

Kuskokwim airborne magnetic and radiometric geophysical survey, Ganes Creek, Alaska (2026)

Logan A. Fusso, Eric I. Petersen, Abraham M. Emond, and EON Geosciences Inc.

Geophysical Report 2026-1



Eon Geosciences' Eurocopter AS350 B2 with the prominent cesium-vapour split-beam magnetic sensor connected beneath the aircraft.

Publications in the DGGs GPR series provide airborne survey data, maps, acquisition details, and sometimes limited interpretive modeling. The data have been reviewed for clarity and consistency but have not undergone technical peer review.

2026
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Department of Natural Resources
Division of Geological & Geophysical Surveys



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Kuskokwim airborne magnetic and radiometric geophysical survey, Ganes Creek, Alaska (2026)

Logan A. Fusso¹, Eric I. Petersen¹, Abraham M. Emond^{1*}, and EON Geosciences Inc.²

INTRODUCTION

The Kuskokwim airborne magnetic and radiometric geophysical survey, Ganes Creek, Alaska, covers part of the Kuskokwim Mountains west of McGrath, Alaska. The survey area includes parts of the Ophir, Medfra, Iditarod, and McGrath quadrangles. EON Geosciences Inc (fig. 1) collected magnetic and radiometric data with a Eurocopter AS350 B2 helicopter from June 21 to September 7, 2024, and a Eurocopter AS350 B3+ helicopter from June 16 to 25, 2025. A total of 25,731 line kilometers were collected, covering 8,197 km². Magnetic data were collected with a Scintrex CS-3 cesium-vapour split-beam sensor. Radiometric data were collected with two (2) Radiation Solutions RS-500 series multi-channel gamma-ray spectrometers, model RSX-5, with 512 channels, for a total crystal volume of 33.6 liters downward-looking and 8.4 liters upward-looking (for atmospheric radon detection). Data from the Ganes Creek survey will improve the understanding of the geology and mineral potential of the central Kuskokwim River region and promote resource exploration in this part of Alaska. These data and accompanying discussion are released as a DGGs Geophysical Report and are available from the DGGs website at <https://doi.org/10.14509/31746>.

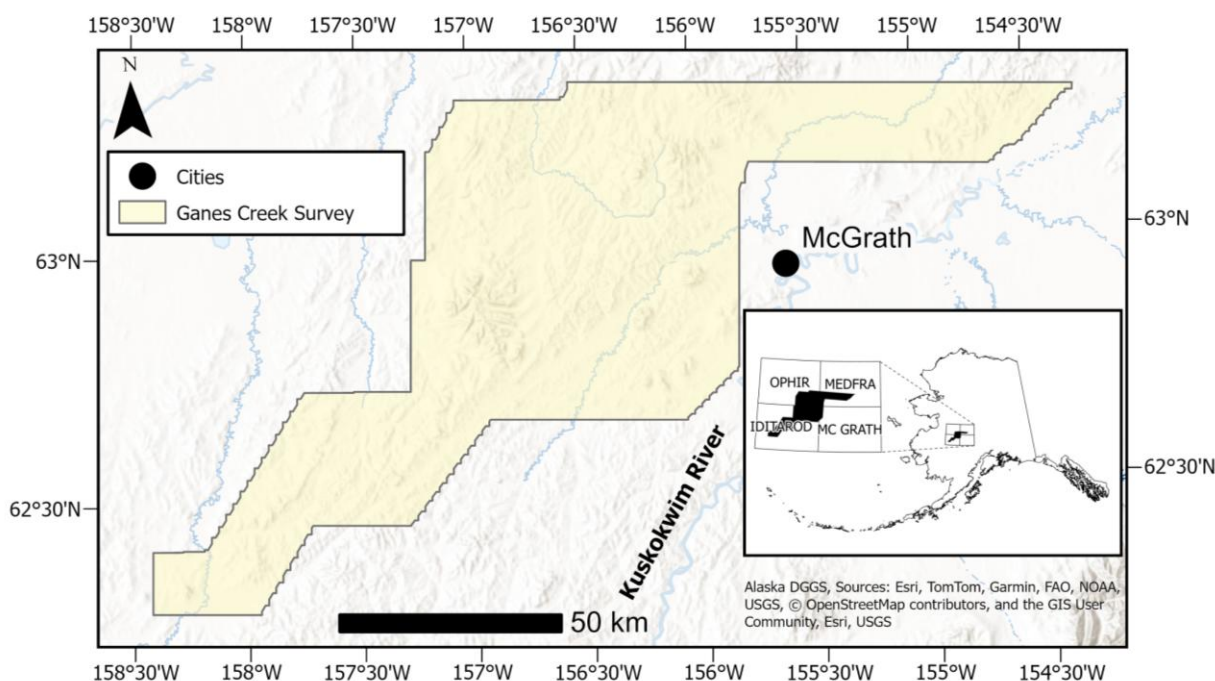


Figure 1. Regional map of the survey area. (Inset) Survey location within Alaska, with the relevant 1:250,000-scale quadrangle labeled.

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DELIVERABLES

This document provides an overview of the survey and includes text and figures of selected primary and derivative products. Table 1 lists available data packages. Table 2 provides a catalog of full-scale maps available for downloading. Please consult the metadata, project report, and digital data packages for more information and data.

Table 1. Data available for download

Data Package	Description
ascii_data	ASCII format line data, other ASCII data
databases_geosoft	Geosoft format database of final line data, other Geosoft format databases
documents	Project report, calibration reports
grids_geosoft	Oasis montaj Geosoft GRD format gridded data
grids_tif	Geographically registered data value rasters of gridded data, GeoTiff format
kmz	keyhole markup language (kml) kmz archive files of project data.
maps_pdf	Printable and geographically registered maps in PDF format.
vector_data	Line path and survey boundary in Esri shapefile (shp) format

Table 2. Full-scale printable maps are available in Portable Document Format (*.pdf) with a resolution of 300 dpi. See Appendix A for previews of these maps in reduced-resolution page-sized format. The page-sized format is intended for reference and search purposes only.

