they are bound to the different soil components since their mobility depends on this, as do the mitigation and remediation of contaminated areas.

By means of sequential extractions the hydrogeochemical behavior of metal ions in contaminated soils will be determined. This method selectively extracts metallic ions associated with different soil fractions through sequential utilization of reagents from the least to the most aggressive.

Of interest in this project are the exchangeable ions, bound to oxides/hydroxides of iron and manganese, to carbonates, to organic matter, and to residual binding fractions.

The sequential extraction procedure for determination of heavy metals and their speciation in soils have been developed in the past 20 years. This methodology was introduced by Tessier et al. (1979) and later publications are largely based in this work.

In most of the literature references, the conditions under which the extractions were performed are not completely specified. Also, depending on the soil type and the metals analyzed, the extractions may present difficulties which have to be overcome.

In this study, the selective extraction methods will be chosen, those which are most interesting will be tested, and new methods will be developed.

An experimental station will be built for collecting soil and water samples, monitoring wells and carrying out experiments. In situ monitoring of parameters such as pH, Eh, CE, temperature and alkalinity will also be performed.

This project will contribute to our understanding about important mechanisms of mobility and fixation of metallic ions associated with soils. — (*December 14, 2001*) .

MORPHOLOGY OF THE IBIRAQÜERA DUNEFIELD, SC*

CAROLINE T. MARTINHO** AND PAULO C.F. GIANNINI

Departamento de Geologia Sedimentar e Ambiental, Instituto de Geociências, USP, São Paulo, SP.

Presented by ANTONIO C. ROCHA-CAMPOS

The Ibiraqüera beach is located in the municipal district of Imbituba, mid-south coast of the Santa Catarina State. The active dunefield present in this beach possesses parabolic geometry and oblique position to the coastline. It begins with foredunes, that locally appear cut and destabilized by for blowouts. Towards the interior, the dunefield passes into an extensive deflation area. This area is composed by deflation plains, usually vegetated and/or flooded, gegenwalle ridges, trailing ridges and isolated parabolic dunes. The trailing ridges appear as lateral portions of transverse and barchanoid dunes. They are fixed by vegetation and left back while the rest of the dune migrates, forming straight ridges of sand, vegetated in the external part and unvegetated in the internal part. The gegenwalle ridges appear in the deflation plain as small ridges of sand (approximate height of 1 m) that possess the identical format of the barchanoid and parabolic dunes' windward limit. They form periodic sequences that record dunefield migration in the deflation area. The parabolic dunes present unvegetated sands in the main advance front (depositional lobe), trailing ridges on both sides with a deflation plain between them. In the internal part of the dunefield the deflation facies disappears, giving place to chains of transverse and barchanoid dunes. They finish in secondary advance fronts contained by the vegetation (precipitation ridges). The whole internal and frontal dunefield borders possess precipitation dunes. In old dunefields totally vegetated now, morphologic features were also recognized such as precipitation dunes and deflation plains.

In Ibiraqüera it is possible to notice that the dunefield started from the north part of the beach and migrated SW, toward the continent. The north section of the beach possesses higher sediment supply than the other sites, seeing that the foredunes in this area are not very well developed, and are buried by small transverse dunes that appear close to the beach.

The characterization of the facies of the Ibiraqüera dunefield allowed to correlate this dunefield to the typical distal or deflation facies association described by Giannini (An Acad Bras Cienc (1998) 70(3): 696). — (*December 14, 2001*) .

* Supported by FAPESP 99/05740-3.

**E-mail: ctmartinho@hotmail.com

HEAVY METALS CONCENTRATION (Cr, Cu, Ni and Zn) IN BOTTOM SEDIMENTS OF THE EMBU-MIRIM RIVER – SP

CLAUDIA L. MOURA[1]* AND JOEL B. SÍGOLO[2]**

[1]Programa de Pós-graduação em Geoquímica e Geotectônica, Instituto de Geociências, USP, São Paulo, SP.

[2]Departamento de Geologia Sedimentar e Ambiental, Instituto de Geociências, USP, São Paulo, SP.

Presented by ANTONIO C. ROCHA-CAMPOS

Heavy metals distribution in the aquatic ecosystems endowed with human activities is nowadays a serious environmental problem. The number of studies related to heavy metals and bottom sediments have been growing lately, because the bottom sediment is the main reservoir for heavy metals contents.

