

MAGNETOTELLURIC INVESTIGATION OF THE CENTRAL TIEN SHAN: PROFILE INTERPRETATION AND SPATIAL ANALYSIS

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The ancient Tien Shan intra-continental range reactivated in the late Cenozoic due to India-Eurasia collision continues to grow rapidly up to the present. The magnetotelluric investigations of the Central (Kyrgyz) Tien Shan, the focus of modern geodynamic activity, are carried out by the Research Station RAS (Bishkek) during last twenty years with the main goal to formulate and constrain different hypotheses of its evolution. The researchers of NARYN WG have developed effective approaches to analyze and interpret the Tien Shan array of EM soundings.

In this presentation we show the multi-component inversion results for magnetotelluric (MT) and magnetovariational (MV) data along three sub-longitudinal profiles across the Central Tien Shan. The comprehensive interpretation of the broad-band and long-period data of the most representative NARYN transect (going from the Kazakh plate to the Tarim Basin along 76°E) are supported by the results of imitation studies as well as by the latest seismological data. The anomalous structures of geoelectric cross-section along 76°E line are correlated with the features revealed in the course of broad-band sounding data inversions at two shorter regional profiles (74°E and 78.5°E).

On the way to the spatial synthesis of multi-profile conductivity sections into a Tien Shan volume geoelectric model we analyzed the behavior of main MT\MV transfer functions over the area. The presented spatial-period distributions of these responses are characterized by bright anomalies, which correlate with other geophysical data and outline principle geotectonic structures of the Central Tian Shan. Acknowledgements to RFBR grants 08-05-00875 and 07-05-00594.

2D inversion, geoelectric and geotectonic structures, orogen

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