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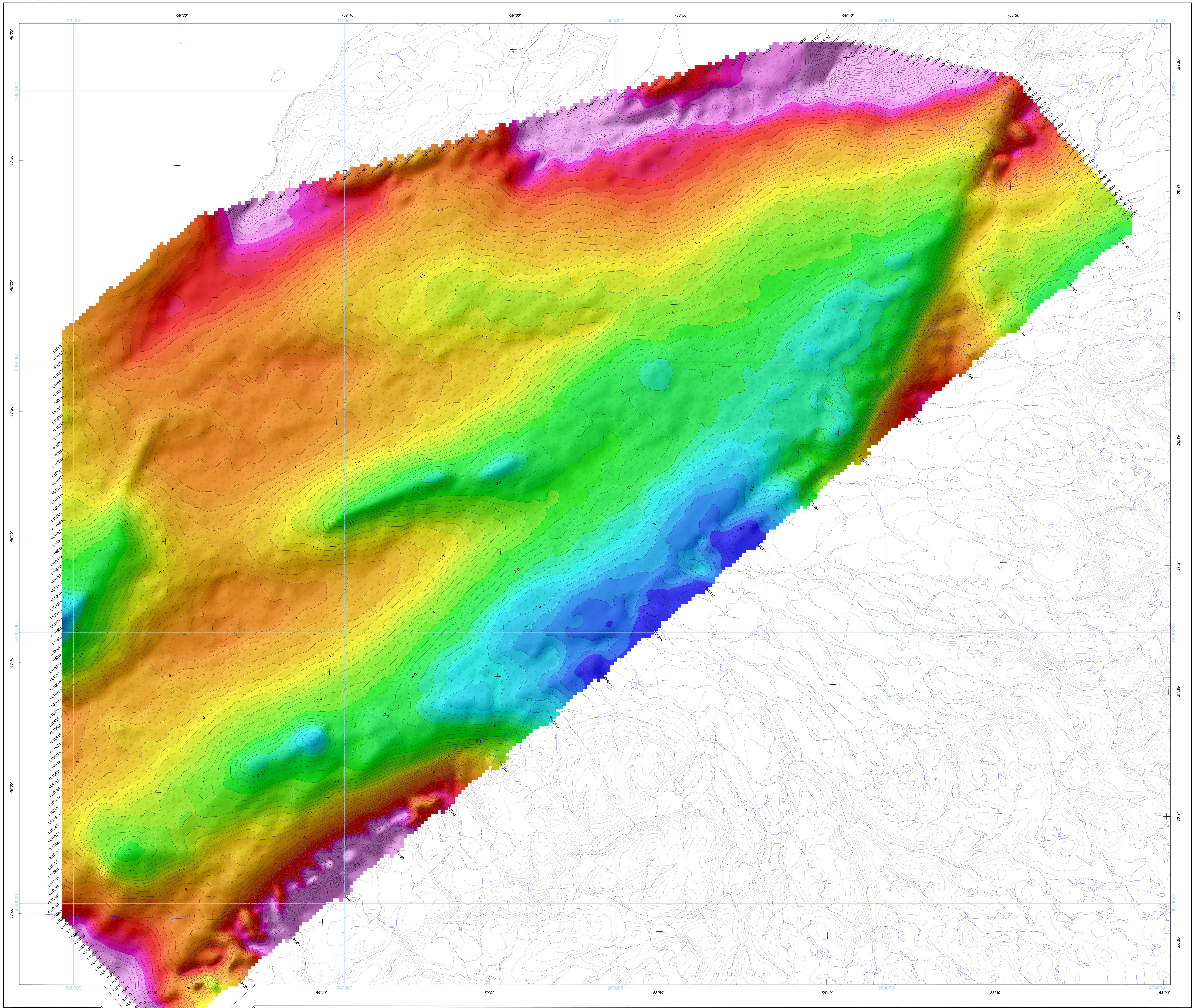
GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA

GEOLOGICAL SURVEY | NEWFOUNDLAND AND LABRADOR

Newfoundland Labrador NATURAL RESOURCES

VERTICAL COMPONENT OF GRAVITY



Technical Information:
These data were acquired during a fixed-wing gravity gradiometric survey carried out by Bell Geospace Inc. between December 3 and December 18, 2012. The survey was flown using a converted DC-3 aircraft: Basler Turbo Conversion BT-67 registration C-FTGX equipped with a Lockheed Martin FTG airborne gravity gradiometer. The nominal traverse line spacing was 500 m, with control line spacing of 5000 m. The nominal aircraft altitude was 80 m. The traverse lines were oriented at N135°E and control lines were flown perpendicular to the traverse lines. The flight path was recorded using real-time GPS corrections transmitted by Omnistar TM XP. The survey was carried out according to a predetermined drape surface.

