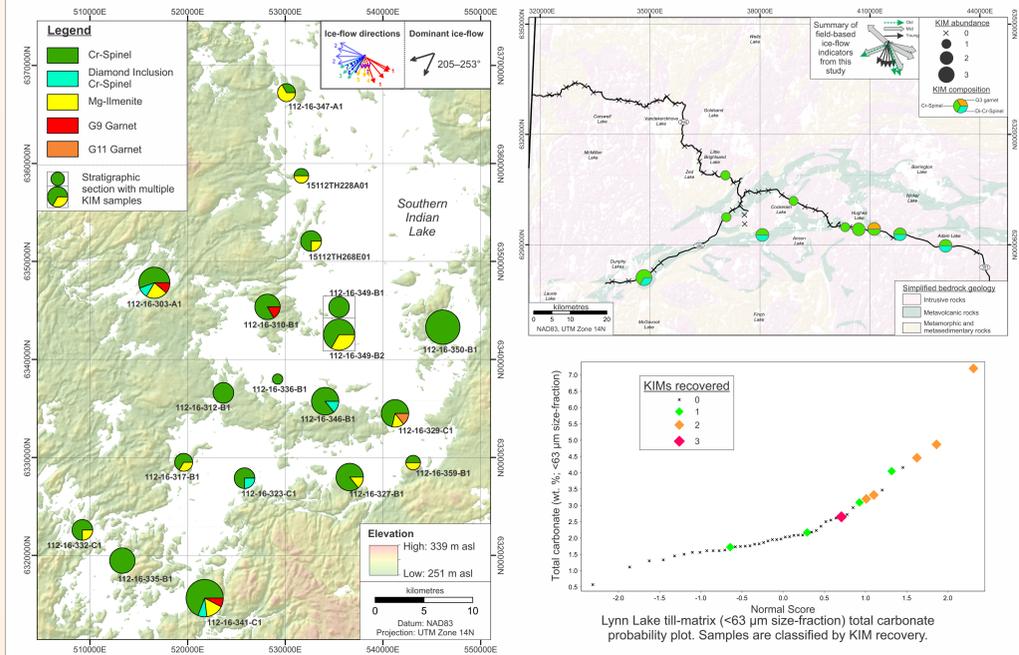


## Lynn Lake – Southern Indian Lake

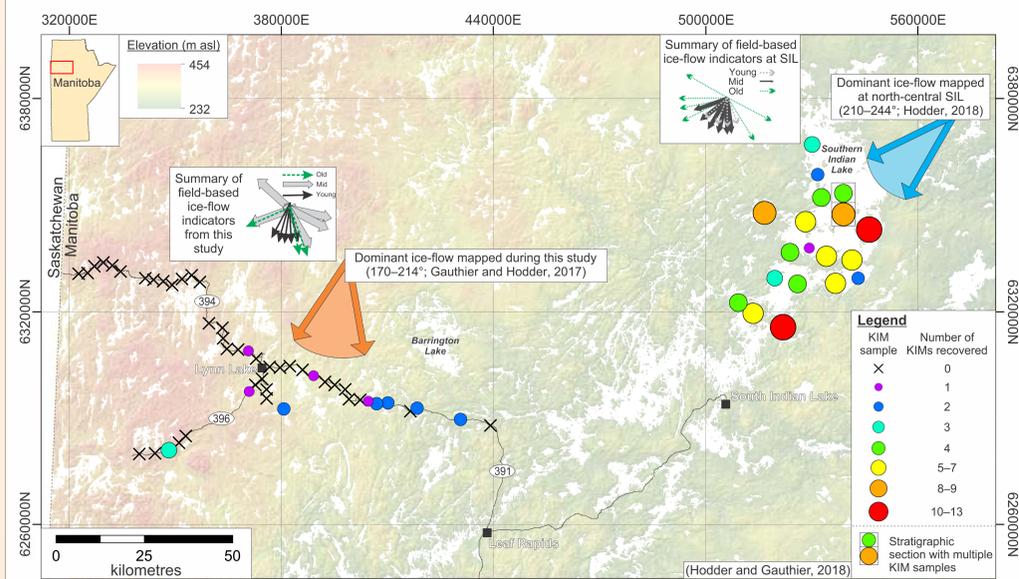


**Southern Indian Lake (MGS OF2017-2):**  
A total of 106 KIM grains were recovered from the 0.3–0.5 mm size-fraction of nineteen 22.7 L till samples. The majority of the KIMs recovered are Cr-spinel (77%) and Mg-ilmenite (15%). Additionally, three G9 garnets (4%), one G11 garnet (1%) and four diamond-inclusion Cr-spinels (4%) were identified with the results of the survey displayed below.

