

(U-Th)/He low-temperature thermochronology of detrital zircons (ZHe) from sedimentary rocks of the southern Prikolyma terrane (Verkhoyansk-Kolyma folded region)

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The Prikolyma terrane is located in the central part of the Kolyma-Omolon microcontinent, in the east of the Verkhoyansk-Kolyma folded region (VKFR). (U-Th/He) low-temperature thermochronology applied for detrital zircons (ZHe) from variously in age sandstones in the southern part of the terrane. The results obtained are as follows:

1. Three samples of Mesoproterozoic (central part of the terrane), Ordovician (?) (western part) and Devonian (eastern part) sandstones yielded very similar ZHe ages of 137+6.2, 137.3+5.4, and 137.4+5.4 Ma, respectively.
2. The more southerly sample of sandstone from the Middle Carboniferous rocks metamorphosed to the greenschist facies gave a ZHe age of 104.3+4.7 Ma.
3. The data obtained suggest that in Late Mesozoic time the southern part of the Prikolyma terrane underwent, at least, two stages of tectonic uplift. At the first Valanginian (Early Cretaceous) stage, the thrust sheets made of Precambrian and Lower-Middle Paleozoic rocks overlay Upper Paleozoic deposits as evidenced by the style of tectonic deformations and by metamorphic degree of Middle Carboniferous rocks. The deformation post-dated the emplacement of Late Jurassic granitoids of the Main (Kolyma) belt and the formation of the Uyandina-Yasachnaya magmatic arc as a result of the major pulse of collision between the Kolyma-Omolon superterrane and the eastern margin of the Siberian craton that occurred in the region no earlier than in the Valanginian.
4. The second stage of orogenesis and subsequent denudation of the earlier formed thrust sheet package occurred in Albian time (late Early Cretaceous) synchronously with the initiation of the Okhotsk-Chukotka volcanic-plutonic belt and subduction processes along the East Asian active continental margin.
5. At the southeastern side of the Prikolyma terrane there are present intensely deformed Upper Cretaceous and/or Lower Cenozoic (?) deposits. Thus, we assume that in the late Late Cretaceous or in the early Cenozoic a final stage of deformation not established from ZHe low-temperature chronometry occurred.

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