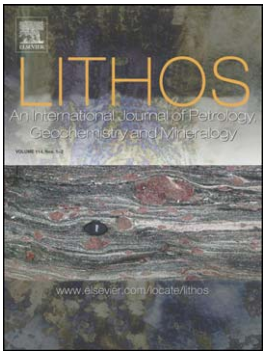

Neoproterozoic granitoids and rhyolites of Wrangel Island: Geochemical affinity and geodynamic setting in the Eastern Arctic region

Marina V. Luchitskaya, Artem V. Moiseev, Sergey D. Sokolov, Marianna I. Tuchkova, Sergey A. Sergeev, Paul B. O'Sullivan, Vladimir E. Verzhbitsky, Nikolay A. Malyshev

PII: S0024-4937(17)30300-6
DOI: doi:10.1016/j.lithos.2017.08.022
Reference: LITHOS 4405

To appear in: *LITHOS*

Received date: 17 April 2017
Accepted date: 26 August 2017

Please cite this article as: Luchitskaya, Marina V., Moiseev, Artem V., Sokolov, Sergey D., Tuchkova, Marianna I., Sergeev, Sergey A., O'Sullivan, Paul B., Verzhbitsky, Vladimir E., Malyshev, Nikolay A., Neoproterozoic granitoids and rhyolites of Wrangel Island: Geochemical affinity and geodynamic setting in the Eastern Arctic region, *LITHOS* (2017), doi:10.1016/j.lithos.2017.08.022

Neoproterozoic granitoids and rhyolites of Wrangel Island: Geochemical affinity and geodynamic setting in the Eastern Arctic region

Marina V. Luchitskaya[a], Artem V. Moiseev[a], Sergey D. Sokolov[a], Marianna I. Tuchkova[a], Sergey A. Sergeev[b,e], Paul B. O'Sullivan[c], Vladimir E. Verzhbitsky[d], Nikolay A. Malyshev[d]

[a]Federal State Institution of Science Geological Institute of Russian Academy of Sciences, Pyzhevsky lane 7, Moscow 119017, Russian Federation

[b]Federal State Unitary Enterprise "A.P.Karpinsky Russian Geological Research Institute", 74, Sredny prospect, 199106, Saint-Petersburg, Russia

[c]GeoSep Service, 1521 Pine Cone Road, ID 83843 USA

[d]Rosneft Oil Company, Dubininskaya str., 31A, 115054, Moscow, Russian Federation

[e] Institute of Earth Sciences, St.-Petersburg State University, Universitetskaya emb., 7/9, St-Petersburg, Russia

Abstract

New results from the study of zircon U-Pb ages by SIMS SHRIMP and LA-ICP-MS, Nd isotopy and the geochemistry of granitic plutonism and felsic volcanism of Wrangel Island are considered. Granitic intrusions are confined to the Wrangel Complex in the Southern tectonic zone, cropping out in the core of a latitudinally extending anticlinorium and representing the metamorphic basement of the Eastern Arctic shelf. Felsic and basic volcanic rocks form a belt of scattered outcrops in the Central tectonic zone. The obtained U-Pb data form two Neoproterozoic age clusters in the Wrangel Complex at ~680–720 and ~590–600 Ma corresponding to the times of granitic plutonism and felsic volcanism, respectively. Granites that are 680–720 Ma old contain inherited zircons of Meso-, Palaeoproterozoic, and Neoarchaean ages, implying the existence of ancient rocks in the basement of Wrangel Island and their participation in partial melting during granite magma formation. The negative εNd(T) (-2.97 to -4.46) values obtained for granites suggest the contribution of a crustal component to their petrogenesis, and their model ages indicate possible Palaeo-Mesoproterozoic ages of crustal protoliths. The geochemical affinities of granites are similar to those of highly fractionated peraluminous I-type granites, and