Geophysical Research Abstracts
Vol. 15, EGU2013-2578, 2013
EGU General Assembly 2013

Lithospheric sources of magnetic anomalies of the Aldan shield and Alpha Ridge

Tamara Litvinova (1) and Alevtina Petrova (2)

(1) Russia Geological research Institute, regional geophysics, St. Petersburg, Russian Federation (tamara_litvinova@vsegei.ru), (2) SPbF IZMIRAN, Russian Academy of Sciences, St. Petersburg, Russian Federation

Regional anomaly Aldan Shield is dated to ancient greenstone belt of the earth's crust. Belt is characterized by high depth forming sequences. Rocks of the upper and middle part of the section contain ferruginous quartzite.
Geomagnetic and density sections allowed to estimate the power density and magnetic crustal heterogeneities. The methodology of constructing the cuts is the spectral-spatial representation of the fields, convertible into the underlying magnetic and density cuts. According to satellite data confirms the presence of regional anomalies within the Aldan shield, at an altitude of 100 km, it is about 100 nT.
The presence of the Central Aldan crast-mantle fault depth of 50-80 km defines metallogenic situation of the region. The structure of the Aldan Shield detects rotational structure. Regional magnetic anomalies arc tangent frame Central Aldan region. May suggest that such behavior of anomalies is caused by of the ancient (Pre-Cambrian) fireplace mantle (the nucleus).
Studies have shown that lithospheric sources Aldan shield on satellite magnetic anomalies and magnetic anomalies (ΔT) a Russia are located at depths of 30 to 35 and 40 to 70 km. They are confined to vertical zone deconsolidated at depths of about 30 and 40 - 70 km.
By magnetic anomalies (ΔT) a Russian in the crust of the Aldan shield a depth of 15 - 17 km and 25 - 30 km depth revealed magnetite zone, the formation of which is due to the processes of regional metamorphism of ancient crust. Studies have shown the limits of the depth distribution of magnetite zones, mosaic developed within the crust of the Aldan shield after repeated activation of the processes of regional metamorphism.Alpha Ridge in the Arctic Ocean is one of the largest igneous provinces in the world. Tectonic history of the Arctic while not significantly deciphered. Deep structure of the Earth's crust are poorly understood
Linearly elongated magnetic anomalies Alpha Ridge clearly seen at the height of the satellite. At an altitude of 100 km reach values of 100 - 120 nT, with gravity anomalies in the reduction of Faye in the central part is only 0 - 20 mg, to the periphery of the ridge rising to values of 40-50 mg. The maximum values of the magnetic anomalies are confined to the Alpha Ridge of the span latitudes 84 - 85N.Deep density and magnetic sections along the latitudinal profiles by satellite measurements showed the following. Lithospheric sources of satellite magnetic anomalies Alpha Ridge located at a depth of about 40 km and are confined to vertical zone centered deconsolidated at depths 30 - 40 km. Higher in the section allocated powerful lens decompressed at a depth of 9 - 18 km.