatized, mantle source as for the nepheline syenite magma.

allanite occurs as millimetric to centimetric crystals in medium to coarse-grained syenites, veins and pods in monazites, granite pegmatites and as detrital megmatites and as detrital megacrysts. The X-ray diffractometry determined that heavy metamictization. Electron microprobe and ICP-MS analyses determined a correlation between allanite occurrence and chemical characteristics, grouping it in three populations: allanite in monazites, allanite from syenite and allanite from granite. Allanite in has high Ce, La, total REE, FeO, MnO, TiO2 and MgO concentrations. Allanite from syenite has higher Nd, Pr, Sm, SiO2 and Al2O3. Allanite from granite has the highest Nd to Dy concentrations, lower total REE and less fractionated REE pattern, and is also CaO-and Fe2O3-rich. Fe2+/Fe3+ ratios are 34% Fe3+/ 66% Fe2+ in allanite from granite and 24-25% Fe3+ / 76-75% Fe2+ in allanite from syenite and monazite as determined by Mössbauer spectrometry. Allanite in and from syenite shows a larger degree of Ca substituion by REE in A1/ A2 sites than allanite in granite, with complete filling if A sites by REE. Allanite in monazite an from syenite are similar to allanite in carbonatite and associated to hydrothermal veins. Allanite from granite is similar to allanite from other granites and granite pegmatites. Allanite in monazite and from syenite crystallized from hydrothermal igneous fluids while allanite crystallized directly from a granite melt.

Krahenbuhl,F.M. 2002. Absortion of atrazine and two metabioliths in dark red latosoils in Distrito Federal, Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

atrazine, deethylatrazine, hydroxyatrazine, oxisol

Instituto de Geociências - Universidade de Brasília *Reference:* D048

DataBase Ref.: 48 **2002** *Date of presentation:* 5/4/2002

Fernando de Melo Krahenbuhl *Advisor(s):* Santos,R.V.

Committee:
- Geraldo Resende Boaventura - IG/UnB
- Edi Mendes Guimarães - IG/UnB
- Maria Leonor Ribeiro Casimiro - IG/UnB
- Flávio de Morais Vasconcelos - IGC/UFMG
- Rosa T. S. Frighetto - EMBRAPA

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The physico-chemical characterization and batch studies of whole and organic matter free soil samples aloud an evaluation of atrazine and two of its metabolites, deethylatrazine and hydroxyatrazine. We have also evaluated atrazine adsorption kinetics in an oxisol under no till practice and a savanna area.
The soils in both sites presented similar characteristics to other Oxisols previously described in the region. The clay fraction was the most abundant and represent more than 50 % of the soil. Caulinite and gibbsite were the most common minerals. In general the soil analysis presented few differences between the two sites. The main differences were the pH, more acidic in the savanna soil, and the organic matter content, higher in the agriculture soil. Those differences may be caused by the use of products and the accumulation of plants residues due to agriculture practice.
By using batch studies, it was possible to identify a two-step atrazine adsorption process in soils from both sites. In the first and faster step, atrazine was initially adsorbed by the most accessible sites in a process that require less energy. This mechanism is more evident in the A horizon, which is richer in organic matter if compared to other soil horizons. Most of the atrazine was adsorbed in less than 72 hours. In the second step the atrazine was adsorbed by the most inaccessible sites. It could be observed also in the organic matter free samples, showing that this process happens also in the inorganic fraction of the soil. After the organic matter extraction the soil was able to adsorb about 10 % of atrazine when compared to the whole soil.
The atrazine adsorption kinetics was not affected by the presence of its metabolites in solution. Deethylatrazine presented a similar behavior as atrazine, but with less affinity to organic matter. Hydroxyatrazine was not correctly evaluated since it was formed during the experiment, probably due to the acidic pH.
The comparison between the savanna and the no till soil, for a 72 hours interaction time, showed that the agricultural soil adsorbed 5% more atrazine than natural cerrado soil.

Larizzatti,J.H. 2002. Gold and indicative elements in the regolith of Garimpo Fazenda Pison: Dispersion processes and implications to the prospection. PhD Thesis, Institute of Earth Sciences, University of São Paulo, USP, 224 pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 942 **2002** *Date of presentation:* 13/11/2002

João Henrique Larizzatti *Advisor(s):* Oliveira,S.M.B.

Committee:
- Marcondes Lima da Costa -
- João Orestes Schneider Santos -
- Maria Cristina Toledo Motta de -
- Claudio Gerheim Porto -

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Lastoria,G. 2002. Hydrogeology of the Serra Geral formation in the Mato Grosso do Sul state. PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 133 pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA132

DataBase Ref.: 1798 **2002** *Date of presentation:*

Giancarlo Lastoria *Advisor(s):* Sinelli,O.

Committee:

Subject of thesis: Geosciences and Environment

State: MS *1/1,000,000 sheet:* SF21 *Centroid of the area:* ' - 'W

Abstract

Leite Jr,W.B. 2002. The Santa Clara intrusive suite (RO state) and the associated primary polymetallic mineralization (Sn, W, Nb, Ta, Zn, Cu and Pb). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1956 **2002** *Date of presentation:* 25/4/2002

Washington Barbosa Leite Jr *Advisor(s):* Bettencourt,J.S.

Committee:

Subject of thesis: Economic Geology

State: RO *1/1,000,000 sheet:* SC20 *Centroid of the area:* ' - 'W

Abstract

Lima,C.V. 2002. Quantification of erosional rates and study of lateritic profiles in the Rio Jardim-DF basin. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

lateritic profiles, Rio Jardim basin, erosion rate, 10Be, cosmogenic nuclides

Instituto de Geociências - Universidade de Brasília *Reference:* D058

DataBase Ref.: 58 **2002** *Date of presentation:* 20/12/2002

Claudia Valéria de Lima *Advisor(s):* Gaspar,J.C.

Committee:
- Edi Mendes Guimarães - IG/UnB
- Elton Luiz Dantas - IG/UnB
- Claudio Gerheim Porto - DG/UFRJ
- Maria Cristina Toledo Motta de - IGc/USP

Subject of thesis: Mineralogy and Petrology

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

In the Rio Jardim Basin, southeastern of the Federal District, there are three distinct morphologically units: I (1000 to 1160 m), II (850 to 1100 m), which is subdivided into IIA and IIB, and III (850 to 980 m). Micromorphological, mineralogical, and chemical studies were performed in lateritic profiles in each unit. Well 01 (500cm deep) is localized in the morphological unit IIB. It is composed of a red-yellow latosoil developed on clayey metarhythmite of the Paranoá Group, which is mainly composed of kaolinite and quartz. Gibbsite occurs from the B horizon up, associated to a modal decrease of kaolinite. SiO2 increases and Al2O3 decreases towards the surface. Well 05 (230 cm deep) is located in the morphological unit IIA. It is composed of a red-yellow latosoil developed on quartzite of the Paranoá Group, contains gibbsite from bottom to top and bears kaolinte and iron-rich nodules. The soil maturity index indicates a maturity decrease from the lateritic zone to the surface. Well 06 (160 cm deep) is located in the morphological unit I. It is composed of a red-yellow latosoil developed on sandy metarhythmite of the Paranoá Group and contains more gibbsite than the two other soils. This latosoil presents kaolinte and gibbsite nodules. The soil maturity index indicates a less pronounced maturity decrease to the surface than in well 05. The mineralogical and geochemical behaviors of the three soil profiles suggest that a leaching process in the upper horizons resulted in modal increase in quartz upwards. The leaching process is more intense as the scarp is approached. Opaque nodules may be mainly composed of kaolinte, gibbsite or iron oxi-hydroxides and are presently being formed, which indicates that the studied latosoils are not derived by the weathering of laterite crusts but of the underling rocks in a sazonal humid/dry climate.
An erosion rate was calculated as 5m/Ma using 10Be determinations in quartz cobbles from a vein and stoneline for the IIB

morphological unity. These data also indicate that the stoneline had an in situ development and a creeping rate of 50m/Ma. The minimum estimated exposure time for the quartz vein is 300Ka and the estimated velocity of scarps dislocation in the Rio Jardim Basin varies from 600 to 650m/Ma.

Lopes,R.P. 2002. The volcanism of the Fernando de Noronha archipelago, PE: Mineral chemistry and geochemistry. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 168 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1124 **2002** *Date of presentation:* 17/6/2002

Rosana Peporine Lopes *Advisor(s):* Ulbrich,M.N.C.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Maia,H.N. 2002. Deformation, flow of fluids and the auriferous deposits formation in the Itapetim shearing zone, Borborema Province (NE of Brazil). PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 964399

DataBase Ref.: 381 **2002** *Date of presentation:* 19/8/2002

Heitor Neves Maia *Advisor(s):* Xavier,R.P.

Committee:

Subject of thesis: Metallogenesis

State: PE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

The Itapetim gold-bearing district, within the Transversal Zone of the Província Borborema, NE Brazil, comprises a series of low tonnage lode gold deposits, such as of hosted by mylonitic gneisses confined to a regional scale shear zone named Itapetim shear zone. The gold mineralization at Sertãozinho, Piedade, Pimenteiras e Gurgueia, the main deposits investigated in this work, are closely associated with vein shear systems. An integrated study involving the 3D analysis of quartz c-axis in veins and host rocks, distribution and pattern of microfractures, fluid inclusions and stable isotopes (18O/16O and d/H) was carried out with the purpose of evaluating the deformation mechanisms responsible for the porosity generation and, as consequent, permeability for fluid circulation within the Itapetim Shear Zone. Additionally, the nature and evolution of the fluids involved in the formation of the gold mineralization in this shear zone were also constrained. The plot of quartz c-axis in veins and host rocks showed a distribution pattern averaging 10º/310 Az, in high angle (mean of 75º) with the direction of the Itapetim Shear Zone. Intra and intercrystalline microfractures, empty or delineated by planes of fluid inclusions (PIFs), form an arrangement of steeply – dipping (between 75 and 85º) and shallowly - dipping (between 20° and 25º) planes, along strikes varying from NNW-SSE to NNE-SSW. The 3D arrangement of the quartz c-axis, together with that of the microfractures, demonstrate that quartz underwent deformation at temperatures close to 400ºC, possibly as result of crystal-plastic and pure elastic deformation mechanisms, accompanied by sliding in <a>. These data also confirmed that the principal stress (□1) associated with the regional transpressional deformation was sub-parallel to the direction of the great majority of the microfractures, perpendicular to the plane (σ2-σ3). Textural relationships, microthermometry and Raman microspectroscopy analysis of fluid inclusion in gold-bearing vein quartz defined three types of fluids: (i) type I, low salinity (0.8 to 10.0 wt % NaCl eq.) aqueous-carbonic (H2O + CO2 □ CH4); (ii) type II, CO2-rich carbonic, with subordinate amounts of CH4 (up to 8 mol%); and (iii) type III, aqueous with salinities ranging from 0.8 to 5.0 % wt % NaCl eq.). The fluid inclusions which represent fluid types I, II and III coexist either in isolated groups or along intra- and intercrystalline microfractures, suggesting heterogeneous trapping of a H2O-CO2 fluid undergoing immiscibility. Such a process may have taken place episodically, under pressure and temperature in the range of 215° - 413°C and 1.3 kb - 4.4 kb, respectively, equivalent to crustal depths of 3 to 11 km. □18O and d/H values calculated for the gold mineralizing fluids varied from -1.6 ‰ to 6.5 ‰ and from -63.8 ‰ to -80.8 ‰, respectively, indicating a fluid regime characterized by the contribution of magmatic (□18OH2O = 6.5 ‰; □DH2O = -75.9 ‰) and metamorphic - derived (□18OH2O = 2.4 ‰;□DH2O = -63.8 ‰) fluids, with cooler fluids of meteoric origin

Marchioreto,A. 2002. Implementation, tests and evaluation of the SASW method (Spectral Analysis of Surface Waves). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2296 **2002** *Date of presentation:*

Adriano Marchioreto *Advisor(s):* Taioli,F.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Martins Neto,R.G. 2002. Fossil insects as bio-indicators in sedimentary deposits: A case study for the southamerican Mesozoic. PhD Thesis, Departament of Geology, University UNISINOS; pp

Departamento de Geologia - Universidade Vale do Rio dos Sinos *Reference:*

DataBase Ref.: 503 **2002** *Date of presentation:* 27/9/2002

Rafael Gióia Martins Neto *Advisor(s):* Guimarães Netto,R.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Melo,J.H.G. 2002. Revision of the Devonian - Lower Carboniferous miospore biochronostratigraphy of the Amazon Basin and correlation with other Paleozoic basins of Brazil. PhD Thesis, Departament of Geology, University Federal of Rio de Janeiro, Brazil, pg.

Biostratigraphy, miospores, Devonian, Carboniferous, Amazon Basin, palynology

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 1502 **2002** *Date of presentation:* 25/3/2002

José Henrique Gonçalves de Melo *Advisor(s):* Rodrigues,R. Carvalho,I.S.

Committee:
João Graciano Mendonça Filho - DG/UFRJ
Jorge Carlos Della Favera - DG/UERJ
Leonardo Fonseca Borghi de - DG/UFRJ
Norma Maria da Costa Cruz - CPRM
Yngve Grahn - DG/UERJ

Subject of thesis: Palaeontology and Stratigraphy

State: AM PA *1/1,000,000 sheet:* *Centroid of the area:* 03 00 's - 56 00 'W

Abstract

A miospore biozonation is presented for earliest Devonian - Early Carboniferous (Lochkovian through Viséan) stratigraphic sections of the Amazon Basin, as a result of a detailed study of various miospore assemblages and biohorizons in the basin. The combined use of selected Euramerican and Western Gondwanan forms as zonal and characteristic taxa permits accurate subdivision, dating and correlation of Amazon Basin palyniferous strata in terms of equivalent miospore zones of Western Europe and the Old Red Sandstone (ORS) Continent.

The proposed scheme consists of 17 new, successive interval zones, mostly bounded by first occurrence biohorizons of selected miospore taxa. In addition, an assemblage zone recently described for the early Late Carboniferous strata of the Amazon Basin is partly revised and integrated with the new biozonation of older Paleozoic sections.

The miospore data provide new insights into a variety of issues pertinent to the basin's geology. Examples of their applicability include: elucidation of the age and stratigraphic relationships of regional rock units; the calibration of stratigraphic ranges of other, concurrent palynomorph groups; the detection and dating of intervening hiatuses, condensed sedimentary sections, anoxic phases, erosion and resedimentation cycles, etc.

Although primarily devised to serve as a regional biozonation, the new scheme presented here has a unifying character, because it can be applied to other Paleozoic basins of Brazil and Western Gondwanan regions where similar miospore successions are documented.

Mesquita,M.P.S. 2002. Composition, structures, technological properties and weathering of ornamental granites of the Morrinho stock- Santa Quitéria (CE state). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.171

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1491 **2002** *Date of presentation:*

Maria Palmira Soares de Mesquita *Advisor(s):* Artur,A.C.

Committee:

Subject of thesis: Regional Geology

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* ' - 'W

Abstract

Monteiro,L.V.S. 2002. Metallogenetic modeling of the Vazante, Ambrósia and Fagundes zinc deposits, Vazante-Paracatu belt, Minas Gerais state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 317 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1126 **2002** *Date of presentation:* 23/8/2002

Lena Virgínia Soares Monteiro *Advisor(s):* Bettencourt,J.S.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Mucida,D.P. 2002. U-Pb and Sm-Nd isotopic geology of the Silvânia Sequence, the Anápolis-Itauçu Complex and the Araxá Group in the Leopoldo de Bulhões region, Goiás state: Contribution to the study of the Brasília Foldbelt evolution. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Anápolis-Itauçu Complex, Araxá Group, Brasília Belt, U-Pb and, Sm-Nd isotopic data, granulitization age, deposition period

Instituto de Geociências - Universidade de Brasília *Reference:* D055

DataBase Ref.: 55 **2002** *Date of presentation:* 2/8/2002

Danielle Piuzana Mucida *Advisor(s):* Fuck,R.A.

Committee:
Elton Luiz Dantas - IG/UnB
José Oswaldo de Araújo Filho - IG/UnB
Allen Hutcheson Fetter - IGCE/UNESP
Johildo Salomão Figueiredo - IG/UFBA

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

U-Pb SHRIMP and Sm-Nd isotopic ages were determined for felsic metavolcanic rocks from the Silvânia Sequence, Jurubatuba Granite, Anápolis-Itauçu Complex and Araxá Group in the central-southern part of the Brasília Belt.

Zircon grains from a metavolcanic sample of Silvânia Sequence yielded 2115 ± 23 Ma and from the Jurubatuba Granite yielded 2089 ± 14 Ma, interpreted as crystalliza tio n ages of these rocks. Six metavolcanic samples of the Silvânia Sequence yielded a six-point whole-rock Sm-Nd isochron indicating a crystalliza tio n age of 2262 ± 110 Ma and positive eNd(T) = +3.0 interpreted as a juvenile magmatic event. Nd isotopic analyses on samples from the Jurubatuba Granite have Paleoproterozoic TDM model ages between 2.30 and 2.42 Ga and eNd(T) values vary between –0.22 and –0.58. The oldest TDM value refers to a sedimentary xenolith in the granite. These results suggest crystalliza tio n ages of Silvânia volcanics and Jurubatuba Granite are the first evidence of a ca. 2.14-2.08 juvenile magmatic event in the basement of the central part of the Brasilia Belt that implies the presence of arc/suture hidden in reworked basement of the Brasília Belt.

U-Pb SHRIMP and Sm-Nd isotopic ages were also determined for granulites of the Anápolis-Itauçu Complex and associated granites. Igneous crystalliza tio n ages obtained in zircon grains of orthogranulite and granites vary between 760 and 650 Ma, and zircon from all samples analyzed present overgrowths attributed to high-grade metamorphism at ca. 650-640 Ma. Zircon cores from paragranulites and granites give U-Pb ages between 2.0 and 0.8 Ga.

Nd isotopic analyses of granulite samples yielded TDM model ages in intervals of 2.3 to 1.9 Ga and 1.7 to 1.4 Ga. eNd(T) values are negative, varying between -9.29 and -1.42. Together with SHRIMP U-Pb ages of zircon cores, Nd isotopic data prove that the granulite protholiths must have been formed in Neoproterozoic times, later than ca. 800 Ma ago. Nd isotopic signature of these rocks indicate that Paleoproterozoic sources, probably placed within the São Francisco Craton, and younger sources, like the Goiás Magmatic Arc, contributed to the sediment infilling of the former basin where protoliths of the Anápolis-Itauçu paragranulites originally accumulated. Similar Nd isotopic data were obtained in samples of associated granites, wich display TDM model ages between 1.45 and 1.2 Ga and two older values of 1.81 and 2.15 Ga and eNd(T) values between -2.61 and -7.96, indicative of assimila tio n of older material by the original magma. SHRIMP U-Pb data in analyzed granites indicate that the amphibolite facies granite shows a strong inheritance pattern (between 2.1 and 0.8 Ga) and magmatic(?)/metamorphic age at ca. 660-650 Ma. The granulite facies granite ANA 1 gave magmatic/metamorphic ages of ca. 650 Ma, without any discernible older inheritance. The growth or overgrowth of zircon occurred at the same time of the high grade metamorphism in the area, probably related with the collision event between the Goiás Magmatic Arc to the west/ southwest and the São Francisco Craton, to the east.

SHRIMP U-Pb and Sm-Nd isotopic data for Araxá Group micaschist, associated amphibolite and intrusive tonalite were used to estimate the age and tectonic setting of deposi tio n of the original detrital sediments, in the southern part of the Neoproterozoic Brasília Fold Belt.

One amphibolite sample from a layer interleaved tectonically within the metasedimentary rocks has the U-Pb zircon age of 838 ±

20 Ma. Its tholeiitic composi tio n and depleted mantle isotopic signature (eNd = +5.1) suggests that it represents a tectonic slice of the former oceanic lithosphere separating the São Francisco and Amazon continents.

U-Pb ages of detrital zircon grains and TDM model ages of the Araxá Group micaschists show a bimodal pattern, interpreted as the result of provenance from two contrasting sources: i) young juvenile sources, probably represented by igneous rocks of the Goiás Magmatic Arc in the west most probably belonging to the São Francisco Craton, in the east. The detrital popula tio n is largely dominated by ca. 666-682 Ma old zircon grains derived from both mafic and felsic igneous source rocks. Detrital metamorphic grains and rims dated at ca. 715 Ma and 643 Ma indicate that the original basin received sediments from Neoproterozoic sources with a previous metamorphic overprint, implying that young metamorphic rocks have been uplifted, exposed and eroded, providing sediment for at least part of what is presently mapped as the Araxá Group. The youngest detrital zircon age of ca. 643 Ma represents the upper limit for deposi tio n of the original detrital sediments. Their minimum age is constrained by the crystalliza tio n of an intrusive tonalite at 638 ± 11 Ma. The data suggest, therefore, that the Araxá Group metasediments were deposited and metamorphosed within a very short time interval, most probably during the tectonic events related with the accre tio n of the Goiás Magmatic Arc to the western part of the Brasília Belt and final closure of the Goiás Ocean.

Neder,R.D. 2002. Massive sulfide deposits associated to volcanic rocks: The case of Expedito Zn-Pb deposit, Aripuanã, MT state, Brazil. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 972045

DataBase Ref.: 383 **2002** *Date of presentation:* 24/5/2002

Renato Dantas Neder *Advisor(s):* Figueiredo,B.R.

Committee:

Subject of thesis: Metallogenesis

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Volcanic-associated massive sulfide deposits represent important sources of lead, zinc, copper and precious metals worldwide. The present study is a contribution to a better understanding of the origin of the Zn-Pb sulfide deposits of the Serra do Expedito, State of Mato Grosso, Brazil. These deposits are located in the SW portion of the Amazonian Craton, associated with Paleoproterozoic felsic volcanic and plutonic rocks, correlate to Magmatismo Teles Pires. Studies undertaken included geological mapping, drill-core examination, lithogeochemical and geochronological studies, petrographic and eletron-microprobe analyses of minerals in the ore, wall rocks and hydrothermal alteration zones, as well as applications of Sr and Pb isotope geochemistry to ore-deposit modeling. Geochemical data place the acid rocks in A-type, indicating an anorogenic or post-orogenic origin, possibly due to mantle activation during a long lasting extensional event, in an ensialic environment. SHRIMP U-Pb zircon ages at 1762 ± 6 Ma and 1755 ± 5 Ma were obtained for volcanic and plutonic rocks, respectively. The predominant volcanic host rocks include crystal and lapilli tuffs that are interpreted as a sub-aqueous record of a distal volcanic center of unknown localization. Field evidence suggests that the orebodies form one single belt, representing the actual trace of a system of synvolcanic fault that channeled the hydrothermal fluids and sulfide deposition. The orebodies present normal sulfide mineralogy for volcanogenic deposits with pyrite, pyrrhotite, sphalerite, galena, chalcopyrite and with locally accessory arsenopyrite. On the other hand, the alteration is atypical since it presents chloritic zones locally associated with actinolite and magnetite. Mineral chemical studies indicate that the main mineralization event occurred in the interval 300-350°C at elevated O2 and S2 partial pressures whereas some portions of orebodies underwent heating and fluid interaction that yielded the calc-silicate and magnetite assemblage overprint. A Pb-Pb model age in galena was obtained at 1.75 Ga which indicates that the deposit was formed during the last stages of a magmatic-tectonic-hydrothermal event that occurred in the interval 1.76-1.75 Ga. The lead isotopic data for K-feldspar and a Rb-Sr isochron for sphalerites leachates indicate a later post-depositional event at 1.1 Ga. The Sr-isotope compositions of carbonate are clearly suggestive of its hydrothermal origin and, in conjunction with elevated lead-isotope ratios in galena, point to hydrothermal sources located in the Upper Crust. These results lead to consider a sub-aqueous deposition of wall-rocks and sulfide deposition in epizonal crustal levels, along synvolcanic fault zones thet channeled mineralizing fluids of plutonic and supracrustal origin. Theses processes are consistent with the VHMS – Volcanic Hosted Massive Sulfide model presently attributed to the Expedito Zn-Pb deposit.