The spatial distribution of total-KIM counts per sample does not appear to show any dispersal pattern at this reconnaissance-scale level of sampling. It is important to highlight that at least 1 KIM grain was recovered from every till sample collected.

**Lynn Lake (MGS OF2018-3):**  
A total of 17 KIM grains were recovered from the 0.3–0.5 mm size-fraction of forty-eight 22.7 L till samples. The majority of the KIMs are Cr-spinels (16/17). Four Cr-spinels have low TiO<sub>2</sub> and high Cr<sub>2</sub>O<sub>3</sub> content and plot in the diamond inclusion and intergrowth field. One G3 garnet was recovered southeast of Hughes Lake.

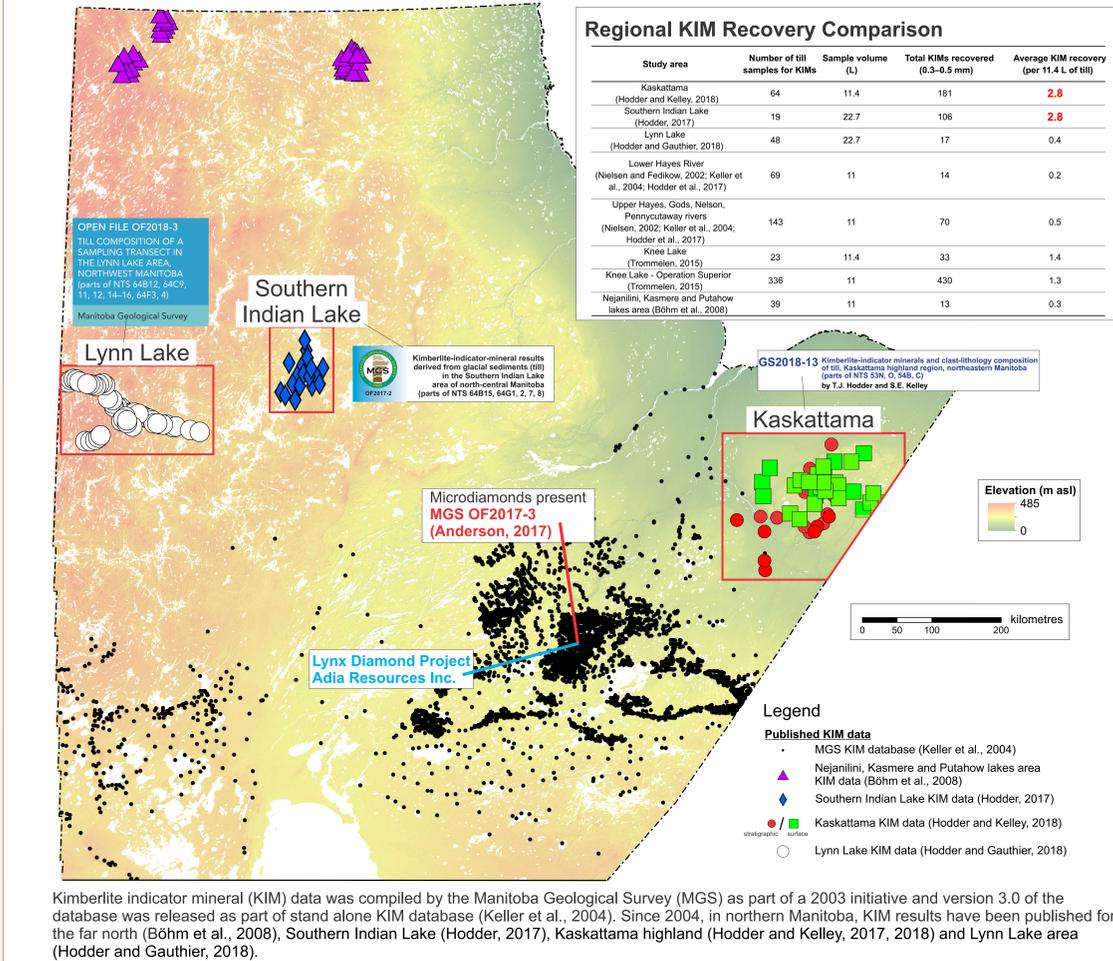
The spatial distribution of total-KIM counts per sample does exhibit variation: no KIM grains were recovered from till samples northwest of Little Brightsand Lake along PR394; the majority of KIM grains (9/17) were recovered from till samples along PR391 between Hughes and Adams lakes. There is a correlation with KIM recovery and the carbonate content of the till-matrix.



