Geophysical Research Abstracts
Vol. 17, EGU2015-11586-1, 2015
EGU General Assembly 2015

The role of compressional tectonics, sedimentary transport and mineral composition on AMS and AARM fabrics. A case study of the flysch from the Dukla nappe, Outer Western Carpatians, Poland

Dániel Kiss (1,2), Emő Márton (2), and Antek K. Tokarski (3)

(1) Eötvös Loránd University, Department of Geophysics and Space Science, Budapest, Hungary (dan.kiss.91@gmail.com), (2) Geological and Geophysical Institute of Hungary, Paleomagnetic Laboratory, Budapest, Hungary (paleo@mfgi.hu)., (3) Institute of Geological Sciences, Polish Academy of Sciences, Research Centre in Kraków, Poland (ndtokars@cyf-kr.edu.pl).

The Carpathians belong to the European Alpine system. The Polish segment of the Western Outer Carpathians is a north-verging thrust-and-fold belt composed largely of Lower Cretaceous to Lower Miocene flysch. The belt comprises the Skole, Subsilesian, Silesian, Dukla and Magura rootless nappes. Anisotropy studies were carried out both in Oligocene turbidite sequences of the Dukla nappe and in the olistostrome of the Lipowica quarry.

For the study 102 individually oriented cores were drilled at nine geographically distributed localities. At each locality mudstones/claystones were sampled, except Lipowica quarry, where silt and sandstone were also drilled. Because of the relatively low susceptibilities (1-3*10-4 SI), paramagnetic minerals can be important contributors to the AMS fabric. AMS and AARM measurements were carried out and the fabrics were compared. Despite of the weak AMS lineations, the mean lineation direction is well defined in all cases on site/locality level. With one exception where the lineation is perpendicular to the bedding plane (due to the presence of siderite), the AMS lineations can be interpreted as due to compressional tectonics.

Concerning the AARM lineations they are highly scattered in the sandstone, show a tendency for alignment in the silt and some of the mudstone/claystone sites, and are well clustered in the other cases. The AARM lineations for four localities correlate to the AMS, and the local strike. The AARM lineation of the siderite bearing rock is also sub-parallel to the local strike. In the remaining cases the AARM linations are suspected to be related to sedimentary transport. Due to the lack of solemarks at most localities this will be investigated systematically with photo-statistical grain shape analysis in oriented thin sections. X-ray diffraction measurements also will be carried out to identify the paramagnetic contributors to the AMS.

Acknowledgments: This work was partly financed by the Hungarian Research Fund (OTKA) project no. K105245 and from a joint project of the Academies of Science of Poland and Hungary.