Gravity:
Raw data from the gravity gradiometer were corrected, levelled and combined with appropriate weighting to form the full gravity gradient tensor. Noise was reduced by deriving the gravity potential from the individual gradient components then recalculating the components from the common potential (Sanchez et al., 2005). For the terrain correction, which was subtracted from the gradient data, the SRTM30Plus grid was merged with multibeam bathymetry and gridded at 50 meters. An average rock density of 2.2 g/cc was selected as the density that minimizes the correlation between the terrain response and the terrain-corrected data. The vertical component of gravity was calculated by vertically integrating the vertical gravity gradient.

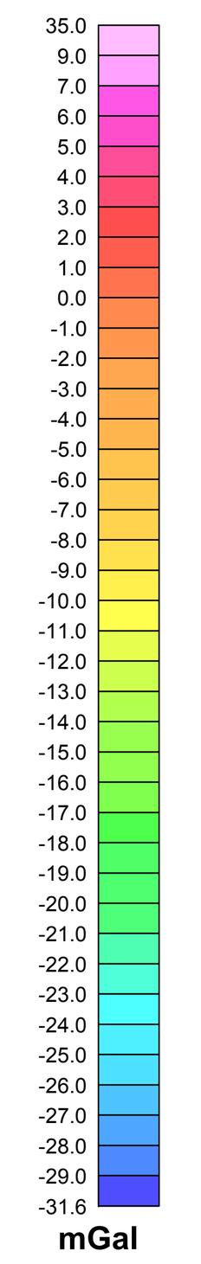
Contact Lineament Processing has been applied to the vertical gravity gradient. The process uses the five independent tensor components to estimate the local strike angle using the method of Pedersen and Rasmussen (1990). These strike direction values are used to steer a directional low pass filter that is applied to the input tensor components. Full tensor processing is then applied to the resulting filtered dataset. This ensures the directionally-filtered tensor components satisfy Laplace's equation.

Pedersen L. B. and Rasmussen T. M., 1990, The gradient tensor of potential field anomalies; some implications on data collection and data processing of maps: Geophysics, 55, 1558-1566

Sanchez V., Sinex D., Y. Li, Nabighian M., Wright D. and Smith D., 2005, Processing and Inversion of Magnetic Gradient Tensor data for UXO Applications, 18th EEGS Symposium on the Application of Geophysics to Engineering and Environmental Problems

A digital version of this map can be downloaded, at no charge, from Natural Resources Canada's Geoscience Data Repository (MIRAGE) at http://apps1.gdr.nrcan.gc.ca/mirage/mirage_index_e.php. 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 Aeromagnetic data at http://gdrdap.agg.nrcan.gc.ca/geodap/home/Default.aspx?lang=e. The same products are also available, for a fee, from the Geophysical Data Centre, Geological Survey of Canada, 615 Booth Street, Ottawa, Ontario K1A 0E9. Telephone: (613) 995-5326, email: infogdc@agg.nrcan.gc.ca.

The same version of this map can also be downloaded, at no charge, from the Web site of the Department of Natural Resources, Newfoundland and Labrador, either on its Open File page at http://www.nr.gov.nl.ca/nr/mines/geoscience/publications/latest_pubs.html or on its Geoscience Online page at http://gis.geosurv.gov.nl.ca/.



