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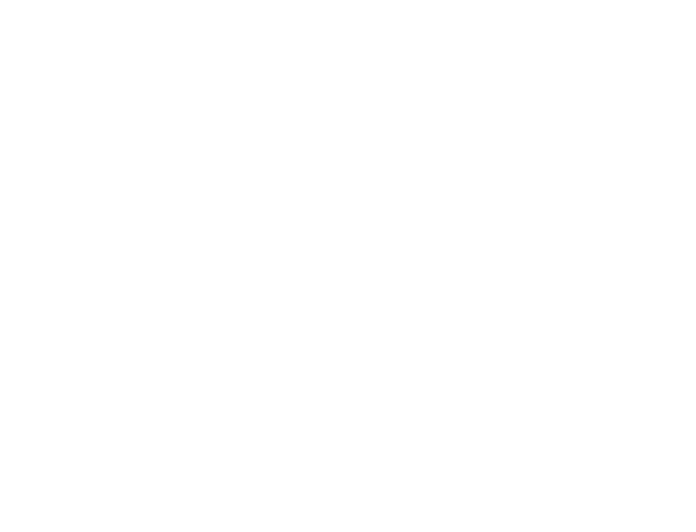
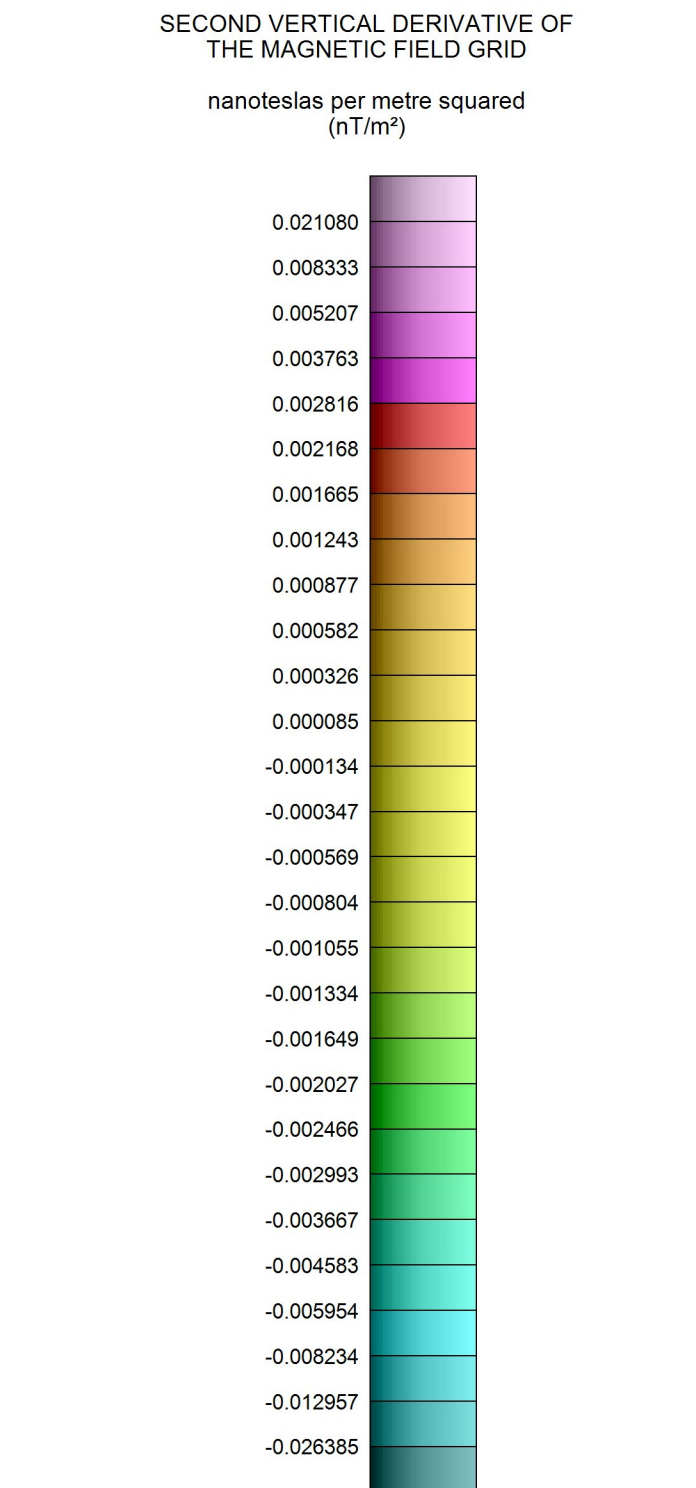
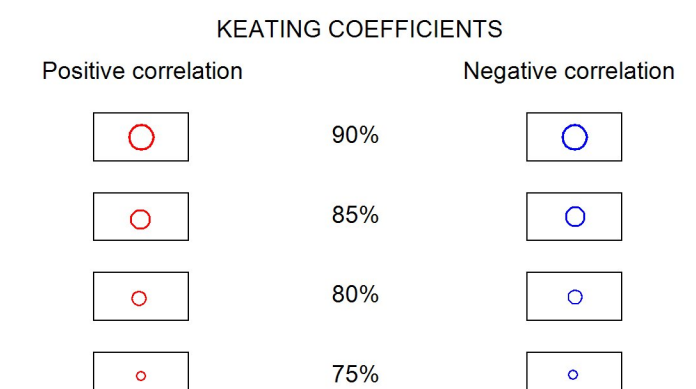
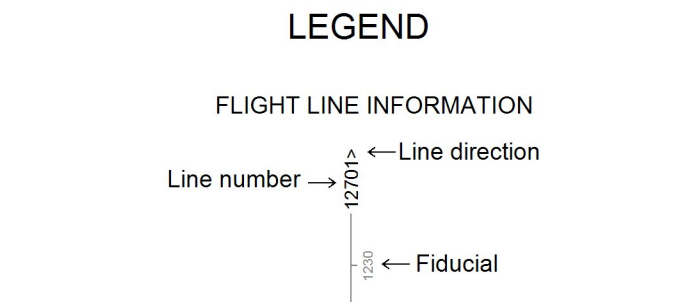
