Goldschmidt 2022 Abstract
https://doi.org/10.46427/gold2022.10963

Sequential resetting of Hf-, Nd- and Sr- isotope signatures during the *ca*. 2 Ga long metamorphic history of the Archean Saglek Block (North Atlantic craton): evidence from zircon, apatite, and feldspars isotopic signatures

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The Saglek Block (Labrador, north-eastern Canada) hosts felsic rocks that preserve among the oldest zircon on Earth, with TTG zircon ages up to 3.87 Ga. These rocks have experienced several metamorphic events at amphibolite grade or higher, at ca. 3.6 Ga, 2.7 Ga and 2.5 Ga, as indicated by U-Pb ages obtained on zircon and REE-rich phases. Several studies have also reported Hf- and Nd-isotopes signatures of these crystals, providing first constraints on the metamorphic evolution of the Saglek Block.

Here we provide additional constraints on the metamorphic evolution of the Saglek Block with the addition of newly produced TTG-hosted plagioclase and K-feldspar Rb-Sr isotopes results measured by LA-ICP-MS/MS. Our preliminary results indicate post-Archean (re)-crystallisation of the K-feldspar with Rb-Sr isotopic ages ranging between at around 1.7 and 1.9 Ga. Plagioclase Sr-isotope signatures cluster around 0.713 to 0.715, below the initial ($^{87}Sr/^{86}Sr$) value obtained from isochron regression of K-feldspar analyses. These new in-situ Rb-Sr isotopes results are indicative of: (i) a latest resetting of Sr-isotopic signatures *ca*. 2 Ga after protolith emplacement, (ii) a lower amphibolite metamorphic event at ca. 1.8 ± 0.1 Ga, likely during waning stages of the Torngat orogen and the Columbia supercontinent formation and, (iii) a temporal difference between plagioclase and K-feldspar (re)-crystallisation. Further, while zircon Hf- and O- isotopes indicate involvement of exotic material during the 3.6 Ga-old and the 2.7 Ga-old metamorphism, the newly produced Rb-Sr isotopes and previously published whole-rock Rb-Sr isotopes data of the Saglek felsic rocks seems to point toward crustal reworking with no significant input of external material during the Paleoproterozoic event. Altogether our in-situ U-Pb/Hf, U-Pb/Sm-Nd and new Rb-Sr isotopes analyses provide a clearer view of the history of the Archean Saglek Block and altogether constrain the timing at which Hf-, Nd- and Sr-isotopes systematics froze in varied different species.