

Petrography, U-Pb age constraints and metamorphic history of the Nulliak Supracrustal assemblage (Northeastern Labrador)

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The Nulliak supracrustal assemblage represents the oldest suite of volcano-sedimentary rocks preserved in the Saglek-Hebron segment of the North Atlantic craton (1). The different lithologies and their field relationships have been studied in detail in the western limb of the Nulliak Island (58°18'30.1"N, 62°35'48.4"W). The lithological assemblage includes well layered meta iron-formation (magnetite + quartz + Fe-pyroxene ± sulfides), quartzites intercalated with garnet-bearing hornblendite and charnokite as well as intruding K-rich granitoids. The latter is locally intruded by ultramafic pods preserving fresh Ol + Opx ± Cpx in granoblastic texture.

We report U-Pb dating of zircons extracted from the quartzite (n=80) and analysed using a secondary ion mass spectrometer (Cameca IMS 1280) at CRPG (Nancy). We measured a maximum sub-concordant age of 3846.1 ± 2.8 Ma (MSWD = 1.8) and a minimum age of 3568.8 ± 3.8 Ma (MSWD = 5.6). High-P tonalite samples preserved a sub-concordant maximum age of 3328.7 ± 5.3 Ma (MSWD = 1.8). A later stage of partial melting is recorded by K-rich granitoids concordant age ranging from 2250 to 2750 Ma) as well as leucosomes cross cutting the amphibolite (2699±53 Ma).

Metamorphic temperature were also calculated for magmatic, recrystallized (garnet-biotite, garnet-hornblende) or exsolved (clinopyroxene-orthopyroxene) mineral pairs. A coherent cooling history can be reconstructed from the initial metamorphic temperature of nearly 980°C (preserved in the iron-formation) to the last T equilibration event at about 600°C, which likely postdates the partial melting of the amphibolite (2699 Ma).

[1] Ermanovics and Kranendonk (1998). *Bull. of the Geological Survey of Canada*, Vol. **497**.