Geophysical Research Abstracts
Vol. 15, EGU2013-9663, 2013
EGU General Assembly 2013

Triassic deposits of the Chukotka Arctic continental margin (sedimentary implications and detrital zircon data)

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Triassic clastic deposits of Chukotka are represented by rhythmic intercalation of sandstones, siltstones and mudstones. During the Triassic, sedimentation was represented by continental slope progradation.
Detrital zircons from Triassic sedimentary rocks were collected for constrain its paleogeographic links to source terranes. Zircons populations from three Chukotka's samples are very similar, and youngest zircon ages show peaks at 236-255 Ma (Miller et al., 2006). Lower Triassic sandstones from the Chaun subterrane do not contain the young population 235–265 Ma that is characteristic of the Upper Triassic rocks from the Anyui subterrane and Wrangel Island. The young zircon population is missing also from the coeval Sadlerochit Group (Alaska) and Blind Fiord Formation of the Sverdrup basin (Miller et al., 2006; Omma et al., 2011). Our data of Triassic sandstones of Wrangel island demonstrate detrital zircons ages dominated by Middle Triassic (227–245 Ma), Carboniferous (309–332 Ma) and Paleoproterozoic (1808–2500 Ma) ages.
The new data on Chukotka show that populations of detrital zircons from Chukotka, the Sverdrup basin, and Alaska, the Sadlerochit Mountains included, demonstrate greater similarity than it was previously thought. Consequently, it may be assumed that they originate from a single source situated in the north.
The data on zircon age of gabbro–dolerite magmatism in eastern Chukotka (252 Ma. Ledneva et al., 2011) and K–Ar ages obtained for sills and small intrusive bodies (Geodynamics…, 2006) in Lower Triassic deposits allow the local provenance. The presence of products of synchronous magmatism and shallow-water facies in the Lower Triassic sequences confirm this assumption. At the same time, coeval zircons appear only in the Upper Triassic strata. It is conceivable that the young zircon population originates from intrusive, not volcanic rocks, which were subjected to erosion only in the Late Triassic.
In our opinion, the assumption of the local source with synchronous magmatism is consistent with the evolution of the petrological–mineralogical and geochemical compositions in the Triassic sandstones of Chukotka. Similar zircon peaks in Triassic rocks of northern Wrangel Island, Sverdrup basin, and Alaska indicate the same provenances for the Triassic periods. It is possible that all obtained data may indirectly support existence of the hypothetical "Hyperborean Platform" or Crockerland–Arctida microcontinent
Work was supported by RBRR projects 11-05-00787, 11-05-00074, Scientific school # NSh-5177.2012.5, kontrakts 01/14/20/11; and we are extremely grateful to the TGS company for execution of a joint research project "Geological history of Wrangel Island".