Negri,F.A. 2002. Petrology of charnockite-granitic rocks and associated high grade host rocks in São Francisco Xavier region, SP state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.404

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1493 **2002** *Date of presentation:*

Francisco de Assis Negri *Advisor(s):* Oliveira,M.A.F.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Nobre-Lopes,J. 2002. Diagenesis of the dolomites hosting Zn/Ag mineral deposits in the Bambuí Group at Januária region - MG. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 963674

DataBase Ref.: 382 **2002** *Date of presentation:* 27/8/2002

Jane Nobre-Lopes *Advisor(s):* Batista,J.J.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

This study is designed to investigate the relationship between Zn/Ag mineral deposits emplacement and the host rock, dolostones of the Sete Lagoas Formation, (Bambuí Group) in the Januária region, MG. The definition of the timing and possible origin of the massíve dolomitization and dissolution/collapse brecciation is of primary importance to understand the evolution of carbonate rocks and define the relationslup between carbonate sedimentation, diagenetic processes and the emplacement of mineral deposits. The recognition of unconformities and their relationship with regional, large-scale brecciation is also envisaged. In order to afain these objectives, a regional and detailled mapping was done. In this research, the Sete Lagoas Formation is informally divided into seven members, grouped into three main shallowingupwards successions, named basal intermediate and upper. The basal succession consists of the argillaceous lime mudstone member 1(basal), and calcirudite member 2, and are interpreted as recording a prograding interval deposited on a lowenergy platform or shallow shelf cutted by tidal channels and sporadically affected by storms. The intermediate succession comprises the dolomitec calcarenite member 3, dolostone member 4, stromatolite dolostone member 5, ooid-intraclast dolostone member 6, and the lowermost unit (7A) of the dolomudstone member 7. Its overall interpretation is that it represents a shallowing-upwards succession from muddy to sandier sediments deposited in offshore through a sandier shoreface with stromatohte reefal barner, lagoonal and beach to tidal flat environments; subaerial exposure of the carbonate platform ended the intermediate shallowing-upwards succession. An unconformity assumed by some authors as developed above the ooid-mtraclast dolostone member 6 (the pink dolostone) is not recogruzed in this research The uppermost succession, made up of small peritidal cycles, is interpreted as representing a series of prograding tidal flat successions that record low energy environments. The three mam succession are interpreted as a parasequence set of a progradational stacking pattera The increase in pelitic sediments upwards in the overlying Serra de Santa Helena shut down the carbonate platform. Regarding diagenesis, the carbonate rocks of the Sete Lagoas Formation has undergone diagenetic alteration in subaerial, submarne and subsurface environments. Diagenetic features of subaenal diagenesis iriclude desiccation cracks, tepees, vadose cements and small-scale dissolution vugs; submarine envirorunent is represented by isopachous fibrous cernem around allochems suggesting beachrock cementation. Subsurface diagenesis resulted in the most important modifications in the carbonate rocks and mcludes, among others, compaction, blocky sparry calcite, hydrothermal dlssolut'On, do1omitization, sulfide and silicate ore minerals, late-stage coarse-crystalline calcite, fluorite and bitumen. The dolostones hosting mineral deposits are made up of replacement dolomites and cements and are strongly af'-ted bY dissolution/collapse brecciation. The main dolomite types recognized in the Januária region related to mineral deposits, are in paragenetic sequence: microcrystalline (McCD), medium-crystalline (MCD), coarse-crystalline (CCD), very-coasecrystalline (VcCD), saddle (SD) and very finelly crystalline. McCD represent early, penecontemporaneous replacement dolomites and MCD/CCD, late replacement dolomites. Very coarse-crystallme dolomite (VcCD), saddle dolomite (SD) and very fmely crystalline dolomite (VfCD) are dolomite cements. MccD occurs mostly in sediments of the dolomudstone member 7 and stromatolites/fure sediments of the member 5. MCD/CCD are widespread and affect mostly the dolostone and ooid-intraclast dolostone member (4 and 6). VcCD and SD are closely associated with each other and occur in cavities and fractures in MCD/CCD, crosscut the limits between the members 6 and 7 what indicate they are formed later Um the presumed unconformity developed above member 6, as already mentioned. SD occurs in rhombohedral (pink or pale gray saddle dolomite) and saddle fornis (Mãe saddle dolomite); white SD is later than rhomboliedrai ones. VfCD is restricted to dissolution/collapse breccia layer and affects the ali above described dolomites, except possibly the white SD. The dolomites and late-stage coarse-crystalline calcite (LCC) were analysed for CIO isotopes, as well as to Sr isotopes. Samples of the basal limestones were analysed in order to have bench markers representing the estimated isotopic signature of the Neoproterozoic seawater of the Sete Lagoas Fonnation and these values will be used as a reference to determine post-depositional diagenetic changes. The Sr isotopic composition suggests sedimentation of the Bambuí Group staried at around 590 to 600Ma. The obtained 8'80 values (PDB) inferred to represent the composition of seawater or slighly modified seawater during deposition of the Sete Lagoas Formation.range from -6.11 to -6.56%o (mean = -6.39) and 8'3C range from 0.26 to 0.58%o (mean = 0,42%o). The "SrP'Sr ratio of seawater during deposition of the Sete Lagoas Formation is estimated to be between 0.7076 and 0.7079 based on micritic limestones at the base of the section. McCD: 8'80 values is within lhe range of values for dolomites that would precipitated from Sete Lagoas Formation seawater, or slighly modified seawater. The 8'SrP'Sr ratios range are slighly higher fim the estimated original isotopic signature of the Neoproterozoic Sete Lagoas Fonnation seawater, suggesting that their original isotopic signature were pardy modified by later diagenetic fluids. MCD/CCD: 8'80 values are shghly depleted compared to the Neoproterozoic seawater. The "Sr/B6Sr ratios are more radiogemc tlian the estimated seawater of the Sete Lagoas Formation. The present data do not provide an unegwvocal conclusion conceniing the origin of MCD/CCD; these dolomites could result from previous dolomites late affected by . neomorphism and diagenetic fluids Sr-nch or formed imder burial conditions by Sr-rich fli ids. MCD/CCD postdate stylolites suggesting that dolomitizahon occured during bunal.,VcCD/SD show similar 8'80 values, the most depleted ones. "SrP" Sr ration are similar to MCD/CCD, thus more radiogenic than the estimated seawater. Fiuid inclusion measurements in SD suggest entrapment temperature above 231°C. Thus VcCD/SD are interpreted as being formed in subsurface during burial by warm diagenetic fluids of similar chemical composition. VfCD cements ali kind of breccia fragments but also act as internal sediment displaying lamination and/or normal grading. Locally is closely related to mineralization. The 8180 values is within the range of Sete Lagoas Formation seawater, hovever the "SrP'Sr values are not compatible with the estimated Neoproterozoic seawater. There is no diagenetic feature or field relationship couid suggest formation of VfCD directly from seawater. Thus, ViCD is interpreted as resulting from chemical or chemically induced meclianical disaggregation by warm brines. VfCD is similar to the named "sanded dolomites" deposited in internai cavities and

related to hydrothermal activity. Ali described dolomites occur in the brecciated dolostone levei making a stratigraphic levei in the Januária region, as well as in the middle São Francisco valley, and resulting from dissolution/collapse brecciation. This study indicate that dissolution occured mostly in subsurface; dissolution related to subaerial exposure are minor and differ from subsurfaoe in at least three main aspects: dissolution vugs related to meteoric waters are small, areally restricted and the infilling material are only fine dolomitized sediment. Dissolution features considered as resulting from subsurface warm fluids, are widespmad, tile filling material inciudes VICD, SD, VfCD, sulfide, LCC, fluorite and bitumen, and dissolution/brceciation crosscut the hypothetical unconformity of previous suthors developed above the member 6. Thus, most of the dissolution and breccias resulted from action of hydrothermal flmds dwing burial, and ore-bearing dissolutin/collapse breccias are interpreted to be the result from selective sulfide replacement of pre-ore collapse breccia. Mmeralization is thus epigenetic, resulting from the action of subsurface warm fluids, interpreted as hydrothermal. The tìming of minerahzation is one of the unsolved problems. As dolomitization and the emplacement of ore nimerals took place during burial of the sediments, considering the compressional model, the Januária mineral deposit could be related to the evolution of the Brasiliano Cycle and thus restricted to the Neoproterozoic. However, if emplacement of mineral deposits is related to extensional tectonics, the timing of mineralization need not be restricted to the Neoproterozoic and could be Phanerozoic in age. The main metallogenic control is tectonics, that provide the driving forces responsible for fluid flow over large arcas. Faults and fractures are the main conduits for the ascending flow in a basin. Withm the basin, fluid flow is controlled also by Porosity and permeability of sedimentary units. Thus, the interaction of fauts with permeable sedimentary units and urxonforrnitiia of the basin define the regional pattem of related dolomitization and dissolution/collapse breccia development. This same association, depending on the availability of lhe sulphur, also controls ore emplacement. Thus, the first ".lm confiol in the study arca related to the carbonate sediments is the distribution of strata with contrasting Permeabilities. The porcus units are lithofacies of the dolostone and ooid-intraclast dolostone members (4 and 6), fmited by'P us, impermeable ones (aquitards); the lowermost unit to act as aquitards was the basal fine carbonate of the do~ calcarenite member 3 and the uppermost unit was lithologies of the dolomudstone member 7. These aquitards controlled dolomitization, dissolution/collapse brecciation and ore mineral deposits. During burial, the permeable units acted as ~ts for wann, hydrothemial dolomitizing and mineralizing fluids.

Nogueira,S.A.A. 2002. Contribution to the metallogenetic study of the Salamangone gold deposit, Lourenço auriferous district, Amapá state. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 250 **2002** *Date of presentation:* 24/6/2002

Sonia Aparecida Abissi Nogueira *Advisor(s):*

Committee:

Subject of thesis:

State: AP *1/1,000,000 sheet:* NA22 *Centroid of the area:* ' - 'W

Abstract

The Lourenço Au-District is located in the central portion of the State of Amapá, within the Maroni-Itacaiúnas Province, 2.2-1.95Ga (Teixeira et al. 1989), of the Amazonian Craton. The Lourenço region is included within a Paleoproterozoic suite of high-grade partially migmatized metamorphic supracrustal rocks and calc-alkaline complexes.

The Salamangone gold deposit lies within a calc-alkaline, metaluminous to slightly peraluminous tonalite to granodiorite pluton. It is characterized by high contents of incompatible trace elements and LREE, showing a geochemical signature of volcanic-arc granitoids.

Zircons extracted from the tonalite were analyzed by the U-Pb method, and analytical points are plotted on a concordia diagram. The discordia calculated for 14 data points has an upper intersection at 2.16 ± 0.13Ga, the inferred crystallization age of the tonalite, and a lower intercept 0.48 ± 0.13Ga, respectively. The Nd values were corrected using 2.16Ga age determined for the tonalite. The Nd(2.16Ga) values vary from +2.88 to +3.02, which suggest that the magmatic source region was mainly a depleted mantle with little or no contamination from Archean crust. The low initial 87Sr/86Sr ratios obtained for both contemporaneous granodiorite and tonalite vary from 0.702 to 0.703, in agreement with the Sm-Nd isotope data.

The deposit, clearly related to the epigenetic style of mineralisation, mainly encompass tree ore bodies, named: Filão Principal, Filão Capa and Filão Lapa. A ductile-brittle shear zone striking N50°-60°W and dipping 55° to 70°NE controls all of these veins. The primary mineralisation consists of ribbon banded quartz veins enriched in Au and As, exhibiting relatively low enrichment of Ag, Pb, Cu, Bi. On the basis of the internal structure and texture, the veins can be classified as laminated. The alteration processes so far recognized are represented by silicification, sulphidation, saussuritization and chloritization of the host tonalite, producing a proximal alteration zone marked by enrichment in As and Au and a poorly mineralized distal zone.

The textural and chronological relationships between the most common sulfide minerals, associated with the gold mineralisation, indicate a distinct paragenetic sequence, Stage I: arsenopyrite, pyrrotite, löllingite and chalcopyrite. Gold, located at grain boundaries between arsenopyrite and löllingite, is related to sulphidation hydrothermal processes. Temperatures yielded by the arsenopyrite thermometer are about 400 to 565°C. For directly date the ore minerals, age determinations were made on samples of arsenopyrite by stepwise leaching technique using Pb-Pb systematic. The analytical points define an isochron, which yield an age of 2002 61 Ma, consistent with the mineralisation stage I. The radiogenic Pb-Pb isotopic composition suggests a deep orogenic crustal source for the Pb. Stage II: arsenopyrite, pyrite and minor galena. It was the predominant period of gold deposition, which is related to remobilization processes.

The primary stage I mineralization fluid inclusions are not at all preserved and recognized in the studied quartz samples, because they were destroyed by superposed episodes of deformation. However, abundant secondary aqueous healed fluid inclusions planes were observed. More complex N5°-35°W trending Ca As (?) high salinity aqueous fluids, active during later stages of deformation within shear zone, are probably responsible for remobilization of gold from deeper levels, during stage II mineralization.

The wide range of salinities recorded in the aqueous fluid inclusions might be referred to the mixture of high-salinity aqueous fluids with low-salinity fluids. These fluids were probably derived from a mixture of deep metamorphic brines with shallow meteoric

waters of deep circulation.
The isotopic data available for the Lourenço Au-District and neighboring regions in French Guiana and Guiana, strongly suggest a geodynamic crustal evolution model, based on the development of a calc-alkaline magmatic arc in the time interval (2.25-2.0 Ga). This can be explained by subduction of oceanic lithosphere in the beginning of the collision between two continental masses composed at that time by the Central Amazonian Province-Carajás-Iricoumé Block and the West African craton.
The important periods of Archean and Paleoproterozoic orogenic gold-deposit formation correlate well with episodes of growth of juvenile continental crust, where the gold-forming events concentrated between 2.1 and 1.8 Ga, including deposition of the important ores, mainly, in the West Africa craton, Amazonian craton and Trans-Hudson orogen. In this way, the Salamangone gold deposit represents an orogenic mesozonal gold deposit, which was formed during compressional to transpressional deformation processes at Paleoproterozoic convergent plate margins in accretionary orogens.

Perdoncini,L.C. 2002. Evaluation and characterization of diamond sources in Franca region-SP state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.191

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* gr-d071

DataBase Ref.: 1499 **2002** *Date of presentation:*

Leila Cristina Perdoncini *Advisor(s):* Carvalho,S.G.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Santos,A. R. 2002. Remining of waste provenient from fluor-apatite ore ore dressing of Araxá(MG) and Catalão (GO), using as aditional in basic masses to obtain structural ceramic products. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.104

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1497 **2002** *Date of presentation:*

Adriano Rodrigues dos Santos *Advisor(s):* Moreno,M.M.T.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Sousa,M.O.L. 2002. Tectonic evolution of Pitanga, Artemis, Pau d'Alho and Jibóia structural highs - center of São Paulo state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.206

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1490 **2002** *Date of presentation:*

Maria Osvalneide Lucena Sousa *Advisor(s):* Morales,N.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Teixeira,L.M. 2002. Minerals bearing rare earth elements in granites from Tocantins and Paranã subprovince, Goiás tin province, Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

granite, datation, apatite, allanite, bastnaesite, fluocerite, monazite, xircon, xenotime, thorite, rare earth elements, hydothermal alteration

Instituto de Geociências - Universidade de Brasília *Reference:* D050

DataBase Ref.: 50 **2002** *Date of presentation:* 28/5/2002

Luciana Miyahara Teixeira *Advisor(s):* Botelho,N.F.

Committee:
Márcia Abrahão Moura - IG/UnB
José Affonso Brod - IG/UnB
Silvio Roberto Farias Vlach - IGc/USP
Herbet Conceição - IG/UFBA

Subject of thesis: Prospection and Economic Geology

State: GO *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The A-type granitic massifs of the Paranã (SPP) and Tocantins (SPT) tin sub-provinces have anomalous REE contents, sometimes 103 greater than the chondrite. Two suites of granitic rocks are present in the SPP, g1 and g2. Rocks of g1 suite display an alkalic affinity whereas g2 granites are metaluminous to peraluminous. Granites of the Serra Dourada Massif in the SPT are chemically similar to g2 rocks. REE-bearing minerals described in these rocks are apatite, allanite, monazite, bastnäesite, REE-oxyfluorides, fluocerite, zircon and xenotime. Thorite was observed only in the SPP granites.
In the studied granites, apatite, zircon, and allanite are the main accessory minerals in the earliest facies. During magmatic evolution, zircon is progressively enriched in U, Th, Y and REE, specially in SPP granites. In the Serra Dourada granites (SPT), apatite composition remains unchanged, whereas in SPP granites this mineral displays important Y and REE enrichment during magmatic fractionation, reaching 10 wt% (Y + REE). In both sub-provinces, apatite and allanite concentration decreases with magma evolution, and in the latest fluorine-rich granites, monazite appears as the main REE-bearing phase.
REE-bearing minerals, except zircon and, sometimes, thorite are completely destroyed during hydrothermal alteration, and are replaced by a secondary assemblage consisting of xenotime, bastnäesite, REE-oxyfluorides, monazite and fluocerite. However, zircon and thorite are also affected by hydrothermal fluids, being partially destroyed or enriched in Y and REE.
LREE patterns and LREE concentrations of the granites and altered rocks are controlled by allanite, monazite, apatite and the secondary REE minerals. Except for apatite, all these minerals are also important HREE carriers, controlling HREE patterns together with xenotime and thorite. The influence of zircon in these parameters is inexpressive, despite its importance as the main accessory mineral and its enrichment in Y and HREE in some granites.
The REE are incompatible at the early stages of g1 magma evolution and compatible at the late stages. In all g2 granites, LREE are compatible, whereas HREE concentrations remain unchanged during magma differentiation. In the Serra Dourada granites, the LREE contents are almost constant in all facies while the HREE are incompatible. In all situations, the REE behavior is in agreement with a magma evolution by fractional crystallization.
The REE behavior during hydrothermal alteration is contrasting between different granites of both sub-provinces. In the SPP massifs, where greisenization dominates, the amount of REE decreases in the altered rocks, whereas in the Serra Dourada massif, where albitization is the main alteration process, the amount of REE increases in the altered rocks.
Monazite geochronology by electronic microprobe yielded ages from 1.85 to 1.80 Ga for g1 and g2 granites, older than the known 1.77 Ga zircon U-Pb ages for g1 suite. In the Serra Dourada massif and its country rocks, monazites yield ages around 600 Ma, correlated to the Brasiliano tectono-metamorphic event. The U-Th-Pb system of primary g1 monazites probably underwent partially resetting during g2 intrusions and the Brasiliano Cycle. Nevertheless, in hydrothermal monazites from both g1 and g2 granites, this system remained intact. The monazite geochronology, together with recent zircon U-Pb ages, suggests the existence of more than two pulses of granite magmatism in the Paranã sub-province, and the known 1.6 Ga age for granites from the Tocantins sub-province may represent another granitic suite. The monazites from the Serra Dourada massif were strongly affected by the Brasiliano metamorphic event, and can only be considered as completely reset or neoformed minerals.

Toledo,C.L.B. 2002. Geological evolution of mafic and ultramafic rocks in the Barbacena greenstone belt, Nazareno region, MG state. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 945888

DataBase Ref.: 379 **2002** *Date of presentation:* 20/11/2002

Catarina Laboure Benfica Toledo *Advisor(s):* Chouduri,A.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

The study area is located at the southern border of the São Francisco Craton and shows plutonic, volcanic and sedimentary rocks, of Archean to Mesoproterozoic age, reworked by later thermo-tectonic events. Two different groups of mafic and ultramafic rocks occur in this region. The first is a komatiite-tholeiite sequence belonging to the Barbacena Greenstone Belt, and the second consists of differentiated mafic-ultramafic bodies intruded in this volcanic-sedimentary sequence. This research aims to characterize and reconstruct the evolution of these two groups of mafic and ultramafic rocks. The rocks of the volcanic-sedimentary sequence are distributed in two irregular NE-SW belts, named Nazareno and Rio das Mortes belts, surrounded by intrusive Paleoproterozoic granitoids. The Al-depleted komatiites (ADK, Al2O3/ TiO2 < 20) present Ti, Zr, Sc ratios different from the chondrite patterns and are HREE depleted. They are interpreted as the result of plume related magmatism generated at depths of 450 to 600 km. The tholeiite succession presents transitional characteristic between E-MORB and N-MORB, similar to basalts of oceanic plateau, and is best interpreted as the result of a mantle plume related intra-oceanic plate. Four different mafic-ultramafic layered bodies are distributed in the volcanic sedimentary belts with different proportions of mafic (metagabbros and anphibolites) and ultramafic (metaperidotite and metapiroxenite) components. In spite of the metamorphism and deformation, the original textural features such as cumulate textures and magmatic layering, indicative of differentiated magmatic plutonic protholiths, are still preserved in some of them. The REE patterns of these bodies are similar to the classical layered complex, suggesting an anorogenic setting. The region was affected by at least three thermo-tectonic events, Dn-1, Dn e D n+1. The oldest, probably of Archean age, developed at lower amphibolite conditions (M1) is recognizable in the volcanic sedimentary rocks. Pervasive tectonic features recorded also in the volcanic sucession and in the mafic-ultramafic layered bodies, characterize the main deformation event Dn. This event occurs in lower to middle amphibolite facies and represents the first register of the Transamazonian Event in the region. The Dn+1 phase is impressed in all rocks of the study area and developed at upper greenschist facies (M3), representing either the second manifestation of theTransamazonian Event or an event related to

the Brasiliano Orogenic Cycle. The geological evolution proposed for these rocks involves the deposition of volcano-sedimentary succession in an oceanic plateau setting; collage and accretion of oceanic plateau at a continental margin; intrusion of mafic-ultramafic layered bodies in an anorogenic setting; deformation and metamorphism of these sequences during the Transamazonian event, followed by the intrusion of several granitoid bodies and diorites associated to magmatism of the Mineiro Belt. Probably, the reactivation of the oldest structures in greenschist facies occurred during the Brasiliano Event. The age of the beginning of this evolution is still poorly known. However, the minimum age is marked by the Cassiterite Trondhjemite body (2. 162 ± 10 Ma) intrusive in the mafic-ultramafic bodies and their host rocks.

Toro,M.A.G. 2002. Geochronology and isotope geochemistry of the Igarapé Bahia and Gameleira Cu-Au deposits, Carajás mineral province (PA), Brazil. PhD Thesis, Center of Earth Sciences, University of Pará, pg.

Geochronology; Isotopic Geochemical, Cu-Au Mineralization; Pb and Nd Isotope; Crustal Evolution; Igarapé Bahia Deposit; Gameleira Deposit; Carajás Mineral Province

Centro de Geociências - Universidade Federal do Pará *Reference:*

DataBase Ref.: 249 **2002** *Date of presentation:* 10/5/2002

Marco Antonio Galarza Toro *Advisor(s):* Macambira,M.J.B.

Committee:
Colombo Celso Gaeta Tassinari - IGc/USP
Marcus Vinicius Dornelles Remus - IG/UFRGS
Raimundo Netuno Nobre Villas - CG/UFPA
Jean Michel Lafon - CG/UFPA

Subject of thesis: Geochemistry and Petrology

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

Copper sulfide + Au ore deposits are common in the Carajás Mineral Province and systematically occur in Archean metavolcano-sedimentary sequences associated or not with granitoid intrusions. Two of these deposits, Igarapé Bahia and Gameleira, have been chosen for a geochronological and isotopic study with the purpose of not only determining their ages, origin and relationships with the host rocks, but also the formation and evolution of the crustal segments within which both deposits are located.

The Igarapé Bahia Group hosts the Igarapé Bahia deposit and is composed of mafic metavolcanic (MVR), metapyroclastic (MPR) and metasedimentary rocks (MSR), besides banded iron-formations and hydrothermally altered breccias zone (HBZ). The whole rock pile is crosscut by mafic dikes (MIR). The Cu-Au ore forms disseminations to massive bodies, mostly occurring in the HBZ which marks the contacts between the MVR and the MSR/MPR rock units. Petrographic and geochemical data about the MVR (basaltic meta-andesites), MPR (laminated and lapilli metatuffs) and MIR (quartz diorites) show them all to be derived from mafic magmas of tholeiitic affiliation, in spite of the alteration evidence. These rocks also show geochemical similarities (major and trace elements, including REE) with the coeval Grão Pará Group volcanic rocks. Chloritization (dominant), carbonation, sulfidation and magnetitization are the most important types of hydrothermal alteration. The ore is chiefly composed of chalcopyrite with variable amounts of pyrite, bornite and chalcocite. Chrorite, magnetite, siderite are abundant as gangue minerals, whereas tourmaline, molybdenite, fluorite and biotite are subordinate.

Pb-Pb dating on zircon yield crystallization ages of 2745□1 Ma and 2747□1 Ma for the MVR and MPR, respectively. Similar whole-rock ages were obtained for the MVR (Pb-Pb / 2776□12 Ma and Sm-Nd / 2758□75 Ma) and the MPR (Pb-Pb / 2758□36 Ma). A Pb-Pb age of 2764□22 Ma for the chalcopyrite and gold suggests the mineralization to be contemporaneous with the host Igarapé Bahia Group. Similar Pb-Pb ages are recorded on chalcopyrite from the HBZ (2772□46 Ma), MVR (2756□24 Ma), MPR (2754□36 Ma) and MIR (2777□22 Ma), and in gold from the MVR (2778 Ma). All these geochronological data support a syngenetic to late syngenetic origin of the Igarapé Bahia Cu-sulfide + Au ores. Pb-Pb ages of 2385□122 and 2417□120 Ma obtained by leaching of the BHZ chalcopyrite may indicate a period of remobilization probably related to tectonic reactivations of the Carajás-Cinzento Strike-Slip System.

◦□S18 values of +0.1 to +4.2‰ in ZBH sulfides (mostly chalcopyrite) corroborate both the involvement of magmatic hydrothermal fluids and exhalative deposition, whereas □C13PDB values of –7.28 to –15.78‰ in ZBH siderite suggest the mantle as a likely source for the homogeneous CO2-rich fluids responsible for the carbonate precipitation (carbonatic source) although, if it does not have evidences of the existence of this type of rock in the Carajás region. In turn, □O18PDB values of –15.51 to –20.96‰ in the same siderite indicate some contribution of meteoric waters to the fluids that altered the breccias.

□The Gameleira ore deposit is hosted by the Archean Igarapé Pojuca Group which consists of mafic metavolcanic rocks (MVR), amphibolites, schists, banded iron-formations and hydrothermalites. Neoarchaean mafic intrusive rocks (MIR), Paleoproterozoic quartz-feldspathic apophyses and granitoids crosscut all the Igarapé Pojuca rocks. Petrographical and geochemical data allow the MVR and MIR to be classed, respectively, as basaltic meta-andesites and quartz diorites of tholeiitic affiliation. The schistose rocks can be classified as plagioclase-quartz-biotite schist. Biotitization, chloritization, sulfidation, tourmalinization and silicification are the most remarkable types of hydrothermal alteration. The ore occurs chiefly in veins and veinlets and is characterized by selvages of chalcopyrite, pyrite, pirrhotite, bornite, molybdenite, rare cubanite, besides quartz, tourmaline, fluorite, chlorite and biotite.

□The MVR seem to be contemporaneous with those of the Grão Pará, Igarapé Bahia and Igarapé Salobo groups, adopting the age of the Grão Pará Group as the age of formation of these rocks. Dating of the MIR (Pb-Pb on zircon) yields a value of 2705□2 Ma interpreted as the crystallization age of these rocks and similar to those found for the mafic sills (2.70 to 2.65 Ga) that occur in the neighboring Águas Claras deposit. Pb-Pb ages of 2615□10 and 2683□7 Ma on zircon from a saprolith of the Igarapé Pojuca Group domain probably represent rocks coeval with those sills.

Pb-Pb ages of 2646□30 Ma (MVR / whole-rock), 2422□12 Ma (vein sulfides) and 2218□14 Ma (leaching of chalcopyrite) are indicative of a superimposed event on the Igarapé Pojuca metamorphic rocks, either the emplacement of granitoid intrusions (1.87-1.53 Ga) or the reactivation of the Carajás-Cinzento Strike-Slip System. This event probably caused remobilization of pre-

existing ore as well as (partial or total) resetting of the Pb isotopic system.
Both the Igarapé Bahia and the Igarapé Pojuca groups, and other greenstone-like metavolcano-sedimentary sequences of Carajás, overlie a basement made up of rocks that are contemporaneous with the Xingu and Pium complexes as well as with the Arco Verde tonalite, which are the likely sources of the inherited zircon found in the MVR and MIR of the Igarapé Bahia Group and dated at 3.03-2.86 Ga. Therefore, the ranges of 3.03-2.86 and 2.76-2.74 Ga represent, respectively, well-defined periods of crust formation and expressive volcanism in the northern portion of the Carajás Mineral Province.
Sm-Nd model ages (TDM) of 3.17-2.99 Ga, obtained for the rocks of both the Igarapé Bahia and Gameleira deposits are consistent with those determined for the basement rocks and granitoids that occur in the Carajás Mineral Province. Nd(t) values for these rocks (–0.36 to –2.12) indicate nor only participation of older crust material in the parental magmas but also that magmas were generated in a continental rift environment. This supports the current hypotheses about the tectonic environment of formation of the Itacaiunas Supergroup to which belong both the Igarapé Bahia and the Igarapé Pojuca groups.
In conclusion, both studied deposits seem to have a similar primary genesis, but distinct further history in the Neoarchaean and Paleoproterozoic times, which certainly affected their mineralizations.

Varella,R.F. 2002. CO, CO2 and NOx flow and C turnover in lateritic soil under herbage. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Cerrado, savanna, soil carbon; trace gases, 13C, geophysics, electrical resistivity; spatial variability; land use change

Instituto de Geociências - Universidade de Brasília *Reference:* D057

DataBase Ref.: 57 **2002** *Date of presentation:* 13/12/2002

Renato Figueiro Varella *Advisor(s):* Santos,R.V.

Committee:
Maria Leonor Ribeiro Casimiro - IG/UnB
Roberto Alexandre Vitória de - IG/UnB
Marilusa Pinto Coelho Lacerda - FAV/UnB
Renato Roscoe - EMBRAPA

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The Cerrado, a Brazilian Savanna, is a region that covers approximately 2 million km2of country's area The expansion of the agriculture frontier in the Cerrado region, as the result of Brazilian government development effort, resulted in a rapid rate of land conversion to monocultural croplands (soybean) and pasture. The regional and global environmental impacts of this change in land use in Cerrado areas has not been assessed. The objectives of this study were: (i) understand the carbon dynamics in a Cerrado oxisol of a degraded 20-year old Brachiaria pasture, (ii) the seasonal effects on CO2, CO, NO and N2O fluxes and (iii) estimate the percentage of substitution of soil carbon derived from the native vegetation. The pasture area was located on an experimental farm of EMBRAPA-Cerrados, Planaltina-DF. A native Cerrado area preserved and protectec from burning since 1974 was taken as a reference for this work. A well, that was dug on a 50 m x 50 m sub-area in the pasture was utilized for soil sampling from surface down to 6.5 m depth. The soil analysis included total C and N, pH, texture, moisture, mineralogical composition and 13C. Detailed apparent electrical resistivity (ER) survey were carried out aiming to identify the occurrence of anomalies and to investigate ER soil spatial variability. The mesurements of CO2, CO, N2O and NOx fluxes were made every month from March 2000 to July 2001 using chamber techniques. The results indicated a large spatial variation in electrical resistivity in the pasture oxisol in both dry and wet seasons. Comparison between the reference cerrado site and the 20-year old pasture showed significant differences in the functioning of these systems regarding C and N cycling. The NO fluxes were lower in the pasture and N2O fluxes were below detection limit in both sites. Considering the average CO2 fluxes in the dry and wet season, there were no significant differences between the cerrado and the pasture, although differences in CO2 fluxes in regions of different soil electrical resistivities were observed. The CO2 fluxes were higher in the pasture in the transition from wet to the dry season. The C3 native carbon replacement by the Brachiaria brizantha C4 in the upper 5 cm layer was between 30 and 33%, which is lower than values mesured in the Amazon forest.