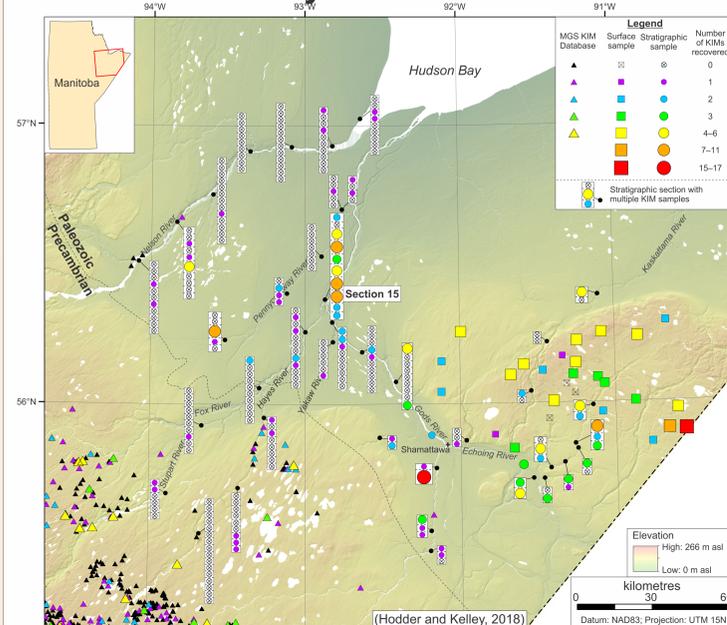
KIM recovery in the Lynn Lake area was correlated to till with a relatively elevated till-matrix carbonate content. The provenance of carbonate detritus is the Hudson Bay Basin, located 280–420 km east of the study area. It is important to note that this correlation does not signify that these KIMs are derived from the basin, but, instead that they are potentially sourced from a region along this ice-flow path(s) and suggests an initial east to northeast provenance.

The locally elevated carbonate-KIM recovery relationship in Lynn Lake has reinforced the diamond prospectivity of the Southern Indian Lake area, which is located 80–120 km northeast of the Lynn Lake area. Till-matrix carbonate content of till sampled for KIM analysis from the Southern Indian Lake area ranges from 25.77–34.82 %.

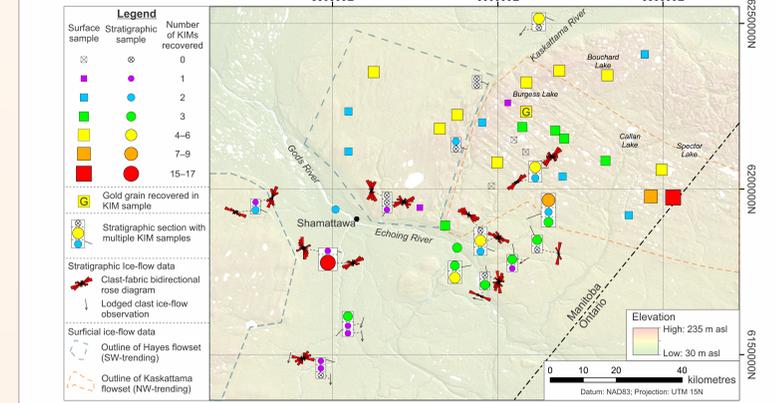
## Overview of kimberlite indicator mineral data in northern Manitoba



