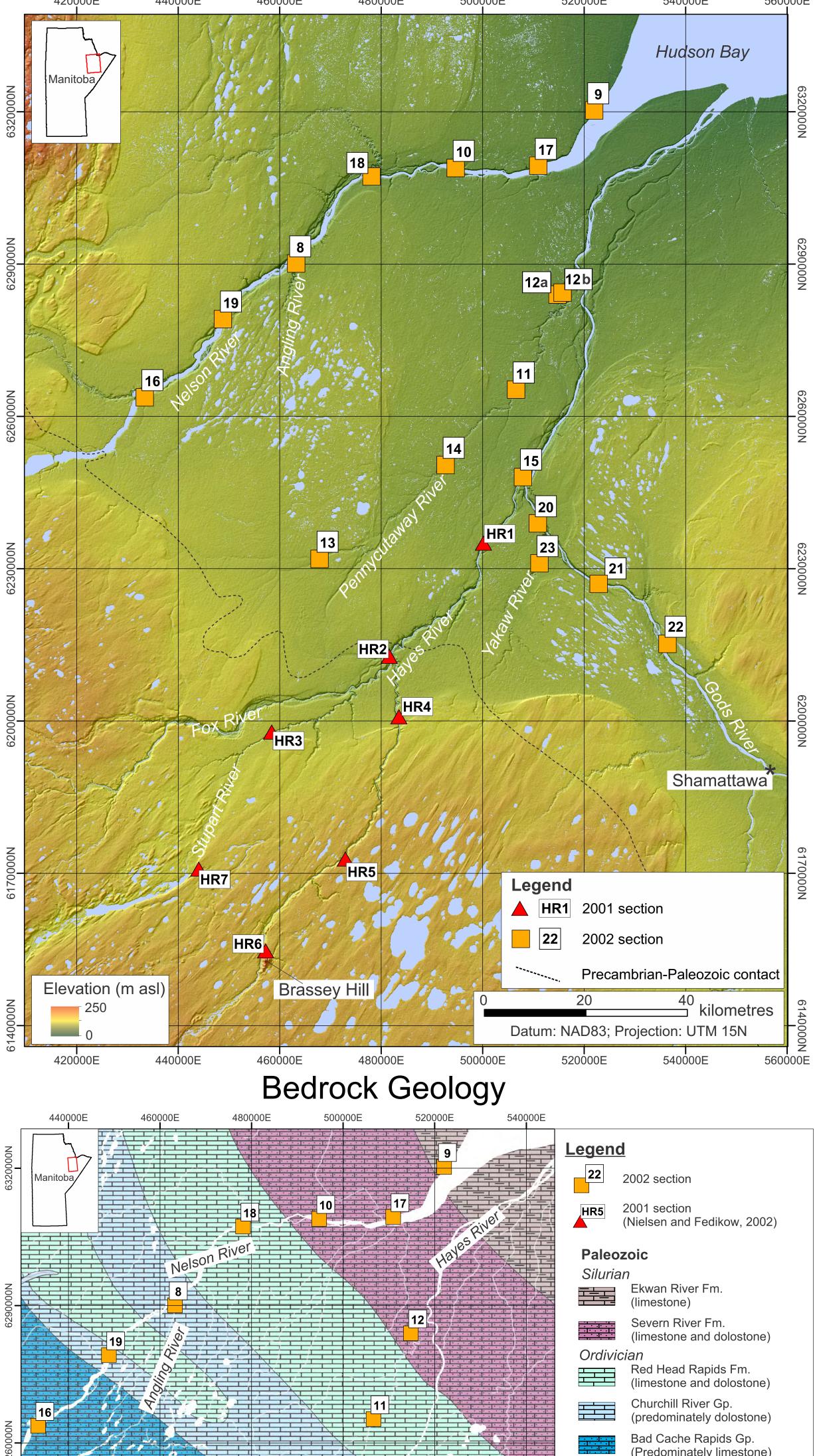


Till composition in the Hayes River area, Hudson Bay Lowland, Northeast Manitoba Hodder, T.J. & Gauthier, M.S.

Introduction

- Original field work conducted in 2001/2002, but 2002 data was never released. This study compiled all field and analytical data (MGS OF2017-4)
- 24 sections, 212 till samples, 60 clast-fabrics conducted
- Till samples processed for: clast-lithology counts, kimberlite-indicator-minerals, till-matrix aeochemi



Ordovician rocks delineated

from drillcore (Rinne, 2016)

Paragneiss and migmatite

Sedimentary units

Mafic–ultramafic volcanics

Mafic–ultramafic intrusions

Granitoid

Nicolas et al. (2014).

