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Two Paleoproterozoic large igneous provinces, eastern Baltic Shield

E. Sharkov

Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry RAS, Moscow, Russia (sharkov@igem.ru/ Fax: +7 494 2302179)

Two Paleoproterozoic large igneous provinces (LIPs) of different composition and age occurred on the eastern Fennoscandian Shield in form of lava successions in riftogenic structures, dyke swarms and layered mafic-ultramafic intrusions. The first one is composed by rocks of the siliceous high-Mg (boninite-like) series (SHMS) of 2.5-2.36 Ga age, and the second - mainly by Fe-Ti basalts and picrites of 2.3 - 1.95 Ga age. Both types of the LIPs evolved within rigid Kola and Karelian cratons, divided by Lapland-Umba granulite belt (LUGB) with crustal-derived enderbite-charnockite magmatism. Belomorian and Tersk-Umba mobile belts occurred between cratons and LUGB; specific disseminated intrusive magmatism, the same type as in cratons, evolved here. All major tectonic structures evolved simultaneously and situation could be described in plume-tectonic terms: cratons developed above extended plume heads and LUGB - on place of the mantle descending flows.

It is important that on the boundary 2.3-2.2 Ga sharp changing of magmas composition occurred without changing of tectonic situation: both cratons and the LUGB continued their development in the same way. Newly formed basalts build up the lava successions in the same riftogenic structures, new dyke swarms and layered titaniferous mafic-ultramafic intrusions were generated. Probably, that it means that the mantle superplume, which provided existence of the early Paleoproterozoic LIP, continue to exist in the middle Paleoproterozoic, but it's composition was change, may be as a result of the mantle metasomatism activization.

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