Geophysical Research Abstracts
Vol. 15, EGU2013-1615, 2013
EGU General Assembly 2013

Estyuninky's Deformation Characteristics of the Iron-Ore Deposit by Gravimetric Means

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Gravitation is the main energy source of many processes which happen in crust. Gravity possesses the leading role in structurization; it defines a tectonic broken state and permeability of the geological medium, having significant importance at an ore deposition. Because of the gravitation density naturally changes, permeability and other properties of the geological medium changes too.
Presence in crust of density heterogeneity of a various form and the sizes and properties change, show its compound stress of deformation condition. Studying of the deformations caused by gravitation, represents great expected and research interest.
Theoretical basis of studying of these deformations consists on ratios between components of a pure tensor deformation and its first invariant –dilatation and results of measurement of gravity force. The method of deformation studying of the geological medium, developed on this basis, was called a method of the tektonophysic analysis of a gravitational field (MTPAGF).
The detailed analysis of results of MTPAGF was made for the region of the Estyuninsky iron-ore deposit.
The deposit region is characterized by a reversed dilatation. The zero isoline of dilatation divides it into two parts. To the east of this isoline where there is a deposit, a dilatation positive and rather small size. To the west – a dilatation negative and it increases as approaching a protrusion. Thus, to the east of the zero isoline the geological medium is in stretching mode, which promote relative expansion of the medium, improvement of its permeability. Thanks to it favorable conditions for an ore deposition here were created. To the west f the zero isoline medium is in a compression mode. Therefore it is characterized by smaller permeability. The border of change of a sign of a dilatation probably was important a role of the peculiar deformation barrier blocking migration through it of ore substance.
It is possible to make the following conclusion of the analysis of deformation characteristics of the geological medium: small values of principal values of deformation and positive dilatation and, as a result, low level of specific energy of volume deformation, can evidence and to rather low tendency of the medium to destruction. As the deposit is located in the medium with such deformation properties, so there is some optimum broken state (permeability) of the medium optimum for an ore deposition. Extreme cases: very small and very big permeability complicate development of this process. In a little permeable medium it doesn't go at all, in very permeable - (at lack of screens) the disseminated or interspersed mineralization is formed.
That work was supported by grant RFBR 10-05-00013.