Geophysical Research Abstracts
Vol. 19, EGU2017-12689, 2017
EGU General Assembly 2017

Paleomagnetic and AMS study of Permian and Triassic rocks from the Hronic Nappe and Paleogene rocks from the Central Carpathian Paleogene Basin, Western Carpathians

Emö Márton (1), Jozef Madzin (2), Jana Bučová (2), Jacek Grabowski (3), Dušan Plašienka (4), Roman Aubrecht (2,4)

(1) Geological and Geophysical Institute of Hungary, Paleomagnetic Laboratory, Budapest, Hungary (paleo@mfgi.hu), (2) Slovak Academy of Sciences, Earth Science Institute, Dúbravská cesta 9, P.O. Box 106, 840 05 Bratislava, Slovakia, (3) Polish Geological Institute – National Research Institute, Paleomagnetic Laboratory, Rakowiecka 4, 00-975 Warsaw, Poland, (4) Comenius University, Department of Geology and Paleontology, Mlynská dolina, Ilkovičova 6, 842 15 Bratislava, Slovakia

The Hronic (Choč) units form the highest cover nappe system of the Central Western Carpathians which was emplaced over the Fatric (Krížna) nappe system during the Late Cretaceous. The Permian (red beds and lava flows) and Triassic (sediments) rocks, the main targets of our study, were affected only by diagenetic or very low-grade, burial-related recrystallization and were tilted and transported together. The pre-late Cretaceous sequence is overlapped by Paleogene mainly flysch sequences.

Three laboratories (Bratislava, Budapest and Warsaw) were involved in standard paleomagnetic processing and AMS measurements of the samples, while Curie-points were determined in Budapest. The site/locality mean paleomagnetic directions obtained were significantly different from the local direction of the present Earth magnetic field, indicating the long term stability of the paleomagnetic signal. The magnetic fabrics varied from un-oriented to dominantly schistose with well-defined lineations. The latter were normally subhorizontal, although subvertical maxima also occurred among the Triassic sediments.

Shallow inclinations, after tilt corrections, suggest near-equatorial position for most of the Permian and Lower Triassic, while around 20°N for the Middle-Upper Triassic localities. The paleomagnetic declinations are interpreted in terms of CW tectonic rotations, which are normally larger for the Permian than for the Triassic samples, although there are some differences within the same age groups. This may be attributed to differential movements during nappe emplacement or subsequent tectonic disturbances.

For two localities from the Paleogene cover sequence of the Hronic units, close to the main sampling area (Low Tatra Mts) of the present study documented fairly large CCW rotations, thus obtained additional evidence for the general CCW rotation of the Central Western Carpathians during the Cenozoic. Thus, we conclude that the Cenozoic CCW rotation was pre-dated by large CW rotations, probably connected to the nappe emplacement. In addition, a pre-Jurassic moderate CW rotation is inferred from the difference in declinations between Triassic and Permian palaeomagnetic declinations.

Acknowledgement: This work was financially supported by the Slovak Research and Development Agency under the contract No. APVV-0212-12 and by the Hungarian Scientific Research Fund OTKA K105245.