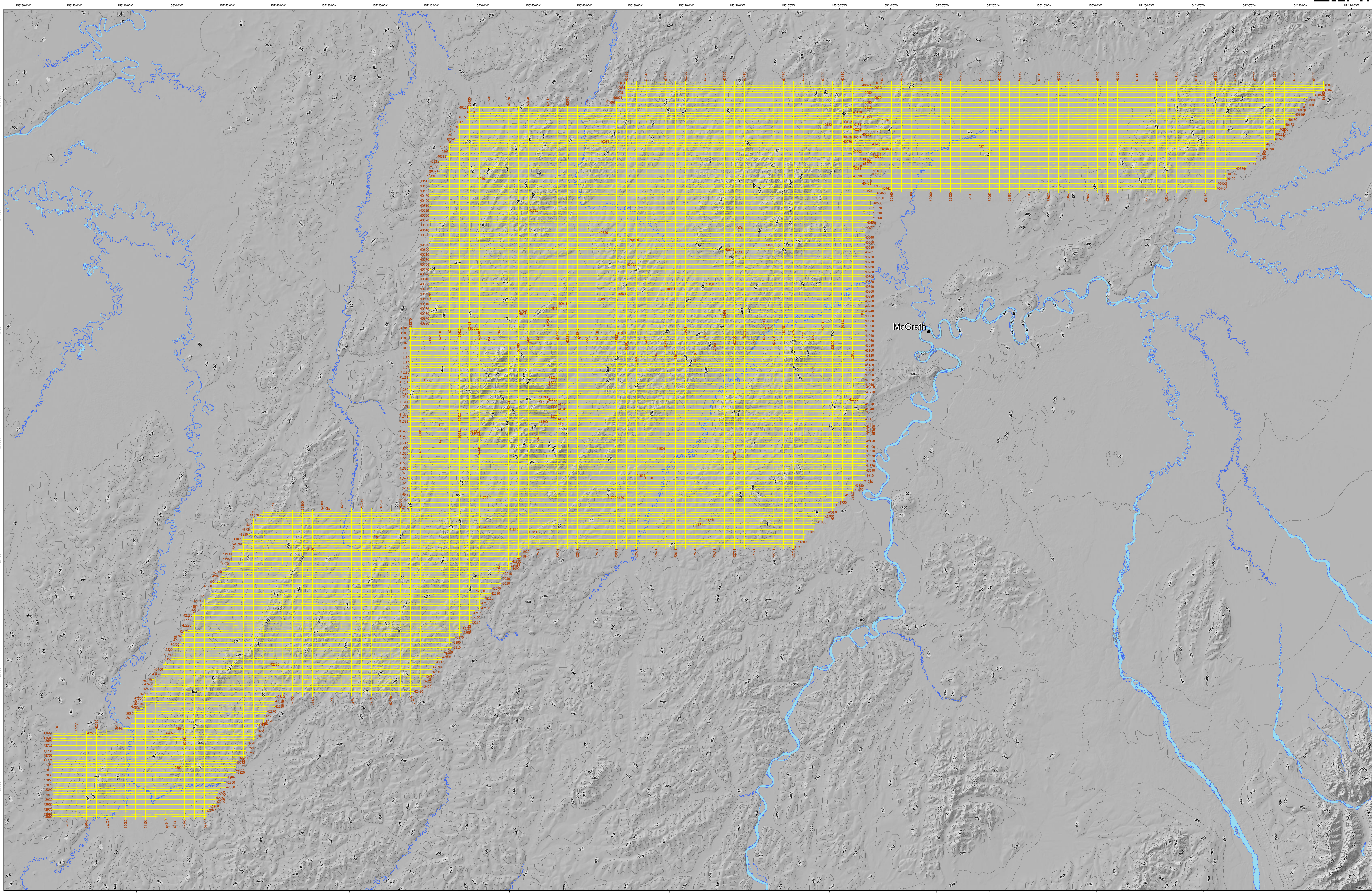
Map Title	File Name
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Magnetics	
Analytic Signal	ganes_creek_mag_analyticssignal.pdf
Calculated 1st Vertical Derivative	ganes_creek_mag_c1vd.pdf
Calculated 2nd Vertical Derivative	ganes_creek_mag_c2vd.pdf
Residual Magnetic Intensity	ganes_creek_mag_residual.pdf
Tilt Derivative	ganes_creek_mag_tiltderivative.pdf
Radiometrics	
Thorium	ganes_creek_rad_equiv_th.pdf
Uranium	ganes_creek_rad_equiv_u.pdf
Natural Air Absorbed Dose Rate	ganes_creek_rad_naadr.pdf
Potassium	ganes_creek_rad_pct_k.pdf
Ratio Potassium/Uranium	ganes_creek_rad_ratio_k_u.pdf
Ratio Thorium/Potassium	ganes_creek_rad_ratio_th_k.pdf
Ratio Uranium/Thorium	ganes_creek_rad_ratio_u_th.pdf
Ternary Map	ganes_creek_rad_ternary.pdf

ACKNOWLEDGMENTS

This work was funded by the United States Geological Survey Earth Mapping Resources Initiative (Earth MRI) grants G22AC00475 and G23AC00408. The authors thank Eon Geosciences for their expertise in geophysical data collections. The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the opinions or policies of the U.S. Geological Survey. Mention of trade names or commercial products does not constitute their endorsement by the U.S. Geological Survey.



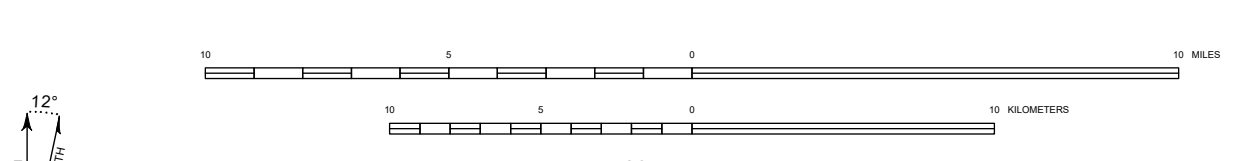
APPENDIX A: PREVIEW MAPS



Flightpath
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

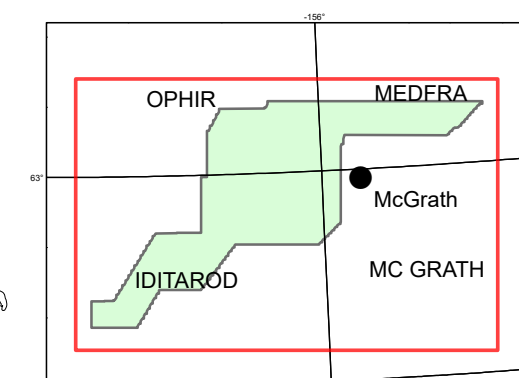
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Flight Paths, Survey Line Number Labelled



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² egea Geo Frameworks, 10348 Highway 200, Fort Laramie, Wyoming 82110 University DGS
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Note: All survey line numbers are shown. Survey line numbers are displayed at the start of each line, indicating the direction flown. Note that in some cases multiple lines may be oriented along the same line of latitude or longitude, one picking up where the previous line ended. This could be due to instrument weather during collection causing multiple flights for a single line, instrument weather causing magnetic diurnalals during collection, or flight paths from out of contact specification requiring a re-flight.

