Neogene changes of the East Slovakian Basin paleoenvironment — a result of interaction of tectonic events with sea level oscillation

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The East Slovakian Basin is situated in the NW part of the Transcarpathian depression and attains 8–9 km depth. The basin development started in compressional regime and can be regarded as a relic forearc basin during the Early Miocene. The Middle Miocene crustal stretching controlled formation of the synrift back arc basin development, followed by thermal postrift subsidence during the Upper Miocene.

Interaction of tectonic events and sea level changes had

important influence on the paleoenvironment of the East Slovakian Basin. Definition of main tectonic events is based on structural and sedimentological observations. The eustatic oscillations are reflected in the coastal onlaps and changes in shallow water environment. The sea level rise or fall were defined by paleoecological study of foraminiferal associations in the offshore environment. The correlation of constructed curves for the environment paleodepth and coastal onlap with global reference curves shows some discrepancies, caused mainly by tectonic events during the basinal development.

In contradiction to the Early Miocene global sea level rise the, Eggenburgian paleoenvironment of the East Slovakian Basin changed from the deep water high-energy to the shallow water high-energy due to collisional tectonics, followed by an uplift and hiatus during the Ottnangian. The Karpatian transgression can be correlated with global coastal onlap, but the intra Karpatian sea level oscillations were tectonically controlled in contradiction to the Badenian ones, and were caused by the global sea level rise in the Lower Badenian and by a global sea level fall at the end of the Middle Badenian. The Upper Badenian transgression and coastal onlap are the last well observed global events in the sedimentary record of the East Slovakian Basin. The Sarmatian gradual shallowing, or local sea level fall was mainly controlled by synsedimentary tectonics during the basin development.