

## **Constraints on the assembly of the North Atlantic Craton segment in Labrador, Canada**

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The North Atlantic Craton (NAC), exposed across northeastern Labrador, southern Greenland and northern Scotland, is one of a small number of cratons that preserve an Eoarchean rock record. The Canadian segment of the craton is subdivided into two blocks: the southern Hopedale block and the northern Saglek block. The majority of recent work has focussed on the northern portion of Saglek block with its ancient basement gneisses and Eoarchean supracrustal rocks. Recent mapping and SHRIMP ion microprobe U-Pb geochronology sheds further light on the extent of both blocks and revises the potential timing of their amalgamation. A migmatitic grey gneiss from the Hopedale block yields a crystallization age of  $3247\pm 12$  Ma with a zircon overprint dated at  $2833\pm 9$  Ma. A second sample of non-migmatitic gneiss yields a crystallization age of  $3262\pm 5$  Ma, also with a ca. 2.82 Ga zircon overprint. These crystallization ages are consistent with ages of the Maggo gneisses in the Hopedale block, as are the overprint ages which corroborate the timing of emplacement of the Kanairiktok suite and related migmatization. Neither sample records evidence of post-2.8 Ga metamorphic overprinting. A septa of Archean gneisses between Mesoproterozoic Nain plutonic suite rocks were investigated in Webb Bay, an area previously interpreted as the boundary between the Saglek and Hopedale blocks. A foliated monzogranite cuts a strongly deformed regional orthogneiss containing enclaves of amphibolite and metasedimentary rocks including quartzite. The quartzite yields detrital modes at 3.65-3.78 Ga, 2.81 Ga and 2.78 Ga. The monzogranite is interpreted to have crystallized at ca. 2710 Ma and contains abundant inherited zircons from a 3.7-3.8 Ga source. The Eoarchean zircon, both detrital and inherited, documented in Webb Bay extend the range of Saglek block Eoarchean gneisses approximately 100km further south from their last dated locality. The recognition of ca. 2.81-2.82 Ga components in both the Saglek and Hopedale blocks may suggest earlier amalgamation than previously interpreted. This expanded dataset of the Canadian segment of the NAC permits a more detailed comparison with the better studied Greenlandic segment and a better understanding of the growth and evolution of cratons.