



T13C-0539: Geophysical modeling across Inner and Outer Western Carpathians in Eastern Slovakia

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13:40 - 18:00

- *New Orleans Ernest N. Morial Convention Center*
- *- Poster Hall D-F*

We present a multidimensional geophysical modelling of Central and Eastern Slovakia in the area of contact zone between the Inner and Outer Western Carpathians, and the East Slovakian Basin. Our crustal and lithospheric studies are based on geophysical data collected during CELEBRATION 2000 project and project THERMES. The new magnetotelluric (MT) multidimensional modelling is combined with seismic 2D wide angle refraction profiles and gravimetric modelling. Together with thermal information gathered from the area we constructed new integrated geophysical models of structures included in the evolution of the Carpathian orogen.

Preliminary results of MT modelling in Eastern Slovakia suggest more electrically conductive structures in the middle and lower crustal depths in comparison with Central Slovakia, where we observed structures dominated by resistive complexes overlaid by conductive sedimentary formations. The higher conductivities below the East Slovakian Basin restrict penetration depth of the geoelectrical images. The electrically conductive structures are connected with tectono-thermal development in Neogene and presence of volcanic activity. Another significant conductive anomaly is imaged along the contact zone between Inner and Outer Western Carpathians in depths of about 10 - 20km, which is known as the Carpathian Conductivity Anomaly (CCA). In order to improve the depth resolution of MT models we decided to combine geoelectrical images with density and velocity models of the area. We used integrated petrological and geophysical modeling code to obtain thermally consistent lithospheric scale models of the area.

A possible preliminary geological interpretation of the northern segment of investigated area suggests a resistive European platform below conductive flysch sediments. The boundary between Inner and Outer Carpathians represented by the Klippen Belt on the surface is changed to the CCA in higher depths. In the direction to the south there are higher amount volcanic fluids in middle crustal depths. Our models are important in enabling of understanding the geodynamical and thermal processes during the collision of Carpathian orogen with the European platform and the connected development of the Pannonian Basin.

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