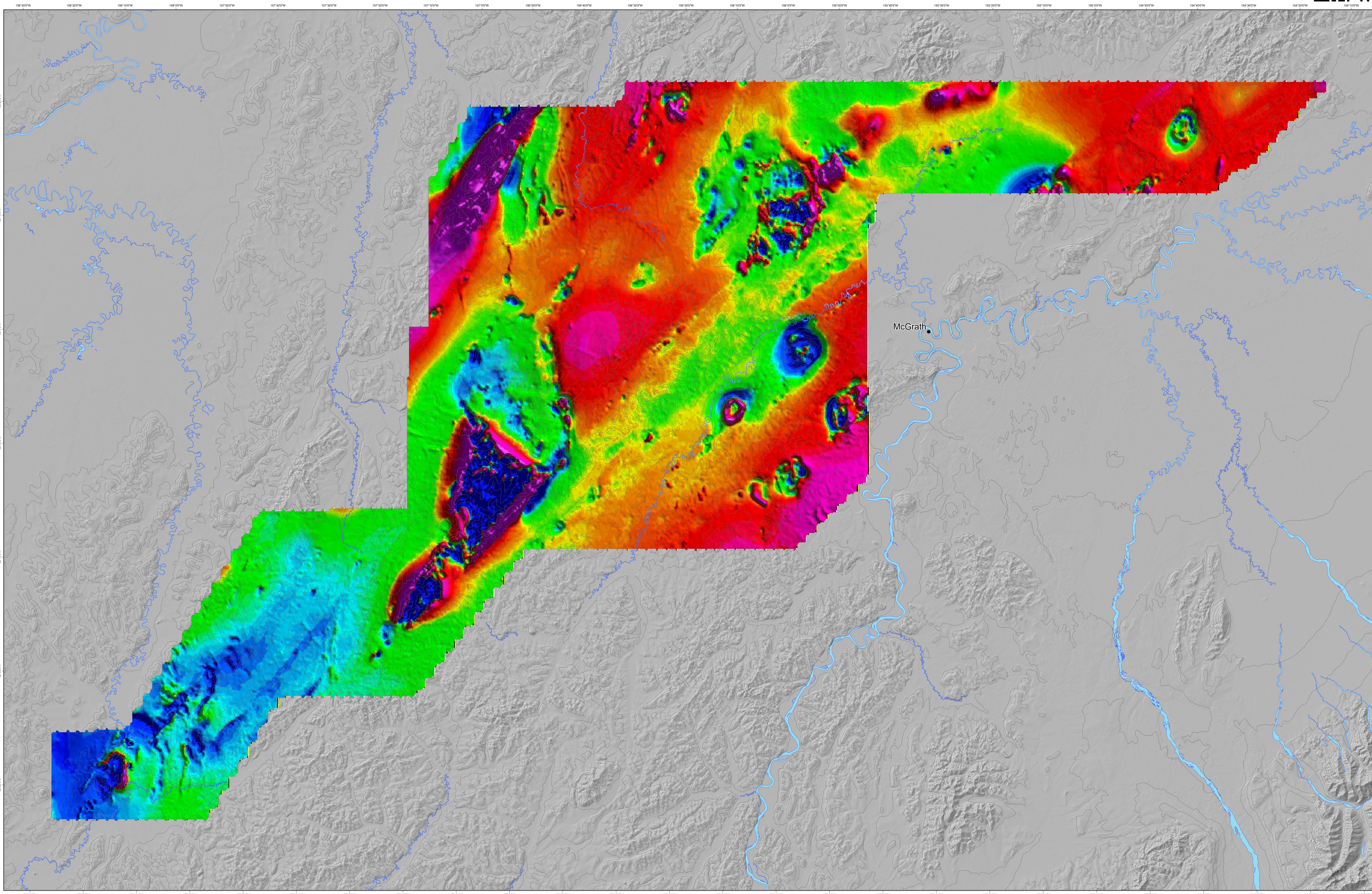


Basemap streams and waterbodies from:
National Hydrography Dataset, U.S. Geological Survey,
Reston, Virginia, 2002-2016
Basemap hillshade from:
ESRI Basemaps - ESRI, USGS
Basemap contours from:
U.S. Geological Survey, EROS Data Center, 2013,
Digital elevation - Interferometric Synthetic Aperture
Radar (IFSAR) - Alaska
Projection:
Universal Transverse Mercator Zone 4N
Datum:
WGS 1984
Cartography by:
E.I. Petersen and A.E. Macpherson (2025)



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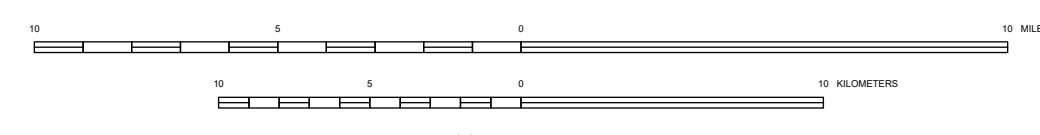
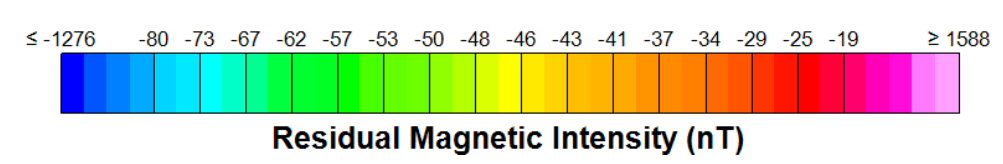
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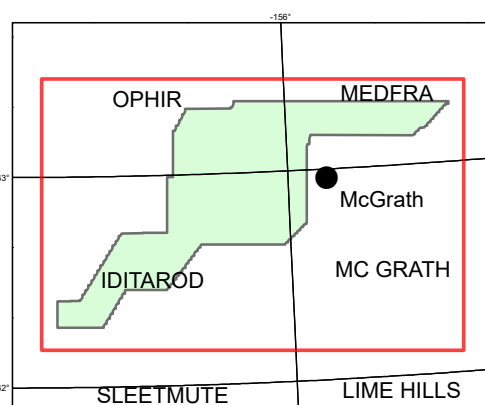


Residual Magnetic Intensity
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by
Fusso, L.A., Petersen, E.I., Emond, A. and EON Geosciences, Inc.¹
2026