Rinne (2016).

Paleozoic geology from

Precambrian geology from

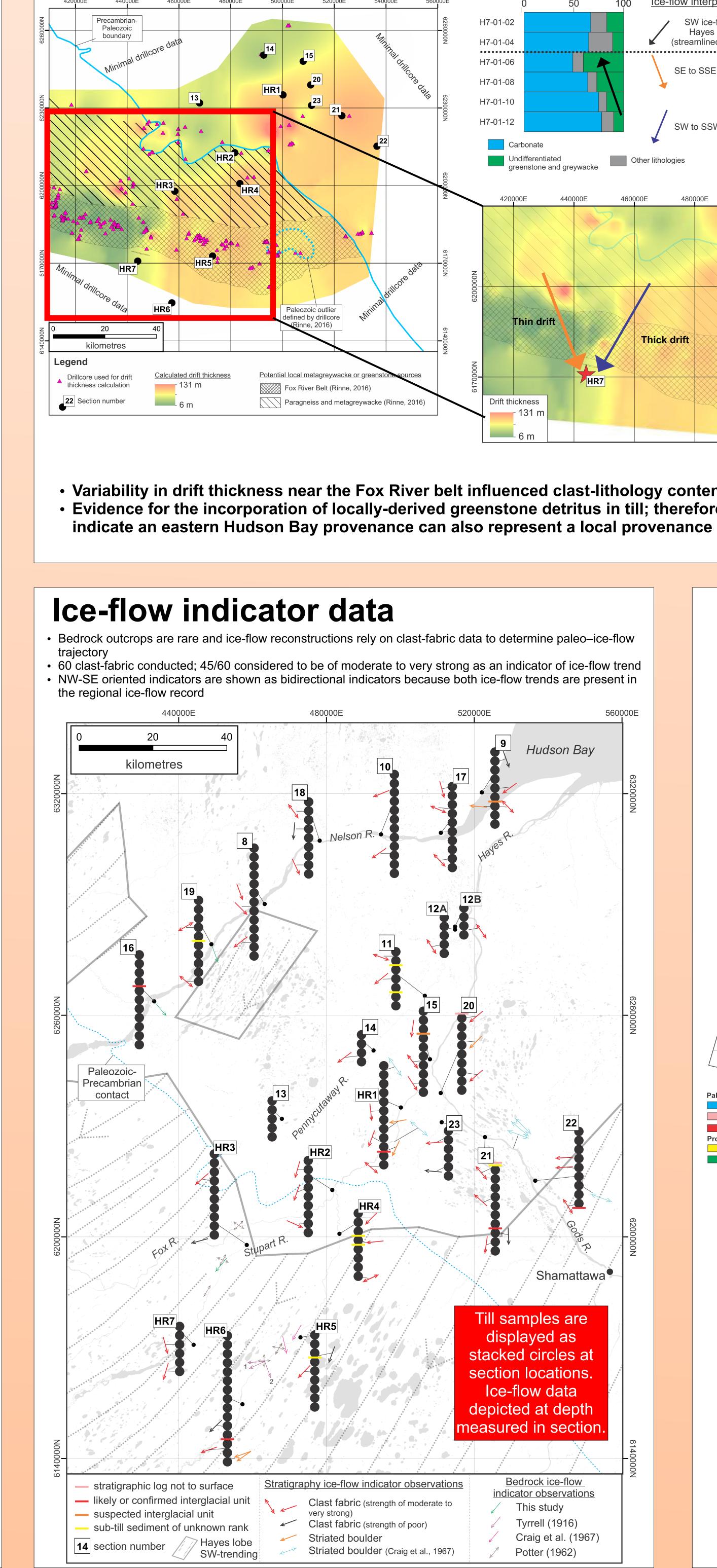
Felsic granulite and gneiss

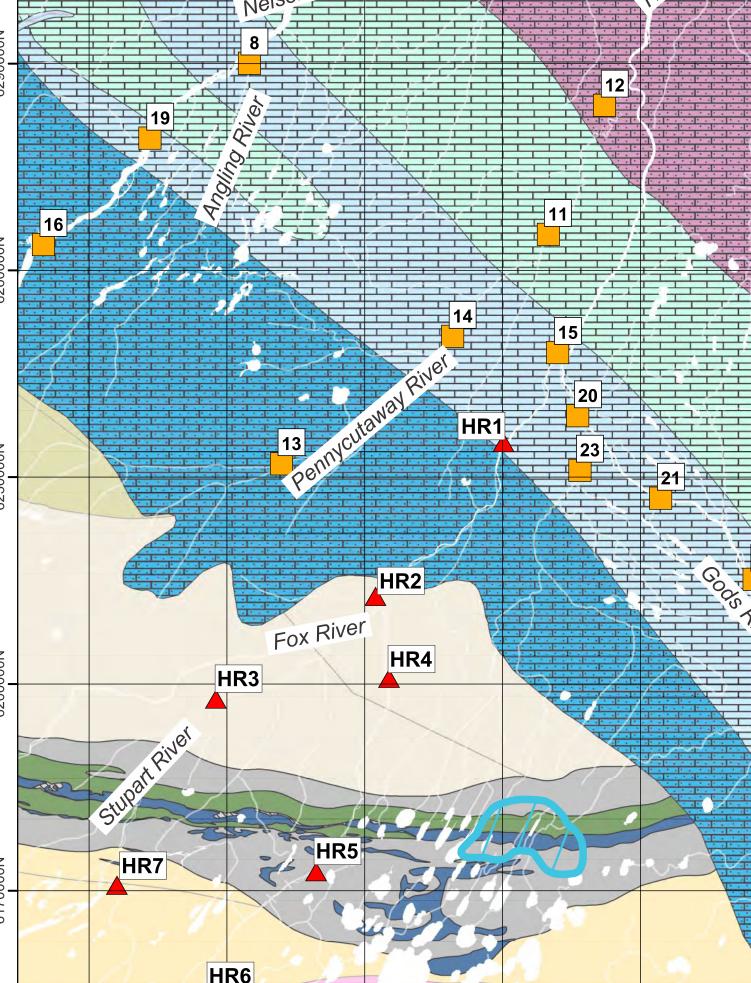
Paragneiss and metagreywacke

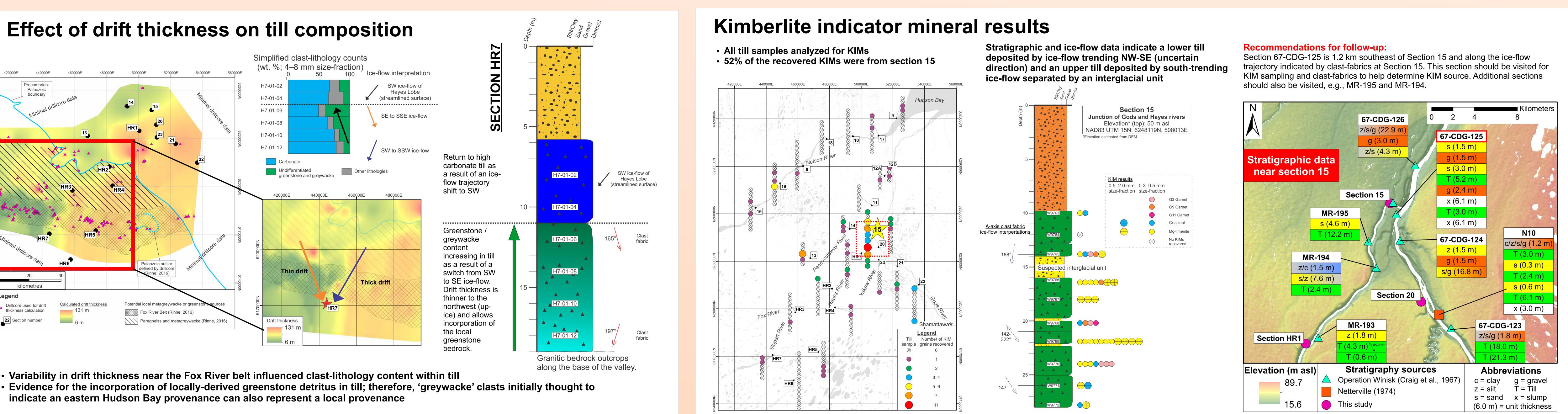
Proterozoi

Fox River belt

Archean





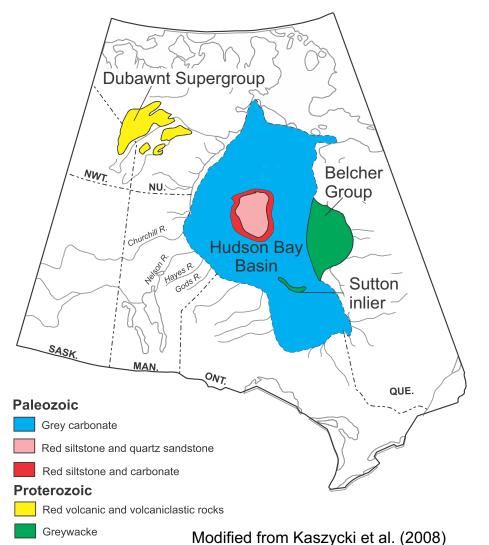


