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Trace elements and strontium isotopic composition of late Mio-Pliocene molluscs and ostracods from the Carpathians foredeep of Romania

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Most of our current knowledge of Miocene-Pliocene climatic history in the Paratethys realm comes from autoecological assessment of aquatic organisms, from palynological studies and from correlation with better-constrained species from the Mediterranean region. However, the relationships between Mediterranean and Paratethys have been debated for long time. Normal marine connections between the Mediterranean and the Paratethys are commonly considered to have ended in the Late Miocene. Since than, the Paratethys may have become a brackish or even a fresh water basin, resulting in the complete loss of the benthic foraminiferal and in the developement of an endemic fauna with a variety of ostracods and molluscs.

Trace-element contents and Sr isotopes of Cyprideis *torosa* valves and mollusc shells from the Upper Miocene-Pliocene successions of the Romanian Carpathians foredeep were analysed to depict changes in seawater geochemistry and the paleoenvironment of the Eastern Paratethys. We selected Rîmnicu Sărat valley where the Mio-Pliocene sedimentary sequences were dated using high-resolution magnetostratigraphy. We focus on the interval between 6.3 and 4.1 Ma, comprising the Messinian Salinity Crisis and the Mio-Pliocene boundary.

Our $^{87}Sr/^{86}Sr$ values from molluscs indicate a reduction in the heavier isotope com-

pared to the general globally increasing trend of the late Neogene seawater $^{87}Sr/^{86}Sr$. The relative depleted $^{87}Sr/^{86}Sr$ values in Rîmnicu Sărat (Romania), suggest a change in water input, or the source of water input, into the basin. An increase in accumulation rate was recorded as well, indicating a change in source area and in basin configuration during the same time range (Chron C3r).

We observed a correlation between the Sr incorporated in the biogenic carbonates from the Carpathians foredeep and trends in $^{87}Sr/^{86}Sr$. Assuming a different, but more or less constant, partitioning coefficient for the two groups of organisms, would imply a general decreasing sea water Sr/Ca ratio. Changes in seawater chemistry coincide with the offset $^{87}Sr/^{86}Sr$ values from the mollusc from the general global trend for late Neogene seawater $^{87}Sr/^{86}Sr$. These independent proxies both suggest that relatively little Sr was supplied to the basin through weathering of the local mountains and that exchange with the open ocean was insufficient to counteract this. Our future work will thus focus on obtaining a high-resolution $^{87}Sr/^{86}Sr$ Paratethys record to unravel the exact timing of the separation and a possible stepwise disconnection of the Paratethys from the world ocean.