

Paleolatitude of the South Carpathians during Jurassic and Cretaceous: new results from the Upper Cretaceous and Paleogene of the Hateg Basin, Romania

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The South Carpathians are part of the so called Tisza-Dacia unit which forms the southern part of the Intra-Carpathian area and comprises, beside the South Carpathians, the East Carpathians, the Apuseni Mountains, and the area which is covered by the Tertiary sediments of the Transylvanian Basin. This block is characterized by a common Tertiary tectonic evolution. Geodynamic models and paleomagnetic studies give rise to the assumption of southern position of the South Carpathians relative to Europe during the Mesozoic.

Supported by a grant of the bilateral scientific/technical co-operation between Romania and Germany we started in 1994 to study the paleomagnetism of Jurassic to Cretaceous sedimentary sequences from the South and East Carpathians.

Sampling and subsequent laboratory analysis of Middle Jurassic to Lower Cretaceous sediments from Pietra Craiului and Bucegi Mts (SE Carpathians) shows a common component with steep inclinations. These directions are better grouped for some sites in geographic than in stratigraphic coordinates pointing to a post-tectonic remagnetization which took place just before the Miocene large scale rotations of the Tisza-Dacia unit. Jurassic limestones reveal a

paleolatitude of about 18 N. Upper Cretaceous paleolatitudes of 25 from the Banatites and of 28 from the remagnetized Albian Bucegi conglomerates indicate a southern position, at least up to the Late Cretaceous.

During the Maastrichtian to Paleocene, in the Hateg and Rusca Montana area (South Carpathians) continental sedimentary sequences ranging from deltaic to fluvial and alluvial fan facies, were deposited. Stratigraphic sampling of the Sinpetru Beds on the western flank of the Sibisel Valley about 5 km SE of Hateg and close to the southern main fault of the Neogene Hateg Basin were carried out in order to establish a magnetic polarity stratigraphy and to determine the paleolatitude during Maastrichtian and Paleocene times.

The laboratory analysis of pilot specimens of each site shows mainly reversed polarity. Normal polarity occurs only in the lowermost part of the section. High resolution stepwise thermal demagnetization up to 675°C reveals preliminary results which indicate about 70 clockwise rotation of the area and inclinations which yield paleolatitudes of about 25–30 N.

The main conclusions are:

- the results are most promising for our magnetostratigraphic approach,
- the Cretaceous collision took place in a coordinate system with north–south striking sutures in the South and East–West striking sutures in the East Carpathians,
- the paleolatitude during Maastrichtian and Paleocene was still about 25–30 N.