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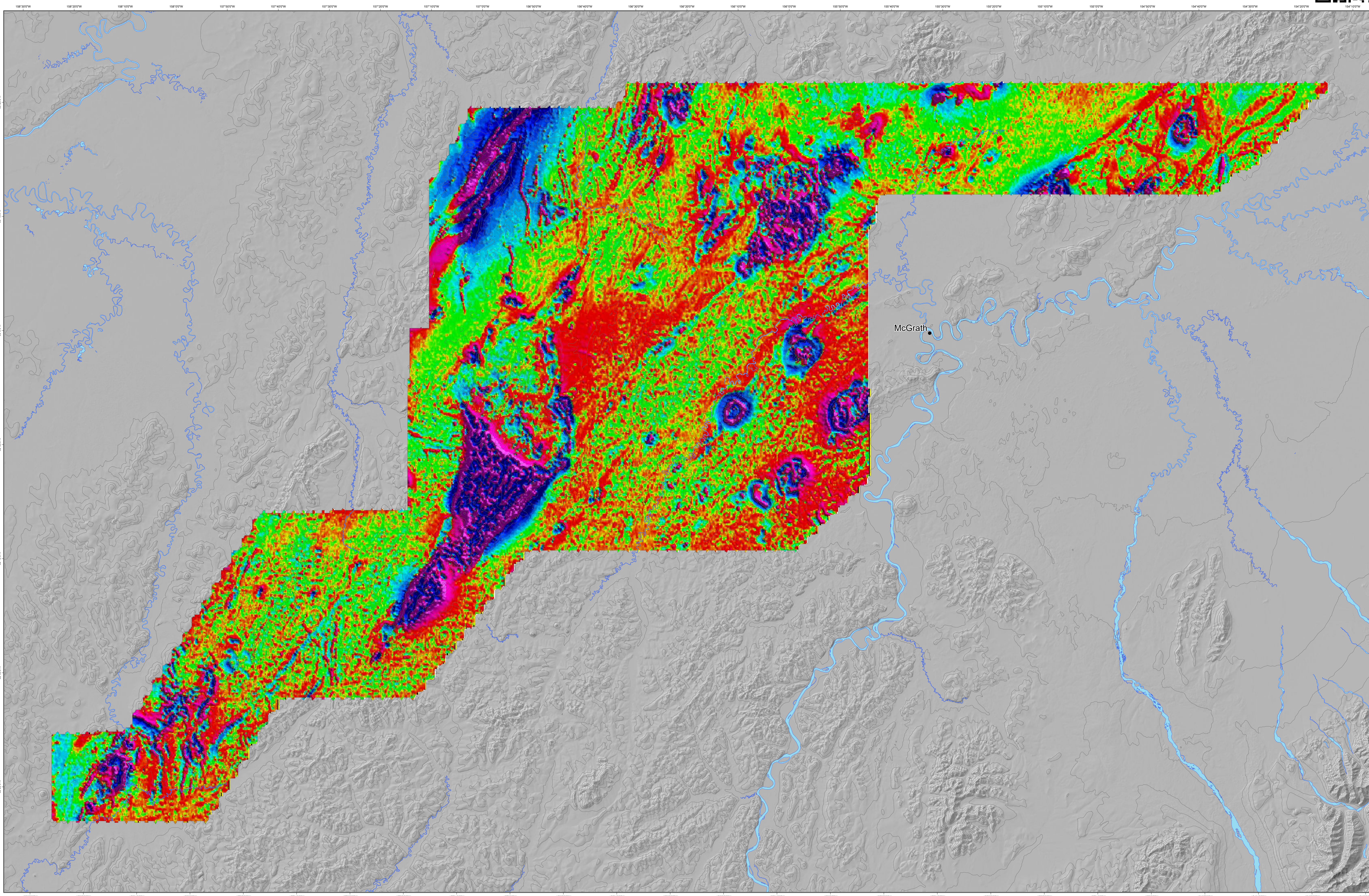
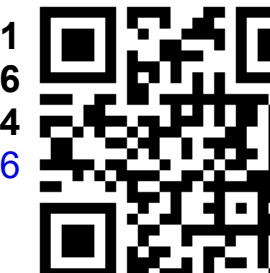
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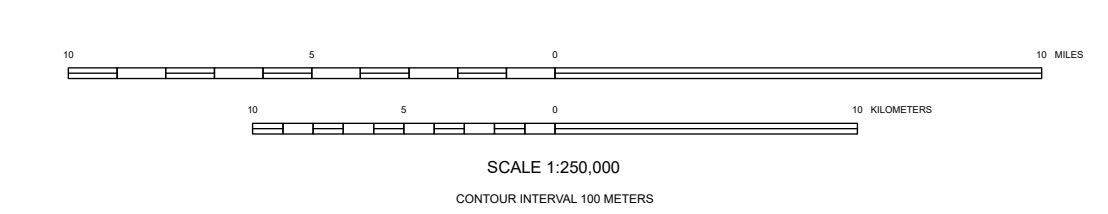
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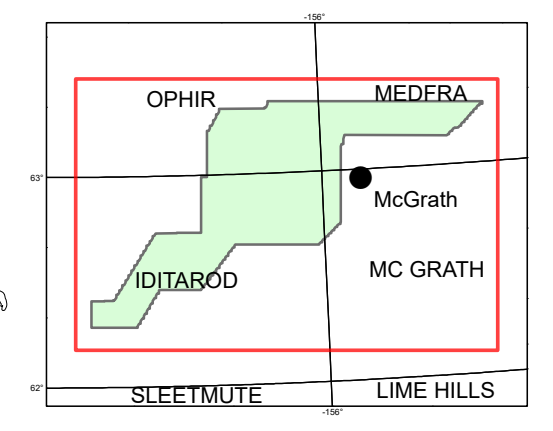
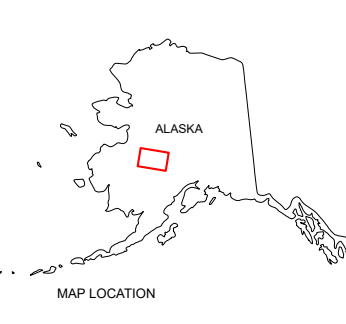
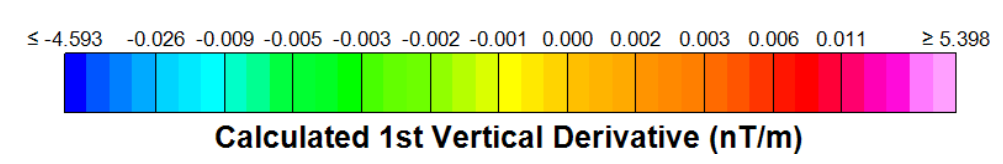


Calculated 1st Vertical Derivative
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by
Fusso, L.A., Petersen, E.J., Emond, A. and EON Geosciences, Inc.¹
2026



