

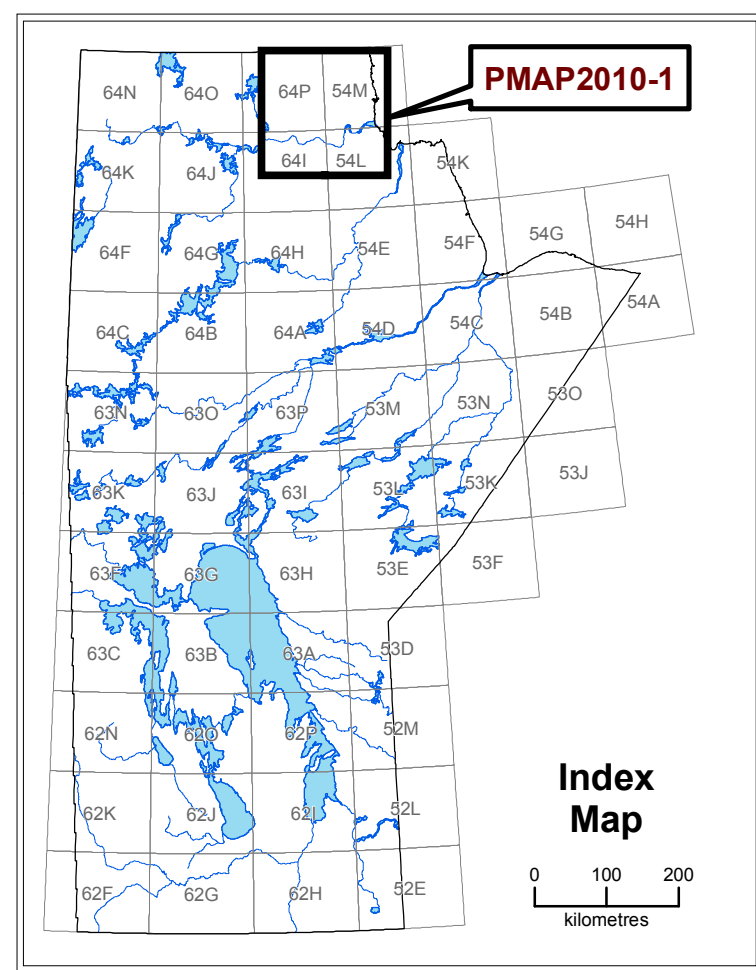


Precambrian geology of the Seal River region, Manitoba (parts of NTS 54L, M, 64I, P)

Geology by: S.D. Anderson, C.O. Böhm and E.C. Syme

This map is a provisional summary of work carried out during the summer field season and is produced directly from the geologist's manuscript. It is not to be regarded as a final interpretation of the geology of the area.