Vidal,A.C. 2002. Hidrogeologic study of Tubarão aquifer in the outcropping area of São Paulo state central region. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.109

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1489 **2002** *Date of presentation:*

Alexandre Campane Vidal *Advisor(s):* Kiang,C.H.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF22 *Centroid of the area:* ' - 'W

Abstract

Almeida,H.L. 2003. Microstructural study in gold host-vein mineralization in shearing zone: Case of the Sertãozinho deposit, Borborema province, NE of Brazil. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d074

DataBase Ref.: 2450 **2003** *Date of presentation:* 15/8/2003

Harrizon Lima de Almeida *Advisor(s):* Hackspacker,P.C.

Committee:

Subject of thesis: Regional Geology

State: PE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Araújo,C.C. 2003. Genesis of the asphaltic sandstone occurrences in the eastern border of Paraná basin, SP state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1918 **2003** *Date of presentation:* 3/12/2003

Carlos César de Araújo *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Sedimentary Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Balistieri,P. 2003. Palaeoichnology of the Upper portion of the Itararé Group in Mafra region (Santa Catarina state): Palaeoecological, Palaeoenvironmental and Stratigraphical constraints. PhD Thesis, Departament of Geology, University UNISINOS; pp

Departamento de Geologia - Universidade Vale do Rio dos Sinos *Reference:*

DataBase Ref.: 502 **2003** *Date of presentation:* 23/5/2003

Patrícia Balistieri *Advisor(s):* Guimarães Netto,R.

Committee:

Subject of thesis: Sedimentary Geology

State: SC *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Batezelli,A. 2003. Analysis of the cretaceous sedimentation in the Triângulo Mineiro region and its correlation to neighbouring areas. PhD Thesis, Universidade Estadual Paulista Júlio de Mesquita Filho, UNESP, Sao Paulo; 183 pp

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1473 **2003** *Date of presentation:*

Alessandro Batezelli *Advisor(s):* Perinotto,J.A.J.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

Branco,M.P.N.C. 2003. Analysis of the depositional systems and coastal dynamics of the Aquiraz municipality, Ceará state, with the aid of remote sensing images. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Coastal Area, Barreiras Formation, Field Dunes, Face Of Beach, Remote Sensing

Instituto de Geociências - Universidade de Brasília *Reference:* D066

DataBase Ref.: 1419 **2003** *Date of presentation:* 10/12/2003

Mônica Pimenta de Novaes Caste Branco *Advisor(s):* Campos,J.E.G.

Committee:
Detlef Hans-Gert Walde - IG/UnB
Paulo Roberto Meneses - IG/UnB
Luiz José Tomazelli - IG/UFRGS
Paulo da Nóbrega Coutinho - DG/UFPE

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* ' - 'W

Abstract

The coastal area of the Ceará State, Brazil is locally represented by a natural landscape constituted by scarps developed in the Plio-Pleistocenic Barreiras Formation sediments and for extensive sandy deposits of eolian origin. The Barreiras Formation sediments due to lithologic variations, grain size and form, sedimentary structures and interfingering of facies were classified in three classes. The first class refers to the cyclical deposition of the sedimentary F1 and F2 facies described in the section of the profile PA8 in the District of Aquiraz. The F1 facies is characterized by the predominance of quartz pebbles in relation to sandy-clay matrix (orthoconglomerated) associated to channel and cut and fill sedimentary structures. In the F2 facies the matrix overcome in relation to the clasts, and the rock is classified as a diamictite. These coarse rocks facies and related structures are verified in the proximal segment alluvial fans, with alternations of droughts and humid climatic conditions. The second facies class includes the sandy-clay outcrops, of reddish color, massive aspect, with the presence of dispersed quartz grains (diameter > 3 mm) in the rock body. The sedimentation interpretation is related to intermediate portion of alluvial fans. The third class corresponds to the sandy-clay deposits of yellow reddish color and massive aspect that outcrops in plateau surface and in the majority of the cliffs in the districts of Beberibe, Aracati and Icapuí. The deposition was controlled by debris flow currents in semi-arid conditions, and is interpreted as distal of the alluvial fans. The Barreiras Formation outcrop along the eastern coast of Ceará State are conditioned by the reactivation of tectonic structures in a neotectonic event. The quaternary sedimentation in the coastal plain of the District of Aquiraz is characterized by beach and aeolian deposits. Aeolian sandy dunes, show varied forms and are classified in active, partially active and inactive, in agreement with their morphologies and vegetable index covering. The cell of the beach face of the point of Iguape is characterized by the presence of extensive field of inactive parabolic dunes. In the cell of the foreshore beach there are a variety of dune types originated by reactivations of tectonic structures and by the processes of sedimentary by passing over the point of Iguape.The face of beach in the coast of Aquiraz is characterized by the dissipative stage (Barro Preto e Batoque beaches) and intermediate stage (Presidio, Prainha and Porto of the Dunes beaches). The amount of sediments involved in the costal dynamics reveals larger values for the areas situated in the beach face of the Iguape rocky point and smaller for the foreshore beach. The images interpretation of remote sensing allowed to discover submerged features in the delta of the Jaguaribe river and along the coastal plain of the District of Icapuí. The tax of migration of the active field dunes positioned in the margin of the Catú lake was calculated starting from the overlapping of aerial photography digitalized and images of the Ikonos - II satellite. The assessment of the variation of the line coast in the district of Aquiraz reveals that the area has been submitted to a small elevation of the relative level of the sea along the 36 last years. By this way the use of satellite images in the coastal researches becomes a tool of vital importance in the process of recognition of the physical processes involved in the coastal dynamics.

Carvalho,A.M. 2003. Coastal dynamic between Cumbuco and Matões, NW coast of Ceará state. Emphasis to the aeolian process. PhD Thesis. Institute of Geosciences, Federal University of Bahia, Salvador, 188p

coastal dynamics, potential for dune formation, coastal geometry, longshore drift

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 2203 **2003** *Date of presentation:* 3/3/2003

Alexandre Medeiros de Carvalho *Advisor(s):* Dominguez,J.M.L.

Committee:
Luiz Parente Maia -
Abílio Carlos S. P. Bittencourt, -
Luiz José Tomazelli - IG/UFRGS
Paulo da Nóbrega Coutinho -

Subject of thesis: Coastal and Sedimentary Geology

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* 02 53 's - 38 38 'W

Abstract

The littoral sector between Cumbuco and Matões, NW coast of Ceará state, has evolved as a coastal depositional system with characteristics denoting dynamic stability. This system has experienced a strong litho-structural control exerted by the precambrian basement in which winds, waves, tides, coastal currents and the quaternary sea-level oscillations exerted a fundamental role. Modelling of the intensity and sense of the longshore transport has shown that the dominant longshore drift is SE-SW, although the NW-SE drift may be seasonally important. The detailed study of the winds, their deposits, and its association with the physiography of the shoreline, have revealed the persistency of a “spiral geometry” of the headland bay beach type according to Yasso (1965) scheme. This geometry in association with ample fine-grained beaches has favored the development, during the Quaternary, of five dune generations. The evolutionary history of these dunes is marked by a change in bedform type as one moves from the shoreline towards de continent. Near the shoreline, frontal dunes dominate and are succeded continentwards by small sand sheets and barcan dunes. Between the shoreline and the upwind limits of the large interior dune fields, a deflation surface is present, in which small barcan dunes, shoestring dunes and migrating parabolic dunes are present. This deflation surface changes continentward into large dune complexes, dominated by transgressive dunes.

Finally in the most internal portions of the coastal zone vegetated parabolic dunes are present. Field measurements, using wind sediment traps, have allowed the development of an expression for the potencial of eolian transport, qt=0.0019Uz2.255. This relationship was the basis for the formulation of a methodology for calculation of the potential for dune formation, expressed by Pt = qt * sinα, where qt is the potential for eolian transport, and α is the angle between the wi nd direction and orientation of the shoreline. This study has also shown an inverse relationship between dune dimentions and dune migration rates, and between eolian transport and rainfall. The inverse relationship between longshore drift and the potential for dune formation prove to be relevant on coastal stability process.

Castro,M.R. 2003. Sequence stratigraphy in Formação Tombador formation, Chapada Diamantina group, Bahia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1994 **2003** *Date of presentation:* 24/3/2003

Marília Rodrigues de Castro *Advisor(s):* Riccomini,C.

Committee:

Subject of thesis: Stratigraphy

State: BA *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Cavalcanti,J.A.D. 2003. Origin of auriferous tourmalinites of the southeastern region of Quadrilátero Ferrífero-MG state: Fiield evidences, petrography, mineral chemistry and Nd e Sr isotopic data. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 971835

DataBase Ref.: 1523 **2003** *Date of presentation:* 18/12/2003

Jose Adilson Dias Cavalcanti *Advisor(s):* Xavier,R.P.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Auriferous tourmalinites of the Anticlinal de Mariana region, southeastern Quadrilátero Ferrífero, have long raised debates regarding their origin. Genetic models have considered the tourmalinites as syngenetic, invoking the importance of exhalative focus, as well as epigenetic formed as a result of hydrothermal alteration and/or granitic magmatism. This study was centred on the Passagem, Mata Cavalo, Chico Rei, Scliar and Duas Bocas gold deposits, where three distinct modes of tourmaline occurrences were identified: (T1) tourmaline as the essential component of stratiform tourmalinites; (T2) tourmalines concentrated as hydrothermal alteration envelopes around gold –bearing quartz-carbonate-sulphide veins; (T3) aggregates of tourmalines as part of gold –bearing quartz-carbonate-sulphide veins. In spite of their compositional differences, all belong to the group of alkaline tourmalines and are classified as dravite. Combining field relationships, together with petrography, mineral chemistry and Nd and Sr isotope data, the following conclusions regarding the origin of the gold-related tourmalinites may be pointed out: i) boron-rich submarine exhalative fluids caused the syngenetic precipitation of the stratiform bodies of tourmalinites; ii) remobilization of boron, possibly by metamorphic fluids sensuo stricto derived from the metamorphic devolatilization of the enclosing rocks and deep-seated synmetamorphic fluids, may have caused the precipitation of vein-related tourmaline, as part of an epigenetic gold-bearing hydrothermal system.

Christofoletti,S.R. 2003. A geologic-technologic classification model of the clays from the Formação Corumbataí formation used at the Pólo Cerâmico de Santa Gertrudes. PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 187 pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1784 **2003** *Date of presentation:*

Sérgio Ricardo Christofoletti *Advisor(s):* Moreno,M.M.T.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cintra,E.C. 2003. Aplication of Neural nets in the Control of copper and gold content of the Chapada deposit (GO state). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d078

DataBase Ref.: 2454 **2003** *Date of presentation:* 28/11/2003

Evandro Cardoso Cintra *Advisor(s):* Sturaro,J.R.

Committee:

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Corsi,A.C. 2003. Morphostructural compartmentation of the Triângulo Mineiro region (MG state) applied to the underground hydric resources. PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 231 pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA128

DataBase Ref.: 1799 **2003** *Date of presentation:*

Alessandra Cristina Corsi *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Geosciences and Environment

State: MG *1/1,000,000 sheet:* SE22 *Centroid of the area:* ' - 'W

Abstract

Costa,P.C.C. 2003. Petrology, geochemistry and geochronology of mafic dikes of Crixás Goiás region, center-western portion of Goiás state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 151 pp.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1692 **2003** *Date of presentation:* 24/11/2003

Paulo Cesar Correa da Costa *Advisor(s):* Girardi,V.A.V.

Committee:

Subject of thesis: Mineralogy and Petrology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Cruz Jr,F.W. 2003. Paleoclimatic and paleoenvironmentala study partir based on Quaternary geochemical records in speleotemes of the Iporanga (SP state) and Botuverá(SC state) regions. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1837 **2003** *Date of presentation:* 12/12/2003

Francisco William da Cruz Júnior *Advisor(s):* Karmann,I.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SC *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W
SP

Abstract

Cunha,F.G. 2003. Human and environmental contaminations in Ribeira valley, states of São Paulo and Paraná, Brazil. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 980234

DataBase Ref.: 376 **2003** *Date of presentation:* 21/2/2003

Fernanda Gonçalves da Cunha *Advisor(s):* Figueiredo,B.R.

Committee:

Subject of thesis: Metallogenesis

State: SP PR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Fambrini,G.L. 2003. The Santa Bárbara group (Neoproterozoic III) of the Camaquã basin, Rio Grande do Sul state. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil, 162p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1618 **2003** *Date of presentation:* 7/11/2003

Gélson Luís Fambrini *Advisor(s):* Fragoso César,A.R.S.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Fernandes,C.J. 2003. Genesis and structural control of the gold mineralizations associated to the metassedimentary rocks of Aguapeí group - Southwestern of Mato Grosso state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Gold Mineralization, Structural Control, Aguapeí Group, Aguapeí Folded Belt, Tectonics Domains, Amazonian Craton, 40Ar/39Ar age, Inclusion Fluid,geochemistry, Mato Grosso State.

Instituto de Geociências - Universidade de Brasília *Reference:* D064

DataBase Ref.: 1417 **2003** *Date of presentation:* 31/10/2003

Carlos José Fernandes *Advisor(s):* Kuyumjian,R.M.

Committee:
- Claudinei Gouveia de Oliveira - IG/UnB
- Elton Luiz Dantas - IG/UnB
- Fernando César Alves da Silva - DG/UFRN
- Artur Cezar Bastos Neto - IG/UFRGS

Subject of thesis: Prospection and Economic Geology

State: MT *1/1,000,000 sheet:* SD21 *Centroid of the area:* ' - 'W

Abstract

The southwestern portion of the Amazonian Craton, in the Mato Grosso state, Central Brazil contains important gold concentrations that are associated with the tectonic and thermal evolution of the Aguapeí folded belt. In these concentrations gold is associated with metasedimentary rocks of the Aguapei Group that cross the Brazilian border and has been called as Sunsas Group in Bolivia. The Aguapeí Mobile Belt forms an approximately 200km long NW trending regional structure that is made of folded metasedimentary rocks of the Aguapeí Group, which cover basic-ultrabasic rocks with chemical sedimentary rocks of the Rio Alegre Terrane, and granitic rocks of the Santa Helena Terrane. Based on tectonic regime, predominant kinematics, and associated structures, in the present work the Aguapeí Mobile Belt has been divided in four domains. From SE to NW they were named: transcorrent tectonic domain, low-angle contractional tectonic domain, symmetric folded domain, and brittle and tilted domain. Important gold mineralizations are associated with rocks from the Fortuna formation in some of these domains. The most important are: the São Vicente Mine in the symmetric folded domain, Lavrinha Region deposits in the low-angle contractional tectonic domain, and Pau-a-Pique Deposit in the transcorrent tectonic domain. Here we present detail studies for this three areas along the belt. The gold for these three areas is in quartz veins systems and disseminated into the hosted rocks. Highest gold grades are associated with quartz veins with comb, saccharoidal and replacement textures. Microthermometric studies in fluid inclusions of quartz veins display three inclusion populations distributed in two systems: trifasic aquo-carbonic – H2O+CO2+NaCl (type I) and; bifasic aquous and monofasic aquous - H2O+NaCl (type II and III), both with low salinity (<8 wt% NaCl eq.). Fluids are related with deep hydrothermal system, and the main gold source is attributed to the process affecting ultrabasic and basic rocks and BIFs from the Rio Alegre and Pontes e Lacerda sequences. Geochemistry studies and 40Ar/39Ar ages of hydrothermal sericites and structural analysis from seven gold deposits hosted in the Aguapeí Group (Mineiros, Pau-a-Pique, Pombinha and Ernensto) and its basement (Ellus, Maraboa and Incra), demonstrated a close relationship between gold mineralizations and geotectonic evolution of the Aguapeí Fold Belt. 40Ar/39Ar ages range from 908.1 □ 0.9 Ma (Pau-a-Pique deposit) to 946.1 □ 0.8Ma (Incra deposit), showing a chronological sequence in which, gold deposits hosted in the basement rocks are older than gold deposits hosted in the Aguapeí Group. Metaconglomerates and quartzites of the Pau-a-Pique deposit show SiO2 from 91 to 98%, demonstrating that quartz is the essential mineral in these rocks. Analyzed trace elements for Pau-a-Pique area show no relationship between gold and any other element. However, at the Lavrinha region, gold is strong related with Ag, As, Se, Mo e Sr. Thus, for the central part of the Aguapeí Belt, using these elements for gold exploration is recommended. Rare earth elements for most of the samples from both areas have patterns similar to the NASC. For few samples the patterns are similar to the European Shale. All samples are strongly fractionated for LREE/HREE with □(LREE)N enrichment related to the □(HREE)N. Pau-a-Pique deposit paragenic association includes pyrite, magnetite, hematite, ilmenite, martite and, chalcopyrite, phyrrotite, arsenopyrite, native silver and galena as accessories. The composition of pyrite are similar for most of the elements from all deposits, however there is a Se enrichment (3600 ppm) at the Lavrinha region and As enrichment (8700 ppm) at the São Vicente

Mine. Gold occur as native element with percentage of gold raging from 90,14% to 96,17%. The Fisher purity levels for gold are 905,8 for samples from the Pau-a-Pique deposit, 906,3 for the São Vicente and 946,5 for the Lavrinha region, demonstrating that the central portion of the Aguapeí Belt presents higher gold purity level, probably related to the simple paragenic association of pyrite and magnetite what the present data allow to classify gold deposits from the Aguapeí Belt as epigenetic what marks the final stages of the Mesoproterozoic (946 to 908 Ma) as an important metalogenetic age for the SW portion of the Amazonic Craton.

França,G.S.L.A. 2003. Structure of the crust in the Southeast and Central-West of Brazil, using receiver function. PhD Thesis , Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Universidade de São Paulo, 165 pp

Receiver Function, Crustal thickness, Poisson's Ratio

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 2052 **2003** *Date of presentation:* 23/3/2003

George Sand Leão Araújo de França *Advisor(s):* Assumpção,M.S.

Committee: Vasile I. Marza - IG/UnB
Aderson Farias do Nascimento - DG/UFRN
João Carlos Dourado - IGCE/UNESP
Jesus Antônio Berrocal Gomez - IAG/USP

Subject of thesis: Seismology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The study of the crustal structure using receiver function is accomplished with the teleseismic P wave that reaches the base of the crust with a steep angle. Part of the energy the P wave is converted into S when refracting in the Moho descontinuity (Ps wave) and also into multiple reflections. Through the deconvolution of the horizontal with the vertical component, the receiver function is obtained, which presents a large peak fot the direct P followed by smaller peaks (Ps waves) of converted waves and reverberation in the crust. The receiver function technique has been used broadly to estimate the crustal structure under broad-band stations. 24 stations in the SE and Central Brazil were analyzed. The multiple reflections are enhanced with the slant stacking which uses the phase as weight. Then we obtain the estimates of the converted phases and have an estimate of the vP/vS ratio beneth each station. In the Paraná Basin, the average thickness is 44 km with a vP/vS ratio increasing towards the axis of the Basin (from 1,71 to 1,77). In the Ribeira belt, the thickness far from the coast is 37 km and ratio = 1,81. Close to the San Francisco Craton, the average thickness is 40 km and ratio = 1,70, and near the coast, it is 34 km and ratio = 1,73. The Brasília belt is much more heterogeneous, with thicknesses varying from 32 to 42 km and ratios varying from 1,68 to 1,88. For each area the vP=vS ratio and P wave velocity were used to infer the probable composition for the lower crust.

Frascá,M.H.B.O. 2003. Experimental studies of accelerated alteration in granitica rocks used in revetment. PhD Thesis, Institute of Geosciences, University of São Paulo, pg.

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 246 **2003** *Date of presentation:* 27/6/2003

Maria Heloisa Barros de Oliveira Frascá *Advisor(s):*

Committee:

Subject of thesis:

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Rock for cladding or flooring will be naturally weathered when exposed to the new environmental and use conditions. This alteration may be modified or accelerated in contact to climatic aggressiveness, by the action of atmospheric pollutants and improper constructive and maintenance procedures. Resulting deteriorations are irreversible. Therefore, the only available way is to prevent such alteration using adequate techniques. However, it is made difficult due to the lack of technical information regarding to the types of deterioration that may occur according to rock type and use conditions. Technological characterization of selected granitic rocks and experimental studies on accelerated alteration under simulated environmental and uses situations (sulfur dioxide and salt mist exposure, thermal shock and partial immersion in sulfuric acid and sodium hydroxide), similar to those described above were carried out aiming at the establishment of a methodology for laboratorial tests that could anticipate deteriorations of the rocky material. Moreover, they also aimed to add the question of durability as a choice criterion of rocks used for covering. Results showed stone deteriorations, in different intensities and ways (mineral oxidation, efflorescence, scaling and others), related to the intrinsic characteristics of each rock from which previously altered minerals and microcracks played significant role in stone degradation. Petrography was the main technique in the alterability studies. It was also possible to verify that the technological qualification of rocks contemplates two complementary aspects: determination of engineering properties (physical and mechanical parameters) and alterability.

Heinz,M. 2003. Seismic anisotropy, structure and deformation of continental upper mantle in orogenic zones: Application to the Ribeira belt, SE Brazil. PhD Thesis - Laboratoire de Tectonophysique -

Université Montpellier II - Montpellier, France; pp

Université Montpellier II - Montpellier, França *Reference:*

DataBase Ref.: 1552 **2003** *Date of presentation:*

Maggy Heinz *Advisor(s):* Vauchez,A.

Committee:

Subject of thesis: Geodynamics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cette thèse se fait dans le cadre du projet de collaboration franco-brésilienne PICS (INSU - MAE): "Anisotropie sismique et deformation du manteau supérieur au SE du Brazil: Couplage croûte-manteau et dynamique des failles lithospheriques" .
Le sujet de thèse est centré sur la détermination de la structure du manteau supérieur dans une région, la chaîne Ribeira au Brésil, affectée, au néo-protérozoïque par l'orogénèse Pan-africaine. Cette chaîne s'est développée en bordure du craton du São Francisco et est caractérisée par de grands décrochements parallèlles au grain tectonique de la chaîne. Des modèles numériques préliminaires suggèrent un fluage du manteau guidé par un échappement latéral à la terminaison sud du craton. L'étude consiste pour l'essentiel à utiliser le déphasage des ondes de cisaillement téléséismiques pour en déduire la fabrique du manteau supérieur. Les données utilisées ont été enregistrées lors de deux déploiements temporaires de stations des parcs nationaux Lithoscope et Large Bande, ainsi que par les stations sismiques large-bande de l'équipe brésilienne et par la station Géoscope (SPB). En complément de l'analyse de l'anisotropie sismique, des données gravimétriques et aéromagnétiques, disponibles pour la région d'étude, seront traitées (en collaboration avec R. Bayer, Université de Montpellier II et D. Fairhead, Université de Leeds). Un de nos objectifs est de rechercher une anomalie de gravité associée aux zones de cisaillement, comme cela a été mis en évidence au Kenya et à Madagascar, suggérant que le Moho est légèrement, mais systématiquement remonté sous les zones de cisaillement lithosphériques. Le traitement adapté des données d'aéromagnétisme permet de préciser la géométrie des grandes failles à diverses profondeurs dans la croûte. Il devrait être ainsi possible d'obtenir une bonne caractérisation de la structure crustale et mantellique associée à la chaîne Ribeira.
L'ensemble des résultats obtenus sera ensuite comparé aux données tectoniques obtenues par la géologie de surface afin d'aller vers une interprétation tectonique à l'échelle de la lithosphère. Pour terminer, la mise en oeuvre de modélisations multi-échelles permettra de vérifier si l'interprétation tectonique peut rendre compte de l'anisotropie sismique mesurée, ainsi que des autres caractéristiques géophysiques de cette région. Ces modélisations sont basées sur le couplage d'un code éléments finis permettant de simuler la déformation lithosphérique et d'un code de plasticité cristalline permettant de simuler le développement d'une orientation cristallographique préférentielle associée à la déformation. Elles permettent de calculer les propriétés tensorielles (sismiques et mécaniques notamment) du manteau lithosphérique déformé et donc de prédire le déphasage des ondes de cisaillement associé à un processus géodynamique particulier.

Junqueira-Brod,T.C. 2003. Volcanology of kamafugitic rocks of the alkaline province of Goiás state, Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Mafurite, Ugandite, Kalsilite, Diatreme, Pyroclastic, Breccia, Tuff, Accretionary Lapilli, Surge

Instituto de Geociências - Universidade de Brasília *Reference:* D063

DataBase Ref.: 712 **2003** *Date of presentation:* 29/8/2003

Tereza Cristina Junqueira Brod *Advisor(s):* Gaspar,J.C.

Committee:
Herbet Conceição - IG/UFBA
Evandro Fernandes de Lima - IG/UFRGS
Nilson Francisquini Botelho - IG/UnB
Sylvia Maria de Araujo - IG/UnB

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Late Cretaceous Goiás Alkaline Province (GAP) is located along a 250 x 70 Km, NW-trending region, and consists of mafic ultramafic alkaline plutonic complexes in the north, sub-volcanic bodies in the central portion and kamafugitic lava flows in the south. This provice contains some of the largest known kamafugite exposures, including the Santo Antônio da Barra flows. The lava volume in these flows reaches at least 23 Km3, spread over an area of 371 Km2, and are the world's largest known kamafugite lava accumulation. The calculated lava volume is consistent with magma chambers equivalent in size to the plutonic complexes in the north of the Province, or with the kamafugite-carbonatite complexes in the nearby Alto Paranaíba Igneous Province (APIP).
Field and petrographic aspects of coherent kamafugites from Santo Antônio da Barra (SAB), in southern GAP, and from Águas Emendadas (AE) in central GAP are described. Intensive variables inferred from simulations using whole-rock chemical data are used to constrain the behaviour of these kamafugitic magmas from their origin in the mantle to their final emplacement as upper-crust magma chambers and as diatreme structures, or as lava flows. In most cases, evidence indicates that differentiation in both deep- and shallow-seated magma chambers intervened in the evolution of these magmas. The discordance between the Precambrian basement and the Phanerozoic sedimentary rocks is the most likely site for the establishment of the shallow chambers, whereas the deeper chambers were probably located in the upper crust. CO2 seems to be the most important volatile phase. An interplay of various possible evolution paths, involving crystal fractionation, magma mixing and liquid immiscibility is

invoked to explain the whole range of observed features in GAP kamafugites
The central GAP is characterized by kamafugitic diatremes, which may crop out continuously for up to 850 m, consisting of a central breccia body, surrounded and overlain by lava flows and crosscut by dykes. The breccias contain some special types of spheroidal juvenile fragments, namely accretionary and armoured lapilli, frozen droplets, spinning droplets and wrapped fragments. Irregularly shaped tuff pockets occurring within the breccias contain textures and structures resembling those of subaerial surge deposits but formed in confined, high gas/(solid+liquid) ratio domains within the conduit. Diatreme emplacement affected the country rock through thermal metamorphism, development of columnar jointing and formation of peperite-like mixtures. There is no evidence of phreatomagmatic activity in the diatremes. This implies that features like accretionary lapilli and peperites are not exclusively associated with H2O-dominated processes.
The internal organisation of two diatremes (Águas Emendadas and Neuzinha) and one small breccia-filled conduit (Tigre), and the criteria for facies recognition in these structures are described. An extensive textural and compositional dataset was collected in the field and analysed by multivariate statistic techniques. Combined with field observations, this allowed us to define a set of facies for kamafugitic diatremes, to understand the internal structure of the studied bodies and to correlate them. Seven distinct facies were recognized. The Fluidised Conduct Facies represents high energy systems characterized by strongly fluidised but only moderately fragmented magma. It occurs in a confined environment, and is typical of deeper parts of the conduit, before the actual diatreme level is reached by the ascending fluidised system. Large amounts of spinning droplets are formed within this region. The Fluidised Conduit-Diatreme Facies is characteristic of intermediate depths in the conduit, where highly fluidised and highly fragmented systems produce large amounts of ash. Spinning droplets decrease in abundance and ordinary juvenile fragments become very common in this facies, and xenoliths from the country rock in the immediate vicinity of the diatreme appear for the first time. The Fluidised-Fragmented Facies and the Magmatic-Fluidised Facies dominate the shallower part of the system, and make up most of the actual diatreme filling materials. They produce very heterogeneous deposits, and can be distinguished from one another by the much higher degree of fluidisation, higher fragmentation and higher system energy associated with the Fluidised-Fragmented Facies. The latter occupies the more internal part of the diatreme, and is characterised by the common presence of tuff pockets, tuff fragments, and accretionary and armoured lapilli. The Magmatic-Fluidised Facies, on the other hand, typically occupies the outer portion of the diatreme and can be distinguished from the Fluidised-Fragmented Facies by the dominance of lapilli over ash and by the presence of abundant wrapped fragments. The Magmatic Facies and the Coherent Magmatic Facies are volumetrically subordinate and represent late stages, where less fluidised and less fragmented material, or even coherent magma erupts in a relatively calm way, following the main explosive activity that generated the diatreme itself. Finally, a Border Facies may occur, basically defined by the increased abundance of material from the immediate country rock. At Águas Emendadas and Neuzinha this is marked by frequent fragments of peperite-like rock, formed by the interaction of the fluidised magma with friable sandstone.

