

RAPAKIVI GRANITES IN NORTHERN POLAND AND SOUTHERN LITHUANIA: WESTERN PART OF THE EAST EUROPEAN CRATON

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Palaeoproterozoic granulite and amphibolite facies metamorphic domains in Lithuania and Poland were juxtaposed during the final accretion of the western part of the East European Craton ca. 1.71-1.66 Ga ago. The consolidated crust was subjected to 1.58-1.50 Ga anorogenic magmatism. A chain of rapakivi granites and associated mafic and intermediate igneous rocks (AMCG magmatic suite) adhered to an E-W trending shear zone extends from the Baltic Sea through northern Poland to southern Lithuania. The rapakivi granites of the Mazury Complex in Poland and Kabeliai Complex in Lithuania are of ca. 1.5 Ga age according to U-Pb zircon datings. The Kabeliai granites and quartz-monzonites contain a Cu-Mo mineralization of 1.486 ± 5 Ga age (Re-Os method). Titanomagnetite and sulfide ores in the gabbro-anorthosites of the Suwalki massif belonging to the Mazury complex yield Re-Os ages of 1.559 ± 37 and 1.556 ± 94 Ga. Thus, the described suites appear to be intruded within 150 myr or less of the end of the last orogeny (ca. 1.7-1.66 Ga). Comparative mineralogical and geochemical studies of the rapakivi granites indicate that their origin is connected with extensional tectonic settings by melting of pre-existing (lower) continental crust. The melting was related to mantle upwellings, which also may be a reason for the extensional tectonics and the bimodal mantle derived and crust-derived character of magmatism impoverished in water fluids.