The modeling of the crust and upper mantle electrical conductivity around TESZ in Central Europe

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SUMMARY

The generalized magnetovariation soundings were carried out around the Trans European Suture Zone (TESZ) using twenty four magnetic stations situated mainly in Poland and partly in Czech Republic, Hungary and Ukraine. Data of nearby geomagnetic observatories of western countries were used too. The impedances were obtained in the period range from 4 up to 48 hours. Due to the new sounding approach it was possible estimating the gradients of impedances also. They were transformed to the traditional induction arrows which allow doing areal modeling of the deep electrical conductivity distributions at the Central Europe region by two independent algorithms developed in Prague and Warsaw. The REBOCC inversion was applied to distinguish conductivity features in the upper mantle along a chosen profile crossing TESZ on Polish territory. The projections of the experimental induction arrows onto the profile line were used as input data for the inversion. The subsurface conductance of shallow layers was accounted also. The obtained model reaches depth of 400 km. The results with induction arrows, areal conductance distributions and cross section beneath chosen profile are presented and discussed.

Keywords: magnetotelluric, magnetovariation soundings, crust, upper mantle, TESZ