
***In situ* Hf-isotope zircon data from two
Paleoproterozoic bimodal volcanic segments of
the Aillik Group, Makkovik Province, Labrador**

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The Makkovik Province of eastern Labrador is part of an accretionary orogenic belt that formed during the Paleoproterozoic Makkovikian orogeny. The Aillik domain of the Makkovik Province is largely composed of: a) the Aillik Group, a package of Paleoproterozoic, polydeformed, bimodal volcano-sedimentary rocks, and b) abundant variably deformed Paleoproterozoic intrusive suites that intrude the Aillik Group. Two areas are the focus of this study. Middle Head is dominated by lower amphibolite facies arkosic sandstone, felsic tuff, rhyolite and basalt. Pomiadluk Point is composed primarily of lower amphibolite to upper greenschist facies felsic tuff and polymictic conglomerate with lesser preserved rhyolite and basalt. Recent detailed 1:10 000 scale bedrock mapping in conjunction with *in situ* Hf-isotopic geochemistry of zircon illustrate that the Aillik Group was deposited on ca 2.5 Ga crust at Middle Head, and mainly on ca 2.8 Ga crust at Pomiadluk Point.

Hf-isotope data was collected by LA-MC-ICPMS. ϵHf_i in zircon from a ca. 1850 Ma felsic tuff range uniformly from -2.0 to -4.9 with crust formation ages of ca 2.4 to 2.6 Ga for their felsic crustal sources. In contrast, two felsic tuff samples at Pomiadluk Point with magmatic ages of ca. 1855 and 1860 Ma have ϵHf_i values in zircon that range from -4.8 to -12.0 in 19 of 23 grains analyzed, giving (felsic) crust formation ages of 2.6 to 3.0 Ga. A third sample from Pomiadluk Point, a ca. 1863 Ma foliated, laminated, fine-grained tuffaceous sandstone that outcrops between two conglomerate beds contains magmatic zircons with ϵHf_i that range from +3.7 to -2.0, and crust formation ages of 2.2 to 2.5 Ga. The new Hf-isotope data suggest that the Aillik Group was deposited on crust that had an age range of at least 800 Ma and included both Paleoproterozoic and Late Archean components. None of the felsic volcanic rocks analyzed from the Aillik Group show Hf-isotope evidence of derivation from truly juvenile, 1.9-2.0 Ga crust with short residence times (<100 Ma), as might be expected for an intra-oceanic island arc origin.