

2009 Portland GSA Annual Meeting (18-21 October 2009)

Paper No. 198-15

Presentation Time: 5:15 PM-5:30 PM

A HIGH-RESOLUTION RECORD FROM OUTCROP- TO MM-SCALE OF LATE MIOCENE LAKE PANNON (AUSTRIA)

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Lake Pannon is an example of a Paleo-ancient lake, which existed for approximately 6 My in SE Europe. Its paleogeography and hydrology was largely controlled by regional tectonics. Climatic factors, however, have affected the lake history significantly. Evolutionary lineages of aquatic biota as well as immigration events of terrestrial mammals provide a detailed biostratigraphic framework that is successively refined by magneto- and sequence stratigraphy as well as astrochronologic approaches.

On the western coast of Lake Pannon (SE Austria) a c. 30 m thick section was subject of a multi-proxy study. The exposed Lower Pannonian transgressive-regressive cycle comprises a time interval of around 300 ky. Gamma-ray and kappa logs were continuously taken over the whole section with a sample distance of 50 mm, bulk samples for geochemical and micropaleontological analyses in c. 1 m sampling intervals. Geochemistry (total carbon, total organic carbon, carbonate (calcite), sulphur), magnetic susceptibility and ostracod assemblages of the lower, transgressive part of the section were analysed in samples spaced 5 mm.

In general, the section shows a coarsening upward trend starting at its base with fine grained, laminated sediments of a limnic environment which grade into a silty-sandy succession reflecting a prograding delta. This coarsening upward trend is clearly represented in decreasing gamma-ray values. A decreasing trend is also observed in the kappa log, in carbonate, TOC and S contents and in the abundance of ostracods. On a higher resolution scale the gamma-ray- and kappa logs show distinct reverse trends and exhibit clear periodicities which correspond well with 100 ky eccentricity and 41 ky obliquity cycles of the Milankovitch band. These seem to be an important trigger for the general paleoenvironmental development of this parasequence.

Beyond these long-term cycles high-resolution geophysical/geochemical logging and ostracod analyses (dominant taxa: *Cyprideis*, *Loxococoncha*, *Hemicytheria*) revealed intense oscillations on estimated timescales of tens to hundreds of years. These cycles show a strong coupling of magnetic susceptibility and ostracod abundance and seem to reflect fluctuations in solar activity which may have also modulated Lake Pannon's environments.

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