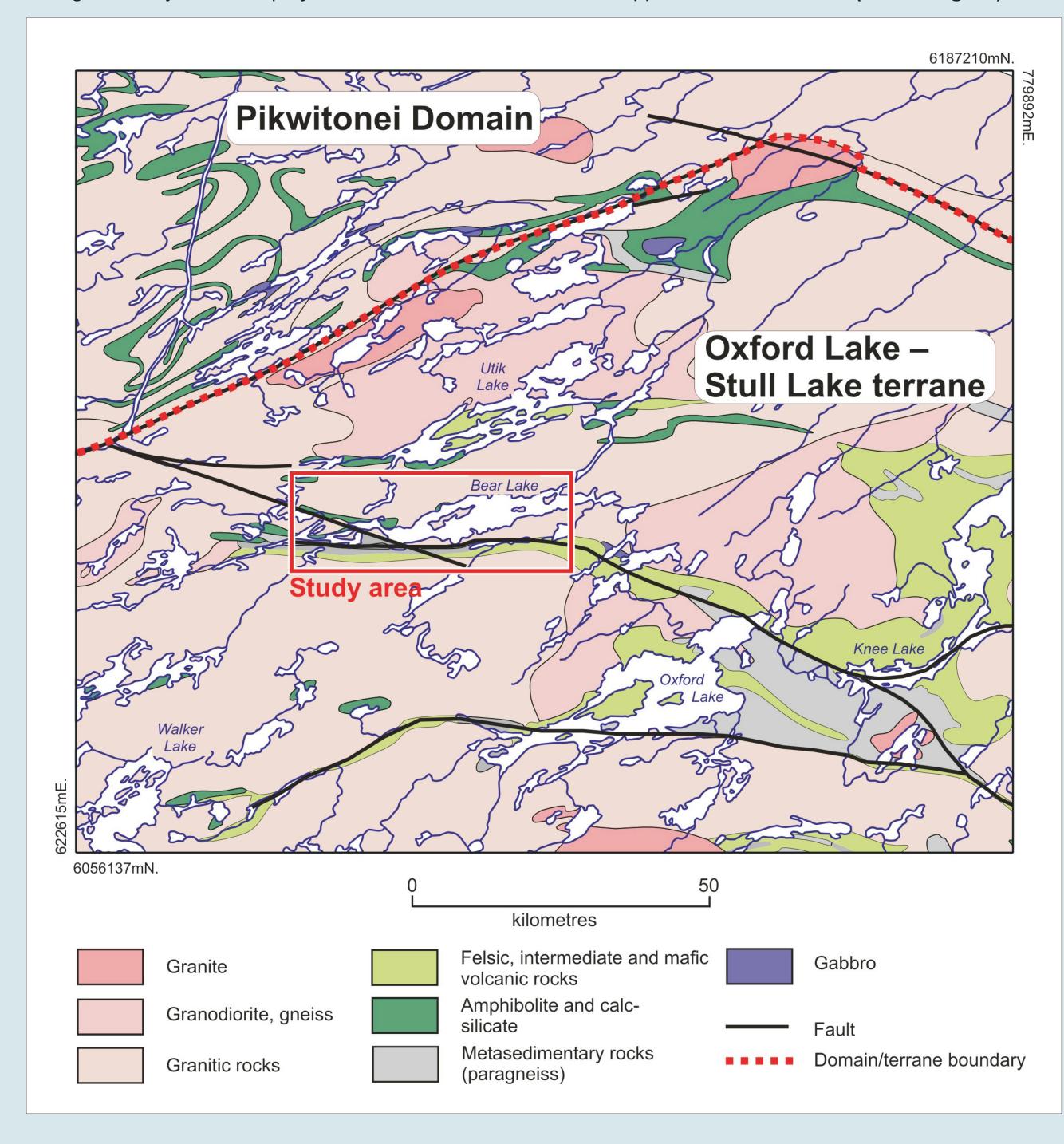
