

# **Seismological structure of the 1.8Ga Trans-Hudson Orogen of North America and comparisons with present-day Tibet**

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The geology of northern Hudson Bay records the Paleoproterozoic (~1.8Ga) Trans-Hudson Orogeny (THO), making it an ideal locality to study Precambrian orogenic processes. Previous studies suggest that the THO was comparable to the present-day Himalayan-Karakoram-Tibet Orogen (HKTO). However, detailed understanding of the deep crustal architecture of the THO, and how it compares to that of the HKTO, is lacking.

Joint inversion of receiver functions and surface wave data provides new Moho depth estimates and shear velocity models for the crust and uppermost mantle of the THO. Archean crust is relatively thin (~39 km) and structurally simple, with sharp Moho. However, the Quebec-Baffin segment of the THO has a deeper Moho (~45km) and a more complex crustal structure. Observations show some similarity to recent models, computed using the same methods, of the HKTO crust. Based on Moho character, present-day crustal thickness, and metamorphic grade, we propose that southern Baffin Island experienced thickening during the THO of a similar magnitude and width to present-day Tibet. Fast seismic velocities at >10km below Southern Baffin Island may be the result of partial eclogitization of the lower crust during the THO, as is currently thought to be happening in Tibet.