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Comparison of structural information obtained from 2D MT inversion with seismic, gravimetric, magnetic and geological data

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In the summer of 2003 an MT survey was carried out in SW Hungary by Geodetical and Geophysical Research Institute of the Hungarian Academy of Science (GGRI) and the Eotvos Lorand Geophysical Institute of Hungary (ELGI). The survey was sponsored by the Hungarian Scientific Research Found. The sounding sites were located on the Hungarian part of the CEL-07 CELEBRATION seismic profile. Along a 140 km line 72 stations were measured with 2 km spacing. MT data were collected by the instruments of Geoforschung Zentrum, Potsdam with the assistance of O. Ritter and U. Weckmann. In addition a short parallel profile close to CEL-07 was measured by P.Schnegg in the same time.

The frequency range was 1000-0.001 Hz. The survey line direction (NW-SE) is practically perpendicular to the strike of the regional geological structures, all along the profile.

Sounding data were processed by the bimodal inversion module of the WinGlink program. The inversion results indicated several blocks of different resistivities below the 1-5 km loose sediments.

The existence of the MT deep structures can be verified by comparison of resistivity distribution with velocity distribution, potential field and geological data. Gravimetric and magnetic structures were identified by known edge detection methods (Euler, Werner deconvolution).

Based of joint interpretation of all data we came to the following conclusions:

- All known major tectonic lines in the area (Rába- , Balaton-, Kapos lines) can be correlated with MT resistivity anomalies in the basement.
- All MT deep structures – except one conductive zone – are in coincidence with the obtained gravimetric and magnetic lineations.
- There is no significant connection between the MT resistivity- and seismic velocity distribution at the depth range of the basement.

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