

**FIRST VERTICAL DERIVATIVE OF  
THE RESIDUAL MAGNETIC FIELD**

**Corner Brook Map Area**

(NTS 12A/13)

**MAP 2009-33  
OPEN FILE NFLD/3058**

**G.J. Kilfoil and L.A. Cook**

**First Vertical Derivative of the Residual Magnetic Field**

This map was derived from data acquired during an aeromagnetic survey carried out by Geo Data Solutions GDS Inc. The survey was flown during the period November 25, 2008 to March 30, 2009, using a Piper PA-31 Navajo aircraft C-GKSA. The aircraft was equipped with three Geometrics cesium vapor magnetometers with a sensitivity of 0.005 nT, installed in the tail boom and right portion of the fuselage. The survey was flown in a grid-like pattern with a constant line spacing of 1.9 km and a constant flight altitude of 90 m. Traverse lines were oriented NS/PW with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Positioning System data and inspection of ground images recorded by a vertically mounted video camera. The survey was flown on 160 pre-defined lines and 160 post-flight lines. The survey includes 1000 m vertical distances of control and traverse lines. These differences were computer-analyzed to obtain a mutually leveled set of flight-line magnetic data. The leveled values were then interpolated to a 50 m grid.

The first vertical derivative of the residual 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 superimposed anomalies. A property of the first vertical derivative maps is the coincidence of the zero-value contour with vertical contacts at high magnetic latitudes (Hood, 1965).

Digital versions of this map can be downloaded, at no charge, from the Newfoundland and Labrador Resource Atlas (<http://gis.geosurv.gov.nl.ca/>), and from the Geological Survey of Canada Open File series (<http://www.geosurveys.gc.ca/collections/geosurveyspublications/openfiles/>). Corresponding digital profile and gridded data for this survey, as well as for airborne surveys flown over adjacent areas, are also available from the Newfoundland and Labrador Resource Atlas.

Printed copies of this map may be obtained from the Geoscience Publication and Information Section, Geological Survey, Department of Natural Resources, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, Canada, A1B 4B6.

Department: <http://www.nr.gov.nl.ca/>  
Geological Survey: <http://www.nr.gov.nl.ca/mines&en/geosurvey/>  
E-mail: pub@gov.nl.ca

**OPEN FILE NFLD/3058**

**PUBLISHED 2009**

**References**

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

**Recommended Citation**

Kilfoil, G.J. and Cook, L.A.  
2009. First Vertical Derivative of the Residual Magnetic Field, Corner Brook Map Area (NTS 12A/13). Aeromagnetic Survey - Corner Brook Area. Geological Survey, Department of Natural Resources, Government of Newfoundland and Labrador, Map 2009-33. Open File NFLD/3058, scale 1:50 000.

Maps released as part of Open File NFLD/3058 are (refer to index map below):

