

THE THOMPSON NICKEL BELT (MANITOBA, CANADA): A TYPICAL PALEOPROTEROZOIC TRANSPRESSIVE SHEAR ZONE.

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The boundaries of Precambrian crustal domains record a history of deformation and metamorphism that allows the reconstruction of plate movements and terranes accretion. The Thompson Nickel Belt (TNB) at the junction of the Paleoproterozoic Trans-Hudson Orogen and the Archean Superior Province is a 200x30km NE trending zone of retrogressed Archean gneisses infolded with Paleoproterozoic supracrustal units. The TNB was deformed during low P-high T amphibolite-to-granulite facies metamorphism. New structural observations and existing data suggest that the currently favoured structural model for the TNB, which involves an earlier period of thrusting and nappe emplacement followed by peak metamorphism, should be revised. Key observations are: 1) all the structures (crustal-scale folds, foliation, shear zones) are steeply dipping to vertical. Foliations trend mainly N30-N40 and less frequently N60-N70. 2) mineral lineations are locally seen and are generally steeply plunging but can have a variable southern or northern pitch; 3) the maximum shortening axis of the strain ellipsoid is systematically sub-horizontal and the maximum stretching axis displays variable plunges; 4) the finite strain ellipsoid indicates an intense flattening deformation in a mostly non-coaxial regime associated with a less developed coaxial component; 5) kinematic criteria indicate both horizontal (dextral) and vertical (east side up) displacements. These characteristics indicate a combination of wrench tectonics and horizontal shortening and fully comply with the definition of transpression. Based on these observations, we conclude that the TNB represents a dextral transpressive shear zone. This implies a oblique collision between the Trans-Hudson orogen and the Superior Province.