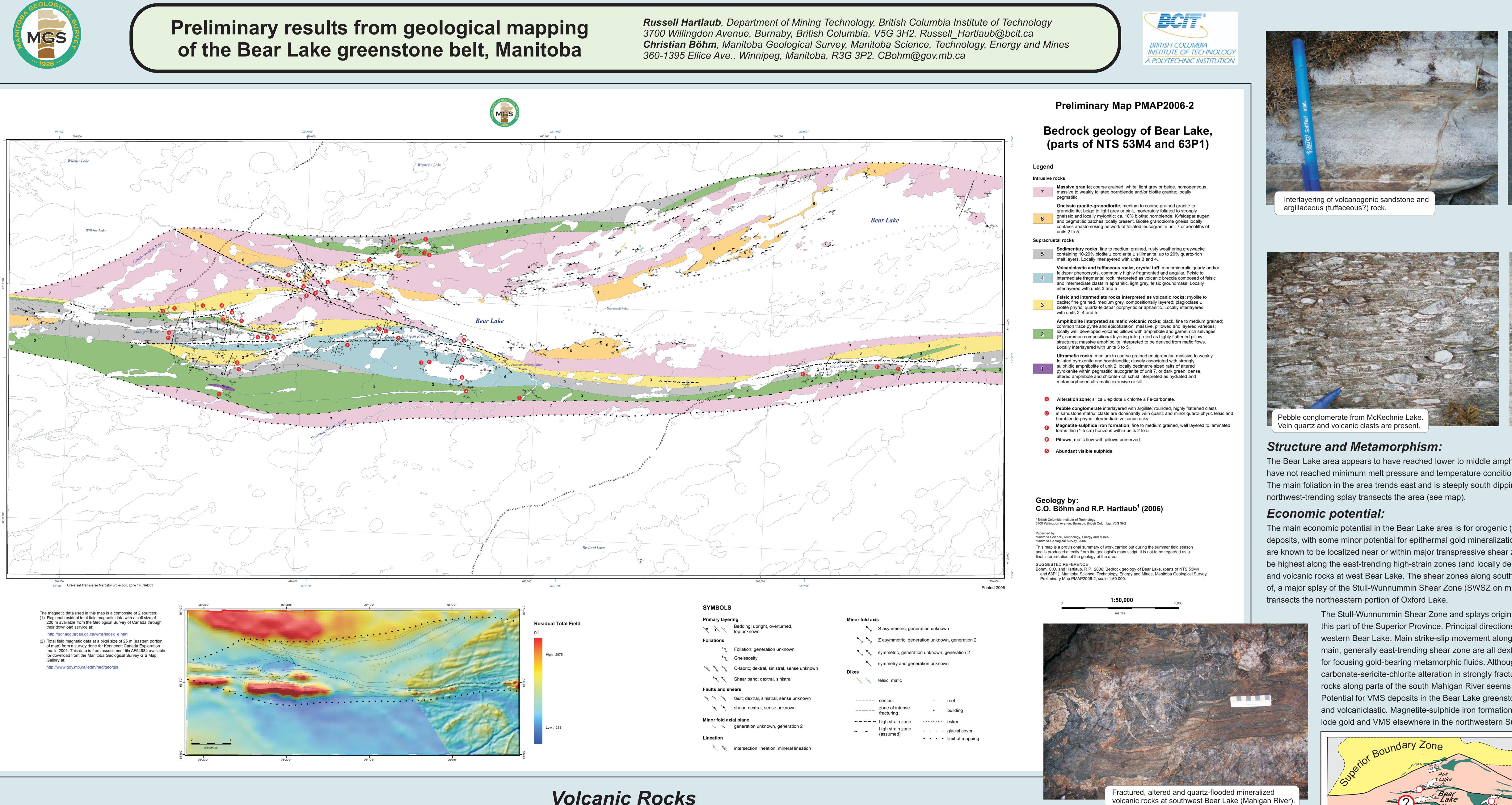