• Variability in drift thickness near the Fox River belt influenced clast-lithology content within till

Greenstone/greywacke (GG) dispersal trends

Issues:

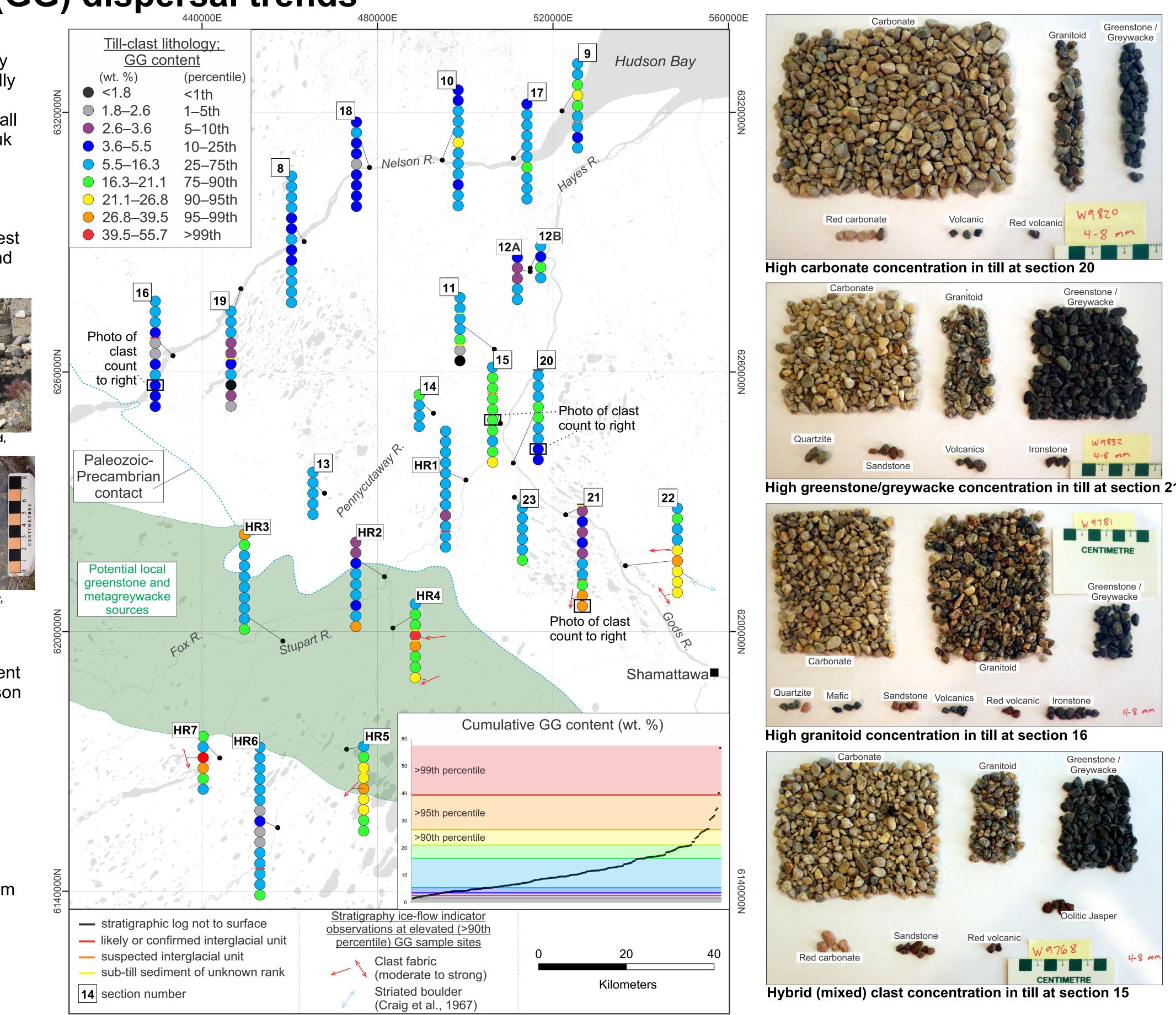
- In the size-fraction (4–8 mm) used for clast lithology analysis, greywacke and greenstone clasts generally cannot be confidently distinguished
- Originally, Nielsen and Fedikow (2002) interpreted all 'greywacke' clasts to be sourced from the Omarolluk Formation "Omars" of the Belcher Group (eastern Hudson Bay), yet section HR7 demonstrates these clasts can be at least partly locally-derived
- Ice-flow indicators at till sample locations with elevated greenstone/greywacke (GG) values suggest ice-flow deposition by W, WSW, SW, SSW, SSE and NW-SE





