

## **Record of modern-style continental subduction in the Paleoproterozoic Trans-Hudson orogen**

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The Trans-Hudson orogen of North America is a middle Paleoproterozoic continental collisional belt that has been proposed to represent an ancient analogue to the Cenozoic Himalayan orogen, due to remarkable similarities in length scales of deformation, and time scales of magmatism and metamorphism. A notable divergence in this correlation has been the absence of high-pressure, low-temperature metamorphic rocks in the Trans-Hudson compared with the Himalaya. It has been debated whether this absence reflects a secular tectonic change, with the requisite cool thermal gradients precluded by warmer ambient mantle temperatures during the Paleoproterozoic, or a lack of preservation. Here we document a new discovery of eclogite from the Trans-Hudson, which fills in the high-pressure gap in the comparative record between the two orogens (Weller & St-Onge, 2017). Through the application of phase equilibria modelling and *in situ* U–Pb monazite dating we show that the pressure–temperature conditions and relative timing of eclogite-facies metamorphism is comparable in both orogenies. The results imply that modern-day plate tectonic processes featuring deep continental subduction were occurring by at least ca. 1830 Ma, and indicate that the global metamorphic rock record (particularly in older terrains) is skewed by overprinting and erosion.

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