



The age of the isolation and the evolution of the sedimentary infill of the Pannonian basin

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The Paratethys was a large network of inland seas that once extended from central Europe to inner Asia, encompassing major sedimentary basins such as the Pannonian, Dacian and Euxinian (Black Sea) basin. Since the Miocene the Paratethys Sea retreated eastward to the present-day Black Sea due to the uplift of the Carpathians and other mountain ranges. One very important step in this retreat was the isolation of the Pannonian basin (Central Paratethys) from the remainder of the system. The discussion on when the isolation exactly occurred and what triggered it is still ongoing. The isolation had profound implications for the sediment transfer between the Paratethys basins; erosional products could no longer be transferred across the Carpathians, from the Pannonian and Transylvanian to the Dacian basin. This led to increased sedimentation in the Pannonian basin and, ultimately, its complete fill.

In this study we use magnetostratigraphy to constrain the age of the Miocene isolation of the Pannonian basin and also of the sedimentary infill of the basin after isolation. Samples for magnetostratigraphy and biostratigraphy were collected from the Sarmatian and Pannonian units exposed on the northern flank of the Fruska Gora inselberg (northern Serbia) in the Pannonian plain where a complete section of Middle and Late Miocene sediments is present. By correlating biostratigraphy with magnetostratigraphy we obtained absolute ages for the isolation of the Pannonian basin, as well as for the substages and biozones of the Pannonian regional stage. These precisely correlated units are additionally useful in providing quantitative constraints on the Late Miocene-Pliocene evolution of the basin infill.