SCLM rifting & regional shearing in the Superior Craton
- deformation & mineralization in a non-plate tectonic Archaean Earth: implications for tectonic reconstructions

Seismic tomographic evidence for Archaean rifting of sub-continental lithospheric mantle (SCLM) in the southern Superior Craton

Tectonic reconstruction
Superior, Greater KARElia (Baltica) & Wyoming cratons prior to Palaeoproterozoic breakup

The Belomorian belt (Baltica), placed against the SE Superior Province in tectonic reconstructions, likely represents a continuation of the Abitibi.

Regional Folding & Shearing Without Plate Tectonics
Short wavelength Bouger gravity shows offset of denser, mafic-dominated domains along regional shear zones
- dense (mafic dominated) crust
- part of displaced block?
- Kapuskasing uplift
- Grenville
- shear zone gravity edges/shallow worms
- limit, N & S Abitibi
- terrane boundaries
  - Au
  - porphyry
  - VHMS
  - Ni, PGE, Cr
  - kimberlite

Discrete shears, cutting broad ductile shear corridors, indicate c.a. N-S shortening & indentation of the N Superior proto-craton

Tectonic model
Rifting of proto-craton

The pattern of shears in W Ithar Terra, Venus (a planet without plate tectonics) resembles the SE Superior Province
When the shear zone interpretation of western Ithar Terra, Venus, is rotated & flipped to match the orientation of shears in the SE Superior Province, the resemblance is striking. Shear zones on Venus formed without stresses arising from plate tectonic processes: arc development & accretion in a modern plate tectonic regime, is similarly not required for formation & deformation of Archaean granite-greenstone terrains on Earth.

Abbreviations
- LTzpl: Lherzolite
- sed: sediments
- mafic: mafic
- mafic lower crust

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