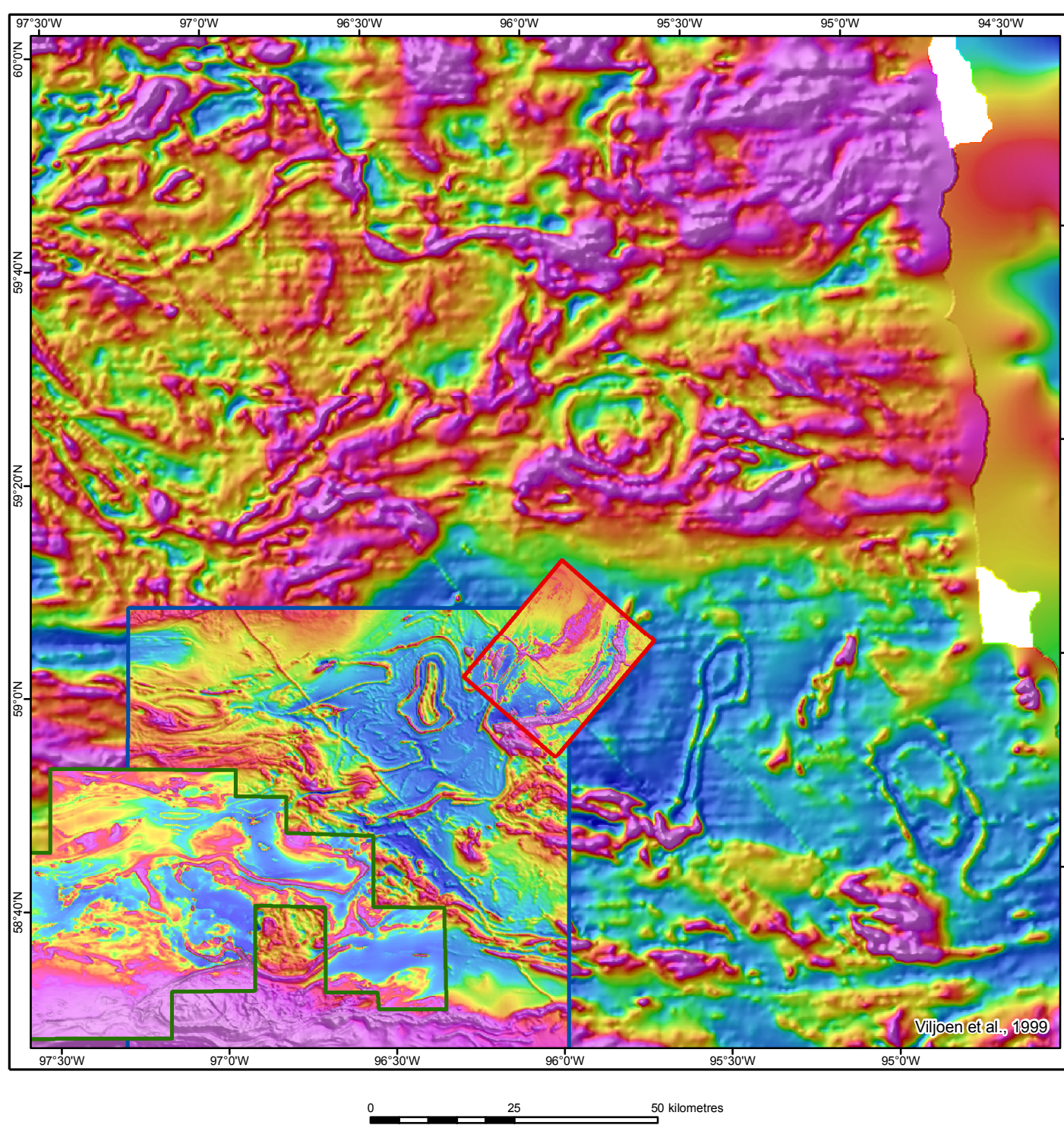
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Cartography by S.K.Y. Lee

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SOURCES OF AEROMAGNETIC DATA:
Assessment File 74007, Manitoba Innovation, Energy and Mines, Winnipeg; Airborne magnetic and MEGATEM Survey, Seal River and Koween blocks, Churchill, Manitoba; BHP Billiton World Exploration Inc.

Assessment File 94732, Manitoba Innovation, Energy and Mines, Winnipeg; High resolution aeromagnetic survey (HRAM) logistical report for Western Warrior Resources Ltd., Eppler Lake Project, Churchill area, Manitoba, NTS 54L/13, 54M/4, 64I/6, & 64F/1.

Fortin, R., Coyle, M., Carlson, J.M. and Kras, F. 2009: Airborne geophysical survey of the Great Island and Seal River area, Manitoba (NTS 54P/03, 64P/02, 64P/01 and part of 54M/4, 64I/6 and part of 54L/13, 64I/15, 64I/16, 64I/11, 64I/10, 64I/09 and part of 54L/12, 64I/07, 64I/06, 64I/05 and part of 54L/09, parts of 64I, 64P, 54L and 54M). Geological Survey of Canada, Open File 6905 to 6970, Manitoba Science, Technology, Energy and Mines, Manitoba Geological Survey, Open File OF2009-1 to OF2009-12, 1 DVD-ROM (120 colour maps), scale 1:50 000.

Villiger, D., Chackowsky, L., Lenton, P. and Broome, H.J. 1999: Geology, magnetic & gravity maps of Manitoba: A Digital Perspective. Geological Survey of Canada, Open File 63095, Manitoba Energy and Mines, Geological Services, Open File Report OF99-12, 1 CD-ROM.

Legend

Ordovician limestone, sandstone

Seal River Domain

Paleoproterozoic

Sequence 4 (<1.88 Ga)

- Sp13 Quartz arenite with subordinate mudstone
- Sp12 Greywacke-mudstone turbidites; feldspathic
- Sp11 Iron formation, oxide facies
- Sp10 Greywacke-mudstone turbidites; quartzose; <1.88 Ga
- Sp9 Iron formation, oxide facies
- Sp8 Dolomitic marble and calcisilicate rocks

Unconformity

- Sp7 Pegmatite; biotite-muscovite/egarnet
- Sp6 Biotite-muscovite granite (egarnet, fluorite)

Intrusive contact

Sequence 3 (<1.98 Ga)

- Sp5 Mudstone with subordinate arenite interbeds
- Sp4 Dolomitic marble
- Sp3 Quartz arenite with subordinate mudstone interbeds; <1.98 Ga
- Sp2 Thinly interbedded arenite and mudstone; <2.05 Ga
- Sp1 Iron formation, silicate facies

Unconformity

Paleoproterozoic or Late Neoproterozoic (?)