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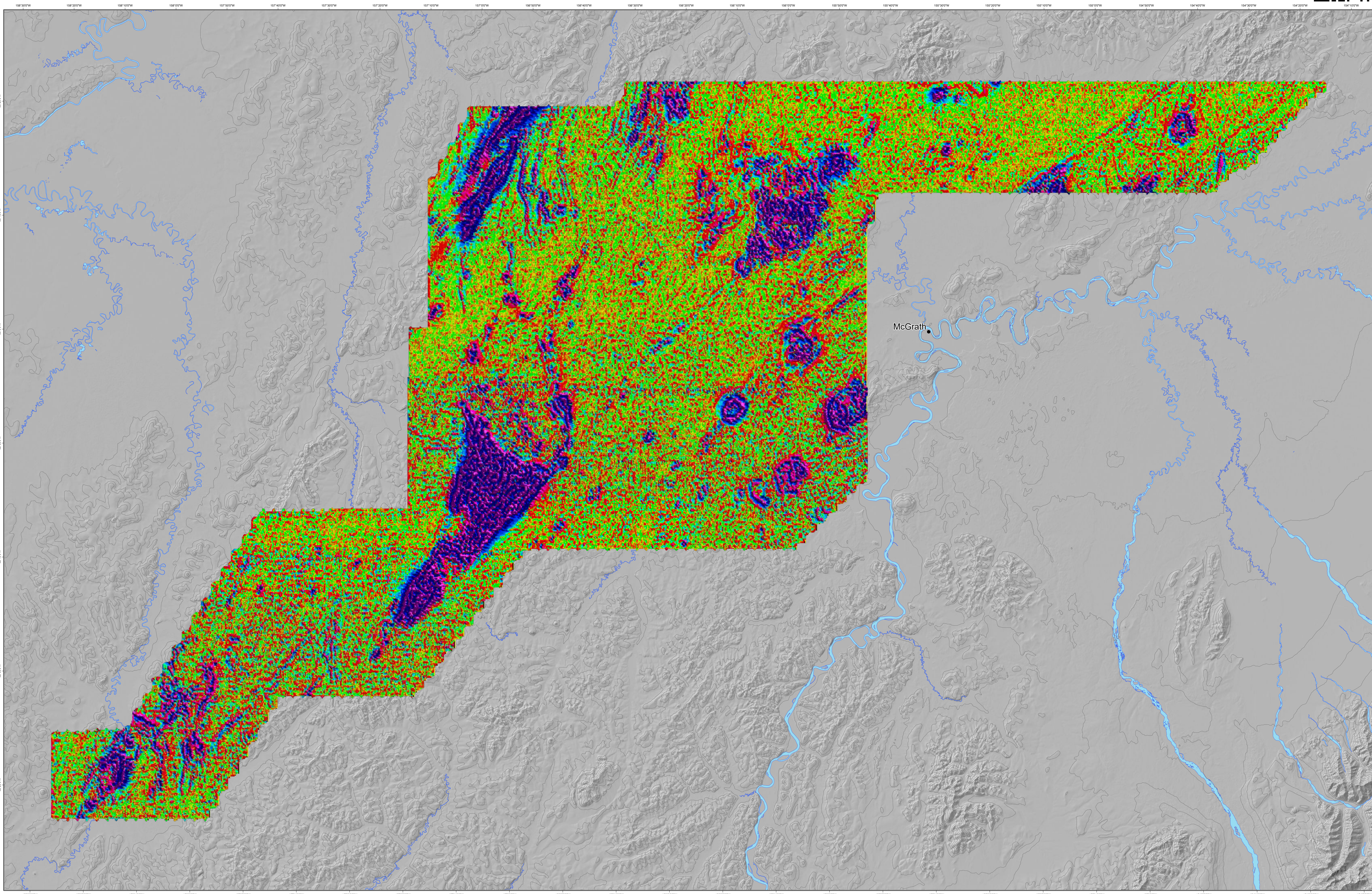
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Projection:
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Datum:
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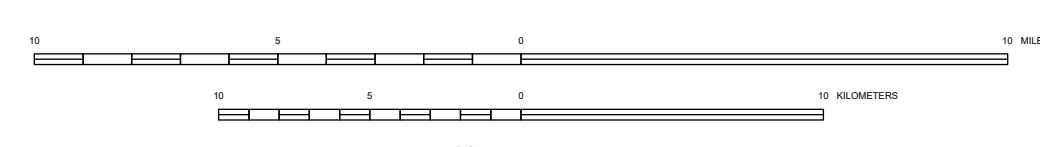
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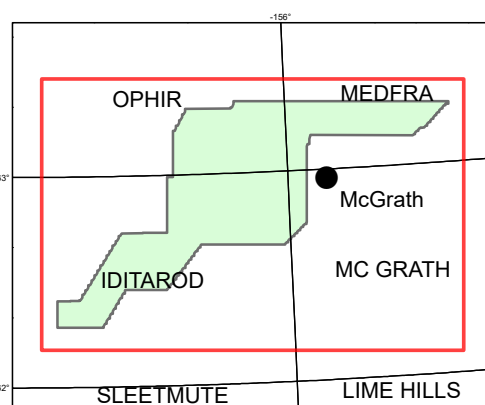
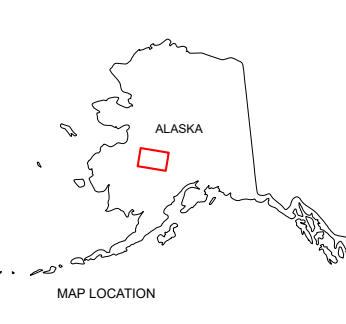
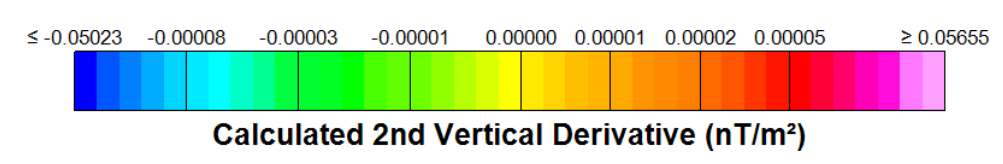
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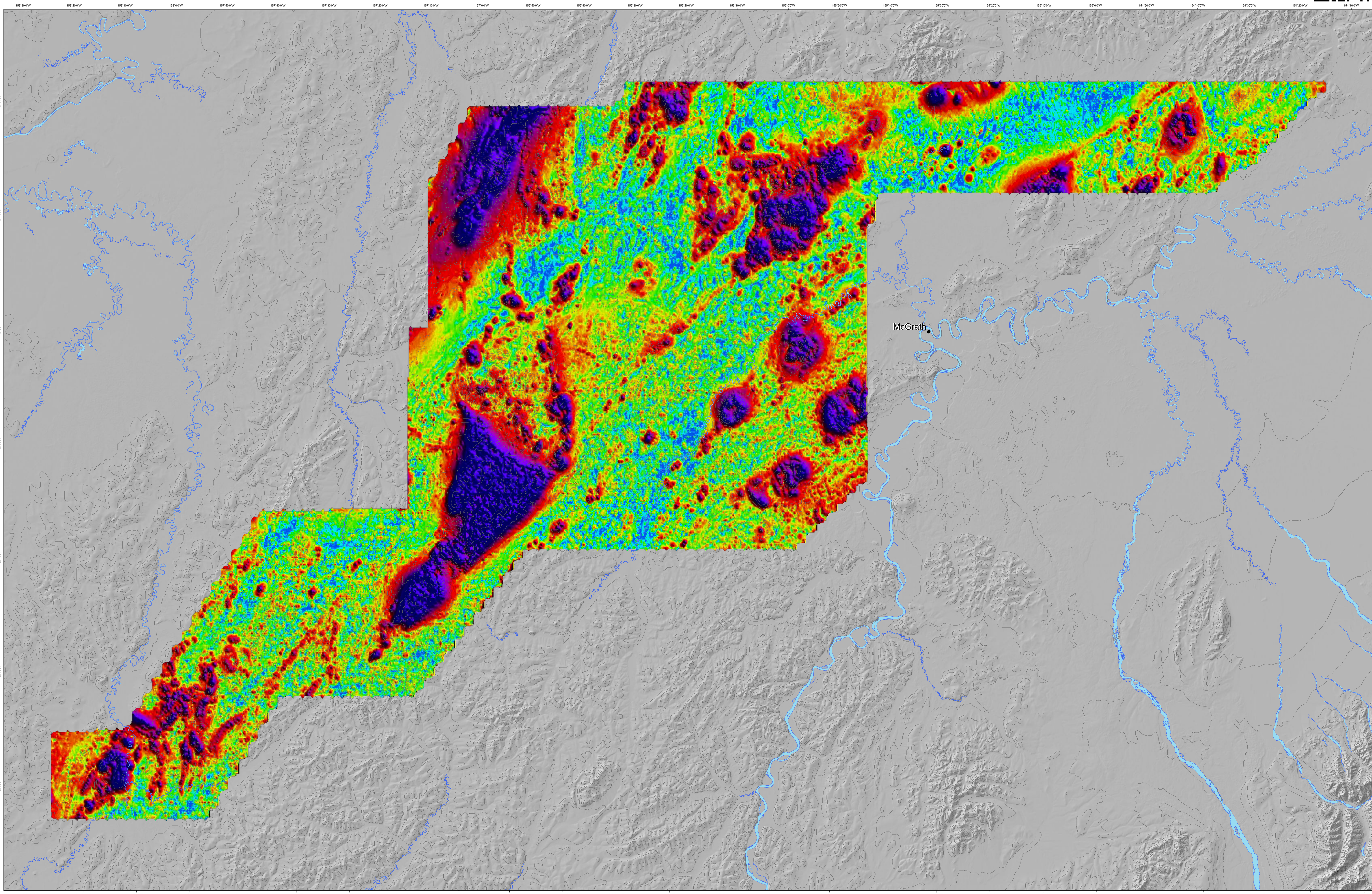
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Basemap contours from:
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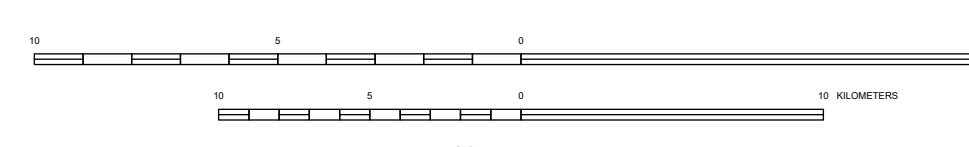
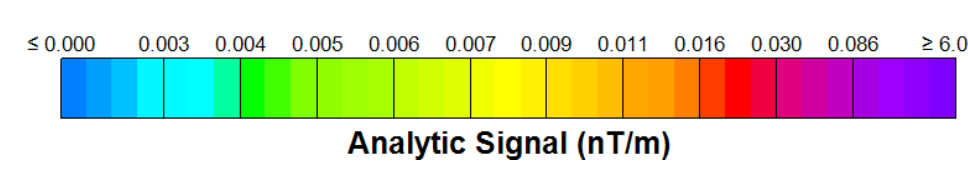
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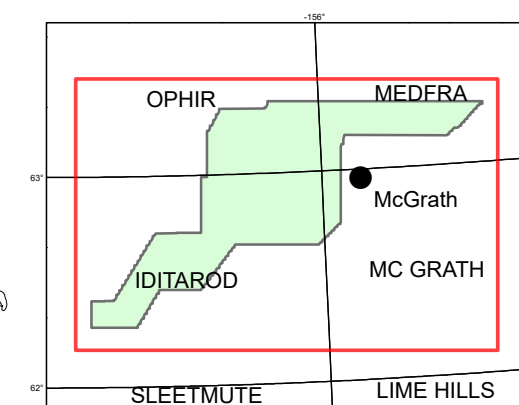
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Analytic Signal
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen, E.J., Emond, A.¹ and EON Geosciences, Inc.²
2026



