

GEOINFORMATIONAL TECHNOLOGIES IN THE STATE CONTRACT ON ESTIMATION OF MINERAL POTENTIAL ON THE BASIS OF STUDYING HEAT-AND-FLOW PALEOSYSTEMS

Arbuzova E.E., Cherkasov S.V. (Russian-French Metallogenic Laboratory, Vernadsky SGM RAS)

Geoinformational technologies play a key role in the researches under State contract targeted on the preliminary search for large buried ore deposits in the frames of crystalline shields. Area of researches envelops south-eastern frame of Fennoscandian shield, Anabar and Aldan shield, and Yenisei ridge. In 2006, geological and geophysical information has been compiled, processed and represented in a single geoinformational system.

- In accordance with the contract, GIS contains the following information:
- Geological map of 1:2500000 scale
- Database on large and superlarge mineral deposits
- Bouguer gravity anomaly map of 1:1000000 scale
- Magnetic field map of 1:1000000 scale
- Transformations of potential fields
- Deep seismic sounding (DSS) cross-sections
- Cross-sections of the seismic bins' concentration
- Lineament schemes (on reference areas)
- Cross-sections representing results of lineament deep sounding (for reference areas)
- Interpretation maps.

Geoinformational technologies have been used for not just representing but for processing data as well. To calculate concentration of seismic bins in the cross-section, ArcInfo focal function has been used (Chesalova, Vishnevskaya, 2006). Fig. 1 demonstrates a cross-section where result of DSS data processing is superimposed on the cross-section obtained using lineament deep sounding techniques (Zhuravlev, Galperov, 2006).

Software used for potential fields processing (TRANSF/BRGM and GRAMO) requested different input and output data format so it was necessary to resolve a lot of minor problems related with coordinates' conversion (Sterligov, 2006). A bigger problem is related with combining of map sheets as the areas under researches are quite large.

For remote sensing data processing and interpretation, two reference regions have been chosen – Anabar shield and a part of Yenisei ridge. Such a choice is reasoned by existence of DSS data for these areas. The data has been processed with ER Mapper software has been used. Fig. 2 represents an ArcView layout representing results of lineament analysis superimposed on gradient of gravity anomalies related with 20-35 km layer calculated using spectral analysis and separation.

The work is done in the frames of the State contract AM-02-43/16 on the base project 7.4-08/06 "To develop technology of forecast for large buried ore objects in the crystalline shields' frames".

References

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B. Sterligov. Problem of representing transformations of a gravity field when using various software, 2006 (in this volume).

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Fig. 1. Cross-section along Batolit DSS geotranssect (Yenisei ridge).

Fig. 2. Gradient of gravity anomalies related with 20-35 km layer superimposed by results of lineament analysis.