

Stages of Shaping of Magmatogene and Terrigene Diamondiferous Formations of the Siberian Platform

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Geological history of formation and evolution of the Siberian Platform's cover marks five tectonomagmatic-sedimentational cycles – Late-Proterozoic, Middle-Paleozoic, Middle-Late-Paleozoic, Mesozoic and Late-Cenozoic, in each of which definite types of diamondiferous formations were shaped.

The first stage is characterized by the appearance of deep-seated magmatites in marginal parts of the Platform – kimberlites in the sutural zone in the south (Ingashinsky complex) and alkaline basanites in the north (Talakhtakh-Kuonapsky and Khorbusuonsky complexes). Terrigene diamondiferous formations related with pre-Riphean primary sources of magmatogene and/or metamorphogenetic types could shape during this cycle.

In the second, Middle-Late-Paleozoic, cycle high-productive kimberlites were formed, which have been one of two basic (besides ancient diamond sources of “northern” type) placer-shaping formations of the Platform for all the subsequent epochs. Apparently there were favourable geodynamic conditions on the Platform and optimal parameters of lithosphere by thermal regime, level of diamond substratum occurrence, etc., at that period.

During the third, Middle-Late-Paleozoic, cycle large-scale processes of peneplanation, crust-and karst-formation took place, followed by shaping of marine diamond placers in the zones of articulation of positive and negative structures and continental ones in local basins of sedimentation on peneplain.

Structure-formation areas of much lower orders appeared in Mesozoic and were related with superpositioned intraplatform and marginal depressions. Shaping of diamond placers was performed in coastal parts of marine basins (north-east of the Platform) and in local (lacustrine) basins of sedimentation on peneplain (central part of the Platform). Magmatism character in Mesozoic cycle is directed towards lower depth of melts and their large volume. At the Late-Cenozoic stage shaping of fluvial, plain and terrace diamond placers took place.