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² EON Geosciences Inc., 4018 South 20th Street, Fort Lauderdale, FL 33309, USA
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Basemap streams and waterbodies from:
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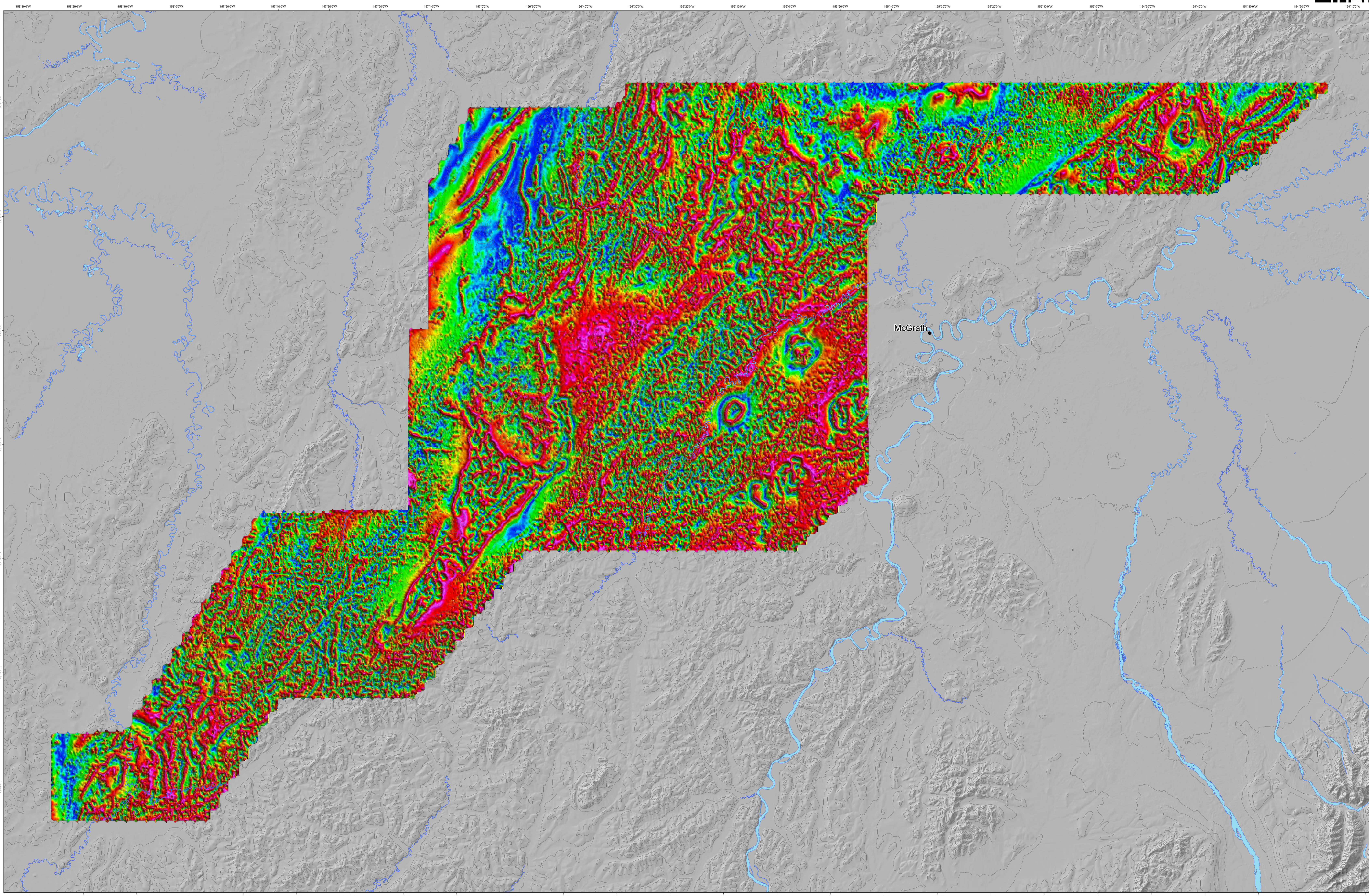
Basemap hillshade from:
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Basemap contours from:
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Projection:
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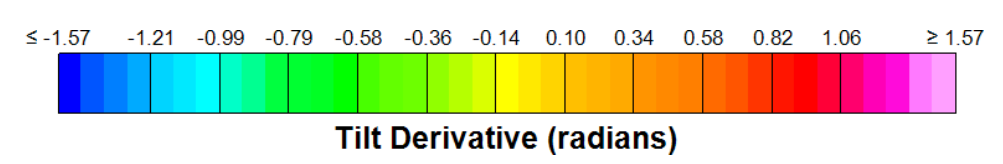
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Tilt Derivative
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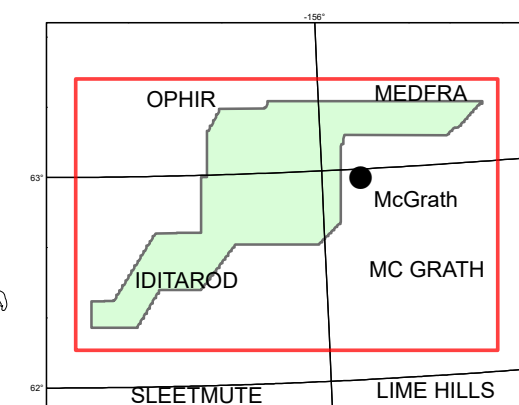
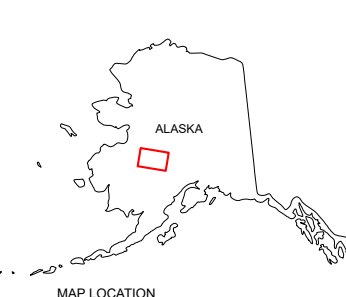
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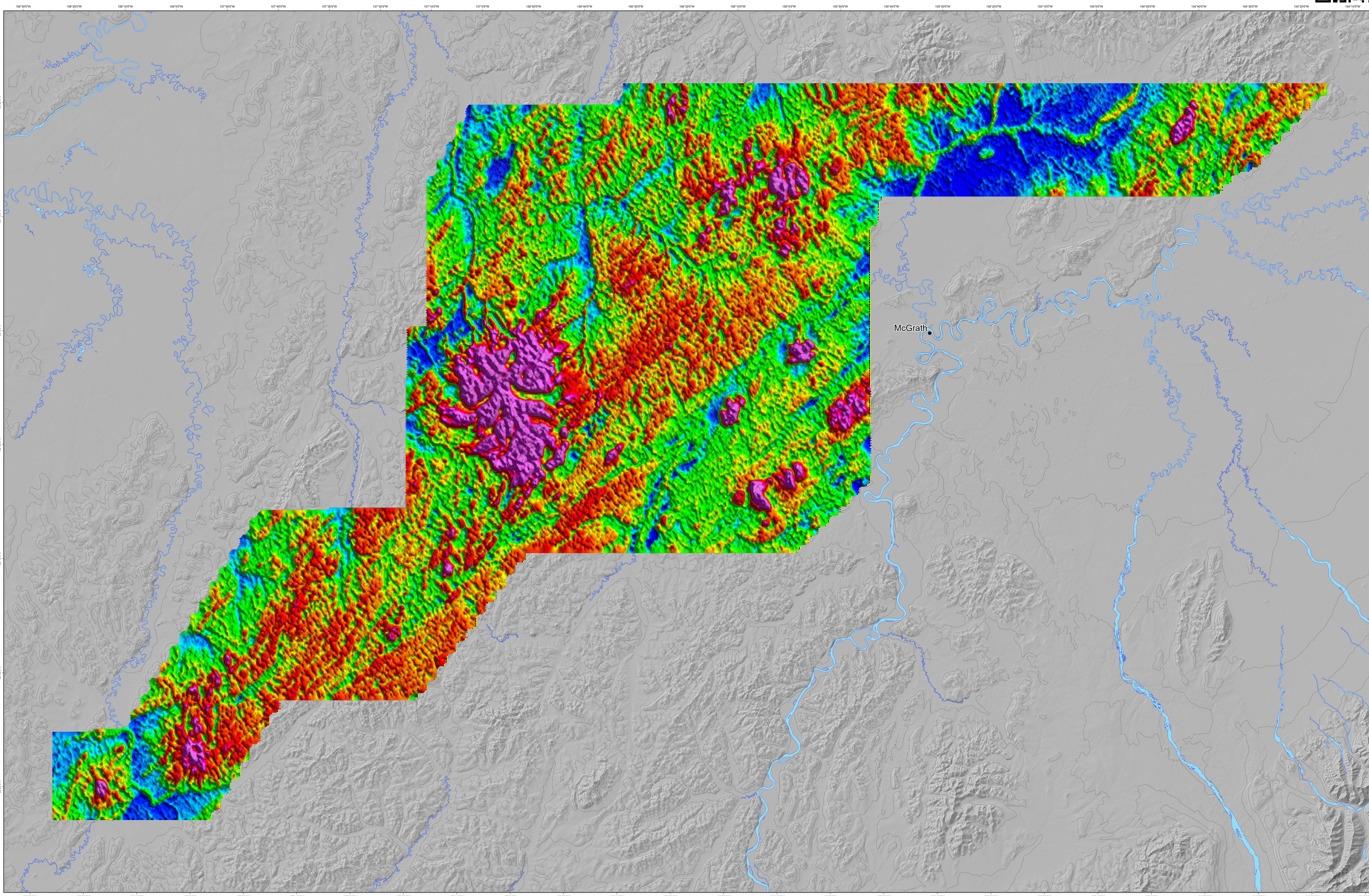
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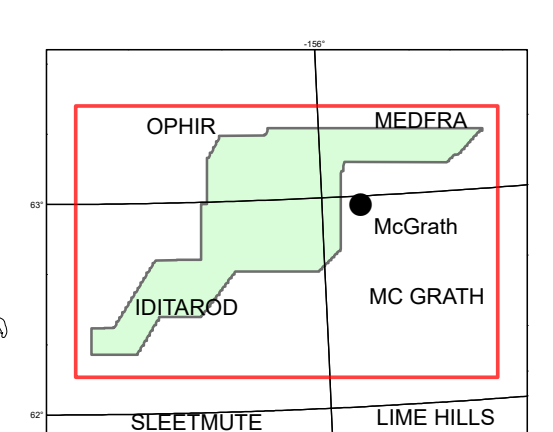
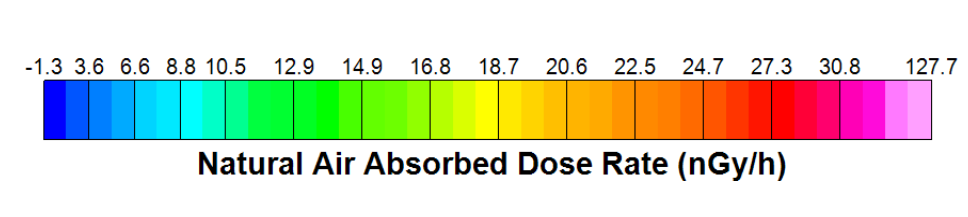
Natural Air Absorbed Dose Rate
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen E.J., Emond, A. and EON Geosciences, Inc.¹
2026