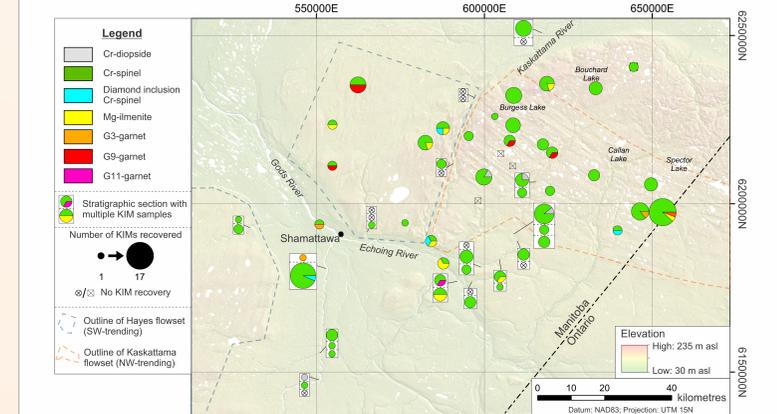
## Hudson Bay Lowland KIM data



## Kaskattama region



Kimberlite-indicator mineral (KIM) results displayed as proportional-sized symbols, Kaskattama highland area. Background hillshade image was generated using Canadian Digital Surface Model (Natural Resources Canada, 2015). Abbreviations: NW, northwest; SW, southwest. From Hodder and Kelley (2018).



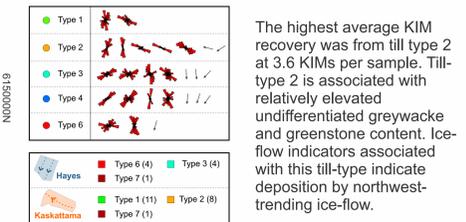
Kimberlite-indicator mineral (KIM) results displayed as proportional-sized compositional pie charts, Kaskattama highland area. Background hillshade image was generated using Canadian Digital Surface Model (Natural Resources Canada, 2015). Abbreviations: NW, northwest; SW, southwest. From Hodder and Kelley (2018).

Till type	No. of samples	Cr-diopside	Cr-spinel	DI Cr-spinel	Mg-ilmenite	G3-garnet	G9-garnet	G11-garnet	Total KIM	Average KIM recovery
Type 1	10	0	44	1	3	0	1	0	54	2.8
Type 2	16	1	52	1	5	1	2	1	58	3.6
Type 3	16	2	42	2	2	1	0	0	49	3.1
Type 4	9	0	8	0	0	1	0	0	9	1.0
Type 6	4	1	5	0	1	0	4	0	11	2.8
<b>Total</b>	<b>64</b>	<b>4</b>	<b>151</b>	<b>4</b>	<b>11</b>	<b>3</b>	<b>7</b>	<b>1</b>	<b>181</b>	<b>2.8</b>

Abbreviation: DI, diamond inclusion

A total of 181 KIM grains were recovered from the 0.3–0.5 mm size-fraction of thirty 11.4 L till samples. The majority of the KIMs are Cr-spinels (86%). Eleven Mg-ilmenite grains were recovered. Four Cr-diopside grains were recovered. Eleven garnet KIMs were recovered: seven G9-garnets, three G3-garnets and one G11-garnet. A gold grain was recovered from a sample in the central region of the study area.

The average KIM recovery per sample in the dataset is 2.8 KIMs. The highest average KIM recovery was from till type 2 at 3.6 KIMs. Till types 1, 3 and 6 have a similar average KIM recovery. Till type 4 stands out because of the relatively low average KIM recovery (1.0 KIMs) associated with this till composition.



The highest average KIM recovery was from till type 2 at 3.6 KIMs per sample. Till-type 2 is associated with relatively elevated undifferentiated greywacke and greenstone content. Ice-flow indicators associated with this till-type indicate deposition by northwest-trending ice-flow.