



## **Mio-Pliocene magneto-cyclostratigraphy in the Carpathian foredeep and Mediterranean-Paratethys correlations**

**I. Vasiliev (1), W. Krijgsman (1), C. G. Langereis (1), M. Stoica (2), C. E. Panaiotu (2)**

(1) Paleomagnetic Laboratory 'Fort Hoofddijk', Faculty of Geosciences, Utrecht University, Budapestlaan 17, 3584 CD Utrecht, The Netherlands, (2) Faculty of Geology and Geophysics, Bucharest University, Bălcescu Bd. 1, 010041, Romania

A full understanding of the Mio-Pliocene paleogeographic and paleoenvironmental changes in the circum-Mediterranean region during the Messinian Salinity Crisis is at present hampered by the lack of reliable chronostratigraphic correlations between the Mediterranean and Paratethys regions. Here, we report magnetostratigraphic ages for the Upper Miocene to Pliocene deposits of the Carpathian foredeep in Romania. From a paleogeographical viewpoint, it represents the westernmost part of the eastern Paratethys. The Neogene chronology of this region is poorly defined and ages of stage boundaries varied by more than 1 or 2 million years in different studies.

The sedimentary succession sampled in the Carpathians foredeep produced exceptional magnetostratigraphic results that give ages of the regional stage boundaries of the Eastern Paratethys and allow an unambiguous correlation to the polarity time scale for the interval between 7 and 2.5 Ma. Moreover, the calculated values for the average duration of the observed sedimentary cycles are very close to the average duration of precession (21.7 kyr). This indicates that the sedimentary cyclicity in the Carpathian foredeep is astronomically forced. The integration of magneto, bio and cyclostratigraphy results allows the construction of a new time scale for the eastern Paratethys region. The Meotian/Pontian boundary is dated in the lower part of chron C3r at ~5.8 Ma, the Pontian/Dacian boundary around C3n.3n (Sidufjall) at ~4.9 Ma and the Dacian/Romanian boundary in the lower part of C2Ar, at ~4.1 Ma.

Our data from Romania show that slightly after the onset of the Messinian Salinity

Crisis in the Mediterranean, the marine Meotian of the Paratethys transforms to the almost fresh water environment of the Pontian Lake, probably as a result of increased river inflow. The desiccation of the Mediterranean at 5.50-5.33 Ma (Lago Mare phase) took place entirely during Pontian times, but apparently has left no clear signatures in the Carpathian foredeep of Romania. We also find no (clear) evidence that the reflooding of the Mediterranean at 5.33 (Mio-Pliocene boundary) is reflected in this region.