

Alternation of Miocene facies and sediment entry points in the Blatné depression of the Danube Basin

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Deep petroleum wells drilled in the Blatné depression of Danube Basin penetrated a Cenozoic sedimentary record with a total thickness of ~ 3500 meters. The fill is composed from a narrow strip of the Inner Central Carpathian Paleogene sediments which occur in the northern part of the depression. These sediments are discordantly overlain by lower Miocene deposits (Biela 1978; Kováč 2000; Vass 2002). A short hiatus follows and the majority of sediments is then composed from Langhian (Lower Badenian) and Serravallian (Upper Badenian-Sarmatian) strata (Rybár et al. 2015, 2016). Deposition during the lower Miocene prerift stage was dominated by local fan-deltas and alluvial fans. The provenance analysis indicates erosion of pre-Neogene basement which entered the depression mainly from the SE and NW. In the central part a small but deep depocenter allowed sedimentation of offshore to possibly bathyal mudstones. The early synrift sedimentation began during the Burdigalian/Langhian transtensional opening of the Blatné depression. Conglomerates and sandstones were deposited and material entered the juvenile depocenters from all directions. During the Langhian synrift stage the accommodation space continued to grow and offshore environment developed in the central part of the depression. The offshore environment was surrounded by shoreface and deltaic environments that occurred on the depression margins. Provenance analysis confirmed ongoing erosion of basement rocks and erosion of some additional Miocene volcanic material that started to enter the depression from the SE. Nonetheless the main sediment entry points are in the W and NW parts. The whole depression is flooded for the first time during the early Serravallian late synrift stage and the depocenter shifts towards the East, what can point to an active sediment entry point in the NW. Offshore environment still prevails in the center of the depression, but the rest of the area is dominated by shoreface and deltaic environments. The late Serravallian postrift stage is connected with pronounced normal regression. River dominated deltas and vast coastal plains occupied the area. The main sediment entry points were in the W and NE. According to Šujan et al. (2016) these environments are later replaced by shallow lake, deltaic and alluvial plain conditions that prevailed during the Tortonian - Pliocene interval.

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