

Anorogenic Magmatism in the Western Part of the East European Craton (EEC)

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A chain of magmatic bimodal intrusions of predominating granitic composition extends eastwards from northern Poland and southern Lithuania into NW Belarus. Those bodies crosscut lithologies of several Proterozoic granulite and amphibolite facies domains, which have been developed separately before their final amalgamation at ca. 1.7-1.66 Ga (Bogdanova et al., 1996).

The Mazury complex in Poland and Lazdijai (Veisiejai) complex in Lithuania appear to belong to the same AMCG magmatic suite displaying all varieties of rocks ranging from anorthosites and gabbros to rapakivi granites. Those are mostly peraluminous rocks, which have been originated from different magma batches or influxes of the same magma chamber as it is indicated by their geochemistry. They display almost identical trace and rare earth element patterns (Skridlaite et al., 2000). The porphyritic Grodno area granites in Belarus may be assigned to the same AMCG suite according to their petrography and geochemistry. Several U-Pb zircon datings on the rapakivi granites of the Mazury Complex have given the same ca. 1.5 Ga age (e.g. Claesson, 1996). Titanomagnetite and sulfide ores in the gabbro-anorthosites of the Suwalki massif belonging to the Mazury complex yield Re-Os ages of ca. 1.56 Ga (Morgan et al., 2000).

The Kabeliai complex in southeastern Lithuania and the Mosty complex in NW Belarus are dominated with porphyritic biotite granites and quartz-monzonites, which are metaluminous and have A-type characteristics. These granitoids of ca. 1.5 Ga age (U-Pb zircon datings, Sundblad et al., 1994) contain a Cu-Mo mineralization of ca. 1.49 Ga age (Re-Os method, Stein et al., 1999).

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 studied granites plot in the Within Plate Granite and Post-Collisional Granite fields. In spite of some minor variations in age, they were formed ca. 1.6-1.5 Ga ago and clearly post-date the last orogeny in the western part of the EEC

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