

New paleomagnetic data from the South Karelia (Russia): Implication for Late Paleoproterozoic paleogeography

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The two major continental blocks, Fennoscandia and Volgo-Sarmatia during their docking to form the East European Craton (Baltica) at 1.8-1.7 Ga are important 'puzzle pieces' in the Global Precambrian paleogeography. For paleomagnetic reconstructions we used ca 1.98 Ga mafic dyke swarm and sills intruding the south-eastern Karelian Craton along the eastern shore of Lake Onega. Dyke strikes dominantly 300–330°NW. These commonly occur as steeply dipping bodies in the Archean basement and as gently dipping sheet-like bodies (sills) in Paleoproterozoic (Jatulian–Ludicovian) carbonate units. They are composed of dolerite, gabbrodolerite and diorite and contain more iron, titanium and potassium and less silicon, calcium and magnesium than 2.5-2.45 Ga rocks. The new U-Pb baddeleyite age of 1968±2 Ma for the Unoi dolerite sill is slightly younger within error limits than the age of Pudozhgora intrusion, dated at 1983±6.5 Ma [1]. Geochemical compositions of the dykes allow us to assume a single episode of magmatic activity ca 25-30 Ma, including several pulses. Paleomagnetic studies include both thermal and AF demagnetization; characteristic northeastern remanent magnetization (ChRM) directions with downward inclinations were isolated. Magnetic mineralogy experiments show that ChRM is carried by high-Hc, and high-unblocking temperature Ti-poor titanomagnetite.

The new 1.98 Ga pole contributes to better define the apparent polar wander (APW) path for the Karelian Craton during the Paleoproterozoic (1980-1750 Ma) and helps to constrain the position of the Karelian Craton in the supercontinent Columbia in the Late Paleoproterozoic.

[1] Philippov, N.B., Trofimov, N.N., Golubev, A.I., Sergeev, S.A., Huhma, H.(2007). *Geol. Miner. Resour. Karelia* **10**, 49–68.