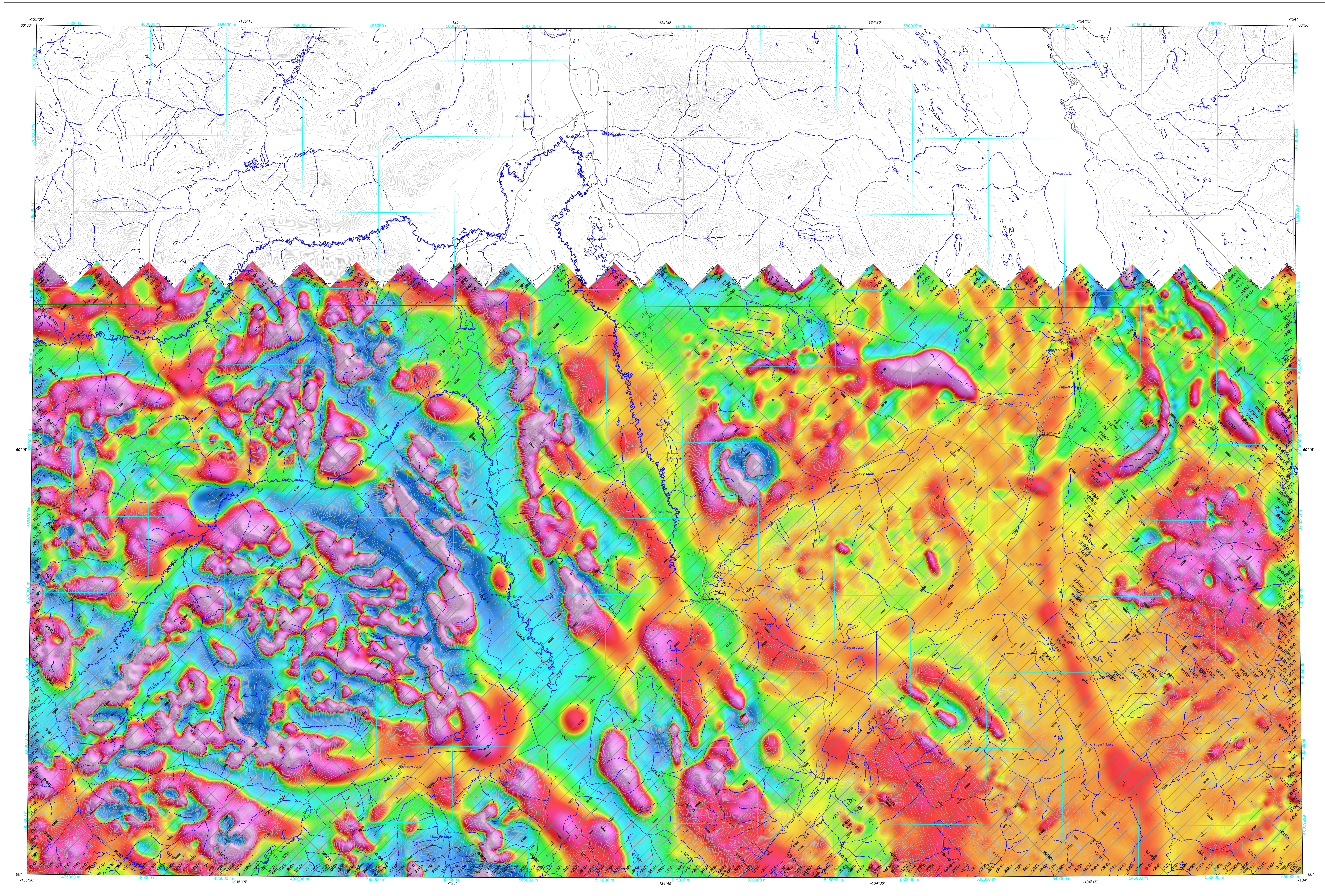


FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD



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GEOLOGICAL SURVEY OF CANADA OPEN FILE 8292  
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FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD

