MAGNETIC FABRIC IN FOLDS AND DUPLEXES OF THE EASTERNMOST RHENO-HERCYNIAN ZONE

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The easternmost Rheno-Hercynian Zone crops out in two relatively large areas, the Drahanská vrchovina Upland and the Nizký Jesenik Mts., both showing thrust sheet structures. In the former area, the achimetamorphism, ductile deformation and degree of AMS are in general weak; the magnetic fabric is oblate. In the east, the magnetic foliation is very well parallel to the bedding, while in the west its poles create a partial girdle.
In the eastern areas of the Nízký Jesenik Mts., the rocks show signs of only weak anchimetamorphism and very gentle ductile deformation; SE vergent buckle folds of long wavelength are developed whose magnetic fabric can be easily unfolded geometrically. The metamorphic grade and ductile deformation generally increase gradually westwards. In the central areas, fracture cleavage and NW vergent buckle folds can be found; the folds can be unfolded mostly only partially. In the western areas, NW vergent cleavage folds and very well developed slaty cleavage occur. The magnetic fabric in the folds is homogeneous, the folds cannot be unfolded at all. The cleavage is transformed into metamorphic schistosity at the western border of the area.

REMAGNETIZATION OF PROTEROZOIC DOLERITE DYKES IN NORTH-CENTRAL SCANDINAVIA DURING CALEDONIAN THRUST TECTONICS.

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In north central Sweden, SSE-NNW trending dolerite dykes of the Central Scandinavian Dolerite Group (CSDG) are an important element of the Baltic Shield. Basement rocks are also exposed within the Caledonian Lower Allochthon (LA) in tectonic windows where basement culminations were originated by antiformal stacking . In two of these outcrops (Bangonaive and Borgefjell windows) we sampled dolerite dykes and found similar geochemical characteristics as for the samples from the basement in front of the allochthonous units. This setting provides the opportunity to investigate the influence of the Caledonian deformation on magnetic fabric and remanent magnetization. For samples from the autochthonous basement a very stable NRM consistent with previous published data for the CSDG was found. Magnetic susceptibility is slightly anisotropic and is interpreted as magma flow fabric. Dykes from the LA exhibit a distinct anisotropy with a NW-SE trending magnetic lineation. The remanent magnetization is subparallel with this direction, which is assumed to reflect the direction of nappe transport. Deformation conditions in the LA are far below the blocking temperatures for magnetite and pyrrhotite and the possible mechanisms of remagnetization will be discussed.

ASM STUDY OF HIGH-GRADE POLIMETAMORPHIC THRUST BELTS - THE BRAGANÇA NAPPE COMPLEX STUDY (IBERIAN VARISCAN BELT).

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The Bragança Massif is a polimetamorphic complex of the Variscan Belt, located NW Iberia, characterized by four principal thrust sheets: the Parautocthonous Thrust Complex (PTC), the Lower Allochthonous Thrust Complex (LATC), the Northern Ophiolitic Terrane (NOT) and the Continental Allochthonous Terrane (CAT). This last, corresponding to the upper level of the thrust nappes, is deeply deformed, and its tectonic evolution involved two cycles: one Pre-Cambrian (Greennvilian) and other Palezoic (Variscan), known from petrographic and microstructural methods.
The study area (CAT) is characterised by different lithotypes: granulites, gneisses, peridotites, pyroxenites, gabros, eclogites, amphibolithes and greenschits. A total amount of 300 samples, corresponding to 32 sites, were analyzed with the KLY-2 Susceptibility Bridge. Mineralogical analysis with microprobe, and IRM was made to evaluate the ferromagnetic minerals.
The main results are : (i) oblate magnetic ellipsoids are dominant, corresponding to a general penetrative foliation; (ii) the bulk magnetic susceptibility agrees with the expected mineralogy for all lithotypes; (iii) the ASM ellipsoid agrees with the strain ellipsoid deduced from mesoscopic studies where this can be evaluated - and allows its generalization for the whole massif.

CHANGING DIRECTION OF MAGNETIC FABRIC IN A THRUST UNIT: AN EXAMPLE FROM THE KARKONOSZE-IZERA MASSIF (SW POLAND)

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The southern and eastern margins of the Karkonosze-Izera massif in the West Sudetes (northern Bohemian Massif) expose a nappe pile overthrust toward the NW onto the pre-Variscan continental basement of the Saxothuringian basin. The tectonically uppermost in the nappe pile is the Leszczyniec unit, composed of meta-igneous, Early Palaeozoic metabasites and gneisses. Widespread deformational fabric in the Leszczyniec unit is differently oriented from that of otherwise morphologically identical fabric in the adjacent Kowary unit. This discrepancy has been variously interpreted and is still the subject of considerable debate.
AMS and rock magnetic studies showed the difference in orientation of magnetic and tectonic fabric between the Leszczyniec and Kowary units, characterized by NNE-SSW and WNW-ESE trend of lineation, respectively. Furthermore, the Leszczyniec unit itself displays a wide scatter of magnetic lineation. Metabasic rocks show an approximately uniform NNE-SSW orientation of lineation whereas gneisses are characterized by continuous transitions from NNE-SSW to WNW-ESE trend of linear structures. The results suggested that deformation partitioning in differentiated rock sequence is the main cause of the discrepancy in orientation of fabric and excluded relative rotations between the two units.

A MAGNETIC STUDY OF DEFORMED ROCKS IN THE FENNOSCANDIAN SHIELD

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In the central parts of the Fennoscandian shield a regional shearzone cuts through 1.70-1.85 Ga old rocks, and defines a boundary between two tectonomagmatic blocks. AMS and susceptibility versus temperature measurements, together with AF and thermal demagnetisation, were performed on samples along three trajectories across the zone. The investigation covers rocks of plastic mylonite, gneiss-granite, and brittle and plastically deformed basic dykes, and also unaltered rocks. Thin sections of selected samples were analysed.
Magnetite is the main magnetic carrier but paramagnetic minerals, most often biotite and hornblende, occasionally contribute greatly to the susceptibility.
AMS directions correlate well with tectonic fabrics and structures interpreted from areomagnetic data. In mylonites the AMS axes are tightly grouped and in less deformed rocks the maximum and intermediate axes often form a girdle pattern. Deformed rocks most often carry only a soft remanence component, however in a few cases remanence directions could be established in high temperature intervals and in AF-fields up to 160 mT The character and age of the deformation zone has been defined, and the study shows that corrections of paleomagnetic data of deformed rocks, by use of the AMS tensor, can give a better fit of the VGP to the expected age determined from the APWP