

Composition of Jurassic conglomerates of Franz Josef Land: implication for stratigraphy, composition and age of pre-Mesozoic rocks of northern part of Barents Sea.

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Franz Josef Land archipelago (FJL) is a crustal fragment exposing a Mesozoic sedimentary succession in the north-eastern part of the Barents Sea. Lack of deep well penetrations on surrounding shelf makes FJL a key for understanding the geology of the adjacent sedimentary basin. Moreover, only a single well (Nagurskaya) penetrated the basement on Alexandra Land Island (FJL). Thus, composition, age, and structural features of pre-Mesozoic succession of north-eastern part of Barents Sea are mainly based on seismic data. Here, we present detailed petrography, geochemistry, U-Pb and low-temperature thermochronology data of pebbles collected from Jurassic rocks of Halla and Graham-Bell Islands (FJL).

Studied pebbles are very diverse in composition, including metamorphic, magmatic, and sedimentary rocks. Zircon U-Pb dating of the 3 granitic pebbles yielded concordant Late Devonian (Famennian) - Early Carboniferous age. Detrital zircon U-Pb dating of 3 metasandstone pebbles showed Latest Neoproterozoic - Early Cambrian maximum depositional ages. Therefore, the pre-Mesozoic succession of FJL includes Late Neoproterozoic-Earliest Cambrian metasandstones intruded by Late Devonian-Early Carboniferous granites and overlain by a Carboniferous-Permian sedimentary succession. The detrital zircon (U-Th)/He data from metasandstone pebbles indicates that the youngest exhumation event in provenance source area took place in the Late Triassic.

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