AEROMAGNETIC SURVEY OF THE LLEWELLYN AREA

NTS 105-D/1, 2, 3 and parts of 105-D/6, 7, 8  
YUKON

Authors: O. Boulanger and F. Kiss  
Data acquisition, data compilation and map production by  
Goldair Airborne Surveys, Saskatoon, Saskatchewan.  
Contract and project management by  
the Geological Survey of Canada, Ottawa, Ontario.  
Permanent link: <https://doi.org/10.4095/905327>

Scale 1:100 000  
2000 0 2000 4000 6000  
(metres)  
NAD83 / UTM zone 8N

Universal Transverse Mercator Projection  
North American Datum 1983  
Other Mapping the Queen in Right of Canada, as represented by the Minister of Natural Resources, 2017  
Digital topographic data from Natural Resources Canada



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GEOLOGICAL SURVEY OF CANADA  
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telle qu'elles sont reçues.

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2017-62  
YUKON GEOLOGICAL SURVEY  
2017

First Vertical Derivative of the Magnetic Field

This map of the first vertical derivative of the magnetic field was derived from data acquired during an aeromagnetic survey carried out by Goldair Airborne Surveys from March 10, 2017 to July 6, 2017. The nominal traverse and control line spacings were, respectively, 400 m and 2400 m, and the airplane flew at a nominal terrain clearance of 150 m. Traverse lines were oriented 45°E with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Positioning System (GPS) data. The survey was flown on a pre-determined flight surface to minimize differences in magnetic values at the intersections of control and traverse lines. These differences were computer-analysed to obtain a mutually levelled set of flight-line magnetic data. The levelled values were then interpolated to a 100 m grid. The International Geomagnetic Reference Field (IGRF) defined at the average GPS altitude of 1550 m for the current mid-survey date of 2017/06/08 was removed. Removal of the IGRF, representing the magnetic field of Earth's core, produces a residual component related almost entirely to magnetizations within the Earth's crust.

The first vertical derivative of the magnetic field is the rate of change of the magnetic field in the vertical direction. Computation of the first vertical derivative removes long-wavelength features of the magnetic field and significantly improves the resolution of closely spaced and superposed anomalies. A property of first vertical derivative maps is the coincidence of the zero-value contour with vertical contacts at high magnetic latitudes (Hood, 1965).

This publication is available for free download through GEOSCAN (<http://geoscan.nrcan.gc.ca/>). Corresponding digital profile and gridded data as well as similar data for adjacent airborne geophysical surveys are available from Natural Resources Canada's Geoscience Data Repository for Geophysical Data at [http://gdp.agu.nrcan.gc.ca/index\\_e.htm](http://gdp.agu.nrcan.gc.ca/index_e.htm). The same products are also available, for a fee, from the Geophysical Data Centre, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8. Telephone: (613) 947-5337, email: [NRCan-Info@dc-Info.gc.ca](mailto:NRCan-Info@dc-Info.gc.ca), [NRCan@Canada.ca](mailto:NRCan@Canada.ca).

These data are also available for free download from the Yukon Geological Survey (<http://data.geology.gov.yk.ca/>), P.O. Box 2703 (K-102), Whitehorse, Yukon Y1A 2C6. Telephone: (867) 667-3201, email: [geology@gov.yk.ca](mailto:geology@gov.yk.ca).

References

Hood, P.J., 1965. Gradient measurements in aeromagnetic surveying. Geophysics, v. 30, p. 891-902.