### Introduction:

Bear Lake is located approximately 125 km southeast of Thompson, Manitoba, within the Archean Superior Province (Figure 1). Abundant volcanic and sedimentary rocks that are exposed at Bear Lake lie along the northern margin of the Oxford Lake – Stull Lake terrane, just south of the granulite -grade Pikwitonei Domain (Figure 2). The strong potential for orogenic (lode) gold and VMS of the area is the impetus for a new three year effort to re-examine the geology of the region.

During the first year of the project, the Bear Lake area was re-mapped at 1:50,000 scale (central figure).





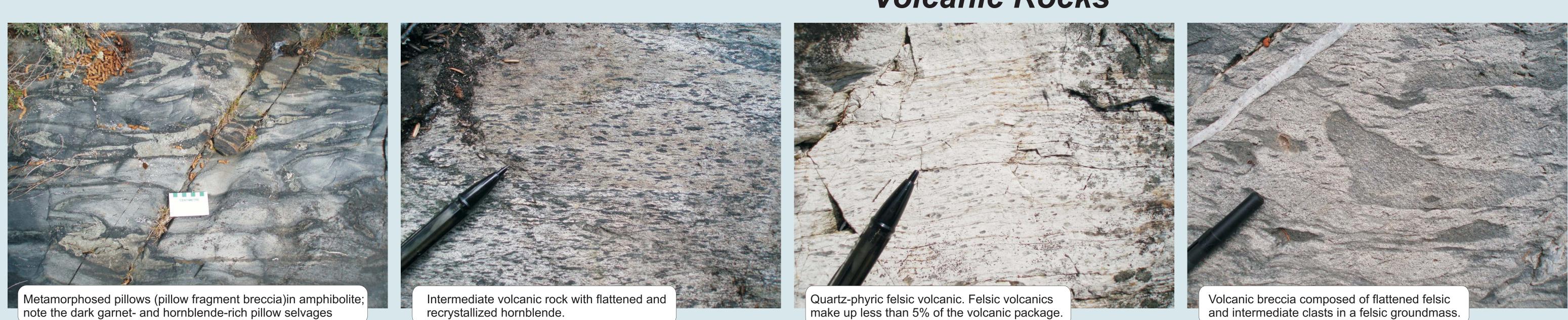


Figure 2. Regional geological map with study area highlighted.

recrystallized hornblende

Volcanic Rocks

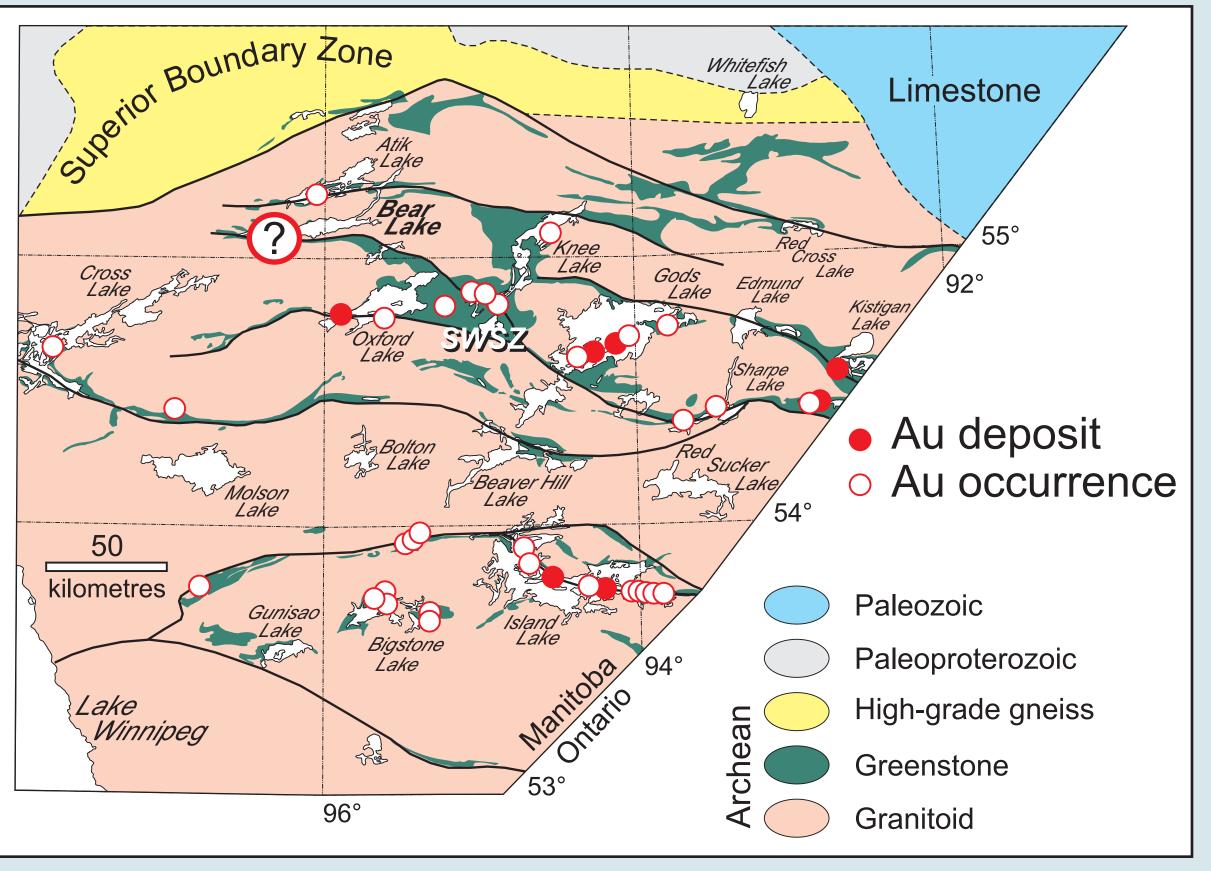
make up less than 5% of the volcanic package.



