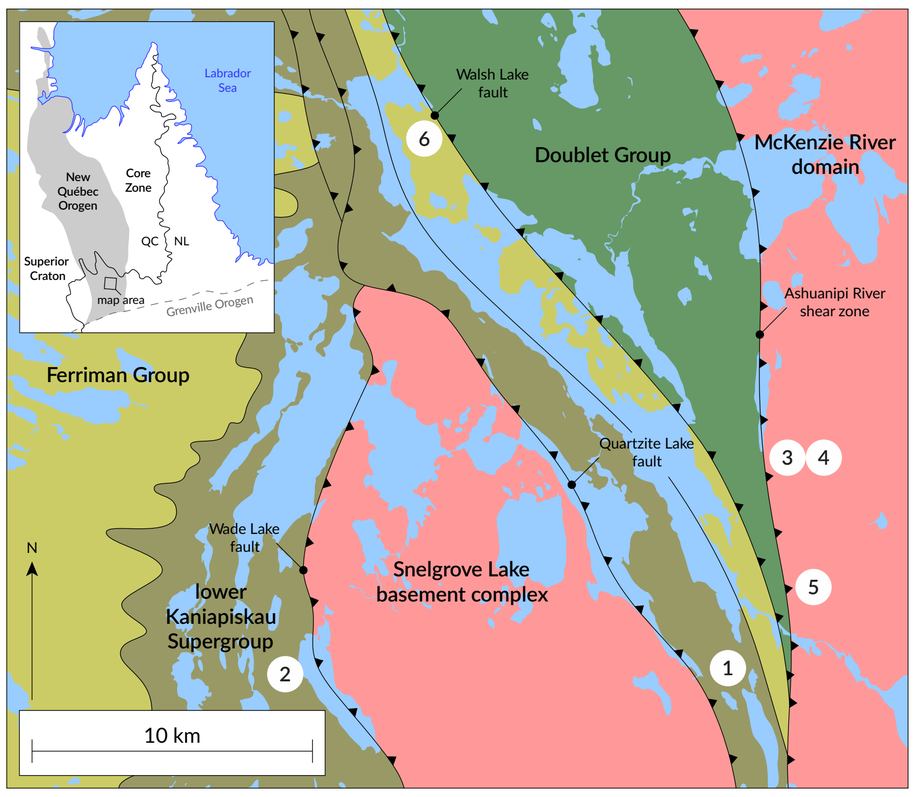
GEOLOGICAL MAPPING OF THE ANDRÉ LAKE AREA, WESTERN LABRADOR

JARED BUTLER

New mapping in the hinterland of the New Québec Orogen of western Labrador aims to unravel the complex tectonic history and mineral potential of an ancient continent–continent collision zone

The André Lake map area (NTS 23I/12) lies in the hinterland of the New Québec Orogen (NQO), a continental collision zone formed at ca. 1.8 Ga, when the Superior Craton collided with the Core Zone during the Trans-Hudson Orogeny (Hoffman, 1988; James and Dunning, 2000). The map area is divided into two litho-tectonic domains separated by a major transpressional shear zone. In the western domain, Paleoproterozoic supracrustal rocks of the Kaniapiskau Supergroup (KS) form a north-plunging anticline cored by a basement complex comprising undated (Archean?) orthogneisses and later granites. To the east, the McKenzie River domain (MRD; James and Dunning, 2000) exposes Archean orthogneisses containing abundant amphibolite pods, and a substantial volume of locally mylonitized tonalite. The KS and McKenzie River domain are separated by the north-south striking Ashuanipi River shear zone (ARSZ), which shows evidence of both west-directed thrusting and dextral shearing related to plate-scale transpression during collision. Future work will constrain the provenance and tectonic histories of these domains, in particular the origin of the MRD. Generally interpreted to represent the distal Superior margin, the widespread presence of Proterozoic intrusive rocks in the MRD, and their absence west of the ARSZ, implies that these two domains represented distinct tectonic entities immediately prior to Hudsonian collision. Notable mineralization in the area is limited to the KS, specifically the Ferriman Group, and includes iron formation (Sokoman Formation), and copper mineralization developed within the shales and sandstones of the Menihek Formation.



Garnet porphyroblasts, indicative of greenschist-facies metamorphic conditions, in lower KS phyllite. Metamorphic grade decreases to the west.

Meta-sandstone of the lower KS with deformed granitoid clast showing west-side-down displacement along the Wade Lake fault.

Straight gneiss, typical of the McKenzie River domain, cut by syn-tectonic (Hudsonian?) leucosome.

Amphibolite from the McKenzie River domain. Could these bodies be metamorphosed equivalents of mafic sills found throughout the KS?

Foliated tonalite from the McKenzie River domain. Similar rocks have been dated at ca. 1.815 Ga (James and Dunning, 2000), but their tectonic significance remains unclear.

Silica-altered meta-sedimentary rock from the Menihek Formation (Ferriman Group) showing chalcopyrite and bornite mineralization.

James, D.T. and Dunning, G.R., 2000. U–Pb geochronological constraints for Paleoproterozoic evolution of the core zone, southeastern Churchill Province, northeastern Laurentia. Precambrian Research, 103: 31–54.

Hoffman, P.F., 1988. United plates of America, the birth of a craton: Early Proterozoic assembly and growth of Laurentia. Annual Review of Earth and Planetary Sciences, 16: 543–603.