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Geochemical Map of Russia in scale 1:2 500 000

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In IMGRE, an integral geochemical map in scale 1:2 500 000 was created for the land of the total territory of the country (17,1 million km). The map is distinguished for its high geological and geochemical informative value. It includes sketch maps (of previous geochemical studies and zoning with respect to the conditions of conducting geochemical works), base maps (structural and formational, of geochemical specialization of structural and formational complexes, ore-producing anomalous geochemical fields) and generalized integral geochemical map of Russia. This map is integral and contains geochemical characteristics of structural and formational maps, reference deposits of known formational types and anomalous geochemical areas (AGChA).

The map contains information on AGChA sources and on the conditions of their formation. It solves a number of applied problems: accessibility for direct sampling of bedrocks; practicability and efficiency of geochemical techniques for prediction and search by secondary haloes and dispersion trains; trends of supergene geochemical processes and their combination (compatibility) with anthropogenic flows.

Major areas of mapping were specialized constituents of the integral geochemical field: petrogeochemical (structural and formational complexes and zones) and anomalous ore and geochemical (areas and zones).

The studies of the distribution of chemical elements in structural and formational complexes and anomalous geochemical fields allowed us to improve the criteria for global forecast of high-potential ore districts and on this basis to conduct prediction and appraisal of the territory of Russia for revealing large and super large useful mineral deposits. For AGChA in the rank of ore district a close relation was established between the composition of their anomalous fields, deposits located in them and the type of geochemical specialization of enclosing structural and compositional complexes.

On the basis of the map, geochemical zoning of the anomalous fields of large regions as well as of the territory of the country was established and the role of this zoning in the location of high-potential ore districts was considered. Geochemical zonation of AGChA of different ranks is predominantly concentric, and in folded areas, it is more complicated, combining rhythmic, liner and concentric zonation.

Major sites for predictive assessment are anomalous geochemical fields (AGChF) in the rank of ore district. Totally 1679 districts were outlined in the territory of Russia. In the map, they are distinguished by major groups of predicted useful minerals (noble: Au, Ag, Pt; non-ferrous: Pb, Zn, Cu, Ni and others) and by the degree of potential (high potential – 392 districts, moderate potential – 400 and unclear or low potential – 887 districts). In the cadastre of the map, geochemical and metallogenic characteristics of AGChF are given.

The map is a geochemical basis for predicting resource potential of the territory of the Russian Federation and it allows short-term and long-term planning of geological prospecting according to the

demand for replacement and expansion of the mineral resources base at the expense of discovering large and super-large deposits of Au, Ag, Pt, Cu, Zn, Pb, Mo, Sn, W, U, Hg, Be, Bi and other useful minerals.