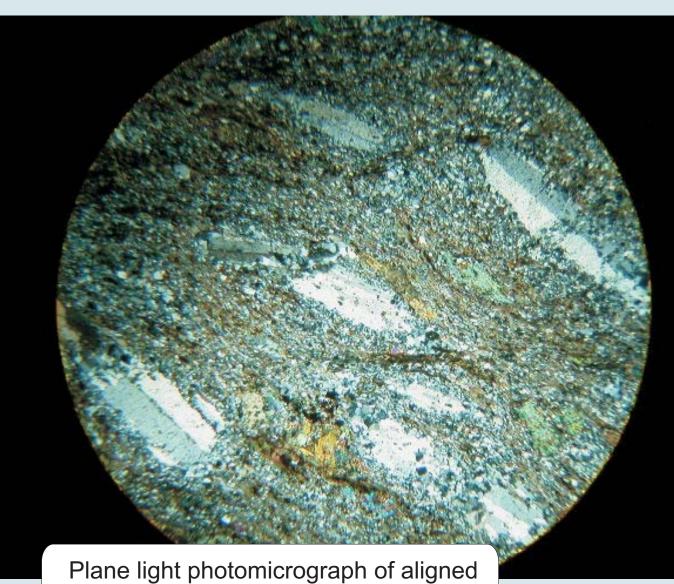
The Bear Lake area appears to have reached lower to middle amphibolite facies under moderate to low pressures and have not reached minimum melt pressure and temperature conditions. Sillimanite and cordierite were identified in greywacke. The main foliation in the area trends east and is steeply south dipping. A major east-trending dextral shear zone with a

The main economic potential in the Bear Lake area is for orogenic (lode) gold and volcanic-associated massive sulphide (VMS) deposits, with some minor potential for epithermal gold mineralization. Orogenic gold deposits in the northern Superior Province are known to be localized near or within major transpressive shear zone structures. The potential for shear-hosted gold is likely to be highest along the east-trending high-strain zones (and locally developed, subparallel alteration zones) that cut the sedimentary and volcanic rocks at west Bear Lake. The shear zones along southwestern Bear Lake are along strike from, and may form part of, a major splay of the Stull-Wunnummin Shear Zone (SWSZ on map of the northwest Superior Province to the lower left) that