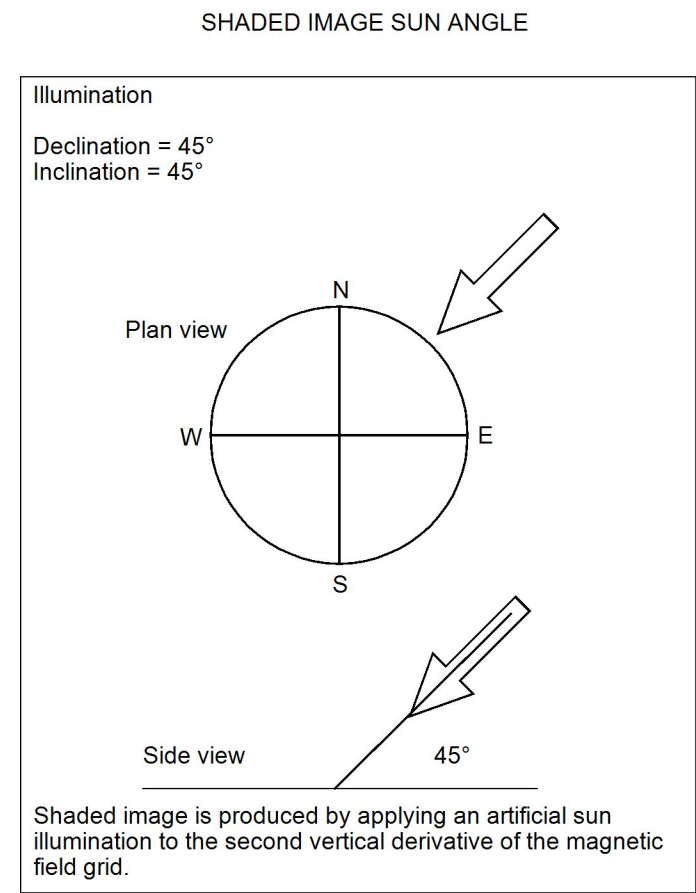
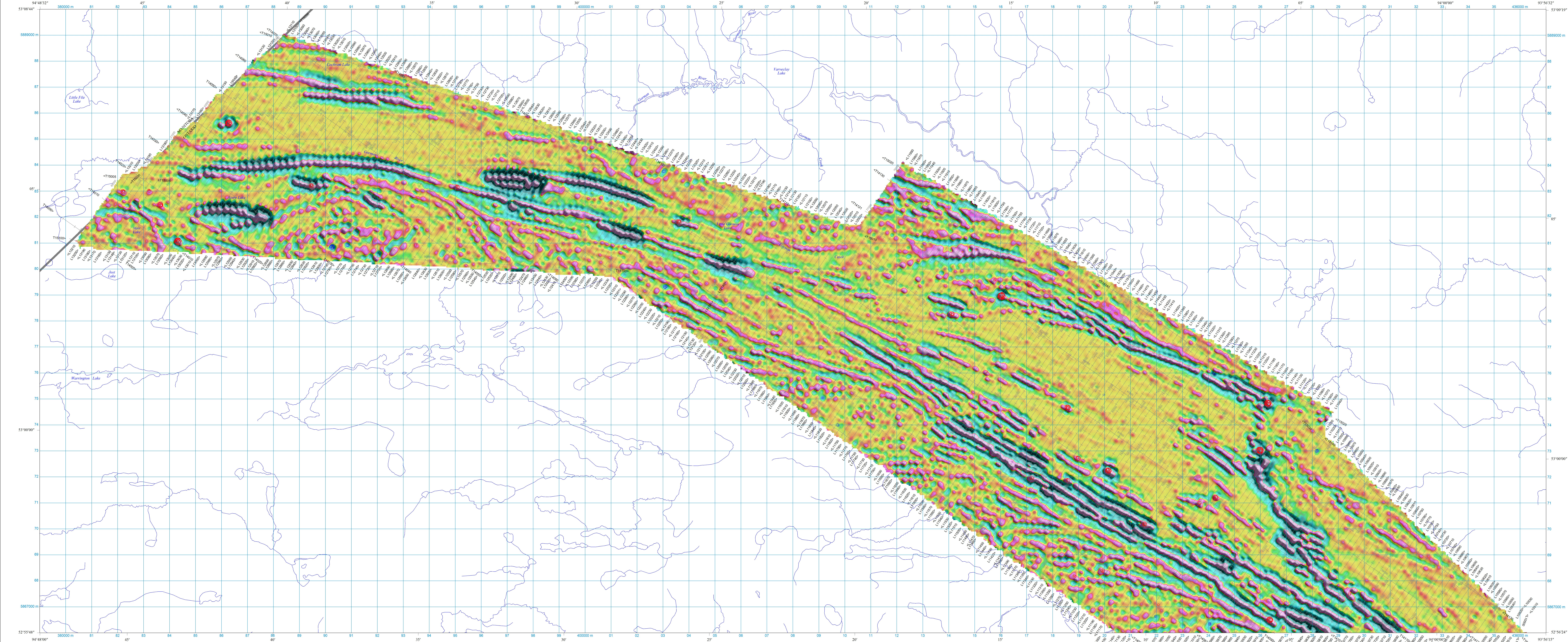
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Ontario Geological Survey 2018. Airborne magnetic and electromagnetic surveys, shaded colour image of the second vertical derivative of the residual magnetic field and Keating coefficients, Sandy Lake–Favourable Lake area; Ontario Geological Survey, Map 82 938, scale 1:50 000.

