

## Evolution of the Proterozoic/Archaean boundary in northern Labrador: an example from the Saglek area

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In the Saglek Fiord area of northern Labrador, located along the eastern margin of an Early Proterozoic mobile belt adjacent to the Archean Nain Craton, two lithotectonic terranes metamorphosed to amphibolite to granulite facies have been identified. On the basis of lithological and structural linkages, Komaktorvik terrane is considered to be parautochthonous with respect to the Nain Craton, whereas Tasiuyak terrane may be allochthonous. Both terranes are characterized by subvertical foliations and subhorizontal lineations that developed in a major regional transcurrent shear zone with sinistral displacement that is exposed for a distance of approximately 1000 km in eastern Labrador and the adjacent Arctic Islands. This transcurrent shearing event, informally referred to as "Torngat orogeny" and not yet precisely dated, was associated with crustal thickening to approximately double normal thickness and was accompanied by

substantial syn-metamorphic uplift during cooling.

A younger, structurally distinct event that resulted in a second episode of crustal thickening can also be recognized in the study area, where it is manifest by metamorphism and deformation of the Early Proterozoic Ramah Group and by east-directed folding and associated thrusting towards the Nain Craton, imbrication of the lithotectonic terranes and inversion of the metamorphic sequence occurred during Torngat orogeny.

The ages of the two events are not well established. An attempt to determine a minimum age for the transcurrent shearing event by  $^{39}\text{Ar}/^{40}\text{Ar}$  dating of hornblende that defines the shear zone fabric in Komaktorvik terrane yielded ages of 1790-1760 Ma. These are interpreted to be the time, after the younger event, that the terrane was uplifted and cooled through the closure temperature for argon in the crystal lattice.