> The Stull-Wunnummin Shear Zone and splays originating from it are commonly the locus for gold mineralization in this part of the Superior Province. Principal directions of compression are northwest and southeast at southwestern Bear Lake. Main strike-slip movement along the shear zones including the northwest-trending splay of the main, generally east-trending shear zone are all dextral and thus form extensional structures (dilational) favourable for focusing gold-bearing metamorphic fluids. Although alteration is of limited extent in the Bear Lake area, ironcarbonate-sericite-chlorite alteration in strongly fractured zones of dominantly felsic and intermediate tuffaceous rocks along parts of the south Mahigan River seems most prospective. Potential for VMS deposits in the Bear Lake greenstone belt lies within rocks interpreted as subaqueous volcanic and volcaniclastic. Magnetite-sulphide iron formation is of particular interest because of its known association with lode gold and VMS elsewhere in the northwestern Superior Province



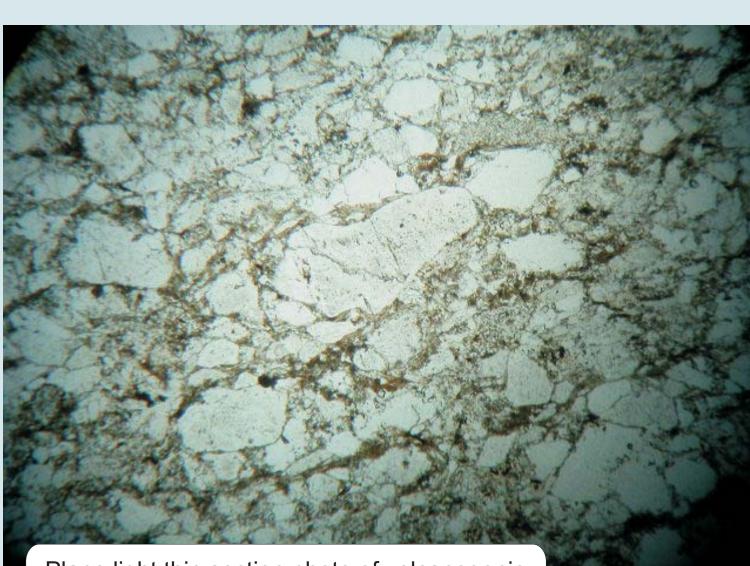
and intermediate clasts in a felsic groundmass



## Sedimentary Rocks



younging is towards the top of the photo.



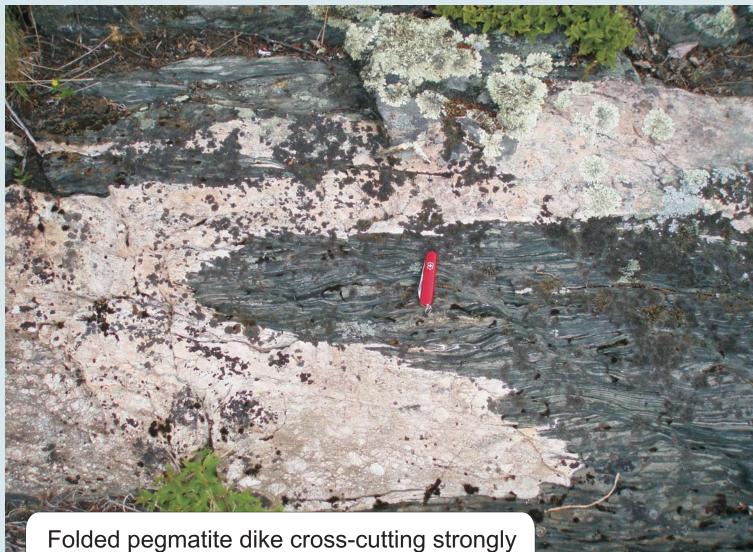
sandstone. Note the high angularity of grain



Granite gneiss containing a layer (dike?) of mafic material with dextral shear bands.



Undeformed gabbro dike cutting granite gneiss These dikes were identified at just two locations.



layered amphibolite.



volcaniclastic sediments.

### For more detailed information:

Hartlaub, R.P. and Böhm, C.O. 2006: Preliminary results from geological mapping of the Bear Lake greenstone belt, Manitoba (parts of NTS 53M4 and 63P1); in Report of Activities 2006, Manitoba Science, Technology, Energy and Mines, Manitoba Geological Survey.



# Intrusive Rocks