



Age of granites of Wrangel Island metamorphic complex

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Within huge arctic shelf of Eastern-Siberian and Chukchi seas the metamorphic basement (Wrangel complex, Berri Formation) is exposed only on the Wrangel Island. There are different points of views on the age of metamorphic rocks of Wrangel complex (Berri Formation): (1) Neoproterozoic (Kameneva, 1970; Ageev, 1979; Kos'ko et al., 1993, 2003), (2) Devonian (Til'man et al., 1964, 1970; Ganelin, 1989).

Metamorphic basement is represented by stratified complex, composed of dislocated metavolcanic, metavolcaniclastic and metasedimentary rocks (schists, metasandstones, metaconglomerated) with single lenses and layers of carbonate rocks (Wrangel Island. . . , 2003). Among basement rocks in the central part of Wrangel Island there are felsic intrusive bodies. They form small tabular bodies from tens centimeters to 70-80 meters in thickness, rarely dikes and small stocks (up to 20 x 30 m) and are composed of granite-porphyrtes, rarely muscovite porphyry-like granites and granosyenites (Wrangel Island. . . , 2003). The age of intrusions allow to determine the age of basement formation.

Earlier the age of intrusions was determined by different methods and correlated to the boundary between Neoproterozoic and Paleozoic: K-Ar 570-603 Ma, Pb-Pb 590 ± 50 Ma (S.M. Pavlov, Institute of Precambrian Geology and Geochronology, USSR Academy of Sciences), Rb-Sr 475 ± 31 Ma (I.M.Vasil'eva, Institute of Precambrian Geology and Geochronology, USSR Academy of Sciences), U-Pb 609, 633, 677 Ma (Geological Survey of Canada) (Wrangel Island. . . , 2003; Kos'ko et al., 1993; Cecile et al., 1991).

In the lower part of metamorphic rocks of Wrangel complex there are conformable tabular bodies of gneissosed and foliated granitoides. The latter are metamorphosed and transformed in biotite-muscovite-feldspar-quartz-sericite and muscovite-feldspar-quartz-sericite gneisses and schists, where relics of primary minerals (quartz, plagioclase, potassium feldspar, rarely biotite and muscovite) and equigranular granitic texture are preserved. Accessory minerals of granitoides are zircon, sphene, apatite.

During field work of 2006 year the probes for U-Pb SHRIMP zircon datings were collected (upper reaches of Khishchnikov River). Dating was carried out on SHRIMP-II in the Center of Isotopic Studies of Federal State Unitary Enterprise "A.P.Karpinsky Russian Geological Research Institute".

Weighted mean ages of zircons from three probes are: 702 ± 3 Ma (N=19), 701 ± 7 Ma (N=3), 707 ± 4 Ma (N=25). They indicate Neoproterozoic age of granitoides. Furthermore, some zircons contain inherited cores, for which following datings were obtained: 1.1; 1.21; 1.107; 1.2-1.4; 1.58; 1.8; 2.6 Ga. These data allow supposing the presence of ancient (Neoproterozoic-Mesoproterozoic) rocks in the basement of Wrangel Island and their participation in the melting process during granite magmas formation.

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