Precise U-Pb (ID-TIMS) and SHRIMP-II ages on single zircon and Nd-Sr signatures from Achaean TTG and high aluminum gneisses on the Fennoscandian Shield

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Ingosersky TTG complex are in the Central-Kola domain. New U-Pb data on single zircon from Bt-gneisses is 3149±49 Ma, metamorphic alterations were in 2725.2±2.5 Ma and reflect the origin of Amf-Bt gneisses with 2733.6±6.6 Ma. The very coeval isotope-geochemistry data have been obtained for rocks from greenstone belts from Finland (Huhma et al., 2012).

New U-Pb (ID-TIMS) data on single zircon from paragneisses near Murmansk in the Central-Kola domain gave 3.17 Ga. Core from these zircon population has the age 3695±5 Ma by SHRIMP-II and older about 100 Ma compared with paragneises of Kola block according to (Myskova et al., 2015). Time of amphibolites metamorphism was dated with 2753±3 Ma.

Archaean gneisses in Monchegorsk ore region were firstly dated in the Central-Kola domain. Single zircon from gneisses in Monchegorsk region which are the basement for Paleoproterozoic PGE layered intrusions with U-Pb ages on zircon and baddeleyite from 2.4-to 2.5 Ga has 3.16 Ga. Single zircon from gneisses gave 2776±3 Ma and is considered as amphibolites metamorphism. Voche-Lambina international polygon lies on the boundary between Belomorian mobile block and Central –Kola domain (Morozova et al., 2012). New neoarhaean U-Pb data on single zircon from TTG of polygon yielded 3158.2±8.2. Zircon are characterized by low concentration U and Pb, low U/Th ratio with 0.2. REE diagrams of grey gneisses reflect high fractionation La/Yb>30,encriched by light REE and depleted by heavy Yb<0.6 ppm. Model Sm-Ng ages on the rocks have protolith from with the ages 3.4 to 3.2 Ga, positive εNd from +1.29 to +3.3, ISr equals 0.702. Precise (ID-TIMS) age of amphibolites metamorphism has been dated on single zircon with 2704.3±5.9 Ma.

Therefore based on the new data on single zircon from TTG and high aluminum gneisses from Central-Kola domain leads to the long history of continental crust origin in the Baltic or Fennoscandian Shield from 3.16 to 3.7 Ga.

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