



Accessory phases in Karelian Province sanukitoids (Finland): Towards understanding temporal changes in subduction style?

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The Archean-Proterozoic transition is marked by the appearance of sanukitoids, which have been found on every continent, whose occurrence is believed to be a consequence of the initiation of the so called “Modern Plate Tectonics”. Whole rock geochemistry and experimental petrology have suggested that they result from the interaction between a mantle wedge and a metasomatism agent (either oceanic crust melt or sediments). Sanukitoids from the Karelian Province (Finland) have been dated at ~ 2.7 Ga (U-Pb on zircon; Heilimo et al., 2011), and whole rock geochemical data, oxygen and hafnium isotopes in zircons have been interpreted as the result of the interaction between a depleted mantle wedge and a recycled crustal component during a slab-breakoff event at the end stage of the subduction (Heilimo et al., 2010, Heilimo et al., 2012).

Geochemistry of accessory phases can give additional information about the petrogenesis and the sources of their host rocks (e.g. Hoskin et al., 2000; Chu et al., 2002). In this contribution, we present new geochemical data on the accessory phases (titanite, apatite, zircon) of the Karelian Province sanukitoids. We demonstrate that trace elements analysis and a detailed petrographic work on these phases give us a direct access to their petrogenesis. These data are compared to new data obtained on “modern” sanukitoids (High Ba-Sr suite, Scotland) and on a BADR suite (Guernsey, Channel Islands) in order to highlight potential geochemical signatures of each. This study will be followed by a systematic analysis of accessory phases in TTG, in order to have a whole record of accessory phases chemistry in plutonic rocks through the crustal evolution.