

Fluid regime of sialic blocks in the continent-ocean convergent zones (Sikhote Alin, Russian Far East)

¹BERDNIKOV N.V., ²KARSAKOV L.P. ^{1,2}Institute of Tectonics and Geophysics, Russian Academy of Sciences, Khabarovsk, Russia.

Among the formations of Late Jurassic-Early Cretaceous Sikhote Alin accretionary complex there occurs the Anyui block of metamorphic rocks of probable Precambrian age. The original fluid specialization of the block's rocks was essentially carbon dioxide at the bottom of the section, and water-carbon dioxide±salt at the top. This fluid specialization is typical of metamorphic complexes of ancient platforms.

The Anyui block experienced at least two stages of transformations in the convergent zone of the Asian continental and Pacific oceanic plates. About 110 mln years ago the block's rocks were heated and structurally reconstructed due to the collision processes. The original mainly carbon dioxide fluid was mostly replaced by a new water-methane fluid which generated in deep portions of the accretionary prism. Having percolated into the heated rock masses of the block this fluid at places triggered their partial melting with the formation of S-granites.

73-58 mln years ago the Anyui block experienced reheating and dome formation at the back of the East Sikhote Alin Late Cretaceous-Paleogene volcanic-plutonic belt. It is assumed that during this at the depth of about 100 km there took place fractional melting of the source of basic composition – the process typical of a mature stage of development of subduction systems. It resulted in elevated heat flow and emplacement of I-type granitoid massifs. Under their influence the Anyui block's rocks obtained a new fluid specialization of the following composition: $\text{NaCl}+\text{KCl}+\text{H}_2\text{O}\pm\text{CO}_2$.