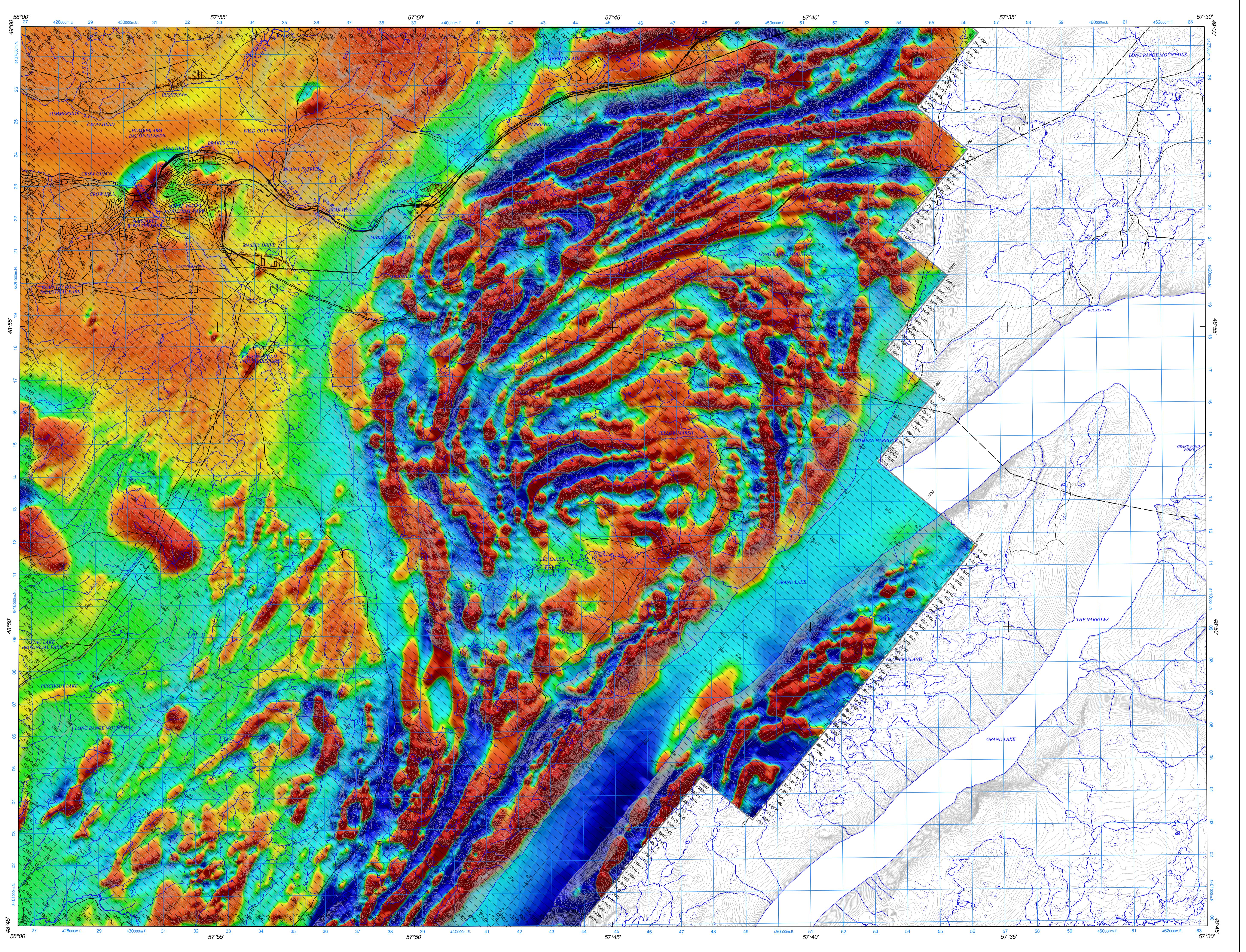
Map Area (NTS)	Residual Magnetic Field	First Vertical Derivative of the Resid. Mag. Field
Little Grand Lake (12A/12)	Map 2009-30	Map 2009-31
Corner Brook (12A/13)	Map 2009-32	Map 2009-33
Harry's River (12B/09)	Map 2009-34	Map 2009-35
St. John's (12B/08)	Map 2009-36	Map 2009-37
Bay of Islands (12G/01)	Map 2009-38	Map 2009-39
Pasadena (12G/04)	Map 2009-40	Map 2009-41
Lomond (12H/05)	Map 2009-42	Map 2009-43

**Note**

Open File reports and maps issued by the Geological Survey Division of the Newfoundland and Labrador Department of Natural Resources are made available for public use without being formally edited or peer reviewed. They are based upon preliminary data and evaluation. The purchaser agrees not to provide a digital reproduction or copy of this product to a third party. Derivative products should acknowledge the source of the data.

**Disclaimer**

The Geological Survey, a division of the Department of Natural Resources (the "authors and publishers"), retains the sole right to the original data and information found in any product produced. The authors and publishers assume no legal liability or responsibility for any alterations, changes or misrepresentations made by third parties with respect to these products or the original data. Furthermore, the Geological Survey assumes no legal responsibility to digital redistributions or copies of original products by third parties. Any products made by third parties must be in concert with the Geological Survey in order to ensure originality and correctness of data and/or products.



