

U-Pb geochronology and REE signatures : fingerprinting the interplay between magmatism and migmatisation, Archean Superior Province (QC, Canada).

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The Attic Complex is hosted by the Northern Volcanic Zone of the Archean Abitibi Greenstone Belt (AGB) and forms a large domain of TTG intrusions in the core of antiformal dome structures surrounded by predominantly amphibolite-grade mafic metavolcanic rocks, which is of higher metamorphic grade than what is usually exposed in AGB (i.e. greenschist). This suggests that the Attic Complex probably represents a structural window displaying the lower crustal “basement” of the AGB.

The U-Pb geochronological analysis on a series of samples from the Attic Complex can be used to define a timeframe for its magmatic, metamorphic and structural evolution. Tonalitic intrusive rocks affected by regional deformation and metamorphism were emplaced ca. 2730-2720 Ma, making them older or coeval with the hosting supracrustal rocks of the Quévillon Group (2714-2718 Ma). Migmatite rocks from this set of samples yield U-Pb ages between 2700 and 2720 Ma.

Migmatite facies rocks likely formed during peak metamorphism constitute a key element to a better understanding of the geological evolution of the Attic Complex. These migmatitic rocks contain several zircon populations originating from the mesosome, the neosome, and subsequent thermal events. Comparing the REE signatures and zircon U-Pb ages and the REE composition of metamorphic minerals preserving peak P-T conditions will enable us to define the “true age” of migmatisation.