

Paleoecology and sedimentology of the Miocene marine and terrestrial sediments on the Devínska Kobyla hill and Hainburg hills (Vienna Basin)

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Dramatic tectonic and sea level changes of the Central Paratethys realm during the Middle Miocene (Late Badenian to Early Sarmatian) resulted in the coastal morphology and seabed changes affecting marine association composition and distribution of the facies along the coast. Three different episodes in the environmental evolution were interpreted in localities on the Devínska Kobyla hill and Hainburg hills spaced 8 km apart.

Lower marine episode (Late Badenian; Serravallian) was dominated by coarse grained sandy carbonatic and siliciclastic deposits derived from the crystalline rocks and Mesozoic sedimentary cover of the Malé Karpaty Mts. what point to the uplifted position of the source area. Still active tectonic movement of the region was documented by presence of clastic dikes. The sequence is characterized also by organodetritic sedimentation on and around the algal bioherm. Maërl facies (with unattached algal protuberances) typical for high energy “rhodalgal” environment evolved on the top of algal mound. On the slopes “rhodechfor” rim separated the bioherm from the rest of the bottom with seagrass cover and crustacean burrows. In the study area, this high energy rhodechfor is the most abundant environmental type. It is composed mostly of coralline algae (*Mesophyllum*, *Lithothamnion*, *Spongites*, *Lithophyllum*), benthic foraminifers (*Elphidium crispum*, *Neoconorbina terquemi*, *Miniacina* sp., *Borelis melo*), echinoids (cidaroid, spatangoid and diadematoid group), bivalves, bryozoans, serpulids and ostracods. Coralline algae form unattached protuberances and less praline rhodolith growth forms. Rare “echinofor” skeletal assemblage is characterized by the dominance of irregular echinoid fragments. “Bimol” skeletal assemblage with high amount of bivalves formed also in greater water depths was identified in couple of sites.

On the basis of fossil assemblages the studied sediment can be correlated with recent Mediterranean infralittoral biocenoses of „coarse sands and fine gravels mixed by waves“ and „coarse sand and fine gravels under bottom currents (SGCF)“ and circalittoral “coastal detritic (DC)” composed of organodetritic gravel with terrigenous sand and mud.

Shallow marine non-tropical rhodechfor, rhodalgal, echinofor and bimol skeletal assemblages are described from the Central Paratethys realm for the first time. Sparse solitary corals which did not form greater accumulation point to the non-tropical conditions. Warm temperate climatic zone where melobesoid algae associated with mastophoroids and lithophylloids was interpreted. Most of the studied sediment

accumulated predominantly in the sublittoral zone influenced by waves and currents in the laguna or shelf with maximum water depth of 25 m.

Overlying terrestrial sedimentation sequence is represented by regolith, paleosol and channel body sediments set discordantly on the top of the lagunal deposits. In the studied area this sediment is documented only from the “Medieval quarry” situated on SW slope of Devínska Kobyla hill.

Subsequent transgressive marine sequence (Lower Sarmatian; Serravallian) is characterized by coarse pebbly sediment with provenance in uplifted pre-Neogene basement.

Serravallian (Upper Badenian to Lower Sarmatian) age was inferred on the basis of the benthic foraminifera, calcareous nannoplankton and bivalve assemblages. *Titanoderma pustulatum* (Lamouroux) Nägeli point to the communication between Central and Eastern Paratethys realms.

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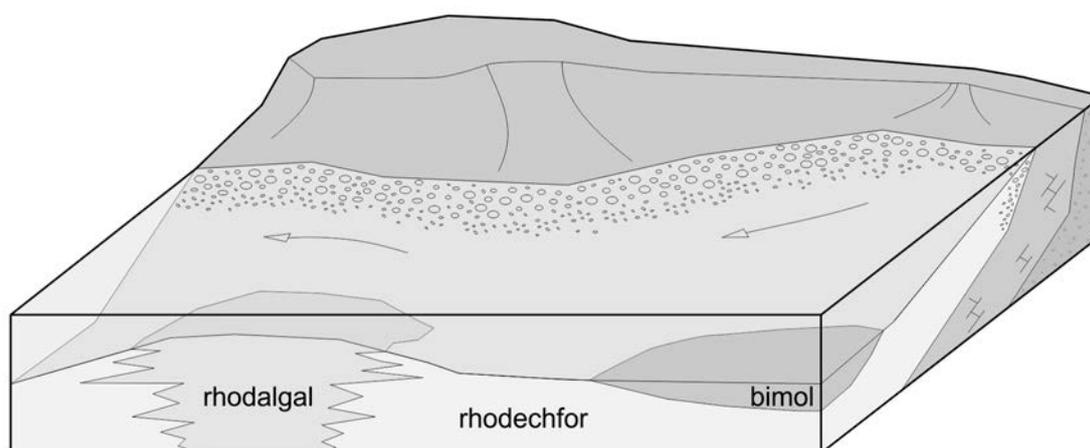


Figure 1: Block diagram of Middle Miocene environment with skeletal assemblages in Devínska Kobyla hill and Hainburg hills.