Leite,R.J. 2003. Petrogenesis and U-Pb geochronology of the late to post-orogenic granitic magmatism in the Agudos Grandes batolith (SP state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 218 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1127 **2003** *Date of presentation:* 28/3/2003

Renato Jordan Leite *Advisor(s):* Janasi,V.A.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Luz,C.F.P. 2003. The palynologycal registers as sensory of the dynamic of the vegetation during the holocene of the north region of Rio De Janeiro state (Brazil). PhD Thesis, Institute of Geosciences / Departament of Geology, University Federal of Rio de Janeiro, Brazil, 167 pg.

Palynology; Holocene; north of Rio de Janeiro; Brazil

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 2007 **2003** *Date of presentation:* 17/12/2003

Cynthia Fernandes Pinto da Luz *Advisor(s):*

Committee:

Subject of thesis: Palaeontology and Stratigraphy

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The inquiry of the dynamics of the vegetation of the north region of Rio De Janeiro State in last 7,000 years was based on the palynologycal results of (1) analysis of superficial sediments of the two lagoons situaded in the city of Campos dos Goytacazes, (2) recent peripherical soil sediments collect near to these lagoons and (3) sediments of two cores, one collected in Lagoa de Cima lake and one in the Lagoa do Campelo lake. The pollen grains, the spores of Pteridophyta and Bryophyta, certains zigospores and cenobium of green algae had been considered as palynomorphs. In accordance with the results had been characterized: 1. The spatial dynamics in the recent deposition of palynomorphs in the surface sediments from these lagoons. 15 samples had been analyzed by a transect of northeast/southwest direction from the Lagoa de Cima lake. The pollen grains, in its majority, had reflected the forest that is situated near the border of the lake and the tributaries Imbé and Urubu, with regional

expressive contribution, as well as the important contribution of hidrophytes and marsh plants, herbaceous plants of the vast pastures found in the area. They had indicated that in the present time the deposicional trend of the palynomorphs in the Lagoa de Cima lake is conditional for the influxes of the rivers Imbé and Urubu causing a space differentiation in the sedimentation in agreement of the size of the palynomorphs, the proximity of the sedimentation place in relation to the outlet of the rivers and the bathymetry of the stream bed of the lake. Already in the Lagoa do Campelo lake the 4 samples of surface sediment, also removed in the northeast/southwest direction, had disclosed a differentiated standard of deposition of the palynomorphs in relation to the Lagoa de Cima lake. The palynological analysis disclosed to high deposition of pollen of hidrophytes and marsh plants. The arboreal types must have its "area-source" of pollen from a s mall forest area contiguous to the northeast edge of the lake. The results had indicated that the deposicional processes of the palynomorphs deposition in this lake is very influenced by the action of the NE winds on the water, by the bathymetry of the lake and by the introduction of pollen and spores previously deposited in dry soil. 2. The spatial dynamics deposition of palynomorphs in the peripherical soil. The palynological analysis of 6 samples of soil surface was carried through of distinct vegetation formations. The analysis of these samples had as objective to evaluate the space variation in the pollen and spores of Pteridophyta and Bryophyta sedimentation and the state of preservation of these palynomorphs in the soil from these region. However, all the soil samples had shown that the current ambient conditions are not appropriate to the preservation of the palynomorphs. 3. The holocenic dynamics of the vegetation evaluated from the analysis of the cores sediments f rom the lakes. In the analyzed sediments it was verified that the composition and the accumulation of the assemblies of palynomorphs in the lakes had presented variations since the late Holocene, as it follows: In the Lagoa de Cima the palynological analysis of the core RJ93/1 demonstrated that before 7.000 years A.P. (age 14C) the level of the sea still in a position below of the current level according to a sand sequencie in the inferior part of the core. The sand-mud interval that has covered the previous sand sequencie testifies a transistion phase enters a continental sedimentation (possibly fluvial) and a lacustrine sedimentation indicated by the mud sequencie, that has covered the sand-mud interval. The paleogeographic reconstructions effected in the coastal plain of the river Paraiba do Sul had shown that the holocenic sedimentation of this plain initiated for the formation of a system barrier-islands/lagoon. The sediments carried for the river Paraíba do Sul had sta rted to deposit themselves in this lagoon what it gave beginning to the construction of a intralagunar delta. With the gradual rise of the level of the sea, the sediments of the intralagunar-delta had deposited it an altitude each bigger time, what the polllen deposition of hydrophytes in the place of the perforation propitiated the increasing of the dam in the Imbé river valley. The higrophylous forests installed since the beginning near to the lake had coexisted around 6.500 years A.P. with vast herbaceous areas. In the occasion of the maximum level of the sea during the holocene (+ 5,100 years A.P.) the flooded areas if had spread in the low valley of the river Imbé with great development of the higrophylous forests. Around 4.000 years B.P. the descending of the sea level again caused the fall in the values of the palynomorphs accumulation in the place indicating that the preferential deposition was tide of the limits of the lagoon. In this phase the herbaceous vegetation developed again coexisting with the arboreal higrophylous plants. The second lagoon phase initiated around 4.000 years B.P. propitiated the great development of the higrophylous forests. The sedimentation tax in the place of the core after 3,000 years B.P. was very low probably for the removal of the fine sediments because the increase of the flow from the river Ururaí in direction to the Lagoa Feia lake.

Macambira,E.M.B. 2003. The depositional environment of Carajás formation and a proposal of evolutive model for the Grão Pará basin. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 878811

DataBase Ref.: 378 **2003** *Date of presentation:* 20/8/2003

Edésio Maria Buenano Macambira *Advisor(s):* Schrank,A.

Committee:

Subject of thesis: Metallogenesis

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

The large Carajás iron ores belongs to the Carajás formation, which is a 100-400m thick banded and laminated iron formation (jaspilite), located at Pará state in North Brazil. This almost continuous formation outcrops for at least 260km, in 60 ore deposits, distributed in three main ridges, São Felix, Leste and Carajás. The last one is a sinformal structure sub-divided in South and North ridges. This work was carried out on detailed mapping, stratigraphic raising and petrographic, geochemical, isotopic and geochronological sampling of the North ridge, where the mining activity is currently running and bench and drill-core are available. Levels (4 □m to 3 cm) composed by chert or jasper alternated with magnetite-maghemite-hematite was deposed between 2,754 and 2,744 Ma (22m/Ma) at depths of 100-200m, locally affected by bottom currents. This hydroplastic chemical sediments precipitated by supersaturation (Si) and oxidation (Fe) from upwelling waters where the base was richer in hydrothermal source waters (□REE=6,66; Eu*=3,54; (La/Yb)N=1,52) than the top (□REE= 3,89; Eu*=3,18; (La/Yb)N=0,66). Besides, the major elements content have more variability at base than top. The Carajás jaspilite have twice Ga (21ppm), Bi (6ppm), Pb (18ppm) and seven times Sb (7ppm) than the world average for similar rocks. The Fe oxidation may have be promoted by organic activity, attested by delicate double wall spherulites and kerogen preservation in siltstones of a light younger unit. Local hydrothermal carbonatization has affected the jaspilite producing □13C mean of –4.3‰PDB and two groups of □18O (+24,9 to +15,4 and +12,8 to +6,6‰SMOW). Otherwise, metamorphic imprints on this rocks are minimal. Regional work, bibliographic compilation and correlations of the Carajás formation with overlying units of Bahia and Azul mines leaves to propose a evolutionary model for the Grão Pará Basin, initiated as a intracontinental rifting stage, marked by crustal contaminated tholeiitic basalt volcanism (2.76 Ga - U-Pb zircon ages). The second stage was the deposition of the Carajás formation over a wide, quiet marine continental shelf, influenced by upwelling of Fe-Si rich waters. In a third stage, the last was recovered by volcanics associated with clastic sedimentation (2.74 Ga - Pb-Pb zircon ages). The fourth stage comprises the installation of another continental shelf environment, where clastics and carbonate rocks has deposed (2.68 Ga - U-Pb zircon ages). Basin inversion and fluvial deposition closes the evolution.

Machado,A.F. 2003. 3D geoelectric modelling of the Central portion of the Paraná basin. PhD Thesis - Observatório Nacional, pp

Observatório Nacional - Conselho Nacional de Desenvolvimento Científico e Te *Reference:*

DataBase Ref.: 2498 **2003** *Date of presentation:* 1/10/2003

Alan Freitas Machado *Advisor(s):* Travassos,J.M.

Committee: Marcelo Sousa de Assumpção -
Jorge Leonardo Martins -
Luiz Rijo -
Marco Polo Pereira da Boa Hora -

Subject of thesis: Geophysics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Massucatto,A.J. 2003. Structural characterization of the basement of Araí grou rocks in the external zone of Brasilia belt. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.163

Instituto de Geociências e Ciências Exatas - UNESP *Reference:*

DataBase Ref.: 1488 **2003** *Date of presentation:*

Armando José Massucatto *Advisor(s):* Simões,L.S.A.

Committee:

Subject of thesis: Regional Geology

State: GO *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Mendonça,K.R.N. 2003. Stratigraphy of sequences in the Areado formation in the southern part of the Sanfranciscana basin, State of Minas Gerais. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d075

DataBase Ref.: 2451 **2003** *Date of presentation:* 5/9/2003

Kátia Regina Nogueira Mendonça *Advisor(s):* Castro,J.C.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Monteiro,R.C. 2003. Space-time estimation of the potenciometric surface of the Guarani aquifer system in the Ribeirão Preto town (SP state), Brazil. PhDThesis, Institute of Earth and Exact Sciences, State University of São Paulo, Rio Claro, 187 pp..

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* D-GMA136

DataBase Ref.: 1797 **2003** *Date of presentation:*

Rubens Caldeira Monteiro *Advisor(s):* Landim,P.M.B.

Committee:

Subject of thesis: Geosciences and Environment

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Nascimento,C.T.C. 2003. Electric resistivity and natural gamma radiation in soil research under native savannah. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Geophysics, resistivity, gamma-ray spectrometry, cluster analysis, soil, Distrito Federal

Instituto de Geociências - Universidade de Brasília *Reference:* D059

DataBase Ref.: 59 **2003** *Date of presentation:* 21/3/2003

Carlos Tadeu Carvalho do Nascimento *Advisor(s):* Pires,A.C.B.

Committee:
Edi Mendes Guimarães - IG/UnB
Maria Leonor Ribeiro Casimiro - IG/UnB
Francisco José Fonseca Ferreira - CG/UFPA
Silvio Crestana - IGc/USP

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The purpose of this work is to present procedures for survey and mapping of soils, based on DC electrical resistivity and gamma-ray spectrometry. The study area has 5 km2 and is located at Jardim Botânico de Brasília, an environmental conservation area. The results show that clay rich soils are less resistive than sandy soils, independently of moisture condition, and that apparent resistivity variation is larger in sandy soils than in clay rich soils. This fact shows that it is possible to use electrical resistivity measurements like a procedure for to separate clay rich and sandy soils. It was also observed that, for the soils studied, the clay rich are more radioactive than sandy, although in the sandy ones , the radioactivity of potassium is the greater. The higher levels of radioactivity can be related with adsorption of radioactive isotopes by clay minerals, and where the radioactivity from potassium is the larger, additional sources of this element can exist, and probably are potassium clay minerals. The statistical analysis shows that resistivity measurements are better than radiometric ones for to distinguish among the studied soils. Resistivity and radiometric maps were constructed and showed a good correlation with the pedological map of study area. A statistical procedure, the cluster analysis, allowed to combine the geophysical data, producing maps of statistical groups, that also have a good correlation with the units of surveyed soils. Vertical electrical soundings permitted to identify the underground variation of resistivity. The sandy soils have 22200 Ohm.m, and a conductive-resistive-conductive structure, where the upper layer has 1.3 meters of thickness. The clay rich soils have 14200 Ohm.m and a resistive-conductive-resistive structure, where the upper layer has 4 meters of thickness.

Nascimento,M.A.L. 2003. Geology, geochronology, geochemistry e petrogenese of the cretaceous igneous rocks from Cabo Magmatic Province and its relations with the sedimentary units of the Pernambuco Basin (NE Brazil). PhD Thesis n. 4, Post-Graduation in Geodynamics and Geophysics, Universidade Federal do Rio Grande do Norte, 233p.

Cabo Magmatic Province, Pernambuco Basin, Igneous Rocks

Departamento de Geologia - Universidade Federal do Rio Grande do Norte *Reference:* Dout. 004

DataBase Ref.: 1537 **2003** *Date of presentation:* 22/12/2003

Marcos Antonio Leite do Nascimento *Advisor(s):* Souza,Z.S.

Committee:
Renato Marcos Darros de Matos - DG/UFRN
Emanuel Ferraz Jardim de Sá - DG/UFRN
Leila Soares Marques - IAG/USP
Mário Ferreira de Lima Filho - DG/UFPE

Subject of thesis: Geodynamics

State: PE *1/1,000,000 sheet:* SC25 *Centroid of the area:* 08 30 's - 35 00 'W

Abstract

The area studied forms a thin NNE-directed belt situated south of Recife town (Pernambuco state), northeastern Brazil. Geologically, it comprises the Pernambuco Basin (PB), which is limited by the Pernambuco Lineament to the north, the Maragogi high to the south and the Pernambuco - Alagoas massif to the west, all of them with Precambrian age. This thesis reports the results obtained for the Cabo Magmatic Province (CMP), aiming the characterization of the geology, stratigraphy, geochronology, geochemistry and petrogenesis of the Cretaceous igneous rocks presented in the PB.
The PB is composed of the Cabo Formation (rift phase) at the base (polymictic conglomerates, sandstones, shales), an intermediate unit, the Estiva Formation (marbles and argillites), and, at the top, the Algodoais Formation (monomictic conglomerates, sandstones, shales). The CMP is represented by trachytes, rhyolites, pyroclastics (ignimbrites), basalts / trachy-andesites, monzonites and alkali-feldspar granite, which occur as dykes, flows, sills, laccoliths and plugs. Field observations and well descriptions show that the majority of the magmatic rocks have intrusive contacts with the Cabo Formation, although some occurrences are also suggestive of synchronism between volcanism and siliciclastic sedimentation. 40Ar/39Ar and zircon fission tracks for the magmatic rocks indicate an average age of 102 ± 1 Ma for the CMP. This age represents an expressive event in the province and is detected in all igneous dated materials. It is considered as a minimum age (Albian) for the magm atic episode and the peak of the rift phase in the PB. The 40Ar/39Ar dates are about 10-14 Ma younger than published palynologic ages for this basin. Geochemically, the CMP may be divided in two major groups; i) a transitional to alkaline suite, constituted by basalts to trachy-andesites (types with fine-grained textures and phenocrysts of sanidine and plagioclase), trachytes (porphyrytic texture, with phenocrysts of sanidine and plagioclase) and monzonites; ii) a alkaline suite, highly fractionated, acidic volcano-plutonic association, formed by four subtypes (pyroclastic flows - ignimbrites, fine- to medium-grained rhyolites, a high level granite, and later rhyolites). These four types are distinguished essentially by field aspects and petrographic and textural features. Compatible versus incompatible trace element concentrations and geochemical modeling based on both major and trace elements suggest the evolution through low pressure fractional crystallization for trachytes and other acidic rocks, whereas basalts / trachy-

andesites and monzonites evolved by partial melting from a mantle source. Sr and Nd isotopes reveal two distinct sources for the rocks of the CMP. Concerning the acidic ones, the high initial Sr ratios (ISr = 0.7064-1.2295) and the negative eNd (-0.43 to -3.67) indicate a crustal source with mesoproterozoic model ages (TDM from 0.92 to 1.04 Ga). On the other hand, the basic to intermediate rocks have low ISr (0.7031-0.7042) and positive eNd (+1.28 to +1.98), which requires the depleted mantle as the most probable source; their model ages are in the range 0.61-0.66 Ga. However, the light rare earth enrichment of these rocks and partial melting modeling point to an incompatible-enriched lherzolitic mantle with very low quantity of garnet (1-3%). This apparent difference between geochemical and Nd isotopes may be resolved by assuming that the metasomatizing agent did not obliterate the original isotopic characteristics of the magmas. A 2 to 5% partial melting of this mantle at approximately 14 kbar and 1269oC account very well the basalts and trachy-a ndesites studied. By using these pressure and temperatures estimates for the generation of the basaltic to trachy-andesitic magma, it is determined a lithospheric stretching (b) of 2.5. This b value is an appropriated estimate for the sub-crustal stretching (astenospheric or the base of the lithosphere?) region under the Pernambuco Basin, the crustal stretching probably being lower.
The integration of all data obtained in this thesis permits to interpret the magmatic evolution of the PB as follows; 1st) the partial melting of a garnet-bearing lherzolite generates incompatible-enriched basaltic, trachy-andesitic and monzonitic magmas; 2nd) the underplating of these basaltic magmas at the base of the continental crust triggers the partial melting of this crust, and thus originating the acidic magmas; 3rd) concomitantly with the previous stage, trachytic magmas were produced by fractionation from a monzonitic to trachy-andesitic liquid; 4th) the emplacement of the several magmas in superficial (e.g. flows) or sub-superficial (e.g. dykes, sills, domes, laccoliths) depths was almost synchronically, at about 102 ± 1 Ma, and usually crosscutting the sedimentary rocks of the Cabo Formation. The presence of garnet in the lherzolitic mantle does not agree with pressures of about 14 kbar for the generation of the basaltic magma, as calculated based on chemical para meters. This can be resolved by admitting the astenospheric uplifting under the rift, which would place deep and hot material (mantle plume?) at sub-crustal depths. The generation of the magmas and their subsequent emplacement would be coupled with the crustal rifting of the PB, the border (NNE-SSW directed) and transfer (NW-SE directed) faults serving as conduits for the magma emplacement. Based on the b parameter and the integration of 40Ar/39Ar and palynologic data it is interpreted a maximum duration of 10-14 Ma for the rift phase (Cabo Formation clastic sedimentation and basic to acidic magmatism) of the PB.

Nogueira,A.C.R. 2003. The Araras carbonatic platform in southwestern of the Amazonian Craton, Mato Grosso state: Stratigraphy, paleoenvironmental context and correlation with the glacial events of the Neoproterozoic. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2307 **2003** *Date of presentation:*

Afonso César Rodrigues Nogueira *Advisor(s):* Riccomini,C.

Committee:

Subject of thesis: Sedimentary Geology

State: MT *1/1,000,000 sheet:* SD21 *Centroid of the area:* ' - 'W

Abstract

Petersen Jr,K.J. 2003. Study of the auriferous minerailzations of the bodies IV and V of the structure IV of the Crixás greenstone belt (GO state). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1842 **2003** *Date of presentation:* 21/11/2003

Klaus Juergen Petersen Júnior *Advisor(s):* Juliani,C.

Committee:

Subject of thesis: Mineralogy and Petrology

State: GO *1/1,000,000 sheet:* SD22 *Centroid of the area:* ' - 'W

Abstract

Ribeiro,L.F.B. 2003. Morfotectonics of the center-eastern region of the São Paulo state and adjoining areas of the Minas Gerais state: Thermochronology and palaeotensions. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d080

DataBase Ref.: 2456 **2003** *Date of presentation:* 12/12/2003

Luiz Felipe Brandini Ribeiro *Advisor(s):* Hackspacker,P.C.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

MG

Abstract

Santos,M.V. 2003. Methodology for environmental zoneography. Case study: APA Gama Cabeça-de-Veado. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

zoning; integrity; sustentabilidade; environmental protection area gama cabeça-de-veado

Instituto de Geociências - Universidade de Brasília *Reference:* D062

DataBase Ref.: 713 **2003** *Date of presentation:* 9/7/2003

Mônica Veríssimo dos Santos *Advisor(s):* Meneses,P.R.

Committee: José Eloi Guimarães Campos - IG/UnB
Edson Eyji Sano - EMBRAPA
Geraldo Resende Boaventura - IG/UnB
Manoel Claudio da Silva Junior - UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work presents a new methodology of Environmental Zoning having the methodologies and implementation ways from the ' ZEE Brasil' Governmental Program (Ministry of Environment/Sustainable Development Secretary) as its building stones. The paradigm of SUSTAINABLE DEVELOPMENT and the concepts of SYSTEMIC TREATMENT (RELATIONSHIPS NET) and ECOLOGICAL and CULTURAL INTEGRITY are the building elements.
The proposed methodology is applied inside the APA (ENVIRONMENTAL PROTECTION AREA) GAMA CABEÇA-DE-VEADO, as this unity has the territorial configurations (urban, rural and protected areas) that have to be treated in a Environmental Zoning.
The first phase corresponds to the social-environmental conflicts inside the APA, which contribute to: the definition of problems and elaboration of the BASIC INDICATORS of Zoning; the interviews; and inside the case study in the Park Way region. After that, there is the CARACTERIZATION OF THE ENVIRONMENTAL AND TERRITORIAL UNITS, corresponding to the collection and production of information relative to the NATURAL AND HUMAN ENVIRONMENT of the ENVIRONMENTAL AND TERRITORIAL UNITS. This material is elaborated taking into account the SOCIAL-ENVIRONMENTAL REQUESTS. For the HUMAN ENVIRONMENT, the reference questions are: political, legal, social, economical and cultural. For the NATURAL ENVIRONMENT, the questions are: physical-terrestrial; physical-aquatic; biotical-terrestrial; biotical-aquatic. After that, the BASIC INDICATORS compose the SYSTEMIC INDICATORS OF THE ENVIRONMENTAL AND TERRITORIAL UNITS.
Four different basic cells of information are defined: two ENVIRONMENTAL UNITS (watersheds and topographical-pedological units) and two TERRITORIAL UNITS (conservation units/protection areas and administrative regions). For each of these units SYSTEMIC INDICATORS were elaborated, which are defined from three conditioning elements: the reference stones; the basic cells of information; and inside the PRESSURE-STATE-ANSWER (PSA) structure. The indicators were applied to the ENVIRONMENTAL AND TERRITORIAL UNITS. All these units have the same evolving structure for the creation of the macro-indicators (SUSTAINABLE CITY, SUSTAINABLE AGRICULTURE and NATURAL SYSTEMS MAINTENANCE). Although, as each UNIT has characteristics and singular phenomena, the INDICATORS were created, in their majority, to represent that emergent property. The limitations of the PSA structure were compensated by the statistical processing. In this case, the analytical model of the methodology uses the Geographic Information System (GIS) and Statistical Analyses to adjust the information coming from different natures, in different scales, in an appropriate way to allow the analyses to generate spatial patterns which reflect the risk levels to the sustainability of the natural and human systems.
As final product, recommendations to the APA Gama Cabeça-de-Veado are made, indicating correction in the direction followed by the federal-district and federal governments, for the establishment of integrated public policies.

Silva,C.H. 2003. Geologic evolution of the Brasília belt in Tapira region, Southwestern of Minas Gerais state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d076

DataBase Ref.: 2452 **2003** *Date of presentation:* 14/10/2003

Carlos Humberto da Silva *Advisor(s):* Simões,L.S.A.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,F.P. 2003. Subsurface geology and hydrostratigraphy of the Bauru group in São Paulo state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d077

DataBase Ref.: 2453 **2003** *Date of presentation:* 5/11/2003

Flavio de Paula e Silva *Advisor(s):* Chang,H.K.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,N.C. 2003. Semi-automatic classification of remote sensing images by genetic synthesis of artificial neural nets. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D061

DataBase Ref.: 1416 **2003** *Date of presentation:* 20/6/2003

Nilton Correa da Silva *Advisor(s):* Santa Rosa,A.N.C.

Committee: Augusto Cesar Bittencourt Pires - IG/UnB
Paulo Roberto Meneses - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This work presents a clustering method of Remote Sensing Images with a high degree of independence of extern factors related to method and data. The main objective of this method is to obtain clusters sets according to the spectral characteristics of multi-dimensional data by using non supervised neural classifiers.
The free parameters of neural classifiers are submitted to an environment of genetic operators, which has as goal, the instantiation of values able to yield optimized clusters sets according to spectral characteristics found in the image to be clustered. The genetic population individuals are formed by training parameters of one of the following Artificial Neural Network paradigms: Self-Organizing Maps, ART2 – non supervised models based on the Adaptive Ressonance Theory or Fuzzy-ART – non supervised models based on Adaptive Ressonance Theory and Fuzzy Logic. Considering the Self-Organizing Maps, the optimized parameters are the Initial Learning Rate, Decreasing of the Neighborhood Function, Decreasing of the Learning Rate, Geometry of the Map (quantity of lines and columns) and the Training Sequence (order of data presentation).
The optimized parameters of the ART2 and Fuzzy-ART models are the Vigilance Parameter and Training Sequence. The population has their individuals valued by different Object Functions (selection of interim population) and Evaluation Functions (choice of individuals to a new generation) according to the type of Neural Network, which are being optimized.
All the algorithms concerned to the method and to the manipulation of graphic files (multi-dimensional images) are in the software GSANN (Genetic Synthesis of Artificial Neural Networks). This software was used to obtain all the clustering works of Remote Sensing images noticed (JERS-I, RADARSAT, LANDSAT-TM5 and RADAR, P band).

Silva,P.Q. 2003. Automatic recognition of targets in multispectral and hyperspectral images based in model, in Eigenspaces and in the "KLT - Karhunen-Loéve Transform". PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Automated target recognition, classification, KLT, multispectral and hyperspectral images, thresholds

Instituto de Geociências - Universidade de Brasília *Reference:* D065

DataBase Ref.: 1418 **2003** *Date of presentation:* 7/11/2003

Paulo Quintiliano da Silva *Advisor(s):* Santa Rosa,A.N.C.

Committee: Paulo Roberto Meneses - IG/UnB
Roberto Alexandre Vitória de - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

In this Doctorate Thesis an automated target recognition approach was proposed using multispectral or hyperspectral images, based on model, on eigenspaces and on KLT- Karhunen-Loève Transform. For this, the ATR - Automated Target Recognition concepts are adapted to the Earth Sciences reality and to the characteristics of its targets, in the way of making possible the recognition of these targets in multispectral or hyperspectral images. The proposed approach uses KLT for the dimensionality reduction of the data.
In order to process the multispectral or hyperspectral images, the pixels are treated as if they were column-vectors, with so many lines as many spectral bands of the worked images have. In this way, these multispectral or hyperspectral images are stored in big vectors, and all of their pixels are represented in the form of two-dimensional images, in the way it is possible to use KLT.
The targets are represented by models in the eigenvalues and eigenvectors domain (i.e., eigenspace), obtained after the application of the KLT. These models are vectors built from eigenvectors with the biggest eigenvalues, with quantity of elements determined by the threshold applied in the eigenvalues cutting. In this way, both the standards used to the model training for each one of the classes, and the standards of the new targets submitted for recognition have their models, constituted by a vector with

the descriptives obtained in eigenspace, working in the eigenvectors domain.
In the training time, using the supervised modality, based on the samples collected from all the worked classes are calculated and built the models of all the classes, already in the eigenvalues domain. In the recognition time, the new targets models are calculated and built. So, these models are compared with the classes models, by means of the Euclidean and Mahalanobis distances. Thus, these distances are calculated between the model of the submitted target for recognition and the models of all the worked classes. If the distance between the new target and the class "i" is the smaller, and if such distance is inside the threshold applied, then there was the recognition of the new target as belonging to class "i".
In order to demonstrate the proposed model operation, It was developed some target detection and image classification applications. Based on the obtained results, these applications drawn some maps with the classifications done and with the detection of the worked targets.
In the calculation of the thresholds, It was proposed the utilization of a Factor Q, which enables the opening or the closing of the thresholds, in the way of adjusting and controlling the indices of false-positive and of false-negative of the obtained results, allowing the adaptation of the approach to the specific needs of any applications.

