

## **COMBINED NLCG /SBI MAGNETOTELLURIC DATA INVERSION FOR RECOGNITION OF COMPLEX GEOLOGICAL STRUCTURES**

Michał Stefaniuk

University of Science and Technology, Krakow

Geological interpretation of magnetotelluric data is a subject of some misunderstandings. Simplified geometrically and well contrasted in resistivity models do not response for real geological environment. The aim of outstripping magnetotelluric works widely made in Polish Outer Carpathians, is general structural and lithological recognising of geological environment and distinguishing of areas where oil prospection will be projected. The geological medium is formed by sedimentary formations, strongly deformed and containing relatively thin layers with essentially differentiated parameters, overlying rather flat, high resistivity basement. Application of simplified strongly contrasted interpretation model with fluently changing parameters gives frequently results not corresponding with geological reality. Presented analysis is based on surveys located in marginal zone of Carpathianst in the area relatively well recognised, where interpreted structural and lithologic model rather well reflects real geological medium. Then, it was used as reference model for obtained results of MT data inversion. Magnetotelluric continuous profiling located along reflection seismic profile, between two deep boreholes was made. Set of results of computations allows to evaluate of effectiveness of used procedures and suggest optimum way of dealing.

First stage of data interpretation was based on 1D and EMAP inversion. The section was then applied as starting model for 2D NLCG inversion. Results of this method give rather generalized resistivity distribution well reflecting structure of flysch cover but not adequate for the basement. This models was applied as starting models for SBI inversion constrained by borehole data. Results of SBI procedure well reflects relatively flat complexes of the basement, but are rather unrealistic for folded flysch cover. The another NLCG inversion was computed with stabilised model of basement obtained from SBI inversion. Obtained resistivity cross section was relatively concordant to reference model.

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AGH - University of Science and Technology, Krakow, [michal.stefaniuk@neostrada.pl](mailto:michal.stefaniuk@neostrada.pl)