

STATISTICAL METALLOGENY: PROBLEMS, STATE-OF-THE-ART AND PERSPECTIVES

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It is known, that the relations between ore deposits and other geological objects are statistical (probabilistic) ones. In the regional metallogeny the number of objects under investigation reaches several thousands, i.e. it is the statistical data set. The systems of geological bodies, creating separate parts of Earth's crust, should be considered as the realization of random fields (random functions, processes). One of fundamental problems of geology is the transformation of the metallogeny to probabilistic-statistical basis and, consequently, to the category of the exact sciences. Such metallogeny as distinct from the traditional one we call the statistical metallogeny. It should include the complex of statistical methods for the analysis of ore deposits location (methods of statistical metallogenic analysis) and the set of the metallogenic statistical regularities. These regularities may be divided into global and regional ones, relatively referred to general and regional statistical metallogeny. Currently, the creation of statistical metallogeny is on the initial stage. In the report the results, obtained in this field by the author, are presented. The complexes of statistical methods are developed for the detection and analysis of spatial relations between ore deposits and other geological objects (methods of spatial compatibility, contacts, random fields, random distances and location densities) for metallogenic zoning, a.o. The results on the statistical metallogeny of Central Asia and some its regions are given.