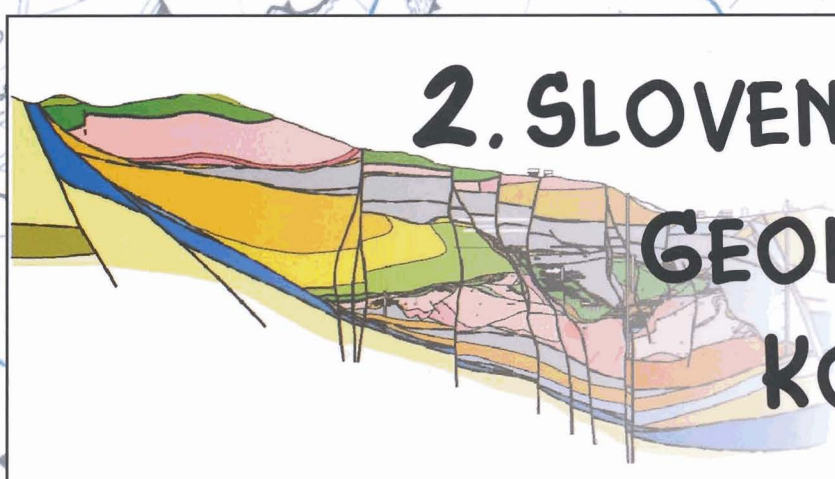
ZBORNIK POVZETKOV
BOOK OF ABSTRACTS



2. SLOVENSKI GEOLOŠKI KONGRES

Idrija, 26. - 28. september 2006

PRESERVATION, ABUNDANCE AND ARCHITECTURAL VARIATIONS OF OSTRACODS IN DIFERENT MIOCENE PALEOENVIRONMENTS OF NORTHERN CROATIA

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During the Neogene period North Croatian Basin was a part of the south-western margin of the Pannonian Basin System. The investigation area extends from the Medvednica Mt. up to the Slavonian Mts. The different type of palaeoenvironments in the Early Miocene (freshwater, brackish and marine) and Middle Miocene (marine) results with different ostracode assemblages. The chemistry, archictural variations, abundance and perseverance of ostracode shells can provide useful information's about the environment in which the animal lived.

In total, 24 freshwater and brackish-freshwater genera of the Early Miocene (Ottnangian, Karpatian?) and 39 Early to Middle Miocene (Karpatian, Badenian) marine genera have been determined.

The oldest Miocene sediments in Northern Croatian Basin are alluvial sediments without ostracod fauna. They are generally covered with lake sediments. In the history of the Early Miocene - Ottnangian Lake it is possible to recognize oligotrophic and eutrophic phase. During the eutrophic phase of the Lake we noticed marine ingression, documented with specific assemblages of ostracods: subspecies Cyprideis heterostigma *sublittoralis* (with specific nodulation on shells in juvenile stages and sharp of sieve pores on adult species) together with marine ostracod genus *Aurila* and foraminifer Ammonia. The stabile lake phase results with abundant, very well preserved, adult ostracod fauna. On surface and marginal edge of some valves of adult lacustrine species Cypria dorsalta and *Amplocypris* sp. it was possible to recognize bacterial activities.

The first marine transgression played a great role during the Karpatian age, Influx of the sea water into the lake caused the extinction of freshwater-brackish ostracods and appearance of the new marine fauna. In the lowermost part of marine sediments ostracods were represented only with younger instars and small number of adult individuals.

Ostracod distribution closely follows regional geological events. Transgressive phases resulted in a very diverse fauna, while regressive phases are characterized with small number of opportunistic taxa, but with a great number of specimens.

THE HOLOCENE OSTRACODS FROM VRANA LAKE (CRES ISLAND - CROATIA)

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Lake Vrana (Vransko Jezero) is a deep and large freshwater karst lake on the northern Adriatic Island of Cres, Croatia. Lake surface area is 5.73 km^2, rhe makximum lenght is 5.5 km and the maximum width is 1.5 km. The lake is situated in a depression, with maximum depth of 75 m. A recent multi-proxy study (Schmidt et al, 2000) of a 5 m dated core from the central part of the lake showed the considerable lakelavel changes during the last 16.000 years. The lake is low in productivity, and the phytoplankton composition indicates oligothropic character (Tomec et al., 1996). Samples were collected during the year 2001. The total of 13 cores 85 to 90 cm long were obtained by scuba diving from the flat bottom (50m +/-2 m) of the lake. The present study is based on three drilling cores located on diferent locations and water depths.

