Creating a standard models for the specialized GIS database and their functions in solving forecast tasks

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Standard models of skarn-magnetite deposits in folded regions of Kazakhstan, is made by using generalized geological and geophysical parameters of the similar existing deposits. Such models might be Sarybay, Sokolovskoe and other deposits of Valeryanovskaya structural-facies zone (SFZ) in Torgay paleorifts structure. They are located in the north of SFZ.

Forecasting area located in the south of SFZ - in the North of Aral Sea region. These models are outlined from the study of deep structure of the region using geophysical data. Upper and deep zones were studied by separating gravity and magnetic fields on the regional and local components. Seismic and geoelectric data of region were used in interpretation. Thus, the similarity between northern and southern part of SFZ has been identified in geophysical aspects, regional and local geophysical characteristics.

Creation of standard models of scarn-magnetite deposits for GIS database allows highlighting forecast criteria of such deposits type. These include:

- the presence of fault zones;
- thickness of volcanic strata - about 2 km or more, the total capacity of circum-ore metasomatic rocks - about 1.5 km and more;
- spatial positions and geometric data of the ore bodies - steeply dipping bodies in the medium gabbroic intrusions and their contact with carbonate-dolomitic strata;
- presence in the geological section of the near surface zone with the electrical resistance of 200 Om*m, corresponding to the Devonian, Early Carboniferous volcanic sediments and volcanics associated with subvolcanic bodies and intrusions;
- a relatively shallow depth of the zone at a rate of V_p = 6.4-6.8 km/s – uplifting Conrad border, thickening of the granulite-basic layer;
- positive values of magnetic (high-amplitude) and gravitational field.

A geological forecast model is carried out by structuring geodata based on detailed analysis and aggregation of geological and formal knowledge bases on standard targets. Aggregation method of geological knowledge constitutes development of bank models of the analyzed geological structures within various ranges, ore-bearing features described by numerous prospecting indicators.

Created standard models are entered into database of specialized GIS-technology. Models are used for solving forecasting tasks on the principle of comparing the formalized features of the standard with the forecast objects. Quantitative estimation is the similarity coefficient. Database is necessary in the planning methodology for conducting field research, and in subsurface resource management in the region.