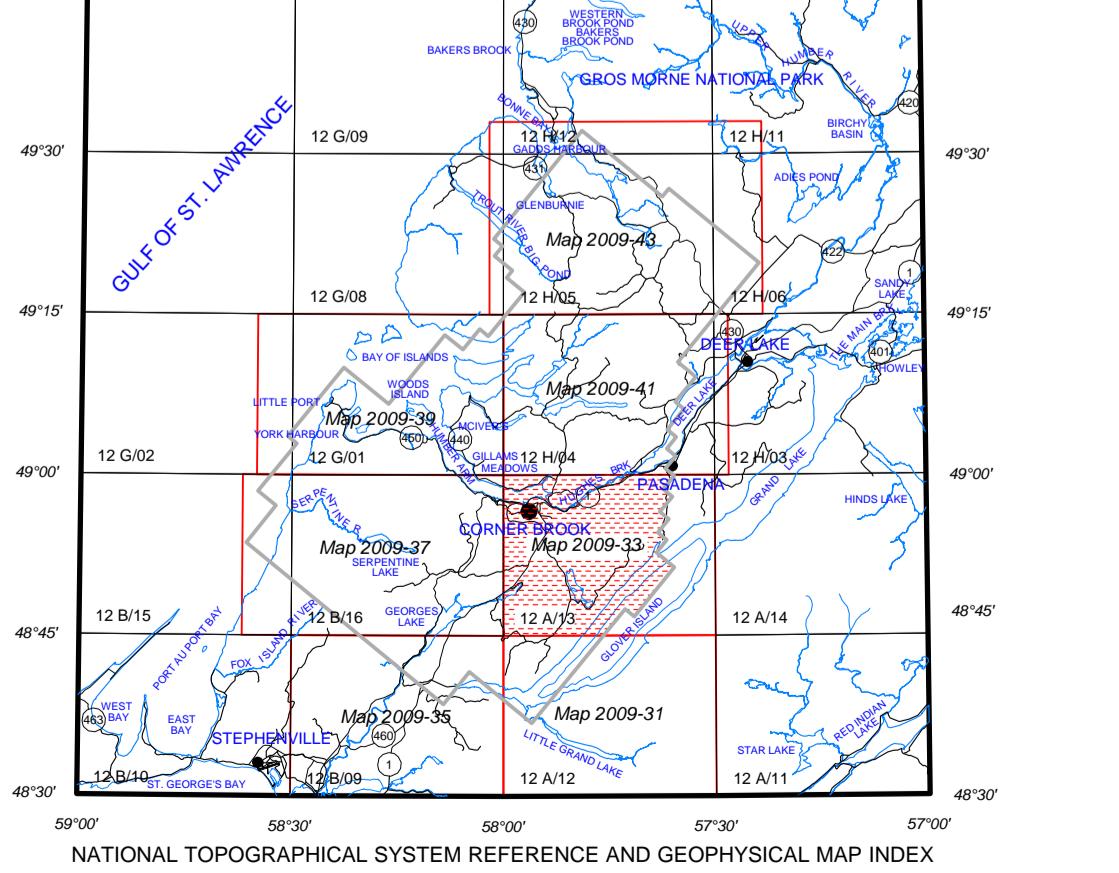
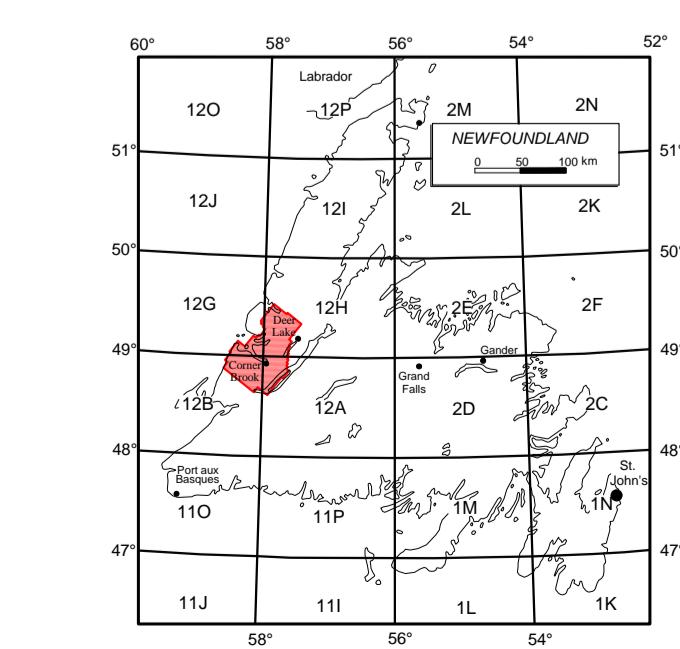
**MAP 2009-33**

**CORNER BROOK - NTS 12A/13**

Scale 1: 50 000  
kilometres 1 0 1 2 3 4 5 kilometres  
NAD83 / UTM zone 21N

Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada

Compilation and map production by  
Geo Data Solutions GDS Inc., Laval, Quebec.  
Contract and project management by the  
Newfoundland and Labrador Department of Natural Resources.



**AEROMAGNETIC SURVEY - CORNER BROOK AREA**