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Relationship of important geological events and Large-scale Mineralization: evidences from the China & Adjacent Areas

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Continent in China & adjacent areas was pieced together by the orogenic belts in different periods [1]. The sequence of the tectonic - magmatic - metallogenesis events have been studied, it is indicated Large-scale Mineralization happening is an accidental event, and has the closely relationship with the geological process of the continent forming and evolution in China & Adjacent Areas.

Geological process of three orogenic belts in China & Adjacent Areas, Paleo-Asia Ocean, pacific belt in Far East Asia and Tethyan of Tibet-Sanjiang, has been studied. Based on the isotopic ages, igneous assemblage, the stages (times) of the oceanic open, initial subduction of inner ocean, subduction, collision and post-collision have been divided for each orogenic belt. Combining the known deposits with each orogenic process, metallogenetic events were restricted in each stage. The comparison of the sequence of the tectonic - magmatic - metallogenetic events in China & Adjacent Areas, indicate that the large-scale mineralization in late Paleozoic, late Mesozoic, and Cenozoic, respectively associated with the after Paleo-Asia Ocean closed, pacific belt, and Tethyan Ocean closed, i.e. post-collision stage.

According to the forming process of the orogeny, no matter what kinds of orogenic belt which has undergone ocean or no, typically go through a process of thickening, thinning and thickening for the thickness of the crust and lithosphere mantle. Coincident with the subduction, collision and postcollision stages, and has its unique igneous assemblage. At the postcollision stage, when the orogenic lithosphere losing stability and de-rooting, will arise from the massive heat and material of the asthenosphere upwelling, and lead to the large-scale magmatism and large-scale mineralization happened. Thickening of the lower crust melting, once has residual eclogite facies rocks, will produce the C-type adakite magma. So, the crust-mantle petrological structures of lithosphere and large-scale metallogenesis lie on the latest and the strongest magmatism, and large-scale metallogenesis begins at the period of the orogenic lithosphere losing stability and de-rooting, the material and heat of the asthenosphere upwelling, the occurrence of C-type adakite rock could be regarded as one of its marks [2]. Large-scale mineralization happened have the closest relationship with the dynamic evolution process of lithosphere.

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