

Correction of the host medium influence for estimating 2D anomalous object parameters by using magnetovariational data

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SUMMARY

Earlier, the authors found out that by using the singular points on the cross-section of magnetovariational (MVP) data, it is possible to quickly determine the parameters of the 2D anomalous object. The depth of the geometric center of the object (H) is defined as $H = \alpha \cdot D + c$ (1). The relative conductivity of the cross section (G) is defined as $G = \gamma \cdot \text{Textr}$ (2). In these two linear relations, D is the distance between the singular points on the tipper magnitude pseudo-sections. Textr is the value of the period of singular points. It is known that the host medium influences the morphology of the MVP anomalies. In this paper, we propose a method for taking the influence of the host medium into account. The task is solved by determining the coefficients α , c and γ . The determination of the values of the coefficients is carried out in two stages. At the first stage, based on the results of the 1D inversion of the TM mode of magnetotelluric data, a horizontally layered host medium is determined. The second stage involves 2D modeling of the magnetovariational response functions. To determine the coefficients α and c , the calculation is performed for 2 models with two different depths (H). G remains constant. To determine the coefficient γ , the calculation is carried out for two models with different G (the depth H remains constant). Since dependencies (1) and (2) are linear, four calculations are sufficient to determine the coefficients.

Keywords: magnetovariational method (MVP), express-interpretation, influence accounting for the host medium
