

عنوان مقاله:

Interpretation of Magnetotelluric Data for the Detection of Deep Water Reservoirs Containing Iodine

محل انتشار:

چهارمین کنفرانس بین المللی پژوهش های کاربردی در علوم و مهندسی (سال: 1398)

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خلاصه مقاله:

The purpose of this study is to evaluate the possibility of using surface MT measurements on the very conductive sediments to monitor the underground salt water bearing layers or bodies. the study area is located in north of Iran. It is geologically a part of the Kopeh-Dagh sedimentary basin. Kopeh-Dagh was formed by the last orogeny phase of Alpine and the subsequent erosion. Topography relief is very smooth and basically it is a flat plain consisting of loesses occurring naturally between the Alborz mountain range and the desert of Turkmenistan. Quaternary sediments including clay, Conglomerate and evaporates and particularly salt are impenetrable. For dimensionality analysis, Swift's skew and Ellipticity [1] were estimated, that are generally less than 0.3, which shows a good indicator for almost 1D or 2D structures, so a 1D and 2D inversion schemes were used. To obtain physically reasonable 2D resistivity models, the nonlinear conjugate gradients (NLCG) were used. [2] The results of two-dimensional inversion show deep conductive masses along the profiles. To have the best possible interpretation some possible modes (TE-, TM-, TE+TM) were examined. Down to 2 km, the resistivity model obtained from the MT data is consistent with the geological information from a 1200 m borehole in the area. The results of this study show that the magnetotelluric method can be utilized effectively in deep saline aquifers exploration in the study area, and similar types of reservoir elsewhere in the world.

کلمات کلیدی:

.Resistivity, Saline aquifers, Iodine, Magnetotelluric, NLCG algorithms, Inversion

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