high temperature from the Pannonian massif into the plastic upper mantle. Beyound the Cis-Carpathian through the temperature regime of the upper mantle is stabilized and the striking boundary between the lithosphere and asthenosphere vanishes.

A magnetotelluric study of the high-resistivity basement of the Carpathians

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Complex geological structure of the Carpathians and limited information available from boreholes make the interpretation of the orogen basement difficult. In this situation, geophysical survey plays the basic role in solving problems related to the structure and the genesis of the Carpathian orogen. The magnetotelluric investigations have been conducted in the Polish Carpathians for 20 years (Jankowski et al 1980, Molek and Klimkowski 1991, Stefaniuk 1995). Magnetotelluric data were interpreted by many geophysicists. This presentation is based on the author's own interpretation of magnetotelluric soundings made along seven profiles transverse to the orogen axis and crossing regions with different style of the geological structure. The results of interpretation are presented as depth cross-sections and, for a case of the eastern part of the study area, as generalized structural outline of the roof of the consolidated basement (Stefaniuk and Kuomierek 1986). The investigations enabled one to outline the morphology of the basement roof which was related to a high-resistivity magnetotelluric horizon. The morphology of the basement roof is much different in each profile, however in all cases four zones parallel to the orogen axis were separated. In the outermost zone the basement roof occurs at a relatively shallow depth. South to that zone the basement slopes steeply, then the most buried zone occurs. On the souhern margin of the area a zone of the elevated basement is observed. The results of magnetotelluric sounding interpretaton were subjected to tectonic interpretation.

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Geological structure of the West Carpathian Flysch Belt and its relation to the Eastern Alps

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The Flysch Belt of the West Carpathians in the eastern Czech Republic is a nappe complex formed by the polyphase Neoalpine orogeny during the Late Peleogene and Early Miocene. Based on lithofacies and tectonics the Flysch Belt is subdivided into the Outer (Krosno-Menilite) and Magura Groups of nappes. Sedimentary record of these units evidences the internal to external parts of the Flysch Belt. This trend results from the general movement of the African plate and the Pannonian block to the N and was manifested in the studied area in the NW and N trending thrusting during the last orogenic events.

The final movements of the Carpatho-Pannonian block system were controlled by an oblique collision with the North European Platform in the Miocene when the Flysch accretionary wedge formed. The collision mechanism diminished towards the E where the subduction process prevailed.

Typical tectonic features of structural types were characterized in cross-sections of the Flysch Belt. General fault pattern encompasses domains with the thrust faults, strike-slip faults, and normal faults.

Geodynamic evolution of the Flysch Belt is characterized using mapping data and analysis of the seismic, gravity, well log, petrophysical and geochemical measurements. Schematic cross-sections show the thrusting mechanism in selected orogenic phases. Subsidence, sedimentation, burial, erosion and thermal history are simulated using basin modeling software.

The frequency-characteristics of seismic and gravity data were processed using combined analysis of the derived gravity field reflectance image and the changes in the seismic echogenity. This technique makes it possible to identify structural-tectonic features from rather low-amplitude seismic and gravity data. It has been applied to draw density-balanced cross-sections of the upper crust layer along the selected seismic profiles with delineation of the tectonic elements.