



The deep structure of the lithosphere of the Eurasian continent by magnetic data

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The data of the magnetometry are insufficiently involved at construction of models of an earth's crust and the top cloak. Meanwhile construction of magnetic model of an earth's crust deserves all-round attention. At the analysis of the anomalous magnetic field connected to magnetization of rocks, it is investigated magnetoactive a layer limited on depth in temperature Curie. The concentration magnetoactive formations in some limited layer narrows a number uncertainties at the decision of applied tasks in the field of research of the lithosphere. Not denying importance of application of the complex approach at reception of the information on the big depths, we shall emphasize, that research of structure of an anomalous magnetic field with the help of modern computer technologies, can give inflow of the new information about deeper heterogeneity of the lithosphere. Consider results of research deep magnetic heterogeneities by the example of a part of the Euroasian continent within of territory of the former USSR.

The analysis brought out below, is based on results of regional interpretation of a map of an anomalous magnetic field (AMF) of territory of the former USSR of scale 1:5 000000 (VSEGEI, 2000ã).

Horizontal gradient AMF in territory of the USSR reaches tens and hundreds nT on kilometer as against very low gradient of a normal field. However the amplitude of anomalies basically does not exceed 10 % of intensity of a normal field, except for local anomalies above iron-ore deposits of Kursk magnetic anomaly.

A research of a deep structure on the magnetic data develops on two directions: 1)

construction of geomagnetic sections; 2) division of an anomalous field into components and studying regional components. Thus it is necessary to notice, that in some cases the decision of a task of division of a field on components not always is correct. In a spectrum of abnormal magnetic field AMF there is a total kind a regional component with lengths of waves 100-500 km and local - with a wide set of frequencies. The analysis regional components AMF shows, the regional component within the limits of the USSR is characterized by a set of lengths of waves of different classes: from 50-200 km, 200-500 km and 500-1500 km. Anomalies with a diameter more than 1000 km are found out at recalculation of a field on height of 300 km. These anomalies prove to be true the data of measurements with the satellite, in particular, satellite Champ. With the regional anomalies can be relate anomalies of the secular variation (Manchajskaja anomaly in Ural).

Statistical analysis AMF has shown, that the regional component with length of a wave 55 km can be considered as the stochastic function possessing high stability of frequency properties limits of identical tectonic provinces - platforms, boards, areas riftogenesis. In territory of Western Siberia distribution of the bottom edges of the magnetized formations down to border Moho ($V_r = 8,1$ km/s) is not excluded. In many cases (Taymir folded system, the East - Siberian and East Europe platforms) distribution of the bottom edges magnetoactive weights is confined for border Konrad ($V_r = 6,6-7,0$ km/s). In geomagnetic sections in many cases precise connection magnetoactive borders with seismic wave guides is found out. A significant part of edges of magnetic formations are concentrated near to a Riphean foundation. The bottom border of magnetic formations in Aldan shield of a board is observed on depth of 35-40 km.

In structure of a regional abnormal magnetic field is revealed the main structural - tectonic elements connected to a deep structure of the consolidated crust. Two ancient platforms: Russian and East - Siberian are allocated with global ring structures, but with various spectral characteristics of a field. Russian platform is characterized by the lowered background values of a field with the separate linear both local positive and negative anomalies reaching $+150$ nT. East Siberian platform is structurally framed by positive regional anomalies intensity $+200$ nT. Continental anomaly is dated for area of the East - Siberian platform with a diameter some thousand kilometers. In structure of a regional anomalous magnetic field does not receive expression Ural. The ring structure in a regional field expresses region of the Barents and Karskoe seas. Deep breaks of planetary character find precise expression in character of a regional field. It is marked the connection the most part of regional anomalies with a regional parts of structures Archaean consolidations.