Silva,S.G. 2003. Fissural aquifers in Semi-arid climate (Case of RN state, NE of Brazil): An analysis of the salinization processes in regional and local scale. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d073

DataBase Ref.: 2449 **2003** *Date of presentation:* 1/8/2003

Sayonara Guimarães da Silva *Advisor(s):* Legrand,J.M.

Committee:

Subject of thesis: Regional Geology

State: RN *1/1,000,000 sheet:* SB25 *Centroid of the area:* ' - 'W

Abstract

Siqueira,A.J.B. 2003. Evaluation of aeroported and orbital radar imagers in the lithostructural mapping in the Carajás mineral province, area of the Águas Claras prospect. PhD Thesis, National Institute of Spatial Research, INPE, pg.

Instituto de Pesquisas Espaciais *Reference:*

DataBase Ref.: 2438 **2003** *Date of presentation:* 1/4/2003

Auberto José Barros Siqueira *Advisor(s):* Paradella,W.R.

Committee:

Subject of thesis:

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

Sousa,D.C. 2003. Lithostratigraphy and Cenozoic deformation in Icapuí region, Ceará state, and implications on petroleum fields structuration in the occidental border of Potiguar basin (NE of Brazil). PhD Thesis n. 3, Post-Graduation in Geodynamics and Geophysics, Universidade Federal do Rio Grande do Norte, p.

Departamento de Geologia - Universidade Federal do Rio Grande do Norte *Reference:* 003/PPGG

DataBase Ref.: 1875 **2003** *Date of presentation:* 14/2/2003

Debora do Carmo Sousa *Advisor(s):* Jardim de Sá,E.F. Medeiros,W.E.

Committee:

Subject of thesis: Sedimentary Geology

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* ' - 'W

Abstract

This thesis deals with the sedimentological/stratigraphic and structural evolution of the sedimentary rocks that occur in the NW continental border of the Potiguar Basin. These rocks are well exposed along coastal cliffs between the localities of Lagoa do Mato and Icapuí, Ceará State (NE Brazil).
The sedimentological/stratigraphic study involved, at the outcrop scale, detailed facies descriptions, profile mapping of the vertical succession of different beds, and columnar sections displaying inferred lateral relationships. The approach was complemented by granulometric and petrographic analyses, including the characterization of heavy mineral assemblages.
The data set allowed to recognize two kinds of lithological units, a carbonate one of very restricted occurrence at the base of the cliffs, and three younger, distinct siliciclastic units, that predominate along the cliffs, in vertical and lateral extent. The carbonate rocks were correlated to the late Cretaceous Jandaíra Formation, which is covered by the siliciclastic Barreiras Formation.
The Barreiras Formation occurs in two distinct structural settings, the usual one with non-deformed, subhorizontal strata, or as

tilted beds, affected by strong deformation. Two lithofacies were recognized, vertically arranged or in fault contacts. The lower facies is characterized by silty-argillaceous sandstones with low-angle cross bedding; the upper facies comprises medium to coarse grained sandstones, with conglomeratic layers. The Tibau Formation (medium to coarse-grained sandstones with argillite intercalations) occurs at the NW side of the studied area, laterally interlayered with the Barreiras Formation. Eolic sediments correlated to the Potengi Formation overly the former units, either displaying an angular unconformity, or simply an erosional contact (stratigraphic unconformity).
Outstanding structural features, identified in the Barreiras Formation, led to characterize a neocenozoic stress field, which generated faults and folds and/or reactivated older structures in the subjacent late cretaceous (to paleogene, in the offshore basin) section.
The structures recognized in the Barreiras Formation comprise two distinct assemblages, namely a main extensional deformation between the localities of Ponta Grossa and Redonda, and a contractional style (succeeded by oblique extensional structures) at Vila Nova. In the first case, the structural assemblage is dominated by N-S (N□20□Az) steep to gently-dipping extensional faults, displaying a domino-style or listric geometry with associated roll-over structures. This deformation pattern is explained by an E-W/WNW extension, contemporaneous with deposition of the upper facies of the Barreiras Formation, during the time interval Miocene to Pleistocene. Strong rotation of blocks and faults generated low-angle distensional faults and, locally, subvertical bedding, allowing to estimate very high strain states, with extension estimates varying between 40% up to 200%. Numerous detachment zones, parallel to bedding, help to acommodate this intense deformation. The detachment surfaces and a large number of faults display mesoscopic features analoguous to the ones of ductile shear zones, with development of S-C fabrics, shear bands, sigmoidal clasts and others, pointing to a hydroplastic deformation regime in these cases.
Local occurrences of the Jandaíra limestone are controled by extensional faults that exhume the pre-Barreiras section, including an earlier event with N-S extension. Finally, WNW-trending extensional shear zones and faults are compatible with the Holocene stress field along the present continental margin.
In the Vila Nova region, close to Icapuí, gentle normal folds with fold hinges shallowly pluging to SSW affect the lower facies of the Barreiras Formation, displaying an incipient dissolution cleavage associated with an extension lineation at high rake (a S>L fabric). Deposition of the upper facies siliciclastics is controlled by pull-apart graben structures, bordered by N-NE-trending sinistral-normal shear zones and faults, characterizing an structural inversion.
Microstructures are compatible with tectonic deformation of the sedimentary pile, burried at shallow depths. The observed features point to high pore fluid pressures during deformation of the sediments, producing hydroplastic structures through mechanisms of granular flow. Such structures are overprinted by microfractures and microfaults (an essentially brittle regime), tracking the change to microfracturing and frictional shear mechanisms accompanying progressive dewatering and sediment lithification.
□Correlation of the structures observed at the surface with those present at depth was tested through geophysical data (Ground Penetrating Radar, seismics and a magnetic map). E-W and NE-trending lineaments are observed in the magnetic map. The seismic sections display several examples of positive flower structures which affect the base of the cretaceous sediments; at higher stratigraphic levels, normal components/slips are compatible with the negative structural inversion characterized at the surface. Such correlations assisted in proposing a structural model compatible with the regional tectonic framework. The strong neogene-pleistocene deformation is necessarily propagated in the subsurface, affecting the late cretaceous section (Açu and Jandaíra formations), wich host the hydrocarbon reservoirs in this portion of the Potiguar Basin.
The proposed structural model is related to the dextral transcurrent/transform deformation along the Equatorial Margin, associated with transpressive terminations of E-W fault zones, or at their intersections with NE-trending lineaments, such as the Ponta Grossa-Fazenda Belém one (the LPGFB, itself controlled by a Brasiliano-age strike-slip shear zone). In a first step (and possibly during the late Cretaceous to Paleogene), this lineament was activated under a sinistral transpressional regime (antithetic to the main dextral deformation in the E-W zones), giving way to the folds in the lower facies of the Barreiras Formation, as well as the positive flower structures mapped through the seismic sections, at depth. This stage was succeeded (or was penecontemporaneous) by the extensional structures related to a (also sinistral) transtensional movement stage, associated to volcanism (Macau, Messejana) and thermal doming processes during the Neogene-Pleistocene time interval.
□This structural model has direct implications to hydrocarbon exploration and exploitation activities at this sector of the Potiguar Basin and its offshore continuation. The structure of the reservoirs at depth (Açu Formation sandstones of the post-rift section) may be controlled (or at least, strongly influenced) by the deformation geometry and kinematics characterized at the surface. In addition, the deformation event recognized in the Barreiras Formation has an age close to the one postulated for the oil maturation and migration in the basin, between the Oligocene to the Miocene. In this way, the described structural cenario represents a valid model to understand the conditions of hydrocarbon transport and acummulation through space openings, trap formation and destruction. This model is potentially applicable to the NW region of the Potiguar Basin and other sectors with a similar structural setting, along the brazilian Equatorial Atlantic Margin.

Souza,M.H.O. 2003. Separation of limestone and pyrobituminous shale of the Irati formation in view of the use for corective and addictive in the ceramic industry. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.154

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* gr-d112

DataBase Ref.: 1501 **2003** *Date of presentation:*

Marcos Henrique de Oliveira Souza *Advisor(s):* Moreno,M.M.T.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Souza,V.S. 2003. Magmatic evolution and metallogenetic model of the stanniferous volcano-plutonic system

of Bom Futuro (RO state). PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Bom Futuro tin deposit, Cassiterite, Metalogenesis

Instituto de Geociências - Universidade de Brasília *Reference:* D060

DataBase Ref.: 1415 **2003** *Date of presentation:* 16/5/2003

Valmir da Silva Souza *Advisor(s):* Botelho,N.F.

Committee: Márcia Abrahão Moura - IG/UnB
Claudinei Gouveia de Oliveira - IG/UnB
Raimundo Netuno Nobre Villas - CG/UFPA
Jorge Silva Bettencourt - IGc/USP

Subject of thesis: Prospection and Economic Geology

State: RO *1/1,000,000 sheet:* SC20 *Centroid of the area:* ' - 'W

Abstract

The Bom Futuro tin deposit, located in the central-west portion of Rondônia state, southwest of the Amazon craton, consists of a volcanic-plutonic system hosted in the Jamari Complex rocks (gneisses, amphibolites and schists) and partially overlaid by colluvium-alluvium deposits. The volcanic system is formed by a breccia pipe intruded by riolite and albite granite dikes, and subordinated small-scale pegmatitic bodies. In this system the cassiterite occurs associated with veins of quartz, topaz and zinnwaldita in a ring-like arrangement around of the volcanic structure. The plutonic system is formed by a biotita granite stock intruded by a albita granite plug that gave rise to greisens zones with cassiterite and wolframite (ferberite), associates with quartz, topaz, fluorite, micas (siderofilite-zinnwaldite), pyrite, chalcopyrite, sphalerite, galena, monazite and hematite. The U, Th and Pb concentrations in monazite from the greisens obtained by electron probe analysis revealed the value of 997±48 Ma, admitted as the age of the hydrothermal activity responsible by generation of the greisens, during the late stages of the albita granite crystallization.
The rocks of the volcanic and plutonic systems are peraluminous, with an A-type granites chemical signature and emplaced in a within-plate environment. These rocks show concave REE patterns with negative Eu anomaly and weak fractionation of the LREE to HREE.
Fluid inclusions in veins (quartz and topaz) and greisens minerals (quartz, topaz, cassiterite and fluorite) are indicative of H2O-NaCl and H2O-NaCl-CO2-CH4-(N2) types systems Cassiterite is mainly associated with H2O-NaCl-CO2-CH4-(N2) fluid system, showing fluid inclusons of low salinity and density with homogeneization temperature between 320o and 420oC. Coeval saturated and insaturated fluids indicate the mixing between magmatic and meteoric fluids. These fluids were captured to a depth of 1km, corresponding to a maximum lithospheric pressure around 0.5kbar and minimum hydrostatic pressure reaching 0.2kbar, compatible with an subvulcanic environment.
The 18O and 34S isotopic compositions of veins (quartz and cassiterite) and greisens minerals (quartz, cassiterite, wolframite, sphalerite and galena) suggest na initial magmatic- derived source for the hydrothermal fluids and an isotopic fractionation during their ascent. However a part of the isotopic desequilibrium is attributed to the interation with meteoric fluids. The valculated isotopic temperatures are following: i) vein, δ18Ocassiterite-quartz = 433o to 483oC; and ii) greisens, δ18Ocassiterite-quartz = 462oC, δ18Owolframite-quartz = 419o to 433oC, δ34Ssphalerite-galena = 319o to 383oC.
The geological evolution of the Bom Futuro volcanic-plutonic system is attributed to the combination of four progressive stages: 1) granitic intrusion, in shallow crustal level, with emplacement of acid residual magma (albita granite), rich in volatile (F, Cl, H2O) and incompatible elements (Sn, W, Rb, Li); 2) phreatomagmatic brecciation and greisenization of the hosted rocks; 3) collapse of the brecciated structure (pipe) with generation of ring-shaped veins; and 4) lateritization followed by subsequent erosion and sedimentation.

Sparrenberger,I. 2003. Evolution of the tin primary mineralization associated to the Santa Bárbara granitic massif, Rondônia state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, 252 pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1128 **2003** *Date of presentation:* 30/6/2003

Irena Sparrenberger *Advisor(s):* Bettencourt,J.S.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: RO *1/1,000,000 sheet:* SC20 *Centroid of the area:* ' - 'W

Abstract

Tallarico,F.H.B. 2003. The copper-gold belt of Carajás, Brazil. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 990115

DataBase Ref.: 377 **2003** *Date of presentation:* 29/8/2003

Fernando Henrique Bucco Tallarico *Advisor(s):* Figueiredo,B.R.

Committee:

Subject of thesis: Metallogenesis

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

This research addresses the geology, ore assemblages and SHRIMP U-Pb geochronology of the Igarapé Bahia, Breves and Cento e Dezoito copper-gold deposits, and the geology and metallogenesis of the Serra Pelada Au-Pd-Pt deposit. The data indicate that two temporally distinct metallogenetic events occurred in the Carajás Copper-Gold Belt, one Neoarchean (~2.57 Ga) represented by the Igarapé Bahia Fe-oxide Cu-Au-(U-REE) deposit, and other Paleoproterozoic (~1.88 Ga) represented by the Breves Cu-Au-(W-Bi-Sn) deposit. The results suggest that Cento e Dezoito is possibly a hybrid deposit resulting from the interplay of Neoachean and Paleoproterozic ore forming processes. The metallogenesis of the belt initiates in the Archean with the development of a continental rift where syngenetic iron, and possibly copper, were accumulated. This environment also favored the formation of Pt-Pd deposits associated with layered mafic-ultramafic intrusions. The early cratonization and the complex tectonic history of the Carajás Copper-Gold Belt, that includes multiple transtensional events, allowed the formation of Fe-oxide Cu-Au-(U-REE) during the Neoarchean. During the Paleoproterozoic the belt underwent other transtensional episode that favored the ascent of several A-type granites to which Cu-Au-(W-Bi-Sn) deposits are associated. The juxtaposition of these distinct metallogenetic events resulted in a complex scenario that includes a variety of ore deposits some of which exotic, as for example the Serra Pelada Au-Pd-Pt deposit, a unique case of Au-Pd-Pt deposit hosted by meta-sedimentary rocks.

Thomazella,H.R. 2003. Study of a Ball Clay deposit at Tambaú (SP), in view of the application to ceramic industry. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d079

DataBase Ref.: 2455 **2003** *Date of presentation:* 28/11/2003

Helber Roberto Thomazella *Advisor(s):* Zanardo,A.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Vidal,C.L.R. 2003. Availability and sustainable management of the Serra Grande aquifer in the municipality of Picos, Piauí. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

aquifer; availability; demand management; drawdown; mathematic model; potenciometric level; simulation; supply management; sustainable management

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2284 **2003** *Date of presentation:* 16/10/2003

Claudio Luiz Rebello Vidal *Advisor(s):* Rebouças,A.C.

Committee: Pedro Caetano Sanches Mancuso -
José Geilson Alves Demetrio -
Ricardo César Aoki Hirata -
Ivanildo Hespanhol -

Subject of thesis: Mineral Resources and Hydrogeology

State: PI *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

This work's goals were to determinate the availability of the Serra Grande aquifer and to establish the governess for its sustainable management in the municipality of Picos, located on the southeast of Piauí State. This aquifer, the region's most important groundwater system, has an unique capacity of fulfilling the population's future demand. However, the absence of basic rules for the exploitation of its resources would compromise its sustainability. The study began with the development of the conceptual model of the area and the analyses of the water resources use. During this step, after verify that the hydrological actual concepts only observe the physical limit of the system to define its availability, it was established a new principle to determinate the volume of resources that can be exploited from an aquifer, named sustainable principle, based on the economical factors involved in its exploitation. In order to determine the physical and economical availability of the Serra Grande aquifer, first, it was estimated the water deficit accumulated since the begging exploitation of the system, established its relationship with the potenciometric level and was calculated the present cost of water production. Later on, two hypothetical scenarios concerning future exploration of water resources were drawn, representing the models of supply and demand management, for a period of 15 and 50 years. Furthermore, a mathematic model was built to represent the subsurface system, which was simulated the evolution of the water level. Based on the values found, it was estimated the amount of water that should be produced from storage, the quantity of resources that have to be incorporated to the system and the future production cost. Moreover, the results showed that the aquifer will need to incorporate a meaningful quantity of resources, that may be not available in the studied region, and that the real increase of the cost of the water would compromise the payment capacity of the population to dispose those resources. After verify this situation, it was defined the actions that must be taken for the sustainable management of the studied aquifer, to guarantee the future water supply of the municipality and the region. In conclusion, this work confirmed that the Serra Grande

aquifer is not “overexploited” in Picos, instead, it is not being correctly exploited, which will negatively affect the future exploitation of its resources.

Araújo Filho,J.C. 2004. Cemented Horizons in ultisol and spodosols from the coastal tablelands and in inceptisols and alfisols from the "sertaneja" depression of Northeast Brazil. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Duric Horizon; Duripan; Fragipan; Ortstein; Pedogenic cementation; Placic Horizon

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1611 **2004** *Date of presentation:* 6/2/2004

José Coelho de Araújo Filho *Advisor(s):* Carvalho,A.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The present study was carried out in cemented horizons in Ultisols and Spodosols from the coastal tablelands, and in Inceptisols and Alfisols from the sertaneja depression of Northeast Brazil. The emphasis was concentrated on the cemented horizons developed in smooth depressions in the coastal tablelands. The main objective was to identify the cementing agents and to characterize horizons considered to be duripan and fragipan, and to infer the pedogenic processes involved in their formation. The morphological, micromorphological, physical, chemical, and mineralogical features of the cemented horizons were described. The identification of the cementing agents was achieved with selective extractions of the amorphous phases using ammonium oxalate, Tiron and sodium pyrophosphate. Detailed studies were carried out with an electron microscope.
In the coastal tablelands region, the results indicated that the principal cementing agents are aluminum compounds, found to be amorphous hydrated aluminosilicates, and secondarily, organo-metallic complexes. The significant contents of amorphous iron compounds associated with organo-metallic complexes were found to cement thin ferruginous layers (placic horizon).
The overall geochemical mass balance indicated the accumulation of aluminum in the cemented horizons composed mainly of quartz and kaolinite. Weakly cemented horizons were classified as fragipans. The more strongly cemented horizons were separated into duric, ortstein and placic horizons, according to their principal cementing agents. The traditional use of the term duripan seems to be inappropriate in the case of horizons in which the principal cementing agents are aluminous, such as those occurring in this region. In the smooth depression domain, the main mechanisms of the formation of these horizons are moderate podzolization, clay translocation, and the development of hydromorphic conditions, although temporary.
In contrast, the main cementing agents in the sertaneja depression region are silicon compounds, always accompanied by aluminum. Strongly cemented horizons developed in Inceptisols have the characteristics of duripan. The weakly cemented horizon thicker than 10 cm within an Alfisol profile was classified as fragipan. The geochemical mass balance showed no silica accumulation in the cemented horizons. The mineralogical composition of these horizons includes kaolinite, quartz, feldspar and small amounts of 2:1 clay minerals.
The investigations indicated that the relative proportions of fine fractions and cementing agents were the main factors in determining the degree of cementation. However, it was only possible to study these proportions in more detail in the cemented horizons of the soils formed on the coastal tablelands.

Barreto Neto,A.A. 2004. Dybamic modelling of envoronmental processes. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:*

DataBase Ref.: 1622 **2004** *Date of presentation:* 8/3/2004

Aurélio Azevedo Barreto Neto *Advisor(s):* Souza Filho,C.R.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Beljavskis,P. 2004. Characterization of the mineralizations and depositional environments of sulfides, turmalines and gold in the context of the Morro da Pedra Preta formation, Serra do Itaberaba group, SP state. PhDThesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1838 **2004** *Date of presentation:* 5/3/2204

Paulo Beljavskis *Advisor(s):* Tassinari,C.C.G.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Bendelack,M.R. 2004. Geophysical charactyerization of the Iguatu quadrangle (Center-South region of the Ceará state) by integration of aerogeophysical, geological and satelite images data. PhDThesis; Institute of Astronomy, Geophysics and Atmospheric Sciences, University of São Paulo, São Paulo, pp

Instituto Astronômico e Geofísico- Universidade de São Paulo *Reference:*

DataBase Ref.: 2519 **2004** *Date of presentation:* 1/10/2004

Marcelo Russo Bendelack *Advisor(s):*

Committee:

Subject of thesis: Remote Sensing

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Campos,J.C.S. 2004. The Jeceaba - Bom Sucesso lineament as a limit of Archaean and Palaeoproterozoi terms of the Meridional São Francisco craton: Geological, Geochemical (Total rock) and Geochronological (U_Pb) evidences. PhD Thesis, DEGEO, Universidade Federal de Ouro Preto, MG pp

Departamento de Geologia - Universidade Federal de Ouro Preto *Reference:*

DataBase Ref.: 2435 **2004** *Date of presentation:* 1/6/2004

José Carlos Sales Campos *Advisor(s):* Carneiro,M.A.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Carraro,C.C. 2004. Integration of Remote Sensing and Geophysical Images in the Study of the Structural Control of the Materalization of southern Rio-grandense Shield. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 2509 **2004** *Date of presentation:* 1/1/2004

Clóvis Carlos Carraro *Advisor(s):* Lisboa,N.A.

Committee: Paulo Roberto Meneses - IG/UnB

Wilson Wildner - CPRM

Subject of thesis:

State: RS *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Carvalho,F.M.S. 2004. Coutinhoite, a new uranium silicate de urânio similar to weeksite. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1849 **2004** *Date of presentation:* 16/2/2004

Flávio Machado de Souza Carvalho *Advisor(s):* Atencio,D.

Committee:

Subject of thesis: Mineralogy and Petrology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Cherman,A.F. 2004. Geology, petrology and geochronology of paleoproterozoic ortogneisses of the meridional margin of the São Francisco craton, in the region between Itumirim and Nazareno, state of Minas Gerais. PhD Thesis, Departament of Geology, University Federal of Rio de Janeiro, Brazil, pg.

Departamento de Geologia - Universidade Federal do Rio de Janeiro *Reference:*

DataBase Ref.: 2437 **2004** *Date of presentation:* 1/7/2004

Angelica Freitas Cherman *Advisor(s):* Valença,J.G.

Committee:

Subject of thesis:

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Conceição,F.T. 2004. Geochemical behaviour of radionuclides and heavy metals in sooils of the Rio Corumbataí basin (SP state). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d083

DataBase Ref.: 2458 **2004** *Date of presentation:* 8/3/2004

Fabiano Tomazini da Conceição *Advisor(s):* Bonotto,D.M.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Dreher,A.M. 2004. The Igarapé Bahia Cu-Au primary deposit, Carajás, Brazil: Fragmentary rocks, mineralizing fluids and metallogenetic model. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 973603

DataBase Ref.: 1522 **2004** *Date of presentation:* 26/2/2004

Ana Maria Dreher *Advisor(s):* Xavier,R.P.

Committee:

Subject of thesis: Metallogenesis

State: PA *1/1,000,000 sheet:* SB22 *Centroid of the area:* ' - 'W

Abstract

Feola,J.L. 2004. Auriferous mineralizations hosted in the Jacuí-Bom Jesus da Penha metavolcano-sedimentary belt - southwestern of Minas Gerais state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d082

DataBase Ref.: 2457 **2004** *Date of presentation:* 27/2/2004

Jorge Luiz Feola *Advisor(s):* Carvalho,S.G.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The gold mineralizations hosted in Jacuí-Bom Jesus da Penha Metavolcano-Sedimentary Belt are controled in the tectonic by shear zones. The mineralization is associated to metamorphic-hydrothermal process, caused by local dynamo-thermal event. The gold occurs free, pure and with some contents of silver, and supergenic alteration produces auricupride associated to cuprite. The quartz veins are shear veins to local type D Riedel structure. The fluid-rock interation from acid and basic/ultrabasics composition litotypes is emphasized. Temperatures around 500-600ºC are admitted to stage initial of the mineralization. The second stage is associated to sulphides forming and is marked by temperatures of 350-400ºC. This stage results of more soften P-T conditions and fO2 and fS2 variations. In the last stage is widely hidrothermal, there is not gold and occurs at temperatures between 270 to 310ºC. The fluid involved in the mineralize process indicates unmixing or melting, and carried gold possibly in chlorinated complex, and their precipitation was resultant probably of fluids mixing and unmixing, besides different fluid-rocks interactions. The reported features admitted to associate the local mineralizations to Au (Ag) mesothermal deposits – dynamic metamorfogenetic model, possibly “quartz lode and lens with free microcrystaline gold” type (Bourneix type).

Fonseca,M.M. 2004. Depositional systems and stratigraphy of sequences from the Itajaí basin / SC state and detailing of the Apiúna turbiditic complex. PhD Thesis, Departament of Geology, University UNISINOS; pp

Departamento de Geologia - Universidade Vale do Rio dos Sinos *Reference:*

DataBase Ref.: 2520 **2004** *Date of presentation:* 1/7/2004

Mônica Marques da Fonseca *Advisor(s):* Paim,P.S.G.

Committee:

Subject of thesis: Geology

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Fortunato,F.F. 2004. Pedologic systems in the coastal flat hills of the Northern Litoral of the State of Bahia: An evolution controlled by preexistent hardpan, neotectonics and paleoclimatic changes of the Quaternary. PhD Thesis. Universidade Federal da Bahia, p.

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 2516 **2004** *Date of presentation:* 1/12/2004

Francisco Ferreira Fortunato *Advisor(s):* Vilas Boas,G.S.

Committee:

Subject of thesis: Pedology

State: BA *1/1,000,000 sheet:* SD24 *Centroid of the area:* ' - 'W

Abstract

Franchi,J.G. 2004. The utilization of peat as heavy metal adsorbent. The example of the contamination of Ribeira do Iguape River catchment by lead and associated minerals. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

contaminated sites;adsorbent;effluent treatment;heavy metals;peat;Ribeira do Iguape River Valley

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2285 **2004** *Date of presentation:* 19/11/2004

José Guilherme Franchi *Advisor(s):* Sigolo,J.B.

Committee: Bernadino Ribeiro de Figueiredo -
José Francisco Marciano Motta -
Sônia Maria Barros de Oliveira - IGc/USP
Ari Roisenberg - IG/UFRGS

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SG23 *Centroid of the area:* ' - 'W

Abstract

This work has as main objectives the characterization of the Eugênio de Melo peat mine, located in the Paraíba do Sul River Valley, State of São Paulo, as well as a representative sample of its ore. This sample was tested as an absorbent material in two conditions – both in natura and treated with hydrochloric acid – in order to assess its use in liquid effluent treatment process. It were adopted as case studies lab generated leaches obtained from mining residues of lead and associated metals sulfides present at the upper course of the Ribeira do Iguape River region, accumulated as huge deposits close to important drainages, near the Adrianópolis (PR) region. The possibility of the heavy metals' environmental release from those deposits was assessed through grain size distribution, mineralogical and chemical approaches. These studies were led in a vertical profile surveyed in a specified deposit. The leaches' heavy metal contents surpass the limits set by both state and federal environmental permits, so they are not allowed for discharge to the environment without prior treatment. The mining residues studied here – mining wastes and metallurgical slags – were characterized as Type I (perilous material) according to Brazilian Guidelines for Residues Classification set by Brazilian Association for Technical Standards. The peat's adsorptive capacity was assessed for 5 of the heavy metals present in the leaches by means of batch equilibrium essays conducted in single component systems. The data of these experiments fitted to Langmuir's kinetic model. The chemical affinity of the peat was stronger for lead, copper and cadmium, and weaker for zinc and manganese. Calcium and magnesium derived from metadolomites that hosts sulfide mineralization are in great amount in the leaches. They were identified as interferential constituents to the adsorptive process, which are also affected by the pH and temperature of the assays. The leaches were undergone to 5 cycles of contact with peat in order to assess if the adsorptive process fit them to the legal discharge environmental standards. In this simulation of batch effluent treatment by means of competitive adsorption, the peat revealed itself as a good adsorbent for both lead and copper. The weak adsorptive performance for cadmium, zinc and manganese ranked peat only as a qualified supplies to remediation process entailing liquid effluents, preferably after primary treatment process.

