

Bedrock sampling of Siberian and Central Segments of Lomonosov Ridge. Implications for the geological and tectonic framework

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The new petrographic, mineralogical and geochronological data from Russian "Arctika-2007-1" expedition on the Lomonosov Ridge presented. The high-grade metamorphic and clastic rock fragments that recovered from two faulted scarps on the Siberian and Central Segments of LR were attributed to the Lomonosov Ridge bedrocks. The U-Pb dating of hemipelagic detrital zircons shows a clear similarity of their assemblages all-over the Arctic Basin and undoubtedly shows the prevalence of Siberian rather than Canadian sources. The lack of the Mesoproterozoic detrital zircons in hemipelagites, indicates that the clastic rocks containing those zircons are beyond the Arctic depositional system, and cannot be correlated with IRD. The almost identical MP-NP zircon signatures were identified from clastic rocks all over Arctic suggest the vast continental source area should have existed in the Central Arctic. The basement of Arctida craton is considered to be a most likely source area. The Siberian Segment of LR is considered to be a northernmost extension of the Timanides of Kotel'ny Island that slightly deformed during Late Mesozoic orogeny. The Central Segment of LR is thought to be a frontal part of Caledonian convergent shear and fold zone. Our data suggests that Timanian crystalline basement of Central Segment was affected by Caledonian high-grade metamorphic event in Early Devonian.