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**Environmental changes in the Paleogene World:  
Insights from organic matter-rich Oligocene rocks in the Paratethys**

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Organic matter accumulation and preservation are largely controlled by environmental factors like climate, salinity, redox conditions, sediment dilution, etc. Thus, organic matter-rich rocks are archives for environmental changes in the depositional realm.

Organic matter-rich Oligo-/Miocene rocks in the Paratethys are proven hydrocarbon source rocks in the Alpine foreland basin, the Carpathians, the Hungarian Paleogene basin, the Black Sea, the Caucasus and the Caspian Sea. Borehole and outcrop sections of these sediments have been studied using organic geochemical parameters (incl. biomarkers) and applying a high resolution approach in order to study vertical variations in the source rock potential. The aim of the present contribution is to compare the source rock intervals in different basins and to evaluate the controls of basin-wide environmental changes on organic matter richness.

Source rocks in the Alpine foreland basin (Schöneck Fm., Dynow Fm., Eggerding Fm.) are characterized by high lateral continuity, but major vertical changes in source richness, which can be related to the establishment of photic zone anoxia, changes in salinity as functions of the isolation and connection of the Paratethys, and dilution by cyclic blooms of calcareous nannoplankton. Similar processes together with diatom blooms controlled source rock quality in the western Carpathians (Menilite Fm.).

Stratigraphic ages of the Oligocene rocks are still discussed controversially. However, some marker horizons help to correlate sections in the Central and Eastern Paratethys. Amongst these is the Dynow Formation, which forms a prominent carbonate-rich horizon in the Alpine foreland basin, the Carpathians and the western Black Sea area and which can be correlated with the Ostracoda Bed of the Maikop Fm. in the Caucasus area. In all mentioned areas, rocks with high hydrogen index values indicating enhanced organic matter preservation are related to this (“Solenovian”) horizon.

On a large scale two trends are visible: (1) Organic matter contents and organic matter preservation decrease eastwards from the Central Paratethys towards the Eastern Paratethys and (2) organic matter contents and organic matter preservation decrease from Lower Oligocene towards Upper Oligocene successions. In some areas organic matter-rich rocks occur in the Lower Miocene section. On a smaller scale, the large scale trends are influenced by local factors controlled by the tectono-sedimentary evolution of each basin.

It is planned to study additional profiles in the future, but the greatest challenge ahead is to date the sediments precisely.