Galvão,W.S. 2004. Use of Geographic Information System (GIS) on the generation of favourability models aiming the location of fluviometrig gages and homogene geoenvironmental stations in the Rio São

Francisco basin. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

river basin, fluviometric networks, geographic information system, homogeneous geo-environment units, maps of favourability for location, spatial inference, spatial modeling.

Instituto de Geociências - Universidade de Brasília *Reference:* D070

DataBase Ref.: 1971 **2004** *Date of presentation:* 8/12/2004

Wougran Soares Galvão *Advisor(s):* Meneses,P.R.

Committee: José Eloi Guimarães Campos - IG/UnB
José Wilson Correia Rosa - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The objective of this work is to provide an alternative approach for the absence of well-defined methodologies for planning hydrometric networks in hydrographic basins. According to the World Meteorological Organization (WMO), the majority of the hydrometric networks of the countries has been planned as a function of regional or local necessities. In general, the criteria used in the planning are not clear and the planning itself or the network design are not based on technical background. In this study, the proposed methodology was based on the integrated analysis of a set of geo-referenced geo-environment variables (physiographic, hydrologic, climatologic and social-economics) and statistical techniques for spatial inference. The Geographic Information System (GIS) was used to obtain models favourability for location of fluviometric stations and for identification of homogeneous geo-environment units that provided the basis for planning and management of fluviometric networks in the São Francisco Basin. The available classification and codification systems of hydrographic basins were evaluated and the Otto Pfafstetter' system was selected as the more appropriate in the planning of hydrometric networks. Based on the literature, a set of geo-environment variables potentially important for the location of fluviometric networks in hydrographic basins was analyzed. The evidence weighting method was used to reduce data dimensionality of the forty variables selected for spatial modeling. The spatial inference techniques of evidence weighting, logistic regression and supervised neural network were applied over the geo-environment variables selected as potential predictors in the fluviometric network planning to produce maps of favourability for location of stations. When applied to the set of eight geo-environment variables (hydrography, Otto-basin perimeter, city area, geology, soils, roads, city location and the Human Development Index (HDI-M), the Radial Basis Function Neural Network approach was selected as the more appropriate technique to produce such maps. The unsupervised classification technique isodata was applied over a set of 16 geo-environment variables to produce maps of homogeneous geo-environment units in the São Francisco sub-basins. Results indicated fifteen units and two associations: 1) the geographic location of the stations in the limits of the homogeneous units; 2) fluviometric stations located in the same region showed relatively high correlation coefficients in the monthly series of water flow data, whereas those located in distinct units presented lower correlation coefficients. The models obtained in this study for the location of the fluviometric stations and delimitation of the homogeneous units were tested and validated in the Amazon River Basin with distinct geo-environment characteristics from the São Francisco River Basin. The methodology presented in this study can be visualized as a contribution for the improvement of the process of planning and management of hydrometric networks.

Ghilardi,R.P. 2004. Compared taphonomy and paleoecology of macroinvertebrates (emphasis in trilobites), of the Ponta Grossa formation (Devonian, Apucarana Sub-basin), State of Paraná. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2316 **2004** *Date of presentation:*

Renato Pirani Ghilardi *Advisor(s):* Simões,M.G.

Committee:

Subject of thesis: Sedimentary Geology

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Gioia,S.M.L.C. 2004. Characterization of the actual Pb isotopic signature in the atmosphere and in the lacustrine system of the Distrito Federal and pre-anthropogenic in the Lagoa Feia lagoon - GO state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Pb isotopes, aerosol, Paranoá Lake, Lagoa Feia, TIMS

Instituto de Geociências - Universidade de Brasília *Reference:* D068

DataBase Ref.: 1969 **2004** *Date of presentation:* 17/9/2004

Simone Maria Lima Costa Gioia *Advisor(s):* Pimentel,M.M.

Committee: Geraldo Resende Boaventura - IG/UnB
Marly Babinski - IGc/USP
Candido Augusto Veloso Moura - CG/UFPA

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: DF GO *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

Hagedorn,M.G. 2004. Contexto geotectônico da Serra do Espinhaço e domínios adjacentes a leste (Minas Gerais) com ênfase em aspectos geoquímicos e geocronológicos. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d086

DataBase Ref.: 2460 **2004** *Date of presentation:* 10/8/2004

Markus Goetz Hagedorn *Advisor(s):* Ebert,H.D.

Committee:

Subject of thesis: Regional Geology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Janikian,L. 2004. Depositional sequences and palaeoenvironmental evolution of the Bom Jardim group and of the Acampamento Velho formation, Camaquã supergroup, Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1868 **2004** *Date of presentation:* 10/11/2004

Liliane Janikian *Advisor(s):* McReath,I.

Committee:

Subject of thesis: Sedimentary Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Klein,E.L. 2004. Precambrian geologic evolution and gold metalogenetic aspects of the São Luís craton and Cinturão Gurupi belt, Northeastern of Pará and Northwestern of Maranhão, Brazil. PhD Thesis, Center of Earth Sciences, University of Pará, pg.

Centro de Geociências - Universidade Federal do Pará *Reference:*

DataBase Ref.: 2514 **2004** *Date of presentation:* 1/5/2004

Evandro Luiz Klein *Advisor(s):* Moura,C.A.V.

Committee:
André Giret -
Benjamim Bley de Brito Neves - IGc/USP
Jean Michel Lafon -
Raimundo Netuno Nobre Villas - CG/UFPA

Subject of thesis: Geochemistry

State: PA MA *1/1,000,000 sheet:* SA23 *Centroid of the area:* ' - 'W

Abstract

Krebs,A.S.J. 2004. Contribution to the knowledge of the underground hydric resources of the Araranguá river hydrografic basin - SC state. PhD Thesis - Universidade Federal de Santa Catarina, pp

Universidade Federal de Santa Catarina *Reference:*

DataBase Ref.: 2497 **2004** *Date of presentation:* 1/2/2004

Antonio Silvio Jornada Krebs *Advisor(s):* Scheibe,L.F.

Committee:

Subject of thesis: Hydrogeology

State: SC *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Laux,J.H. 2004. Evolution of the Goiás Magmatic Arc based on U-Pb And Sm-Nd Geochronological Data. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Instituto de Geociências - Universidade de Brasília *Reference:* D067

DataBase Ref.: 1968 **2004** *Date of presentation:* 11/3/2004

Jorge Henrique Laux *Advisor(s):* Pimentel,M.M.

Committee:
Reinhardt Adolfo Fuck - IG/UnB
Benjamim Bley de Brito Neves - IGc/USP
Hardy Jost - IG/UnB
Elson Paiva Oliveira - IG/UNICAMP

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The data presented here combined with those in the literature suggest that igneous activity in the Goiás Magmatic Arc took place in two different episodes: the older between ca. 0.89 and 0.78 Ga, probably in intraoceanic settings, and the younger between ca. 0.66 and 0.60 Ga, most likely in an active continental margin, at the end of the Brasiliano orogeny.
New U-Pb and Sm-Nd isotopic data of orthogneiss and granitoid rocks from the Neoproterozoic Goiás Magmatic Arc in western Goiás helped to better constrain the geological evolution of this large section of juvenile crust in the western part of the Brasília Belt. Orthogneiss of dominant tonalitic composition have U-Pb crystallization ages of 804 ± 6 Ma, 669 ± 3 Ma, 662 ± 12 Ma, 634 ± 8 Ma, 630 ± 5, and 637 ± 20 Ma, and present eNd(T) values varying within a large range, between +2.8 and -15.1. Rock units with negative eNd(T) are more frequent in the eastern part of the studied area, south of Anicuns, suggesting the presence of slivers of older continental crust in that part of the arc. Metagranites in this area have ages of 821 ± 10 Ma, 810 ± 10 Ma, 792 ± 5 Ma, 790 ± 12, 748 ± 4 Ma, 782 ± 14 Ma, and 614 ± 5 Ma, and eNd(T) values between +5.1 and -3.7.
Mafic rocks exposed in the Anicuns region, in the eastern part of the Goiás Magmatic Arc are represented dominantly by amphibolites (metavolcanic and metaplutonic). New U-Pb results demonstrate that this association is Neoproterozoic and that mafic rocks also crystallized during two main periods: (i) between ca. 890 and 815 Ma, and (ii) between ca. 630 and 600 Ma. Metagabbro and metadiorite samples JHL-14, JHL-15, JHL-23, AMB-01, and JHL-26B have U-Pb zircon ages of 886 ± 5 Ma, 862 ± 5 Ma, 815 ± 10 Ma, 856 ± 15 Ma, and 839 ± 9 Ma, respectively, and comprise the older group. The Late Neoproterozoic intrusive Anicuns-Santa Bárbara gabbro-diorite and Americano do Brasil suites are coeval. Four samples of the first (SB-01, JHL-04, JHL-22C and JHL-19) yielded U-Pb ages of 598 ± 8 Ma, 612 ± 6 Ma, 623 ± 13 Ma and 622 ± 6 Ma, respectively, whereas zircon grains from one norite sample of the Americano do Brasil Complex yielded a concordia age of 626 ± 8 Ma. All mafic rocks investigated present TDM model ages of ca. 1.0 Ga, comparable to model ages of metaigneous rocks of the Goiás Magmatic Arc. eNd(T) values are strongly positive, indicative of the depleted nature of the mantle source (MORB-like), similarly to volcanic and plutonic rocks of the arc-type volcano-sedimentary sequences exposed to the west. The lithological associations comprising the supracrustal sequences in the Anicuns area are compatible with origin in an oceanic or fore-arc setting.
The mafic samples investigated in this study correspond to tholeiitic to calc-alkaline metabasalts and display major and trace element characteristics that are compatible with an origin within an island arc setting, with LILE enrichment and HFSE depletion. In these settings, LILE enrichment is assigned to metasomatism of the mantle source due to fluids released during slab-dehydration. Amphibolite samples ANA 19A and ANA 19B, of the Bonfinópolis Sequence, associated with sedimentary rocks of the Araxá Group, to the east of the area investigated here are slightly different when compared to those of the Anicuns region, and most probably represent fragments of Neoproterozoic ocean floor.
The TDM values of the sedimentary rocks of the Anicuns-Itaberaí and Córrego da Boa Esperança sequences are very distinct from each other. The Córrego da Boa Esperança Sequence sediments, with TDM values between 0.8 and 1.2 Ga, were derived mostly from the erosion of the juvenile arc, whereas those of the Anicuns-Itaberaí Sequence indicate derivation from an older, mostly Paleoproterozoic source.
Based on the field, geochronological, isotopic and regional geophysical data, we suggest that the supracrustal sequence exposed in the Anicuns area might represent a arc/fore-arc sequence, marking the tectonic boundary between the Goiás Magmatic Arc and the westernmost exposures of the former São Francisco continental plate.

Lustosa,J.P.G. 2004. Morfologic, micromorfologic and mineralogic characterization of three topossequences in Irauçuba municipality and their relations with the desertificatin processes. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d087

DataBase Ref.: 2461 **2004** *Date of presentation:* 30/9/2004

Jacqueline Pires Gonçalves Lustosa *Advisor(s):* Sigolo,J.B.

Committee:

Subject of thesis: Regional Geology

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

This research investigates the origin and evolution of two soil systems and their influence over the supposed process of desertification in the County of Irauçuba-Ceará. This County is characterized by the occurrence of a rainfall index lower than 550 mm/year, an accentuated hydric deficit, shallow soils and a vegetation well degraded. Because it presents these characteristics the region of Irauçuba is considered as one of the main areas in process of desertification in the semi-arid region of the state of Ceará, being the anthropic action pointed out as the main cause of the process. In this thesis, we deal with the hypothesis that the formation and evolution of the pedological coverage are associated with the conjugation of other natural variables – geology, climate, geomorphology , vegetation – which represent the causes of the dry or "desertified" aspect of the area. This study was developed based on the methodology of the Structural Analysis of the Pedological Coverage, considering the fact that soils, as pedological organizations, are organized from the crystal level of the mineral constituents (microscopic scale) up to the landscape level (macroscopic scale). The projection of the pedological coverage under the topographical profile and the detailed description of these organizations indicated the ideal sites for sample collection. The results of the field analysis were complemented by micromorphological, mineralogical, granulometric and chemical of mobile (friable) and non-deformed samples carried out in laboratory. The study of the toposequencies and the laboratory analysis allowed the identification of two pedological systems: the podzolic system with ferruginous nodules and the system of lythodependent soils . The results of the study of both systems indicate that the processes of formation and evolution of the pedological coverage, along with the conjugation of the geological, climatic, geomorphological and biogeographical conditions, contribute to the origin of the xeric physionomy of the landscape. The human interference, by the use of the soil and the vegetation, contributes to emphasize the "dry" aspect of the landscape. However, evidences that the anthropism has affected the natural mechanisms that originated the current landscape of Irauçuba, were not found.

Madrucci,V. 2004. Prospection of underground water in crystalline terrains using integrated analysis of remote sensing data, geophysics and geoprocessing techniques, Lindóia region, State of SP. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2319 **2004** *Date of presentation:*

Vanessa Madrucci *Advisor(s):* Taioli,F.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Mello,L.H.C. 2004. Cladistic analysis ofs Bouchardiinae Allan, 1940 (Brachiopoda, Terebratellidae) : Systematic and paleozoogeographic implications. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2313 **2004** *Date of presentation:*

Luiz Henrique Cruz de Mello *Advisor(s):* Simões,M.G.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Meyer,K.E.B. 2004. Envirinmental changes in the Quadros and Itapeva lagoons, Coastal plain of the Rio Grande do Sul state, Based in Palynofacies analysis and Palinological data. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 2518 **2004** *Date of presentation:* 1/8/2004

Karin Elise Bohns Meyer *Advisor(s):* Coimbra,J.C.

Committee:

Subject of thesis: Palinology

State: RS *1/1,000,000 sheet:* sgh22 *Centroid of the area:* ' - 'W

Abstract

Nascimento,H.S. 2004. Geologic and palaeomagnetic study of the granitoids of the Serrinha Block (Craton of São Francisco, state of Bahia, Brazil). PhD Thesis. Universidade Federal da Bahia, 1v. 238p.

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 2499 **2004** *Date of presentation:* 1/10/2004

Hosanira Santos do Nascimento *Advisor(s):* Cruz,M.J.M.

Committee: Alain Vouchez -
Herbet Conceição -
Jean-Luc Bouchez -
Pierre Sabaté -
Ricardo Ivan Ferreira da Trindade -

Subject of thesis: Petrology

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Nogueira,J.F. 2004. Structure, geochronology and emplacement of the Quixadá, Quixeramobim and Senador Pompeu batholiths- Ceará state Centre. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d084

DataBase Ref.: 2459 **2004** *Date of presentation:* 21/5/2004

Johnson Fernandes Nogueira *Advisor(s):* Morales,N.

Committee:

Subject of thesis: Regional Geology

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Oliveira,F.R. 2004. Hydrogeology of middle Jequitinhonha, MG state, and the use of neotectonics as a tool for the fissural aquifers study in the region. PhD Thesis, Institute of Geosciences - University of São Paulo, SP, Brazil,200 p

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1619 **2004** *Date of presentation:* 23/4/2004

Fernando Roberto de Oliveira *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Paisani,J.C. 2004. Stratigraphy, palaeoenvironmental meaning and evolution of sandy slope/dissipation in the Praia Mole brach - Santa Catarina island. PhD Thesis, University Federal of Santa Catarina, Brazil, pp.

Universidade Federal de Santa Catarina *Reference:*

DataBase Ref.: 1699 **2004** *Date of presentation:* 26/4/2004

Julio Cesar Paisani *Advisor(s):* Oliveira,M.A.T.

Committee: Luiz José Tomazelli - IG/UFRGS

Subject of thesis: Coastal and Sedimentary Geology

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Rocha,M.M. 2004. Analysis of the impact of sampling methods in the reproduction of geologic texture based in different statistical distributions. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2315 **2004** *Date of presentation:*

Marcelo Monteiro da Rocha *Advisor(s):* Yamamoto,J.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Santos,A.L.F. 2004. Dynamics and distribution of the Fe and trace-metals components in the Ilha da Convivência island – mangroves of the Paraíba do Sul river estuary – RJ state. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Iron bearing, trace- metals, Mangrove Swamps

Instituto de Geociências - Universidade de Brasília *Reference:* D069

DataBase Ref.: 1970 **2004** *Date of presentation:* 29/9/2004

Antônio Lázaro Ferreira Santos *Advisor(s):* Boaventura,G.R.

Committee: José Affonso Brod - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The estuarine system is characterized by various ecosystems, which encompass great variations of environmental conditions. The mangrove is one of such estuarine ecosystems, characterized by the development of special vegetation with few species of trees. From a geochemical point of view, the dynamics of iron chemical species in coastal sea sediments has been largely discussed in the scientific literature, particulars with regard to relationships between the organic matter cycle and the immobilization of iron and other trace elements species in the sediments.

In this study, the dynamics of iron and other trace elements occurring in the sediments of the mangrove ecosystem of "Ilha da Convivência" were evaluated. The studied area is located in the mangroves of the "Ilha da Convivencia", in the estuary of the Paraíba do Sul River. The studied site covers an area of 17 km2, in the Municipal district of São João of the Barra-RJ. Three sediment cores, approximately 7.5 cm in diameter and 80 cm in depth were collected.

Fe, Al, Si, Mn, Zn, Co, Ni, Cr and Cu were determined using Atomic Emission Spectrometry with Plasma Source (ICP/AES), and analytical results were checked with Certified Standard Material (Estuarine Sediment Sample 1646a from NIST (National Institute of Standard and Technology-USA). Carbon and total sulfur were determined using LECO analyzers CR-12 and SC-132, respectively. The mineralogical characterization of the samples was made by X-ray difractometry and Mössbauer spectrometry. Futhermore, the magnetic susceptibility of samples was characterized, using a Magnetic device (TCA model).

The results of the statistical analysis showed that the most significant correlations are obtained for Cr vs Fe (r=0,60); Cr vs Zn (r=0,58); Cu vs Zn (r=0,57);Cu vs Cr (r=0,84); C/S vs Fe (r=0,61) and Fe vs Zn (r = 0,64). The mean concentrations of trace elements (Fe [2,12mg/Kg], Zn [47,88mg/Kg], Cr [35,71mg/Kg], Cu [14,08mg/Kg], were lower than those reported previously for this type of environment. These low concentrations can be related with (i) a preferential deposition process which led to an enrichment of these elements in some places, (ii) some dilution processes associated with the lack of punctual contamination and (iii) the precipitation mechanisms of sulfide minerals enhanced by the metabolic activity of sulphate-reduced bacteria activity. The quartz, the kaolinite and gibsite clays are the most abundant minerals. Secondary associations of muscovite, rutile, pyrite, magnetite, albite, microcline, tremolite, smectite, ortoclase, actinolite and halite were also present. This mineral paragenesis suggests mineral evolution starting from the mineralogical constituents of the gneiss formation occurring in the Archaean crystalline basement and from the Cenozoic sediments corresponding to the Barreiras Formation. The Mössbauer results associated with the three studied stations are similar. From these results we verified that: pyrite, silicates, clay minerals, iron oxides and hydroxides are the main formed minerals. These considerations allowed us to infer that, for the station 1, until the 32 cm initial of depth and for the station 3, until the depth of 18 cm of the sedimentary profile, the main source of iron used for the formation of the pyrite are the ferric oxides (hematite and/or maghemite). At larger depths smectite is often associated with pyrite. This result suggests that pyrite is formed by chemical reaction of H2S with ferrous ion located in the mineralogical structure of the smectite. Using the Mössbauer spectroscopic technique it has been possible to identify and to evaluate the dynamics of the iron components along the sedimentary profiles.

Continuity of this work is recommended, with the study of the related subjects the speciation of the analyzed chemical elements, as well, the hydrodynamic studies with aid in the mechanisms of explanation of deposition of the authigenic minerals (halite and gypsum, mainly).

Santos,R.N.E.S. 2004. Investigation of the environmental passive in Cachoeira do Piriá, NE of State of Pará : base for the environmental managemente in panned areas in Amazonia region. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2317 **2004** *Date of presentation:*

Raimundo Nonato do Espírito Santo dos Sant *Advisor(s):* Rebouças,A.C.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: PA *1/1,000,000 sheet:* SA23 *Centroid of the area:* ' - 'W

Abstract

Scomazzon,A.K. 2004. Study of Conodonts in marine carbonates of the Tapajós Group, lower to medium Pennsilvanian of the Amazonas Basin with applications to Sr and Nd isotpes in this interval.. PhD Thesis, Instituto de Geociências, Universidade Federal do Rio Grande do Sul, pp.

Instituto de Geociências - Universidade Federal do Rio Grande do Sul *Reference:*

DataBase Ref.: 2436 **2004** *Date of presentation:* 1/5/2004

Ana Karina Scomazzon *Advisor(s):* Lemos,V.B.

Committee:

Subject of thesis: Stratigraphy

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Silva,C.C.N. 2004. Geologic-geophysical characterization of the fissural aquifer media: A contribution to the underground water flow and storage models. PhD Thesis, Department of Geology, University Federal of Rio Grande do Norte; pp

Departamento de Geologia - Universidade Federal do Rio Grande do Norte *Reference:*

DataBase Ref.: 2507 **2004** *Date of presentation:* 1/6/2004

Carlos Cesar Nascimento da Silva *Advisor(s):* Jardim de Sá,E.F.

Committee:

Subject of thesis: Geodynamics

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Souza,F.E.S. 2004. Morphodynamic evolution of the Curimataú River /RN state estuarine influence region with emphasis in the alterations of the mangroove depositional environment and the GeoData integration using SIGa. PhD Thesis, Department of Geology, University Federal of Rio Grande do Norte; pp

Departamento de Geologia - Universidade Federal do Rio Grande do Norte *Reference:*

DataBase Ref.: 2515 **2004** *Date of presentation:* 1/4/2004

Flavo Elano Soares Souza *Advisor(s):* Vital,H. Amaro,V.E.

Committee:

Subject of thesis: Geosciences

State: RN *1/1,000,000 sheet:* SB25 *Centroid of the area:* ' - 'W

Abstract

Souza,J.C.S. 2004. Hydrogeologic study of the Lorena region- State of São Paulo. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2312 **2004** *Date of presentation:*

João Carlos Simanke Souza *Advisor(s):* Silva,A.A.K.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Tomio,A. 2004. Estilos de deformações glaciotectônicas no Subgrupo Itararé, Neopaleozóico da Bacia do Paraná. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2320 **2004** *Date of presentation:*

Alexandre Tomio *Advisor(s):* Santos,P.R.

Committee:

Subject of thesis: Sedimentary Geology

State: SP PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Torello,F.F. 2004. Experimental taphonomy of the living fossil Bouchardia rosea (Brachiopoda, Terebratellidae) and its applictions in Paleontology. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2314 **2004** *Date of presentation:*

Fernanda de Freitas Torello *Advisor(s):* Simões,M.G.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Valle,M.A. 2004. Hydrogeochemistry of the Una Group (Irecê and Salitre basins) : An example of the action of sulfuric acid in karstic system. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2318 **2004** *Date of presentation:*

Murilo Andrade Valle *Advisor(s):* Karmann,I.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: BA *1/1,000,000 sheet:* SC23 *Centroid of the area:* ' - 'W

Abstract

Vilar,C.S. 2004. Tridimensional structure os S-waves in the Lithosphere of the Brazilian Northeastern. PhD Thesis - Observatório Nacional, pp

Observatório Nacional - Conselho Nacional de Desenvolvimento Científico e Te *Reference:*

DataBase Ref.: 2508 **2004** *Date of presentation:* 1/6/2004

Carlos da Silva Vilar *Advisor(s):*

Committee:

Subject of thesis: Seismology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Weber,W. 2004. Geochronology of metabasic rocks of the Água Clara formation: Recond of a Mesoproterozoic basin. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1870 **2004** *Date of presentation:* 5/10/2004

Werner Weber *Advisor(s):* Siga Jr,O.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PR SP *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Abreu,G.C. 2005. Evolução petrogenética e metalogenética da mina de ouro do Pari e arredores, NE do Quadrilátero Ferrífero-MG. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2066 **2005** *Date of presentation:* 21/3/2005

Gustavo Correa de Abreu *Advisor(s):* Schorscher,J.H.D.

Committee:

Subject of thesis: Mineralogy and Petrology

State: MG *1/1,000,000 sheet:* SE23 *Centroid of the area:* ' - 'W

Abstract

Almeida,R.P. 2005. Tectonics and sedimentation from the Ediacariane up to Ordoviciane : examples of the Camaquã supergroup (RS state) and of the Caacupé group (Paraguai Oriental). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2431 **2005** *Date of presentation:*

Renato Paes de Almeida *Advisor(s):* Fragoso César,A.R.S.

Committee:

Subject of thesis: Sedimentary Geology

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract

Bernardes,E.S. 2005. Diagenesis of the Corumbataí formation in the Mina Partezani mine, Rio Claro-SP state. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Corumbataí Formation, petrographic analysis, diagenesis,cement.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d090

DataBase Ref.: 2464 **2005** *Date of presentation:* 27/4/2005

Eduardo Silveira Bernardes *Advisor(s):* Carvalho,S.G.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Late Permian Corumbataí Formation was studied in its vertical variability within a couple of mine works close to Rio Claro, focusing relationships between mineralogical components and ceramics properties. The petrographic analysis of the samples collected in these mines, made by optical microscopic, Scanning Eletron Microscopy (SEM) of the cement minerals and X-ray techniques with clay fraction, revealed a complex mineralogical assemblage with quartz and feldspar in silt size grains, within a matrix constituted by illite, smectite-chlorite, chamosite, berthierine and interestratified clay-minerals, with cement of hematite, calcite and albite. The original fine-grained iron-rich sediment was modified by diagenetic events, during the interaction with alcalline conate solutions; mineralogical substitution and authigenesis followed this early diagenesis with the formation of different types of cement. The hidrous phyllosilicates and the amorphous silica precipited in the water-sediment interface played an important role on these transformations, but there are evidences of strong influence of magmatic events wich promoted another diagenetic phase generation. The principal stratigraphic horizons were described in terms of lithology, texture, argillaceous content and cement minerals. Principal Components and Clusters Analysis strains the correlation between textural features (grain size and maturity) and physical properties of the material.

Carvalho Jr,A.L.P. 2005. Hydrogeology karstic processes in the Muribeca, Riachuelo and Contiguiba formations in the SE/AL Basin in State of Sergipe. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2327 **2005** *Date of presentation:*

Afonso Ligório Pires de Carvalho Júnior *Advisor(s):* Karmann,I.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SE *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Carvalho,M.J. 2005. Tectonic evolution of the Marancó - Poço Redondo domain: Record of the Cariris Velhos and Brasiliana orogenesis in the Sergipana belt, NE of Brazil. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 990544

DataBase Ref.: 2471 **2005** *Date of presentation:* 26/8/2005

Marcelo Juliano de Carvalho *Advisor(s):* Oliveira,E.P.

Committee:

Subject of thesis: Metallogenesis

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Castro,N.A. 2005. Proterozoic geologic evolution of the region between Madalena and Taperuaba, Ceará Central tctonic domain (Borborema province). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 1995 **2005** *Date of presentation:* 25/2/2005

Neivaldo Araújo de Castro *Advisor(s):* Basei,M.A.S.

Committee:

Subject of thesis: Regional Geology

State: CE *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Costa,S.S. 2005. Delimitation of the tectonic framework of the Central Guiana belt,Roraima state, based on integrated analysis of the Geophysical, geological, isotopic data and satelite satelite images. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 960338

DataBase Ref.: 1878 **2005** *Date of presentation:* 17/1/2005

Solange dos Santos Costa *Advisor(s):* Pascholati,E.M.

