Strontium isotope stratigraphy vs. calcareous nannoplankton datums in an epicontinental sea – a case study from the Miocene Paratethys

Katarína Holcová

Institute of Geology and Palaeontology, Charles University, Albertov 6, 128 43 Praha 2, Czech Republic. holcova@natur.cuni.cz

Filip Scheiner

Institute of Geology and Palaeontology, Charles University, Albertov 6, 128 43 Praha 2, Czech Republic
Institute of Geology of the Czech Academy of Sciences, Rozvojová 269, 165 00 Praha 6 Lysolaje, Czech Republic

Lukáš Ackerman

Institute of Geology of the Czech Academy of Sciences, Rozvojová 269, 165 00 Praha 6 Lysolaje, Czech Republic

Jan Rejšek

Institute of Geology of the Czech Academy of Sciences, Rozvojová 269, 165 00 Praha 6 Lysolaje, Czech Republic

Václav Santolík

Institute of Geology and Palaeontology, Charles University, Albertov 6, 128 43 Praha 2, Czech Republic
Institute of Geology of the Czech Academy of Sciences, Rozvojová 269, 165 00 Praha 6 Lysolaje, Czech Republic

Biostratigraphic correlations in semi-enclosed epicontinental seas are affected by many specific paleoenvironmetal patterns occurring in these marine basins, which do not have precise Recent equivalents. Therefore, the following problems arise concerning the use of biostratigraphy and also Strontium Isotope Stratigraphy (SIS): (1) The timing of bioevents was dependent on specific paleoenvironmental conditions that were limiting factors for survival of the index organisms in particular basins; this is especially true for basins that were located along communication gateways; (2) Specificity of seawater chemistry arising from varying fresh-water input, together with rock weathering intensity in surrounding drainage areas (weathering of carbonates may significantly influence the $^{87}Sr/^{86}Sr$).

The aim of our research was to compare large $^{87}Sr/^{86}Sr$ dataset (100 values; obtained from benthic and planktic foraminifera, otolith and molluscs) with calcareous nannoplankton datums for the upper Burdigalian-Serravallian interval. As our study area, we selected the Eocene to Miocene system of European epicontinetal seas called the Paratethys, that was connected periodically with the surrounding oceanic domains. The following bioevents can be identified within this interval in the selected study area: the last occurrence (LO) of *Helicosphara ampliaperta*, the first occurrence (FO) and the LO of *Helicosphaera waltrans*, the FO of *Helicosphaera walbersdorfensis*, and finally the LO of *Sphenolithus heteromorphus*. To conclude, the $^{87}Sr/^{86}Sr$ is significantly influenced by the character of weathered rocks among the surrounding drainage areas in the studied epicontinental basins. Carbonate rocks can significantly shift the $^{87}Sr/^{86}Sr$, while in areas with dominant clastic rocks the $^{87}Sr/^{86}Sr$ are close to the oceanic values.