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DESCRIPTIVE NOTES

INTRODUCTION

This survey was flown using the Geotech VTEM Plus helicopter-mounted magnetic and electromagnetic system. The aircraft was also equipped with a GPS navigation system and a digital data acquisition system.

SECOND VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

The second vertical derivative values of the magnetic field were computed directly from the gridded residual magnetic intensity data using a fast Fourier transform, combining the transfer functions of the second vertical derivative and a sixth-order Butterworth low-pass filter (200 m cut-off wavelength). The low-pass filter was aimed at attenuating unwanted high frequencies enhanced by the derivative operator.

Shaded relief parameters:
Inclination: 45°
Declination: 45°

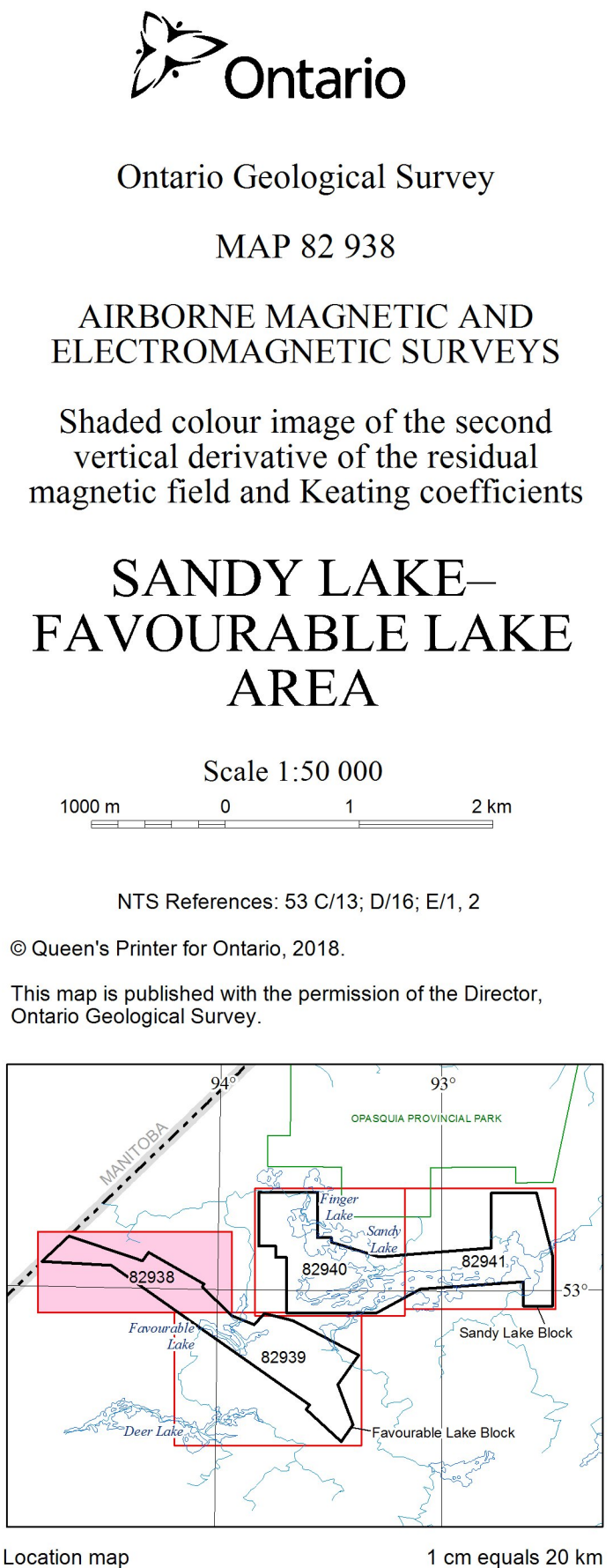
KEATING CORRELATION COEFFICIENTS

Possible kimberlite targets have been identified from the residual magnetic intensity data, based on the identification of roughly circular anomalies. This procedure was automated by using a known pattern-recognition technique (Keating 1995), which consists of computing, over a moving window, a first-order regression between a vertical cylinder model anomaly and the gridded magnetic data. Only the results where the absolute value of the correlation coefficient is above a threshold of 75% were retained. The results are depicted as circular symbols, scaled to reflect the correlation value. The most favourable targets are those that exhibit a cluster of high amplitude solutions. Correlation coefficients with a negative value correspond to reversely magnetized sources. It is important to be aware that other magnetic sources may correlate well with the vertical cylinder model, whereas some kimberlite pipes of irregular geometry may not.

Cylinder model parameters:
Sandy Lake Block:
Cylinder diameter: 200 m
Cylinder length: infinite
Overburden thickness: 4.2 m
Magnetic inclination: 77.1°
Magnetic declination: 1.3°W
Window size: 13 x 13 cells (520 m x 520 m)
Favourable Lake Block:
Cylinder diameter: 200 m
Cylinder length: infinite
Overburden thickness: 5.5 m
Magnetic inclination: 76.9°
Magnetic declination: 0.5°W
Window size: 13 x 13 cells (520 m x 520 m)

REFERENCES

Keating, P.B. 1995. A simple technique to identify magnetic anomalies due to kimberlite pipes. Exploration and Mining Geology, v. 4, no. 2, p. 121-125.



SOURCES OF INFORMATION

Base map information derived from the Land Information Ontario Data Warehouse, Land Information Ontario, Ministry of Natural Resources and Forestry, scale 1:50 000.

Magnetic declination for the centre of the map area was approximately 0°SW in 2018.

CREDITS

Data acquisition, data compilation and map production by Geotech Limited, Aurora, Ontario.

Project management and quality assurance by Paterson, Grant and Watson Limited, Toronto, Ontario.

Contract management, base maps and map surrounds by the Ministry of Energy, Northern Development and Mines, Sudbury, Ontario.

Corresponding digital data for this survey are available from the following Ontario Geological Survey publications:

Ontario Geological Survey 2018. Ontario airborne geophysical surveys, magnetic and electromagnetic data, grid and profile data (ASCII format) and vector data. Sandy Lake-Favourable Lake area. Ontario Geological Survey, Geophysical Data Set 1085a.

Ontario Geological Survey 2018. Ontario airborne geophysical surveys, magnetic and electromagnetic data, grid and profile data (Geosoft format) and vector data. Sandy Lake-Favourable Lake area. Ontario Geological Survey, Geophysical Data Set 1085b.

Every possible effort has been made to ensure the accuracy of the information presented on this map; however, the Ministry of Energy, Northern Development and Mines does not assume liability for any errors that may occur. Users should verify critical information.

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