Committee:

Subject of thesis: Metallogenesis

State: RR *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Jesus,I.P.S. 2005. Characterization of the aqüifers in crystaline environment of hte Alto Tietê basin western portion. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2427 **2005** *Date of presentation:*

Ivanety Pereira Santos de Jesus *Advisor(s):* Campanha,G.A.C.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Lousada,E.O. 2005. Hydrogeologic and isotopic studies in the Distrito Federal: Conceptual flow models. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Conceptual aquifers models, isotopic data, fractured aquifers, Distrito Federal (Brazil),

Instituto de Geociências - Universidade de Brasília *Reference:* D072

DataBase Ref.: 2332 **2005** *Date of presentation:* 27/4/2005

Eneas Oliveira Lousada *Advisor(s):* Campos,J.E.G.

Committee: Geraldo Resende Boaventura - IG/UnB
Newton M. Souza - UnB
Maria Marlúcia Freitas Santiago -
Ricardo César Aoki Hirata - IGc/USP

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: DF *1/1,000,000 sheet:* SD23 *Centroid of the area:* ' - 'W

Abstract

The research theme is the evaluation of the transference mechanisms of rainwater and superficial waters to different aquifers in Federal District. The proposal is to characterize the flow conditions and recharge areas. The data obtained will be a basement for considerations about conceptual hydrogeologics models applied for a region. The research was applied in a watershed with intense agricultural use, the Jardim river basin. Four models were proposed: (1) the Two Potenciometric Surfaces Model, (2) the Fractured-Carstic Model (3) the Unique Confined Potenciometric Surface Model, (4) the Unique Non-Confined Potenciometric Surface Model (with large and restrict oscillation). To test these models a integration method based on classic hydrogeologic studies to quantify the groundwater, hydrochemistry of main elements, isotopic geochemistry of δ18O, Deuterium, CFC's e Tritium for water dating and determining recharge areas, tracers assays to define about circulation way and piezometric evaluation to conclude about the groundwater movement and porous aquifer importance as recharge regulator for fractured aquifer, was applied. The analysis have been applied in different soils present in a basin: Latosoils, Clay Latosoils, Cambisoils, Gleysoils and Sandy Neosoils. Based on data integration was concluded: (1) The Clay Latosoil and Gleysoil are the main recharge regulators for a fractured aquifer. (2) The porous aquifer in a Federal District is heterogeneous and anisotropics, considering the soil structures, biological activities and structures remains for the rock. (3) The groundwater in porous and fractured aquifer are stable since the origin to penetration and movement in a aquifer, and the recharge occurs in regions close to the basin, considering δ18O values equivalents to global meteoric line. (4) The isotopic analysis showed variation about mean residence time for the waters. Qualitative analysis for tritium resulting that the waters in porous aquifer are youngers than the waters in fractures. CFC's 11, 12 and 113 quantitative evaluations confirmed the tritium interpretations. The first point sampled (EL1 and EL2) showed a mixing of waters from porous and fractured aquifers, considering the age obtained (18 and 17 years). The other two places sampled (EL3 - EL4 and EL5 - EL6) showed 19 and 18 years age for waters in porous and 36 and 34 years age for waters in fractured aquifer, resulting in 17 and 15 years of time intervals between the mean residences in distinct aquifers. (5) the unique confined potenciometric surface model is observed in a basin, associated to cambisoils. (6) the unique non-confined potenciometric surface model is applied on a large area in a basin, presenting restrict and large oscillation (sand neosoil). (7) Appling isotopic analysis was possible to confirm the two potenciometric surfaces model, associated to areas with large weathering and soil thickness on fractured rocks presenting high interconnection level.

Mattos,I.C. 2005. Geology, petrography, geochemistry, physical-mechanical behaviour and alterability of ornamental rocks form the Serra do Barriga granitic stock, Sobral (CE state). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d096

DataBase Ref.: 2468 **2005** *Date of presentation:* 16/12/2005

Irani Clezar Mattos *Advisor(s):* Artur,A.C.

Committee:

Subject of thesis: Regional Geology

State: CE *1/1,000,000 sheet:* SA24 *Centroid of the area:* ' - 'W

Abstract

The polyintrusive Serra do Barriga granitic stock is post-tectonic, with a 522.2 ± 7.6 Ma age. It presents inequigranular to megaporphyritic syenogranitic and monzogranitic faciological types differing by collor, composition, and textural aspects. In this research we investigated the following ornamental types: Rosa Iracema, Rosa Olinda, Branco Savana, and Branco Cristal Quartzo. Geochemically these are peraluminous, high-potassium calcium-alkaline rocks formed from highly evolved magmas in a post-collisional orogenic environment. Late-magmatic transformations indicate an origin by fractioning of a unique parental magma, added by a mafic pulse (Rosa Olinda). The correlation between the physical indices and the physical and mechanic resistance were done as a function of the petrographycal analyses. The technological parameters obtained are higher or close to the bordering values, which characterises these rocks as good quality ones. The granites react to the chemical attack by slight both chromatic variations and mineral alterations, indicating to be resistant rocks. The rose colored granites, however, show a greater alteration when in contact with the more destructive citric and chloridric acids. Although resistant, one sends regards to prevent expositions to acid-bearing substances. The granites of the Serra do Barriga stock are adequate for ornamental use, being the Rosa Iracema and Rosa Olinda types highly efficient for both floor pavement and wall covering, with care in the maintenance

Moraes,L.C. 2005. The teaching of geology in the minning technical courses of Brazil: a view based on Araxá, MG state. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 11935

DataBase Ref.: 2470 **2005** *Date of presentation:* 18/8/2005

Lúcia Castanheira de Moraes *Advisor(s):* Carneiro,C.D.R.

Committee:

Subject of thesis: Education Applied to Earth Sciences

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Moura,C. L. 2005. Natural radiactivity and 222Rn emanation in ornamental rocks from different magmatic series sources used as internal covering. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d091

DataBase Ref.: 2465 **2005** *Date of presentation:* 29/4/2005

Claudia Lopes de Moura *Advisor(s):* Artur,A.C.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Nascimento,R.S. 2005. Canindé domain, Sergipana belt, Northeastern of Brazill: A geochemical and isotopic study of a neoproterozoic continental rift sequence. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:* 6872

DataBase Ref.: 2060 **2005** *Date of presentation:* 10/6/2005

Rosemery da Silva Nascimento *Advisor(s):* Oliveira,E.P.

Committee:

Subject of thesis: Metallogenesis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Neves,M.A. 2005. Integrated analysis applied to exploration of underground water in the Rio Jundiaí river basin (state of SP)). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Applied Structural Geology, Applied Hydrogeology, Morphotectonics, Crystalline Rocks, Jundiaí

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d088

DataBase Ref.: 2462 **2005** *Date of presentation:* 16/3/2005

Mirna Aparecida Neves *Advisor(s):* Morales,N.

Committee:

Subject of thesis: Regional Geology

State: SP *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The intensive use and pollution of superficial water resources in the Jundiaí River Catchment lead to an increasing groundwater exploitation. The major part of Jundiaí Catchment is located on the Crystalline Basement, where water flow is dependent on discontinuities. In order to investigate the behavior of groundwater in such a context, it is necessary, besides the hydrogeologic characterization, the definition of geologic, structural and tectonic characteristics. The Tubarão Aquifer System occurs on the west side of the area and the Cenozoic Aquifer System is distributed along the main channels. It is possible to identify an important structural control over well productivity, not only on those located in crystalline rocks, but also on those located in sedimentary rocks. The integration of geologic, structural and hydrogeologic data shows that structural control happens mainly in distensive areas, where transtractive tension leads to formation and/or reactivation of brittle NW-SE and E-W structures, commonly associated with the occurrences of alluvial deposits. Other factors that affect well productivity were identified, for example, the location of wells with respect to some morphostructural compartments and the overexploitation of groundwater, which, despite favorable geologic structures, tend to decrease well productivity.

Pelosi,A.P.M.R. 2005. Paleogeographic evolution of the Maricá group, Neoproterozoic Pre-600 Ma of the Rio Grande do Sul state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2065 **2005** *Date of presentation:* 28/2/2005

Ana Paula de Meireles Reis Pelosi *Advisor(s):* Fragoso César,A.R.S.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Pires,P.F.R. 2005. Genesis of auriferous deposits in metaconglomerates of the Moeda formation, Quadrilátero Ferrífero, MG state: The paper of the metamorphism and association to carbonaceous matter. PhD Thesis, Instituto de Geociências - Universidade de Campinas/SP, pp

Instituto de Geociências - Universidade Estadual de Campinas *Reference:*

DataBase Ref.: 2059 **2005** *Date of presentation:* 31/3/2005

Paulo Fernando Ravacci Pires *Advisor(s):* Xavier,R.P.

Committee:

Subject of thesis: Metallogenesis

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Prazeres Filho,H.J. 2005. Geologic and petrogenetic characterization od the Três Córregos granitic batholit (PR-SP states) : Isotopic geochemistry (Nd-Sr-Pb), ages (ID-TIMS/SHRIMP) and delta 18 O in zircon. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2430 **2005** *Date of presentation:*

Hélcio José dos Prazeres Filho *Advisor(s):* Basei,M.A.S.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: PR *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

SP

Abstract

Rocha,W.J.S. 2005. Salinization study of underground waters in Maceió region based on the integration of hydrogeological, hydrogeochemical and geoelectrical data. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

groundwater, salinization and geophysics

Instituto de Geociências - Universidade de Brasília *Reference:* D074

DataBase Ref.: 2333 **2005** *Date of presentation:* 10/6/2005

Wilton José Silva da Rocha *Advisor(s):* Campos,J.E.G.

Committee:

Edi Mendes Guimarães	-	IG/UnB
Geraldo Resende Boaventura	-	IG/UnB
José Geraldo de Melo	-	DG/UFRN
Waldir Duarte Costa	-	DG/UFPE

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: AL *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

As a consequence of the industrial and urban growth, Maceió with 75 % of the population supplied by groundwater already presents salinization encroachment problems due to the intensive and disordered exploitation of the aquifers. The developed studies were addressed to evaluate the causes and processes of the salinization, by the integration of hydrogeologic, hydrochemical and geophysical data, and the results are synthesized in the maps, graphs and tables that compose this research.

In the area four aquifers systems were characterized: Maceió, Marituba, Barreiras/Marituba, Barreiras and Beach and Alluvium Sediments aquifers systems. The Maceió System is an aquifer of low potentiality (Transmissivity = 2.7 x 10-4 m2/s), where the

wells present an average specific capacity of 0.612 m3/h/m and average discharge of 27 m3/h. It is under exploited because of the water quality with high hardness and high chloride content. The Marituba System underlies the Barreiras Formation and the Beach and Alluvium sediments. It is considered of average potentiality (Transmissivity = 2.0 x 10-3 m2/s) with average specific capacity of 2.562 m3/h/m and average discharge of 40 m3/h. The Barreiras System outcrops in almost the whole area in extensive coastal boards. It shows average specific capacity of 4.845 m3/h/m and average discharge of 18 m3/h and is considered of medium potentiality (Transmissivity = 4.7 x 10-3 m2/s). The Barreiras/Marituba Aquifer System is considered of high potentiality (Transmissivity = 6.1 x 10-3 m2/s) with average specific capacity of 6.531 m3/h/m and average discharge of 69 m3/h. The Beach and Alluvium Sediments occur in the coastal plain, covering the Maceió and Marituba aquifers. The potentiality of that aquifer is considered as low (Transmissivity = 4.0 x 10-4 m2/s), with average specific capacity of 3.472 m3/h/m and discharge up to 15 m3/h.

The permanent reserves correspond to 1267 x 106 m3 for all aquifers systems, while the regulatory reserves are of 43 x 106 m3/year. The exploitable installed resources are of 192 millions m3/year and the effective resources correspond to 111 millions m3/year, or, 8,8 % of the permanent reserves. The virtual resource that corresponds the potentiality is of 41,6 millions m3/year.

The chemical quality of the waters is, in general, good for all uses, except by restrictions as for the chloride and iron contents. The chlorine water type prevails in the majority of waters (78,1 % in 1975-2002 and 92,2 % in 2003-2004), and comprises the following waters: sodic chlorine (48,6 % in 1975-2002 and 63,3 % in 2003-2004), magnesian sodic chlorine (13,3 % in 1975-2002 and 13,0 % in 2003-2004), magnesian chlorine (13,3 % in 1975-2002) and calcic sodic chlorine (6,5 % in 2003-2004). The carbonated type (1,9 % in 1975-2002 and 3,9 % in 2003-2004) occurs in restricted areas related with the limestone of the Maceió and Marituba formations, with the waters sodic carbonated, calcic magnesian carbonated and mistas carbonated.

The geophysical approach involved the use of the eletroresistivity method, applied the techniques of vertical electric survey to identify the geoeletric behavior of the local stratigraphy, concerned about the salinization of the aquifers systems. Although the obtaining of data shows some restrictions the results can be considered satisfactory as an auxiliary tool to the studies of salinization in urban areas.

The causes and processes of salinization of the groundwater in Maceió were analyzed in terms of salt concentration by dissolution, by directly / indirectly seawater relation and by the possibility of increasing salt content by contamination of wastewater infiltration. The developed studies allow to affirming that the main salinization process is related to active encroachment of seawater and is the result of the over exploitation of aquifer systems. The ion concentration by dissolution only occurs when carbonate rocks of the Maceio and Marituba formations and of the Beach and Alluvium sediments are present. The results also show that the salinization by recharge water and by wastewater infiltration do not occur in the study region.

Considering that the largest problems for the management, control and preservation of the groundwater of Maceió region are related to the overexploitation, salinization, contamination, surface sealing and bad construction / operation of wells, it is recommended that the municipal and state organs analyze the several situations under the point of view of hydrogeology and of use of water, and begin the management process and control of the exploitation of the local groundwater.

Roig,H.L. 2005. Modeling and data integration applied to analysis of erosional transport of sediments processes - The case of Paraíba do Sul river basin - State of São Paulo. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Suspended sediments discharge, Soil Erosion, Sediments Yield, Sediments Provenance – Sm-Nd Isotopic Geochemistry and Paraíba do Sul River – Funil Reservoir

Instituto de Geociências - Universidade de Brasília *Reference:* D071

DataBase Ref.: 2331 **2005** *Date of presentation:* 15/4/2005

Henrique Llacer Roig *Advisor(s):* Meneses,P.R.

Committee:
Elton Luiz Dantas - IG/UnB
José Eloi Guimarães Campos - IG/UnB
Claudio Riccomini - IGc/USP
Noris Costa Diniz - UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Brazil, a country that has over 70% of its electric power provided by hydroelectric plants, has been enduring hard times over the last few years in view of the low water volume of its reservoirs. Apart from the absence of rains, the sediments accumulation represents another prevailing factor. Siltation cases have multiplied as a result of increased erosion in the hydrographic basins.

This study presents results of the suspended sediments solid discharge quantification, soil loss determination, and Sm-Nd isotopic geochemistry results for identification of the source areas of sediments transported in the paulista portion of the Paraíba do Sul river basin.

The quantification of the suspended sediments discharge enabled the division of the basin in four main segments. The interval between Santa Branca and São José dos Campos had a low sediments yield with an average of 33 x 103 t.year-1 (ΔQss), or a specific sediment yield of 2.7 t.km.-2.year-1 (ΔPES). The second segment (São José dos Campos – Pindamonhangaba) showed an increase in the sediments load yielding 400 x 103 t.year-1 (ΔQss) or 120 t.km.-2.year-1 (ΔPES). The interval between Pindamonhangaba and Rio Comprido showed a fluctuation in the suspended sediments discharge, varying from 60 to 100 t/year, with a low specific yield ≈ 7.6 t.km.-2.year-1 that indicates the prevalence of sedimentation over transportation. The upstream interval of the Funil reservoir, between Cachoeira Paulista and Queluz, is marked by an increased sediment yield, ranging from 600 to 1200 x 103 t.year-1 or 160 t.km.-2.year-1. The temporal analysis of the solid discharge revealed that the sediments transportation flow was stable from 1969 to 2000.

The basin's annual soil loss average rate varied between 0 and 327 t.ha-1.year-1. The areas most critical to erosion (>120 t.ha-1.year-1) are concentrated in the heavily undulated relief regions associated with shallow or clayish soils where extensive cattle raising activities take place, mainly along the Serra da Mantiqueira, nearby the Funil reservoir. In general, the spatial distribution

of the basin's susceptibility to erosion indicated a scenario similar to the one in the sediments transportation balance. The Cachoeira Paulista-Queluz segment had the highest soil loss average rates whereas the region between São José dos Campos and Rio Comprido had the lowest.

The sediments Sm-Nd isotopic signatures showed a variation (eNd(0) from –16.86 to –21.93 and TDM from 1.71 to 2.13 Ga) that is associated with the isotopic differences of the source rocks and the percentage of occurrence of each geological unit in each watershed. The Guaratingueta and Piquete watersheds have the highest TDM values (2.11 and 2.13, respectively) related to the existence of lithologies of the Mantiqueira Complex (average TDM 2.9 Ga) and Andrelândia Group (TDM.2.1). The Buquira and São Gonçalo watersheds have TDM of 1.76 and 1.78, respectively, and are influenced by the existing biotite gneisses of the Embu Complex (1.56-1.67 Ga).

The use of the model age (TDM) to compose the mass balance between the suspended sediments and the weighted average of the existing rocks in the drainage basins clearly shows the existence of a dynamic equilibrium between the weathering and erosion/transportation processes for this segment of the Paraíba do Sul river basin, with Rsed-rock values for TDMs between 1.08 and 1.02.

Ruiz,A.S. 2005. Geological evolution of the Southwestern of the Amazonic Craton, boudering region of Brazil - Bolívia - Mato Grosso. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d097

DataBase Ref.: 2469 **2005** *Date of presentation:* 22/12/2005

Amarildo Salina Ruiz *Advisor(s):* Simões,L.S.A.

Committee:

Subject of thesis: Regional Geology

State: MT *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The purpose of this thesis is to characterize the framework and the tectonic history of the Southwest Amazonian Craton in Mato Grosso based on collecting new geological data obtained from mapping in the 1:250.000 and 1:100.000 scales and lithogeochemical and geochronological results (U-Pb, Sm-Nd e Ar-Ar). Preexistent geochemical and geocronological data were reevaluated and reinterpreted based on the geological picture depicted by new field data.

Long and complex geological evolution starting since Paleoproterozoic to Neoproterozoic times resulted in the Rodinia Supercontinent formation and the Amazonian Craton consolidation and produced a tectono-stratigraphic array of five crustal segments, named Tectonic Domains that record data since the break-up of the Atlantica Supercontinent until the rupture of the Rodinia Supercontinente and the formation of the Brasiliano / Panafrican belts (Paraguai Fold Belt).

Were recognized five Tectonic Domains where two of them do not show evidences of the action of The Sunsás Orogeny (Neoproterozoic), the Cachoeirinha and Paragua Domain, and the others, Jauru, Rio Alegre and Santa Barbara Domains exhibit metamorphic, deformational and magmatic records of the Tonian tectonic reactivation (Sunsás Orogeny).

In the Cachoeirinha Domain were distinguished two orogenic periods of accretionary nature. Santa Fé Orogeny (Estaterian – 1790 to 1750 Ma) marked by basic to intermediate volcanism (Vulcano-sedimentary Sequence Cabaçal) and calk-alkaline orthognaisses (Intrusive Suite Santa Fé) formed into an environment of volcanic island arcs associated to a soft collision regime. Cachoeirinha Orogeny (Calimmian) evolved along two stages, the first one between 1590 to 1560 Ma dominated by intraoceanic volcanic island arcs and the second one, between 1560 to 1520 Ma, is characterized by expressive granitic magmatism (Santa Cruz and Cabaçal Batoliths) of continental magmatic arc. Geocronological 40Ar-39Ar data point to a regional cooling of this domain around 1500-1450 Ma with the implantation of a long period of tectonic quiescence

After the deposition of the Aguapei Group in the Ectasian / Estenian times marking a long period of tectonic quiescence occurred the retake of magmatic records with the emplacement of the Rio Branco Rapakivi Granite that marks an important anorogenic magmatic event in the Estenian Period (1130 Ma) probably associated to the existence of a mantle plume. Tonian mafic sills Salto do Céu define an igneous event interpreted as a reflex of the extensional collapse of the Sunsás Orogen or a precursor of the Rodinia rupture.

In the Jauru Domain were distinguished plutonic (Suites Salto Grande and Córrego Dourado) and volcanic (metabasalts from the Jauru Valley) units bearing geochemical and Sm-Nd isotopic signatures typical from divergent oceanic limits (N-MORB). Two accretionary orogenic episodes were identified in the Calimmian Period inside this domain. Oldest orogenic phase correlated to the Cachoeirinha Orogeny is characterizated by juvenile magmatism (positive εNd(t)), TTG type, grey orthogneisses (Rio Novo, Taquarussu and Retiro) intruded between 1550 to 1570 Ma, probably formed along coalescent volcanic islands in a tectonic regime of soft collision.

It was followed by the implantation of a continental magmatic arc along a type Andean margin (Santa Helena Magmatic Arc, Santa Helena Orogeny) identified by the calk-alkaline batholith of Santa Helena and Agua Clara (1500 to 1480 Ma) and by the Intrusive Suite Pindaituba (1465 to 1425 Ma). Lithogeochemical and isotopic (Sm-Nd and Rb-Sr) data point to a juvenile nature of the parental magma. Structural data point to a tectonic mass transport from NNW to SSE and to a NE-SW trend for the pre-Sunsás regional structures (foliation, original bedding and shear zones).

After the depositon of the siliciclastic sedimentary cover of the Aguapei Group in the Ectasian / Estenian times signing a long period of tectonic quiescence had the retake of tectonic records in the Sunsás Orogeny in the Tonian Period.

Rio Alegre Domain is characterized by an association of volcanic-sedimentary lithotypes common to the environment of the limits of divergent oceanic plates along mid-oceanic dorsal with the ages of 1510 to 1500 Ma. Orogenic stage is typically accretionary (Rio Alegre Orogeny) marked by the tholeiitic and calk-alkaline plutonic magmatism (Suite Santa Rita) with ages between 1440 and 1410 Ma and regional metamorphism of greenschists facies, showing ages of regional cooling around 1380 Ma (40Ar-39Ar ages). Rio Alegre Orogeny (1440 to 1380 Ma) is marked by the coalescence of volcanic island arcs at the margins of the Paragua and Santa Barbara Domains with important accretion of juvenile crust into an environment of B-type subduction. Structural elements recorded (folds and foliations) suggest crompressive stresses with tectonic transport from SW to NE.

After the deposition of the Aguapei Group marking long tectonic quiescence is notable the record of thermo-tectonic effects of the Sunsás Orogeny in the Tonian (1000 to 960 Ma).
Basement of the Santa Bárbara Domain is characterized by an association of mevolvanic-sedimentary rocks (Vulcano-sedimentary Sequence Ascencion) and orthognaisses and granulites (Intrusive Suite Serra do Baú) probably Estaterian in age as suggested by U-Pb ages of 1690 Ma reported in the Bolivian sector. Tarumã and Lajes Batholith (ca. 1310 Ma) record sin-collisional magmatism of crustal derivation as indicated by the geochemical and isotopic (negative εNd(t)) signatures of the San Ignácio Orogeny (1350 to 1300 Ma). During the period of tectonic quiescence marked by the deposition of the Aguapei Group occurred the tectonism of the Sunsás Orogeny.
Paragua Domain, the less known in Brazil, presents a basement constituted by post-kinematic granitic rocks (Vila Bela Granite) and by a batholith body of basic to ultrabasic composition (Suite Guará), both undeformed. Aguapei Group lies in an erosive unconformity with no evidence of orogenic deformation. Tonian mafic sills (ca. 930 Ma) of the Huanchaca Suit mark the reflex of the Sunsás Orogeny.
Sunsás Orogeny into the Brazilian territory has a character eminently reflex. It had established along an belt with NW strike (Aguapeí Orogenic Belt) and affects the rocks of the Jauru, Rio Alegre and Santa Barbara Domains and also the sedimentary civer of the Aguapei Group. The orogenic phase (compressive) is responsible by regional folding well depicted in the Aguapei Group and part of its basement and reverse shear zones and thrusts with transport sense from SW to NE. Regional metamorphism of grenschist facies is associated to the deformation and it is clearly more intense in the central-east portion of the orogenic belt.
Compressive phase is followed by a stage of extensional collapse of the orogen marked by the developing of ductile shear zones with normal kinematics (Piratininga, Indiavai-Lucialva and Corredor Shear Zone), late- to post-kinematic granitic magmatism of crustal derivation (negative εNd(t)) of the Guapé suite and mafic tholeiitic sub-alkaline magmatism of the mafic dyke swarm Rancho de Prata and alkaline of the mafic sills of the Salto do Céu and Huachanca suites.
At the end of the Sunsás Orogeny, around 900 Ma, consolidate the Rodinia Supercontinente and in consequence the SW Amazonian Craton that was reactivated in the Cryogenian Period for the installation of the Paraguai Fold Belt

Sales,A.M.F. 2005. Taphonomic analysis of the macroinvertebrates fossiliferous occurrences of the Romualdo member (Albian) of the Santana formation, Araripe basin, NE of Brazil : stratigraphic and paleoenvironmental meaning. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2068 **2005** *Date of presentation:* 9/5/2005

Alexandre Magno Feitosa Sales *Advisor(s):* Simões,M.G.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Salles,F.A.F. 2005. Evaluation of the iron zero-valency reactive barrier eficiency in the remediation of the underground water contaminated by organic chlorades compounds. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2429 **2005** *Date of presentation:*

Flávio Augusto Ferlini Salles *Advisor(s):* Duarte,U.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Sallun Filho,W. 2005. Geomorphology and geospeleology of the Serra da Bodoquena karst, MS state. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2064 **2005** *Date of presentation:* 18/3/2005

William Sallun Filho *Advisor(s):* Karmann,I.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MS *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Santucci,R.M. 2005. Evolution and paleogeographic distribution of the Titanosauria (Saurischia, Sauropoda). PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d092

DataBase Ref.: 2466 **2005** *Date of presentation:* 25/7/2005

Rodrigo Miloni Santucci *Advisor(s):* Bertini,R.J.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Titanosaurs are Cretaceous sauropod dinosaurs with a wide geographical distribution and large number of species. In this study a cladistic analysis using a large number of titanosaurs was processed in order to elaborate a detailed cladogram for this group. Other sauropods have been included in this analysis, which comprises 39 taxa. Moreover, using the phylogenetic tree and paleogeographical reconstructions along the Cretaceous, a biogeographical analysis was also carried out. The strict consensus of the three most parsimonious trees depicts the following relationships for Titanosauria: (Andesaurus delgadoi (Malawisaurus dixeyi (Mendozasaurus neguyelap (((Series B; Series C) (Mugeo 1282 ((Rinconsaurus caudamirus (Argentinosaurus huinculensis, Ampelosaurus atacis)) (Gondwanatitan faustoi (Aeolosaurus rionegrinus, Aeolosaurus de Monte Alto))))) (Epachthosaurus sciuttoi (Alamosaurus sanjuanensis, Magyarosaurus dacus, Lirainosaurus astibiae (Rapetosaurus krausei, CPP 217)) (Titanosaurus colberti (Saltasaurus loricatus (Rocasaurus muniozi, Neuquensaurus australis)))))))). According to the obtained results, vicariance was the main biogeographical event driving the evolution of basal titanosaurs. During the Late Cretaceous dispersal events followed by speciation are identified from South America to North America and Europe, and from South America to India and Madagascar.

Silva,C.L. 2005. Analysis of cenozoic tectonics in the Manaus region and neighbouring. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d095

DataBase Ref.: 2467 **2005** *Date of presentation:* 30/11/2005

Clauzionor Lima da Silva *Advisor(s):* Morales,N.