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² Agas Geo Frameworks, 10441 Ridge Road, Fort Laramie, Wyoming 82126
EON Geosciences Inc., 4018 South 20th Street, St. Laurent, QC, Canada H4R 1V4

SCALE 1:250,000
CONTOUR INTERVAL 100 METERS

12" = 1 MILE
VERTICAL SCALE 1:250,000



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National Hydrography Dataset, U.S. Geological Survey, Reston, Virginia, 2002-2016

Basemap hillshade from:
ESRI Basemaps - ESRI, USGS

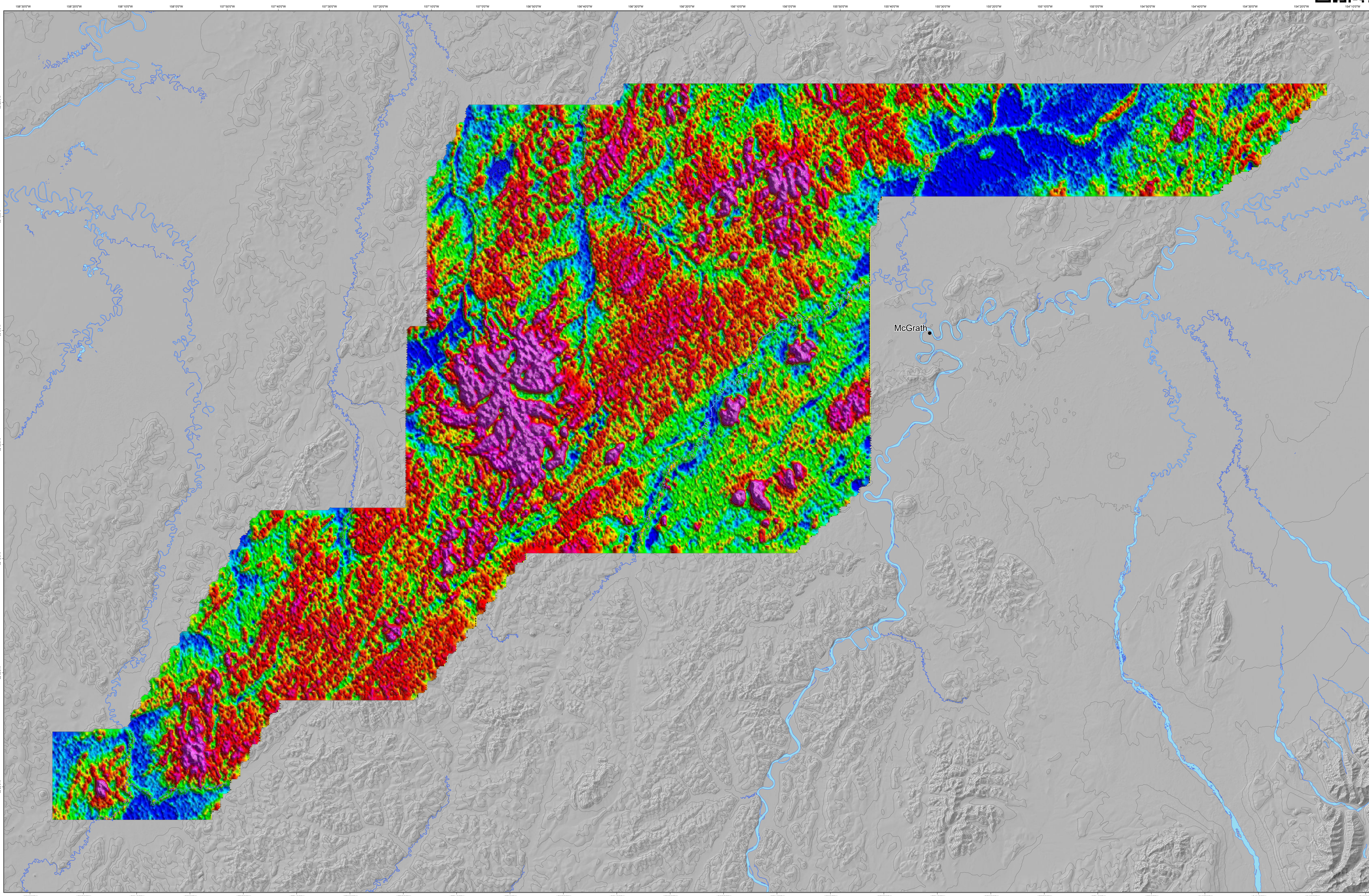
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Projection:
Universal Transverse Mercator Zone 4N