Ten samples from the Embu-Mirim river were collected and studied in this basin to measure downstream towards the Guarapiranga Reservoir. The purpose is to study the Cr, Cu, Ni and Zn contents in the bottom sediments sampled by means of two subsamples, one at the top and the other in the base of the core sediments. The influence of the physicochemical properties (pH and Eh), the organic matter data and granulometric data were correlated to the heavy metals found in this environment. The research shows the probable contamination by those metals in the sediment of the Guarapiranga Reservoir.

The results obtained so far suggest a possible tendency of the values of Cr, Ni and Zn to depend on the properties of the organic matter, and that the Cu amounts are being governed by the pH values, as a function of the sources emission of those metals. The granularity is directly related to the concentration of the metals, because the sampling stations with larger amounts of metals are clayey, while the smallest amounts were found in the stations of sandy size.

With the collected data, an environmental approach becomes relevant in the area, seeking to improve the quality of the bottom sediment, mainly for Cr and Ni that present considerable decline in the quality of the water of the Guarapiranga Reservoir. — (*December 14, 2001*) .

* E-mail: clau__clau@uol.com.br

**E-mail: jbsigolo@usp.br

FACIES, 3rd ORDER SEQUENCE STRATIGRAPHY AND HYDROLOGIC POTENTIAL OF SANDSTONES, MAFRA FORMATION (LATE PALEOZOIC), PARANÁ BASIN, BRAZIL*

CONRADO E.B. PICOLO AND JOSÉ R. CANUTO**

Instituto de Geociências, USP, São Paulo, SP.

Presented by ANTONIO C. ROCHA-CAMPOS

The middle part of the Mafra Formation shows, in Mafra and Rio Negro, a great thickness of diamictites, sandstones, shales, siltites and varvites.

According to Canuto's (1999) nomenclature, the following facies were recognized, in a general way: compacted massive diamictite, lenticular diamictite, cross-bedded and showing fining-upward sandstone, lenticular sandstone, massive siltite, massive siltite with dispersed clasts, laminated or massive shale with dispersed clasts, interlaminated (very fine sandstone intercalated with silty shale), and regular rhythmite, some of them corresponding to diagnostic (#) facies of facies associations.

Four facies associations were also recognized: A_1, compacted massive diamictite#; A_2, laminated or massive shale with dispersed clasts#; lenticular diamictite; cross-bedded and showing fining-upward sandstone, lenticular sandstone, massive siltite with dispersed clasts# and regular rhythmite#; A_3, massive siltite, lenticular diamictite and cross-bedded and showing fining-upward sandstone; and A_4, interlaminated#, lenticular sandstone and cross-bedded and showing fining-upward sandstone; they represent, respectively, lowstand, transgressive, highstand and regressive glacio-isostatic system tracts, forming a complete 3rd order sequence.

The alternation of psammitic and pelitic sediments identified sandstone porosities between 20 to 25% and the observed permeability of 10^{-3} cm/s indicate a good potencial as aquifers.

According to their great lateral extension, it can be expected that they can supply the local community even without a systematic exploration. Besides existing wells in the vicinity, water seeps in outcrops, directly used by the population have also been verified. — (*December 14, 2001*) .

* Supported by FAPESP 97/13973-2.

**E-mail: jrcanuto@usp.br

PROBABLE FIRST OCCURRENCE OF LYCOPODIALES IN THE GONDWANA NEOPALEOZOIC*

FRESIA RICARDI-BRANCO[1]** AND

MARY E. BERNARDES-DE-OLIVEIRA[2]***

[1]Departamento de Administração e Política de Recursos Minerais (DARM), Instituto de Geociências, UNICAMP, Cidade Universitaria Zeferino Vaz, Cx. Postal 13083-970 Campinas, SP, Brazil.

[2]Laboratório de Geociências – UnG, Guarulhos, SP and Instituto de Geociências – USP, São Paulo, SP.

Presented by ANTONIO C. ROCHA-CAMPOS

The Transitional ''A-B'' Taphoflora is a Lower Permian plant megafossil association of the Paraná Basin (Southern Brazil), whose type locality is located on the Sítio Itapema Cerquilho (SP). In this taphoflora there