Committee:

Subject of thesis: Regional Geology

State: AM *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Analysis of cenozoic tectonics from Manaus region was supported by structural and geomorphologic field data and remote sensing. Important relief elements were recognized such as fault scarps, aligned watershed, unleveled terrain surfaces, lowered terraces, and anomalous drainage patterns, stream capture, drowned valleys, beheaded streams, anomalous bends, aligned channels, associated to the major lineaments. Geologic and structural interpretation pointed to four compartments. Within the Rio Negro Compartment NW-SE normal faults dominate, associated to E-W dextral transcurrent ones, developing Quaternary basins (Manaus pull-apart basin, Rio Negro Graben, Ariaú Asymmetric Graben, Manacapuru rhombohedric basin). The Rio Urubu Compartment contains NW-SE and NE-SW normal faults (with horst and graben geometry) and reverse faults that deform the Alter do Chão Formation. In the Presidente Figueiredo region normal faults oriented N-S, NE-SW and NW-SE control waterfalls, rapids and the scarpments of the Nhamundá Sandstones. In the Silves/Itapiranga Compartment dominate NE-SW transtensive faults associated to the segments of the Amazonas and Madeira rivers. Cenozoic tectonic evolution based on recognized faults and reconstruction of paleostress defines four major stages. First a distensive system resulting on the Alter do Chão Formation sedimentation marked by syn-depositional NE-SW and NNW-SSE normal faults. Second, a compressive NW-SE system that resulted on NE-SW reverse faults affecting the rocks of the Alter do Chão Formation with tension axes of paleostress oriented σ1 NW-SE, σ2 NE-SW e σ3 subvertical from transpressive tectonic regime. This deformation resulted from the displacement of South American and Caribbean Plates in Miocene time. At this time also occurred the modification of the drainage system towards the actual course of the Amazonas River, promoting the sedimentation of Solimões Formation in the Solimões Basin, with post-Miocene tectonic stability resulting on the formation of the lateritic profiles during Plio-Pleistocene times. The region was submitted to uplift and erosion of the rock beds in the Amazonas Basin caused by flexural deformation related to the continuous convergence of the Caribbean Plate, leading to the formation of colluvium deposits in Plio-Pleistocene or Pleistocene. The final and main event of Cenozoic tectonics is characterized by a set of NW-SE normal faults interplaying with strike-slip dextral and sinistral faults forming the Quaternary basins where the alluvial plains of the systems Amazonas and Negro rivers are structurallys controlled. The array of those Quaternary faults promoted deformation and tilting of Alter do Chão Formation and the laterite horizon. Paleostress reconstructions points to sub-horizontal σ1 NW-SE and σ3 NE-SW and σ2 sub-vertical, associated to the E-W transcurrent dextral tectonic regime of the Brazilian intraplate region.

Silva,M. G. 2005. Determination of the depositional fabric in glacial diamictites of the Rio do Sul formation (Paraná basin, SC state) by the inertial tensor method. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2432 **2005** *Date of presentation:*

Márcia Gomes da Silva *Advisor(s):* Archanjo,C.J.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: SC *1/1,000,000 sheet:* SG22 *Centroid of the area:* ' - 'W

Abstract

Silva,O.A. 2005. Analysis of aerogeophysical data applied to exploration and management of underground hydric resources. PhD Thesis; Instituto de Geociências, University of Bahia, Salvador; pp

Instituto de Geociências - Universidade Federal da Bahia *Reference:*

DataBase Ref.: 2204 **2005** *Date of presentation:* 31/3/2005

Osmar Almeida da Silva *Advisor(s):* Sampaio,E.E.S.

Committee: Antônio Expedito Gomes de -
Carlos Alberto Dias -
Johildo Salomão Figueiredo - IG/UFBA

Subject of thesis: Geophysics

State: BA *1/1,000,000 sheet:* SC24 *Centroid of the area:* ' - 'W

Abstract

Time domain airborne electromagnetic systems, combined with magnetic and radiometric methods, are efficient tools applied to geophysical investigation for groundwater exploration and environmental studies with respect to aquifers salinization and contamination. Therefore we adopted these methods to survey the Mundo Novo area. The surveyed area has an N-S extension of 40 km and a width of 12 km, it is enclosed by the Mundo Novo Greenstone Belt and limited by the city of Mundo Novo on the north and by the city of Rui Barbosa on the south. The Itaberaba regional fault and several others structural lineaments occur in the area. They are important for the hydrogeological study of this crystaline environment. The analysis of the radiometric and the magnetic methods improved the information about the structural geology of the area. The AEM survey was flown using the QUESTEM 450 EM System along E-W lines spaced of 200 m, for the measurement of the magnetic field with a 3 component receiver with axis directed horizontally along the flight direction (X), horizontally transverse to the flight direction (Y) and vertically (Z). This job aimed to evaluate available processing techniques applied to these data, in order to search for groundwater potential targets. The AEM data were processed using the EMFlow software which allowed to convert it into a set of Conductivity Depth Image (CDI) and conductivity-depth slices. The check of the result of one CDI section against the sinthetic model that we developed gave a good aggreement. Using the 2-D invert module of EMFlow we identified tabular sub-horizontal bodies at depth varying from 50 m to 150m as sources of most AEM anomalies and probably bearing some relation with groundwater. Using the information of existing wells, of the geology and the EM interpretation, we applied Archie's law and estimated an average value of porosity about 1,3% for the fissured aquifer and a hidric cumulative potential of 125 milions cubic meters. All these analysis, together with the geological information and the magnetic and gamaespectrometric interpretation indicated appropriated regions for a follow up ground geophysical investigation aiming to locate and drill holes for human and animal water supply in areas of poor surficial water resources. Furthermore, the result of this job shows the advantage of a initial approach at regional scale and its applicability in terrains of similar geology and environmental characteristics.

Silva,S.F. 2005. Geoenvironmental Zoning using Fuzzy logic and proposal of a geoindicador to characterize Rio do Peixe Basin Environment. PhD Thesis - Escola de Engenharia de São Carlos, Universidade de São Paulo, São Carlos

Geoprocessing, Continuous Classification, Soil Compaction, TDR Probe, Environmental Aptitudes and Restrictions

Universidade de São Paulo *Reference:*

DataBase Ref.: 2511 **2005** *Date of presentation:*

Sandra Fernandes da Silva *Advisor(s):*

Committee:

Subject of thesis: Engineering geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

This study presents a methodological technique to characterize environmental restrictions and aptitudes considering continuous variation in the attributes and gradation in contact between units. Fuzzy logic procedures were used to generate representation of contact gradation for Rocky Substratum and Unconsolidated Materials maps. Continuous attribute variation and numerical maps were used to produce Slope, Least Water Runoff Distance, Runoff Potential, Erosion Susceptibility and Agricultural Potential Charts. Geoprocessing operations using the SPRING Geographical Information System and its LEGAL programming language permitted the representation of gradation in contact (fuzzy), continuous classification and information crossing. Soil penetration

resistance was proposed as the environmental geoindicator to evaluate environmental changes. Measurement of soil penetration resistance by a soil penetrometer connected to a TDR probe permitted the characterization and specification of natural basin soil compaction conditions and the comparison of different occupation activities on the soil. A parameter for future changes due to soil occupation was therefore identified by this procedure. Area Zoning was attained by the adoption of landform units as segmentation units. The characterization of aptitudes, restrictions and conflicts in occupation were achieved by this procedure.

Soares,J.E.P. 2005. Studies of deep seismic refraction, function of receptor and gravimetry in the Tocantins Province, Central Brazil. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

seismic refraction; Moho; Tocantins Province; Central Brazil

Instituto de Geociências - Universidade de Brasília *Reference:* D073

DataBase Ref.: 2338 **2005** *Date of presentation:* 6/5/2005

José Eduardo Pereira Soares *Advisor(s):* Fuck,R.A.

Committee:
Augusto Cesar Bittencourt Pires - IG/UnB
José Oswaldo de Araújo Filho - IG/UnB
Jesus Antônio Berrocal Gomez - IGc/USP
Marco Polo Pereira Buonora - PETROBRÁS
Roberta Mary Vidotty -

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

A two-dimensional model of central Brazil crust and upper mantle was obtained from travel-time interpretation of deep seismic refraction data from Porangatu and Cavalcante lines. The seismic refraction lines, 300 km long each, were deployed with an overlap of 50 km, forming a WNW-ESE transect of around 530 km across Tocantins Province, and western São Francisco Craton. Tocantins Province was formed during Neoproterozoic by the convergence and collision of São Francisco, Paranapanema, and Amazon cratons, following subduction of former Goiás Ocean basin.

Despite geological differences, the crust can be divided in upper (VP 5.7 km/s – 6.0 km/s), intermediate (VP 6.3 km/s – 6.5 km/s), and lower crust (VP 6.6 km/s – 7.1 km/s). Moho is an irregular interface from 36 km to 44 km deep, with discontinuities giving evidence of first order tectonic structures. The upper mantle presents P wave velocity of 8.0 km/s under Porangatu line, and 8.3 km/s beneath Cavalcante line.

Considering mean crustal VP and VP/VS ratio, Moho topography behavior, and lateral discontinuities within the crustal layers, the crust beneath central Brazil can be associated to major geological domains recognized in the surface. Mean crustal VP and VP/VS are, respectively, 6.6 km/s and 1.74 under Araguaia Belt, 6.5 km/s and 1.71 beneath Neoproterozoic Goiás Magmatic Arc, 6.4 km/s and 1.70 below Paleoproterozoic terrains of Goiás Massif, and 6.4 km/s and 1.69 beneath the foreland fold-and-thrust belt and western São Francisco Craton. These values indicate a crust of felsic composition, except for the lower layer of Araguaia Belt.

Seismic features allow identifying: i) Neoproterozoic sutures related to a westwards subduction of São Francisco plate, and to an eastwards subduction of Amazon plate, defining at least one inversion in subduction sense during Tocantins Province amalgamation; ii) delamination of mafic-ultramafic root beneath Goiás Magmatic Arc, and iii) thick skin tectonics in the foreland fold-and-thrust belt of northern Brasília Belt, with relative movement of large crustal blocks during Neoproterozoic. These results led to reinterpreting gravimetric data, showing that the gravimetric high anomaly of central Brazil is a regional feature, provoked by neoproterozoic mantle ascent under the thin crust of Goiás Magmatic Arc. Superimposed there is the effect of mantle density that is denser under neoproterozoic arc terrain and lighter under paleoproterozoic terrain. The limit between these domains is marked by the central gravimetric gradient, which continues southward, limiting south branch of Brasília Belt from Paranapanema block.

Integrating geophysical and geological data allows to infer a simplified model for central Brazil evolution, characterized by three main stages: i) collision between São Francisco Craton and former island arc system of Goiás Magmatic Arc terrain; forming the northern branch of Brasília Belt; ii) collision between São Francisco and Paranapanema cratons, forming the southern branch of Brasília Belt; and iii) collision between Amazon Craton and eastern terrains, forming Araguaia Belt. The last convergent event, Amazon subduction influences many geological features of north Brasília Belt, as, for example, delamination and detachment of mafic-ultramafic root of Goiás Magmatic Arc, splitting and rotation of layered mafic-ultramafic complex, formation of the Transbrasiliano Lineament, and many other related features.

Goiás-Tocantins seismic trend is associated to the gravimetric high of central Brazil, and as consequence, to the thinnest crust and the densest and hottest mantle.

Spier,C.A. 2005. Geoquímica e gênese das formações ferríferas bandadas e do minério de ferro da Mina de Águas Claras, Quadrilátero Ferrífero, MG. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2328 **2005** *Date of presentation:*

Carlos Alberto Spier *Advisor(s):* Oliveira,S.M.B.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Trindade,I.R. 2005. Analysis of radiogenic isotopes behaviour during migmatization processes. PhD Thesis, Institute of Geosciences and Exact Sciences, State University of São Paulo, Rio Claro, pg.

Instituto de Geociências e Ciências Exatas - UNESP *Reference:* d089

DataBase Ref.: 2463 **2005** *Date of presentation:* 5/4/2005

Ivaldo Rodrigues da Trindade *Advisor(s):* Legrand,J.M. Dantas,E.L.

Committee:

Subject of thesis: Regional Geology

State: *1/1,000,000 sheet:* SB24 *Centroid of the area:* ' - 'W

Abstract

Studies of chemical elements mobility, isotopics and petrologic were used to investigate the behavior of the radiogenic isotope Rb/Sr, Sm/Nd and U/Pb in the formation of, estromatics migmatites and diatexites in three different tectonic setting. The studies were accomplished in derived migmatites of metasedimentary rocks of the Seridó Grup Seridó that had deposition and metamorphism in Neopreterozóico, in migmatitics orthogneisses of granitic and tonalitic composition of the Caicó Complex of Paleoproterozoic age and in migmatitics orthogneisses of tonalitic composition of the President Juscelino Complex in São José de Campestre Massif of Archaean age. The results in mica-schist`s Seridó Grup showed that the leucosome was generated by exsudation of quartz and feldspars formed starting from the elements In the Ca and Si liberated of the paleosome for the melting partial that were individualized as veins. The Rb stayed immobile in the system and Sr lost mass, while Sm and Nd stayed immobile. The isotopics systematics Rb/Sr and Sm/Nd were strongly affected during the process migmatization, supplying ages without geological meaning. Two outcropping of orthogneisses migmatitics of age Paleoproterozic of the Caicó Complex were studied, in the first of composition granitic all of the larger elements presented mobilization, with the amount of mass loss of In the, K, Ca and Al of the paleosome were smaller to the earnings of mass of these elements in the leucosome, indicating migmatization in open system. Rb in the general lost mass and Sr gain mass. Sm and Nd gain mass, but that last one in smaller amount, these elements are dependents of the desestabilized of the biotite, feldspar and apatite minerals. The elements Zr and U in the general gain mass and Pb lost mass. The desestabilized of the accessory minerals as zircon, apatite and allanite control the behavior of these elements. The data isotopics showed in the paleosome, systematic Rb/Sr was very affected for the migmatization and systematic Sm/Nd, even in some cases supplying coherent age with the age of crystallization of the rock, it was also affected. The analyses U/Pb in crystals of zircon of the samples of the paleosome and neosom for dilution isotopic and for SHRIMP they showed same ages, with values around 2200 Ma. The second outcropping of age Paleoproterozoic is of migmatites of tonalitic the granodioritic composition. In the comparison between the paleosome and the total rock, the study of mobility of chemical elements showed that the largest stayed immobile in the migmatization process except for the volatile ones, indicating migmatization in closed system. Rb and Sr stayed immobile and Sm and Nd lost mass. U and Pb had small mass earnings and Th and Zr lost mass. The data Rb/Sr supplied ages without geological meaning in function of the disturbance in his systematic isotopic. The values obtained with systematic Sm/Nd is coherent with the age of crystallization of the paleosome. The data U/Pb in crystals of zircon of the paleosome and leucosome gave values around 2200 Ma. In the President Juscelino Complex, the Archaean migmatitics orthogneisses studied showed that the largest elements than they were mobilized in the migmatization process K that gain mass and Mg and the volatile with mass loss were just, indicating that it happened introduction of material external K- rich. Rb and Sr gain mass, Sm and Nd were not mobilized. U, Pb and Th lost mass and Zr was immobile. The systematic isotopics Rb/Sr and Sm/Nd were disturbed strongly with the values of the ages without geological meaning. The data U/Pb in crystals of zircon of the paleosome gave age around 3250 Ma corresponding the crystallization age and the monazite crystals gave values around 2000 Ma. The data zircon U/Pb and of monazite of the leucosome they gave age around 2100 Ma corresponding the age of a first migmatization event. The lower intercepts gave values of ages around 575 Ma, showing influence of a second migmatização event.

Zolinger,I.T. 2005. The intrusions of kimberlitic affinities E1 and Es1 of the Colorado do Oeste region, State of Rondônia. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2428 **2005** *Date of presentation:*

Iede Terezinha Zolinger *Advisor(s):* Gomes,C.B.

Committee:

Subject of thesis: Mineralogy and Petrology

State: RO *1/1,000,000 sheet:* SC20 *Centroid of the area:* ' - 'W

Abstract

Carvalho,L.M.M. 2006. Integration of aerial geophysical data applied to geology and mineral prospection in the Itabira-Ferros emeraldiferous district, Quadrilátero Ferrífero, State of Minas Gerais. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Airborne Geophysical, Airborne Magnetic, Gamma-ray Spectrometric, Geological Mapping, Mineral Prospecting, Beryls, Emeralds, Aqua Marines

Instituto de Geociências - Universidade de Brasília *Reference:* D075

DataBase Ref.: 2444 **2006** *Date of presentation:* 17/2/2006

Leila Márcia Mendes Carvalho *Advisor(s):* Pires,A.C.B.

Committee:
Adalene Moreira Silva - IG/UnB
Elton Luiz Dantas - IG/UnB
Marcelo de Lawrence Bassay -
Marco Antônio Fonseca -
Raul Minas Kuyumjian - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

The Itabira-Ferros area is located in the Quadrilátero Ferrifero region, State of Minas Gerais, and it is known for abundant emerald occurrences. The area is characterized by volcanic metasedimetary sequences of the greenstone belt type (Rio das Velhas Super group) and paleoproterozoic iron formations of Minas Super Group, inserted in granitic bobies (Borrachudos Unit). Emerald genesis is associated to the interaction of pegmatitic fluids with mafic-ultramafic rocks of Rio das Velhas Super group. The present work present data processing, with the purpose of studying and analyzing airborne geophysical information and the in integration with geological data, in order to determine zones prone to carry emerald mineralization. The results obtained with the interpretations of this airborne survey were individually analyzed and integrated among them. The final result of this study has two main specific objectives: the first illustrates the application of geophysical data to the geological and structural mapping and the second, to the mineral prospecting. In the first case evidence is shown of the use of geophysics derived information in the support of geological mapping and structural characterization. In the second, is shown how airborne geophysics can help in the characterization of exploration targets. From this study potential areas for mineralization are identified.
In gamma-ray spectrometry, the total count image lead to the definition of a framework of major units covering the area. The analysis of the distribution of the K, U, and Th elements, used together with ternary RGB and CMY images, lead to the characterization of units and structures. The processing of airborne magnetic data lead to images of the anomalous magnetic field, amplitude of analytical signal, magnetic field reduced to the pole, and analytical signal inclination. These images conducted to the design of a framework with emphasis on the crystalline basement of the region, with the definition of shallow and deep units. The integration of magnetic and gamma-ray spectrometric units lead to the definition of 27 distinct geophysical units. Most of these units are correlates to known geological units, however some of them have no correlation with mapped units in the area. Main magnetic and gamma-ray spectrometric interpretes structures are correlated. This pattern seems to indicate that the main gamma-ray spectrometric lineaments are related to magnetic structures. These, on the other hand, are related to tectonic structures present on the study area. The main magnetic structure cuts the study area at a 70º angle to the gamma-ray structures, associated with the outcroping lithologies. Brittle structures, related to pressure relief in the directions E-W and N-S, are noticed in association with gamma-ray lineaments. Analysis and interpretation of the mentioned images suggests the presence of three deformation events. The lineament D1 represents the preferential direction of alignment, NE-SW. In the central region of the area, there is a sigmoidal feature that, probably, may reflect the Pedra Branca shear zone, with dextral movement. Lineament D2 cuts lineaments in the E-W direction, indicating, probably, a transcurrent system of faults with a sinistral movement, indicated by D1 lineament being displaced by D2 faults, as observed in central and northern portions of the area. Other brittle structures are present in the N40ºW direction.
The maps with interpretation of geophysical units and structures show that mineralization in the region occurs in deeply faulted areas, specially associated to the border of the Pedra Branca shear zone, reflex of ductile displacement in the area. The main unit containing emerald mineralization is unit SGRv2, Rio das Velhas Supergroup. Known mineralizations form a belt, with a general NW-SE trend, between two faults, in the same direction, and the cities of João Monlevade and Dores de Guanhães. Emerald mineralizations remain to the east of the Pedra Branda shear zone, directly associated to NE-SW structures. Other beryl mineralizations (acqua marine and other beryls) are associated to the central portion of the shear zone or to other N-W and E-W features cutting the area. Image resulting from the integration of airborne magnetic and gamma-ray data indicates region with potential mineralization for emerald. Potential areas without spatial association with known occurrences suggest the enlargement of the exploration potential for gems for the region.

Dias,C.M. 2006. Emission of 14C through the unities I and II of the Almirante Álvaro Alberto Nuclear Central (CNAAA) and its local effect in the environmental levels. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Carbon-14, Brazilian nuclear power plants, PWR, gaseous effluents, atmospheric air, vegetation, soils, AMS

Instituto de Geociências - Universidade de Brasília *Reference:* D077

DataBase Ref.: 2523 **2006** *Date of presentation:* 16/10/2006

Cintia Melazo Dias *Advisor(s):* Santos,R.V.

Committee:
José Affonso Brod - IG/UnB
Elton Luiz Dantas - IG/UnB

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: RJ *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

14C is a is a long-lived beta-emitting nuclide (T1/2 = 5730 years) produced naturally in the upper atmosphere as a result of reactions between neutrons and stable 14N(14N(n,p)14C). Although in a lesser extent, nuclear power plants produce 14C as well during their routine operation. Since it is converted in 14CO2 and mixed throughout the atmosphere, it is incorporated into plant tissues, via photosynthesis process, and hence in food chain. Because of the biological importance of 14C and long half-life, it is of interest to quantify the amounts released by nuclear industry.
The Brazilian nuclear central named Nuclear Central Admiral Álvaro Alberto (CNAAA) has two nuclear reactors of PWR type in operation, Angra I (657 MWe) and Angra II (1350 MWe), and one under construction, Angra III (1309 MWe PWR). The aim of this study was to determine the strength of the sources and the 14C content in the environment through analyses of air, vegetation and soils taken within 5 km (the influenced area) of CNAAA. The thesis consists of an extensive review about the subject (part one) and of four papers (part two).
The first paper is about the determination of 14C concentrations released by reactors (source strength). For Angra I, a device was developed in order to sample the gaseous effluents and for Angra II, a commercial monitoring system had already been implemented since its initial operation (2001). The 14C can be emitted as hydrocarbons, CO or CO2, depending on the type of reactor. For PWRs, the main chemical form released is hydrocarbons (80 %). The monitoring system of Angra I was planned to determine both CO2 and hydrocarbon fractions but in Angra II, all hydrocarbons are converted to CO2 by using a Pd/Al2O3 catalyst at 450 °C. The liquid scintillation was the method employed to measure the samples.
The second one concerns the atmospheric dispersion of the released radiocarbon through measurements of air samples taken with 3 km from power plants, in five different wind directions. The sampling system consisted of a pump connected to a trapping column filled with 3 M NaOH solution. The trapped CO2 was, then, precipitated as BaCO3 using a BaCl2 solution. For the measurements, the single stage accelerator mass espectrometry system (SSAMS) was used. This system belongs to the Radiocarbon Laboratory located in Geology Department of Lund University, in Sweden.
The third paper is the investigation of 14C content in vegetation samples. Since food chain starts with plants, these measurements are useful to estimate radiation exposure to local population. Grass samples were taken up to five km from power plants, in seven different wind directions. The SSAMS was employed for the analyzes.
The last paper involves the study of soils taken just close to power plants (within 1 km) and at 50 km far from them, in a testimony area. Not only 14C content was determined but analyzes of d13C, total C and 137Cs were also made. SSAMS was used for the 14C measurements.

Enrich Rojas,G.E. 2006. Petrogenesis of the alkaline suite of the Monte de Trigo island, state of SP. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2425 **2006** *Date of presentation:*

Gaston Eduardo Enrich Rojas *Advisor(s):* Ruberti,E.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Gaspar,M.T.P. 2006. Urucuia Aquifer System: Regional characterization and proposals of management. PhD Thesis, Institute of Geosciences, University of Brasília, pg.

Urucuia Aquifer System; hydrodynamic parameters; groundwater reserves, management.

Instituto de Geociências - Universidade de Brasília *Reference:* D076

DataBase Ref.: 2517 **2006** *Date of presentation:* 18/9/2006

Márcia Tereza Pantoja Gaspar *Advisor(s):* Campos,J.E.G.

Committee:
Carlos José Souza de Alvarenga - IG/UnB
Carlos Tadeu Carvalho do - IG/UnB
Leila Nunes Menegasse - IGC/UFMG
Gerson Cardoso da Silva Junior - DG/UFRJ

Subject of thesis: Data Processing in Geology and Environmental Analysis

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

The Urucuia Aquifer System (UAS) represents a groundwater reservoir of regional extension, composed by related aquifers subtypes. The aquifer is constituted by aeolian quartz and feldspatic sandstones, well selected, with the presence of silicified levels, and in smaller proportion conglomeratic levels, related to the Urucuia Group, Upper Cretaceous of the Sanfranciscana Basin, the Phanerozoic São Francisco Craton cover.

The effective area of UAS extends for 76.000 km² from the south of Piauí state to the northwest of Minas Gerais state, with the

larger expression in the west of Bahia state. It presents a longitudinal divisor axis that separates the flow to the west (Tocantins river watershed) and to east (São Francisco river watershed). Westward of the divisor there is a progressive increase in the depth of the potenciometric surface, characterized by deep static levels. The available data allows the proposition of four aquifers subtypes in the UAS: regional free aquifer; perched local aquifer; confined or semi-confined aquifer and deep free aquifer.

The hydrodynamic parameters are: hydraulic conductivity (K) of 10-6 to 10-7 m/s and transmissivity (T) of 10-4 to 10-5 m²/s (regional free aquifer); K=10-6 m/se T=10-3 m²/s (deep free aquifer); K=10-5 m/s, T=10-3 to 10-2 m²/s and storage coefficient (S) of 10-4 (confined or semi-confined aquifer).

The thickness of the Urucuia Group rocks vary from 100 to 600 meters in the 27 points submitted by geophysics study, with use of the electromagnetic vertical sounding. The saturated thickness in the UAS, vary from 80 meters up to 460 meters.

The hydrogeologic budget applied to a specific area of the UAS for the period from 1982 to 2002 showed that the recharge in the saturated area of the system is about 24% of the rain precipitation. The base flow represented 90% of the total discharge registered in the stations in the period. The budget that evaluated the saturated area as the observation system it was obtained the sum of the storage in the saturated area plus the volume transmitted for the underlying aquifers (basement rocks). This value represents 17% of the recharge in the saturated area of the UAS in that area and only 4% of the precipitation, for the considered period.

The permanent reserve of the UAS is 2.46·1012 m³, the renewable reserve was of 3.13·1010 m³/year, while the exploitable reserve was about 3.13·1010 m³. The following activities are suggested to the management of the system: seasonal monitoring of the static levels; data collection for the majority of the wells including the number and types of users of the groundwater; application of economic parameters to the use of water; improvement in the environmental monitoring with respect to the maintenance of natural areas; observe the rational use of the water and to develop the technique of storage of rainwater to use in plantation pulverization.

Leme,J.M. 2006. Cladistic analysis of Conulariidae Walcott (Neoproterozóoic-Triassic) : characterizing and defining a group of extinct. PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2433 **2006** *Date of presentation:* 6/3/2006

Juliana de Moraes Leme *Advisor(s):* Simões,M.G.

Committee:

Subject of thesis: Sedimentary Geology

State: *1/1,000,000 sheet:* *Centroid of the area:* ' - 'W

Abstract

Martins,L. 2006. Generation and migration of granitic magmas in the continental crust: Detailed studies in granites and migmatites from the Nazaré Paulista region (State of SP). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2422 **2006** *Date of presentation:* 3/2/2006

Lucelene Martins *Advisor(s):* Janasi,V.A.

Committee:

Subject of thesis: Mineralogy and Petrology

State: SP *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Silva,C.M.G. 2006. Application of radiogenic isotopes in the Cuiabá mine gold mineralization, Rio das Velhas greenstone belt (State of MG). PhD Thesis; Institute of Earth Sciences, University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2424 **2006** *Date of presentation:*

Cintia Maria Gaia da Silva *Advisor(s):* Tassinari,C.C.G.

Committee:

Subject of thesis: Mineral Resources and Hydrogeology

State: MG *1/1,000,000 sheet:* SF23 *Centroid of the area:* ' - 'W

Abstract

Zanon,C. 2006. Petrography, chemical mineralogy and geochemistry of the dike swarms and their host rocks in the Piratini and Pinheiro Machado regions, State of RS. PhD Thesis; Institute of Earth Sciences,

University of São Paulo, São Paulo, pp

Instituto de Geociências - Universidade de São Paulo *Reference:*

DataBase Ref.: 2434 **2006** *Date of presentation:*

Celí Zanon *Advisor(s):* Machado,R.

Committee:

Subject of thesis: Geochemistry and Geotectonics

State: RS *1/1,000,000 sheet:* SH22 *Centroid of the area:* ' - 'W

Abstract