The first study on the Holocene ostracods of the Lake Vrana documents the distribution of 9 freshwather species: *Candona* candida (O.F. Muller), Pseudocandona *hartwigii* (G.W. Muller), Ilyocypris brady Sars, Metacypris cordata Brady & Robertson, Darwinula stevensoni Brady & Robertson, Cypria ophtalmica (Jurine), Cypridopsis vidua (G.W. Muller), *Cytherissa* lacustris (Sars) and Herpetocypris brevicaudata (Kaufmann).

The determined species could be divided in two main types of assemblages: littoral-sublittoral assemblage and a profundal assemblage.

The littoral-sublittoral assemblage is rich in species. It contains species which either swim beetwen the macrophytes or creep on/in the substrate: Darwinula stevensoni, Herpetocypris *brevicauda*ta, Metacypris cordata, Cypridopsis vidua, *Candona* candida and *Ilyocypris* brady.

The profundal assemblage is less diversified and contains 1-2 species. The dominant profundal species of Lake Vrana is Cytherissa lacustris, abundance of which is generally over 60 % in the first 40 cm of core samples. In deeper parts of the lake *Cytherissa lacustris* is coming together with the species Cypria ophtalmica and in shallower parts of the lake with the species *Ilyocypris* brady. In the lowermost part of the sediment cores Cytherissa lacustris occurs in a very low abundance (4-5 valves per sample).

Cytherissa lacustris exclusively inhabits the bottom of cold, well-oxygenated lakes with low productivity. The higest densities seem to occur in lakes at depths between 12-40 m. Changes in abundance of these species indicate alterations in climate, bottom substrate, waterlevels and water inflow.

MIOCENE FORAMINIFERAL TESTS - SOURCE OF DATA ON PALAEOENVIRONMENTS

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Miocene rocks in Northern Croatia, deposited in Southwestern Paratethys, are well developed and represented with different clastic and carbonate facies. A nicely exposed Miocene profile was described from Donje Orešje quarry in SE Medvednica Mt. Upper Badenian marls of the Zone Bulimina-Bolivina contain numerous fossils of benthic foraminifer genera: Bolivina, *Cassidulina, Globocassidulina,* Uvigerina, Cibicidoides, *Planulina,* Elphidium, Asterigerinata, and planctonic taxa: *Orbulina,* Clobigerinoides and Clobigerina, varying in abundance from 1,59 to 85,81 %. Sarmatian sediments were deposited continuously. They contain less abundant fossil communities, with generally smaller specimens. Lower Sarmatian Zones Anomalinoides badenensis and Elphidium reginum, as well as Middle Sarmatian Zone Elphidium hauerinum were recognized. Content of planctonic foraminifera is significantly reduced, and varies from 0,68 % to 16,28 %. The most abundant taxa are *Elphidium, Anomalinoides,* Bolivina, Ammonia and Rosalina.

Diagenetic mineralization processes were investigated by a Tescan TS 5136 SEM microscope equipped with an Oxford energy dispersive spectrometer. During the taphonomical processes, due to the microbiological activity, H_2S, CO, and different organic acids cause the decrease in pH of the sea water.

Sulphide minerals (e.g. pyrite) can be precipitated under such conditions. Depending on the deposition rate and chemical composition of pore waters this primary sulphidization can be preserved, or oxidized into iron oxide minerals. During the increase in pH and Eh of microenvironments, $CaCO_3$ can be precipitated, often fulfilling the whole foraminiferal tests. According to the different environmental factors, sulphide and carbonate mineralization can not be precipitated together within the same microenvironment. In Badenian samples sulphide minerals are not present. Presence of hematite indicates a well oxygenated environment. Sparry calcite is present within the foraminiferal tests, usually typical for elevated pH values of sea-water (>8). It is possible to find traces of the fossil microbial activity within the tests.

Sarmatian tests, on the contrary, often contain pyrite. Gradual decrease in sparry calcite moulds can be traced in Sarmatian beds.

Data obtained from diagenetic features support a theory of shallowing-upward and gradual decrease of salinity during the Sarmatian.