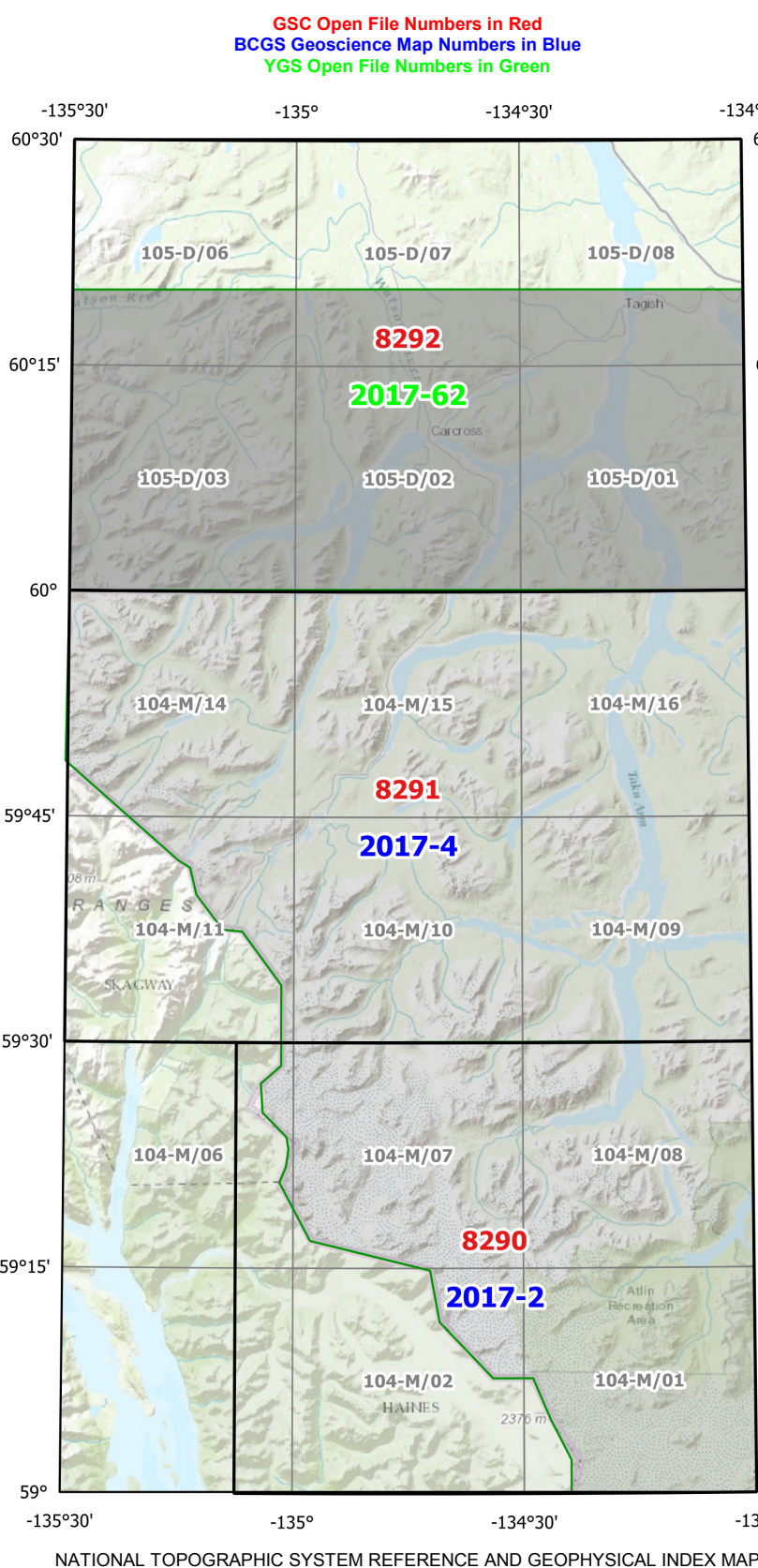
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6.8690  
0.1671  
0.1191  
0.0834  
0.0616  
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0.0175  
0.0112  
0.0061  
0.0018  
-0.0018  
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-8.3893  
nT/m

PLANIMETRIC SYMBOLS

Topographic contour .....  
Drainage .....  
Road .....  
Flight line .....  
Building .....  
Project limit .....  
Territorial boundary .....



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