Additional sources?

- Unexpected elevated GG till sample sites are present northeast of potential local sources within the Hudson Bay Basin, e.g., section 21 and 22 • Clast-fabric measurements from these tills, at
- sections 21 and 22, trend to the west, southsouthwest and northwest-southeast – all of which preclude the Fox River greenstone belt and metagreywacke as a source
- Elevated concentration of GG clasts at sections 21 and 22 – up to 34.7 wt. % – suggests that some of these clasts must have a more local source, in addition to the Belcher group which is ~ 800 km from this study area
- Elevated GG clast counts have recently been recognized east of this study in the Kaskattama highland region ----> SEE POSTER IN THIS SESSION

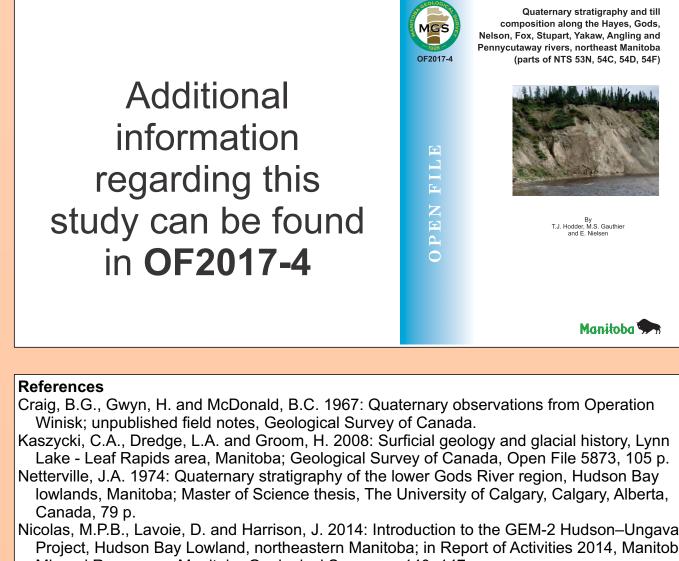


Gods River, northeast Manitoba



Concluding remarks

- The differentiation of distally-sourced greywacke clasts derived from the Omaralluk Formation in eastern Hudson Bay and locally-sourced metagreywacke and greenstone derived clasts is imperative and should be approached cautiously with consideration for the implications on till provenance interpretation
- Drift thickness is variable within the Hudson Bay Lowland and is an important parameter to consider when interpreting till composition
- Elevated greenstone/greywacke concentrations in till within the Hudson Bay Basin are intriguing and suggest the potential for additional source rocks
- KIM concentrations at section 15 near the Hayes and Gods River should be followed up with additional KIM sampling and clast fabric analysis. Nearby accessible sections with till are identified on this poster.



- Project, Hudson Bay Lowland, northeastern Manitoba; in Report of Activities 2014, Manitoba Mineral Resources, Manitoba Geological Survey, p. 140–147. Nielsen, E. and Fedikow, M.A.F. 2002: Kimberlite indicator-mineral surveys, lower Hayes River Manitoba Industry Trade and Mines, Manitoba Geological Survey, Geoscientific Paper GP2002-1, 11 p. Potter, R.R. 1962: Gods River Map-Area, Manitoba, Geological Survey of Canada, Paper 62-8,
- Rinne, M.L. 2016: Geological compilation of the Fox River Belt; Manitoba Mining and Minerals Convention, Winnipeg, Manitoba, Nov. 16–18, 2016. Tyrrell, J.B. 1916: Notes on the Geology of Nelson and Hayes rivers; Transactions of the Royal Society of Canada, v. 10, p. 1-29.