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Triassic and Jurassic-Cretaceous deposits in the Western Chukotka: geodynamic implications, provenance studies and deformation

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Studied region is situated in western Chukotka, in Northeast Russia. We examine the part of Chukotka microplate, the key element in the evolution of the Amerasian basin.
The Triassic of Chukotka is represented by up to 5 km of deposits. Triassic terrigeneous deposits consist of three different complexes: Lower-Middle Triassic, Upper Triassic Carnian, and Norian. All the complexes are represented by rhythmic intercalation of sandstones, siltstones and mudstones. Clastic material was carried by large rivers, possessing large reservoir on neighbouring continent. Progradation of delta system in deeper regions is observed. During the Triassic, sedimentation was represented by continental slope progradation. Petrographic study of mineral composition has established the sandstones as graywackes and lithic arenites, according to Pettijohn classification (1981). Sandstones with clasts of rock fragments of lower metamorphic grade rocks dominate at the base of Triassic deposits, sandstones with fragments of higher grade metamorphic rocks dominate in the Later Triassic deposits. This different shows that the Triassic represents an unroofing sequence sours of erosional processes that produced the clastic material eroded more deeply buried rocks through time.

Detrital zircons from Triassic sedimentary rocks were collected for constain its paleogeographic links to source terranes. Zircons populations from these three samples are very similar, and youngest zircon ages show peaks at 236-255 Ma. Besides, we are dating the 9 samples for K-Ar and Rb-Sr methods. Data are similar and show 200-204 Ma, and we suppose that this isotopic data indicate the age of first stage of deformation in Chukotka's basin.

The Jurassic-Cretaceous of Chukotka is represented by up to 3 km of deposits. The sedimentary complexes are enriched by organic matter, and fresh clastic materials. Fragments of shales, sometimes laminated or cleaved are their indicator constituents. Sandstones are arkosic. The chemical composition and mineral assemblages are different from Triassic sandstone. Besides, Upper Jurassic sandstones differs from Cretaceous sandstones. Our investigations indicate that Triassic, Upper Jurassic, and Lower Cretaceous sedimentary basins were related to different source provenance. In the paper will discuss the sedimentation, provenances, and geodynamic settings of Triassic and Jurassic-Cretaceous deposits.

The studied part of western Chukotka is composed of variably deformed, folded and cleaved rhythmic deposits. Widely distributed and intensively deformed Triassic sequences (Tuchkova et al., 2007) and J-K units both intruded by Aptian-Albian postcollisional plutons and dikes (Katkov et al., 2010). Collisional-related fabric and subsequent granitoids are complicated by small-scale latest normal faults, in particular related to the westernmost segment of South Chukchi (Hope) basin development in Upper Cretaceous (?)-Cenozoic. Intensity of the compressional deformation of Jurassic-Cretaceous rocks is significantly less than in Triassic sequence.

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