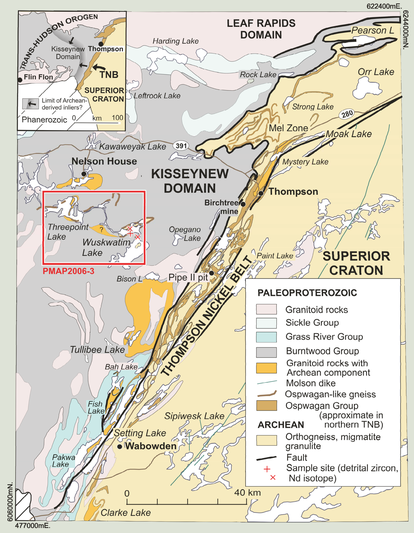
Manitoba

Thompson Nickel Belt type-units in the northeastern Kisseynew Domain

Summary

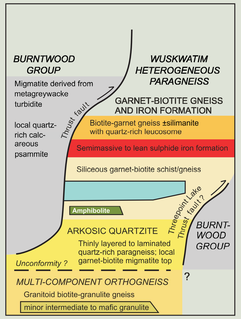
Remapping a corridor from the Thompson Nickel Belt (TNB) 60 km west to Threepoint Lake (south of Nelson House) and a preliminary interpretation of geochemistry and Nd isotope data provide new evidence for an Archean age of crystallization and/or mantle extraction of biotite granulite facies orthogneiss in the northeastern part of the Kisseynew Domain. The gneiss occurs in local structural culminations mantled by, and probably interleaved with, heterogeneous paragneiss that may overlie it unconformably. A composite stratigraphic section through the narrow belts of this paragneiss comprises basal quartzite (containing only Archean detrital zircons) and minor calcsilicate gneiss, overlain by garnet-biotite gneiss and aeromagnetically prominent sulphide-facies iron formation. The succession has distinct similarities to the lower half of the cover rocks (Ospwagan Group) on the Archean basement in the TNB, but also some problematic differences. These narrow units are in fault contact with widespread juvenile Paleoproterozoic migmatite (Burntwood Group) derived from volcanic-arc sedimentary rocks.

A preliminary interpretation suggests that a large region, which seems to be structurally underlain by these rocks, may be a major exploration frontier for Thompson-type nickel deposits. This assumes that the correlation of these rocks with the Ospwagan Group is confirmed by more rigorous examination, including planned analytical work and further mapping.

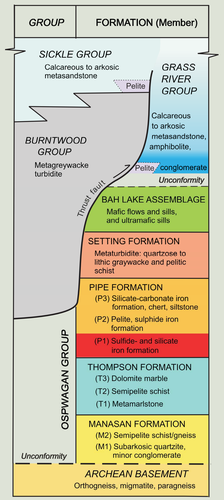


Simplified geology of the exposed Thompson Nickel Belt with Threepoint - Wuskwatim lakes area outlined in red

