

WITHIN-PLATE MAGMATIC SYSTEMS IN CONDITIONS OF THICK SIALIC CRUST: EVIDENCE FOR PROTEROZOIC ANORTHOSITE-RAPAKIVI GRANITE COMPLEXES OF BALTIC AND UKRAINIAN SHIELDS

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The western part of East-European craton is characterized by unusual thick continental crust (till 50-60 km) which was formed as a result of the Svecofennian orogeny (1.9-1.8 Ga ago). Number of large anorthosite-rapakivi granite complexes (ARGC) 1.8-1.5 Ga age are located here. According to geophysical data, they represent large trans-crustal cone-like anomalies, located above mantle highs; its inner structures are characterized by complex alternation of basites and granites. The ARGCs are large multistage batholiths which formed during 20-25 Ma. They are composed mainly granites and anorthosites, where the former predominate. Sometimes, they look like coarse-layered intrusions with graduate transition from anorthosites through norites, monzonites and diorites to granites (Salmi, Ahvenisto, Korosten, etc.). According to geochemical and isotopic data, magma rapakivi derived from crustal sources and anorthosites from mantle-derived melts, contaminated by crustal material. Diabase dykes are closely associated with the ARGCs; they often intruded during the formation of their formation, as shown by cross-cutting relationships with granites and by mingling. These dykes originated from Fe-Ti basalts, demonstrating that formation of the ARGC occurred simultaneously with melting of plume material beneath them. Thus, the ARGCs on their tectonic settings were within-plate formations which appeared above hotspots in the conditions of very thick (60-80 km in the moment) continental crust.