

Miocene and Pliocene palaeogeography of the West European Platform

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Based on stratigraphic and palaeoenvironmental analyses of its numerous Tertiary basins, palaeogeographic maps of the West European Platform have been compiled for the Chattian-Aquitainian, Burdigalian, Langhian-Tortonian, Messinian and Zanclean-Piacenzian time intervals. The sequence stratigraphic records of the basins indicate that Neogene tectonic activity related to intra-plate stresses and plate motions generated by the continuing collision of Apulia and Europe played an important role in basin development, as during the Paleogene. Eustatic changes in sea level induced major changes in the palaeoenvironmental evolution of the West European Platform, for instance by terminating the occurrence of saline passages between basins. In general, minor changes in relative sea level and restricted tectonic events had great impacts on the environmental and depositional development of the generally shallow-water, filled to overfilled basins. These effects are illustrated for the Rhenish Triple Junction, which structure comprises the Upper Rhine Graben, Hessen Depression, Neuwied Basin, and Lower Rhine Embayment. In particular, the episodic existence of saline communication of the Upper Rhine Graben with the external marine realms is evidenced by the immigration of different species of fish from the north (North Sea Basin), the south (Mediterranean Basin) or the east (Paratethys).

Stratigraphy and paleogeography of the Eastern Paratethys

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Stratigraphy

“Gold nails” for Paratethyan stratigraphy are several brackish levels in the basin evolution and their related occurrence of endemic biota. An explosive evolution of ancestral marine euryhaline forms and rapid extinction in unstable environments of semi-closed basins are observed among molluscs, ostracods, diatoms, and dinocysts. They provide a possibility for precise stratigraphic correlations. The best studied and most useful group are the molluscs.

The first appearance of specific Paratethyan short-lived endemics took place as a result of the Solenovian brackish event during the Rupelian (BALDI 1984, VORONINA & POPOV 1984, MERKLIN 1974, RUSU 1988, NAGYMAROSY & VORONINA 1993). This event distinctly influenced the mollusc, ostracod (*Disopontocypris oligocaenica* - Association), calcareous nannoplankton (bloom of *Reticulofenestra ornata*, *Transversopontis fibula*), and dinocyst composition as well as the sediments. It is recognized from the Alps to Lake Aral and Kopet-Dagh and reflected in the stratigraphic scheme of Fig. 1 as Level 1. The Solenovian mollusc fauna possibly originated in the Transcaucasian area (South Georgia, Akhaltsikhe).

The second event occurs in the Upper Ottnangian – Kozakhurian (Level 2 in Fig. 1). This brackish level is based on molluscan and foraminiferan data and can be observed from the Swiss Molasse Basin to the northern Lake Aral area and the western Kopet-Dagh (POPOV & VORONINA 1983). Transitional forms from euryhaline ancestral *Cerastoderma* to endemic *Limnopageta* and *Limnopappia* are observed in material from Bavaria (SCHLICKUM 1962,

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