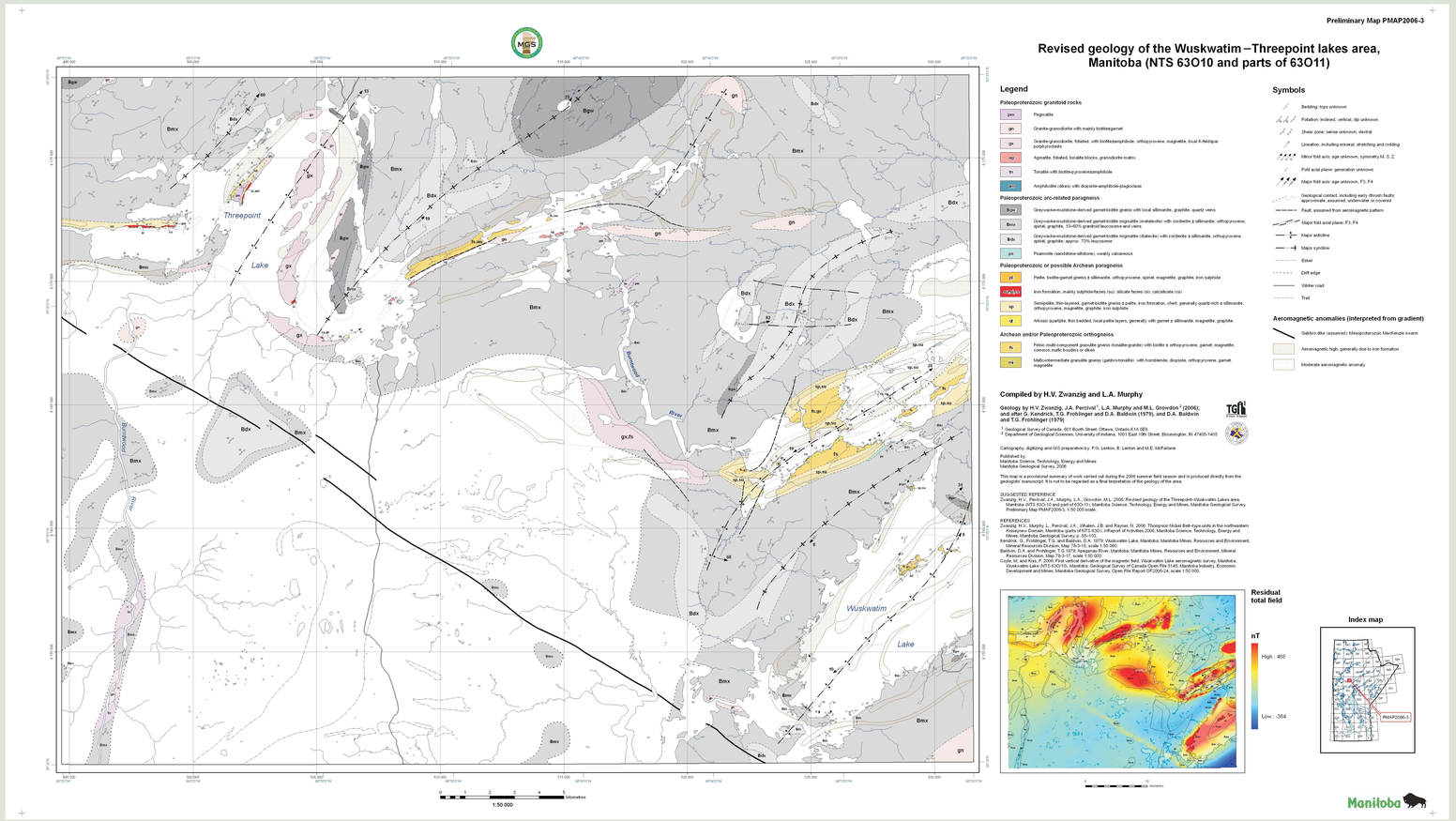
a) Wuskwatim Lake Corridor

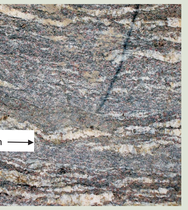


b) Thompson Nickel Belt



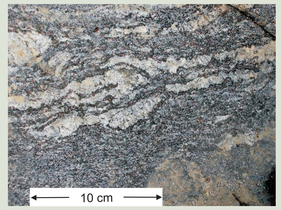
Composite tectonostratigraphic columns comparing Wuskwatim Lake and Thompson Nickel Belt sections





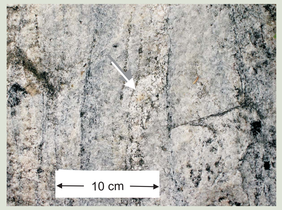
Burntwood Group greywacke-mudstone-derived metatexite (Bmx) with quartz-rich leucosome; Nd model age = 2.37 Ga. Layers with larger garnets and more leucosome (eg. below scale) are interpreted as more pelitic.

Calcareous quartz-rich metapsammite (unit cs) with lenses (near scale bar) and layers of calcsilicate minerals (top) including calcite; Nd model age = 2.38 Ga: interpreted as part of the Burntwood Group.

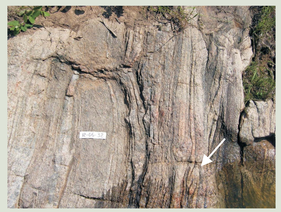


Quartz-rich veins in biotite-garnet gneiss (unit pl) appearing similar to Burntwood Group but formed from Archean detritus; Nd model age = 3.29 Ga: interpreted as part of Ospwagan-like paragneiss sequence.

Sulphide-facies iron formation (unit su) with quartz-rich garnet-biotite gneiss interlayers (arrow), interpreted as part of Ospwagan-like paragneiss sequence.



Arkosic quartzite (unit qt) with thin biotite-rich partings as remnants of bedding and yielding only Archean detrital zircons, interpreted as base of Ospwagan-like sequence; pegmatite at arrow.



Layered multicomponent biotite-granulite gneiss, showing local isoclinal intrafolial folds (arrow); tape is 10 cm long: possible basement to the paragneiss sequence (above). Nd model age is 3.27 Ga.

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