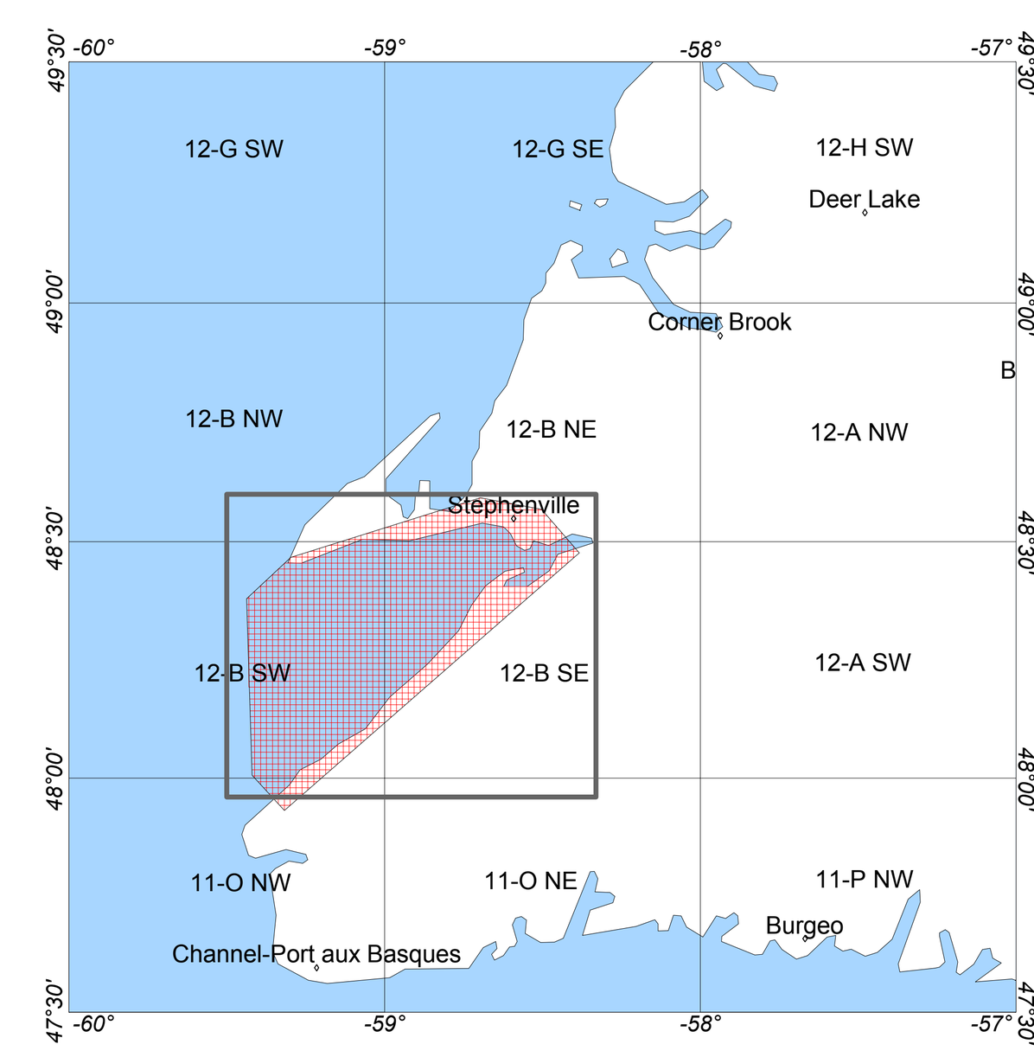
PLANIMETRIC SYMBOLS

Topographic Contour ....

Roads..............................

Drainage ....

Flight Path .... L10010> 16000



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX

AIRBORNE GRAVITY GRADIOMETER SURVEY OF THE ST. GEORGE'S BAY AREA

GEOLOGICAL SURVEY OF CANADA OPEN FILE 7411

AIRBORNE GRAVITY GRADIOMETER SURVEY OF THE ST. GEORGE'S BAY AREA

Parts of NTS 11-O (North Half) and 12-B
NEWFOUNDLAND AND LABRADOR

VERTICAL COMPONENT OF GRAVITY

Scale 1:100 000

2000 0 2000 4000 6000
(metres)
NAD83 / UTM zone 21N

Universal Transverse Mercator Projection
North American Datum,1983
Topographic Contour Interval: 15 metres

Digital Topographic Data provided by Geomatics Canada, Natural Resources Canada

Authors: R. Dumont and A. Jones

Data acquisition and compilation by Bell Geospace, Houston, Texas. Map production and project management by the Geological Survey of Canada, Ottawa, Ontario.

LOCATION MAP

OPEN FILE DOSSIER PUBLIC	
7411 GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA 2013	Publications in this series have not been edited; they are released as submitted by the author. Les publications de cette série ne sont pas révisées; elles sont publiées telles que soumises par l'auteur.

SHEET 2 OF 3
FEUILLET 2 DE 3

MAP SHEET SUMMARY

Sheet	MAP
1.	Vertical Gravity Gradient
2.	Vertical Component of Gravity
3.	Contact Lineament Processing of The Vertical Gravity Gradient

Recommended citation:
Dumont, R. and Jones, A., 2013.
Airborne Gravity Gradiometer Survey of the St. George's Bay Area, Parts of NTS 11-O (North Half) and 12-B, Newfoundland and Labrador; Geological Survey of Canada, Open File 7411; scale 1:100 000.

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