

Main geodynamic settings of gold ore deposit formations in South Siberia fold belts

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The study of the regularities of ore gold deposit localization in the South Siberia fold belts has shown that its mainly occur in some tectonic terranes or synaccretional and postaccretionary complexes. Each terran in Phanerozoic fold belts forms in the geodynamic settings which can be restored using paleotectonic reconstruction. It has been found that most gold deposits are generated by following geodynamic settings, i.e. the oceanic, the island-arc, the collision and the interplate (plume) ones. It has been shown that the ocean crust and particularly enriched on gold (ophiolites, sulfide deposits) is very important for ore gold deposit formation in other type of geodynamic settings. The model of the formation of the granitoid intrusions related gold deposits in various geodynamic settings has been developed.

Main factors determining the gold mineralization related granitoid intrusions are their high water content, the presence of fluid components (especially Cl) and Au-source. These conditions are fully realized at the volcanic arc type granitoid formation as a result of the partial melting of the subducted oceanic crust including the water-containing sediments, the enhanced concentrations of Au, S, Cl in sediments and magmatic rocks of the ophiolite association.

As for the geodynamic setting of the gold deposit formation, they are, as for many other elements, defined by their reference to the plate marginal parts or the areas of deep plumes occurrence. In addition, the discovery of new gold deposits largely can be associated with the search for the oceanic and transitional types crust relics as well as for the volcanic and intrusive rocks of the island arc type.