Sequence 2 (<2.5 Ga)

- Sa5 Basalt
- Sa4 Gabbro; possibly includes east- to east-northeast-trending gabbro-dike swarm
- Sa3 Plagioclase and semipelite paragneiss; ca. 2.98 Ga
- Sa2 Mudstone with subordinate arenite
- Sa1 Quartz arenite with subordinate conglomerate and mudstone; <2.5 Ga

Unconformity

Late Neoproterozoic

Intrusive rocks

- Sa23 Granitic pegmatite; biotite
- Sa22 Alaskite
- Sa21 Granite, granodiorite, quartz diorite; 2550±4 Ma
- Sa20 Quartzfeldspar porphyry; 2562±5 Ma
- Sa19 Syenogranite; quartz syenite; typically fine grained; 2570±5 Ma

Intrusive contact

Sequence 1 (<2.7 Ga, >2.57 Ga)

- Sa18 Quartz arenite with minor mudstone and conglomerate
- Sa17 Arenite and polydeformed conglomerate; <2.7 Ga

Unconformity

Intrusive rocks

- Sa16 Serpentine, peridotite, gabbro
- Sa15 Biotite-hornblende granite, granodiorite, tonalite; gneiss; minor amphibolite

Fault contact?

Sosnowski Lake assemblage

Garlinski Lake and Howard Lake greenstone belts

- Sa14 Feldspar-quartz porphyry; 2679±6 Ma
- Sa13 Volcaniclastic and epiclastic rocks; <2.7 Ga, <2.61 Ga
- Sa12 Dacite and rhyolite; associated intrusives
- Sa11 Leucodiorite
- Sa10 Andesite
- Sa9 Basalt and basaltic andesite; related gabbro; minor iron formation
- Sa8 Gabbro; local amphibolite along belt margins

Fault contact?

Neoproterozoic to Mesoarchean

Seal River Complex

- Sa7 Diabase (dikes); foliated; northwest trending
- Sa6 Quartz- and feldspar-phryic rhyolite; 2570±3 Ma
- Sa5 Feldspar (hornblende, quartz) porphyry
- Sa4 Hornblende diorite (dikes)
- Sa3 Biotite granodiorite (dikes); 2660±4 Ma
- Sa2 Biotite-hornblende granite and granodiorite; heterogeneous
- Sa1 Orthogneiss; includes amphibolite or metagabbro enclaves; 2601±5 Ma

Fault contact?

Nejaniitli Domain

Intrusive and supracrustal rocks

- Na6 Biotite granite, leucogranite, granitic pegmatite
- Na5 Potassium feldspar porphyritic granite; 'fresh'
- Na4 Potassium feldspar porphyritic granite; recrystallized
- Na3 Mafic granulite
- Na2 Paragneiss
- Na1 Unseparated biotite-hornblende granite, granodiorite; variably gneissic; 2527±2 Ma

Symbols

Planar structures

- Bedding: tops unknown, known, overturned
- Pillows: tops unknown, known, overturned
- Flow contact: tops unknown, known
- Igneous layering: tops unknown
- Foliation
- Gneissosity
- Fold axial plane
- Dike

Linear structures

- Fold axis: symmetry unknown, S, U, Z
- Lineation (includes stretching and mineral lineations)
- Mp1 Gabbro (ca. 1.27 Ga Mackenzie swarm)
- Sa4 Gabbro
- Np1 Diabase? (ca. 2.45 Ga Kamikak swarm?)
- Geological contacts (in part inferred from geophysical data)
- Form line
- Fault
- Mapping limit

Dikes inferred from magnetics

- Mp1 Gabbro (ca. 1.27 Ga Mackenzie swarm)
- Sa4 Gabbro
- Np1 Diabase? (ca. 2.45 Ga Kamikak swarm?)
- Geological contacts (in part inferred from geophysical data)
- Form line
- Fault
- Mapping limit

- Extent of Western Warrior magnetic data (AFN 94732)
- Extent of BHP Billiton magnetic data (AFN 74007)
- Extent of OSC magnetic data (Fortin et al., 2009)