Datum:
WGS 1984

Cartography by:
E.I. Petersen and A.E. Macpherson (2025)

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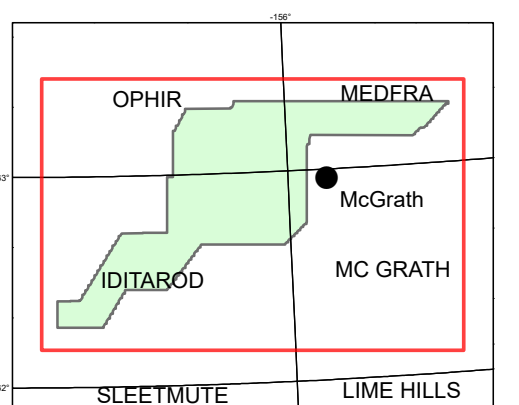
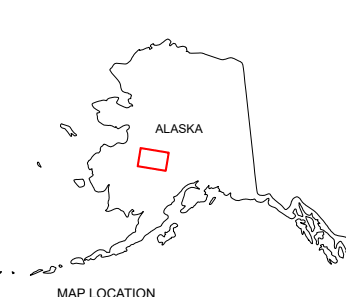
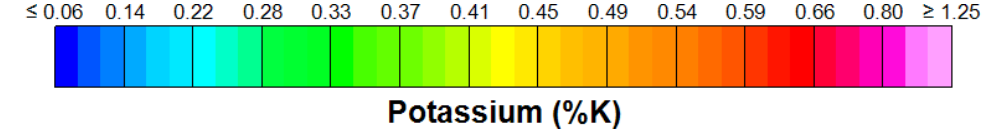


Potassium
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen, E.J., Emond, A., and EON Geosciences, Inc.
2026

SCALE 1:250,000
CONTOUR INTERVAL 100 METERS

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Basemap hillshade from:
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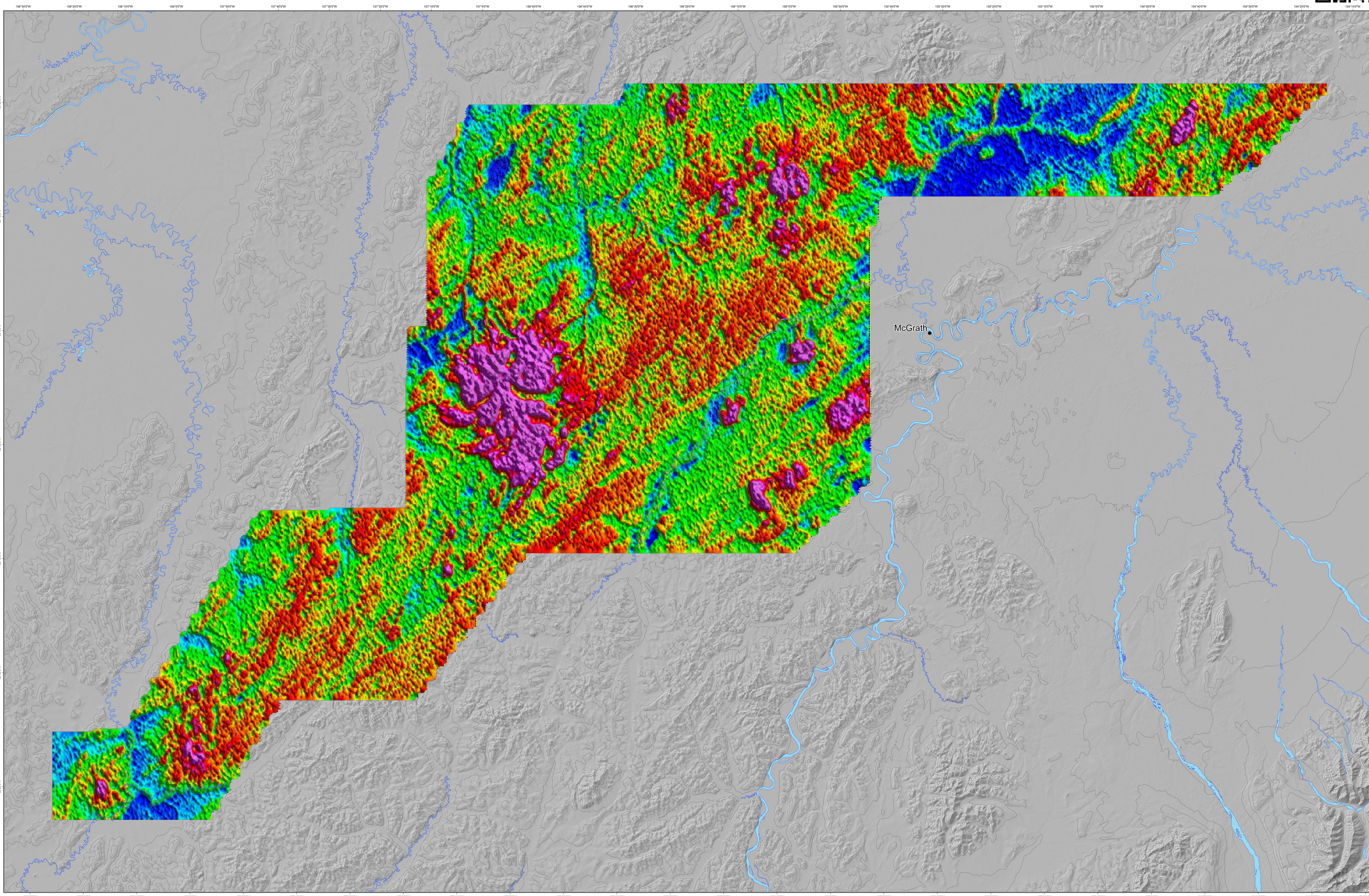
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Projection:
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Datum:
WGS 1984

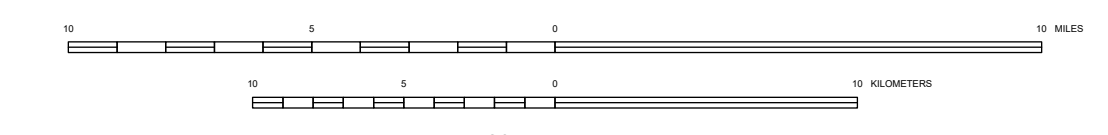
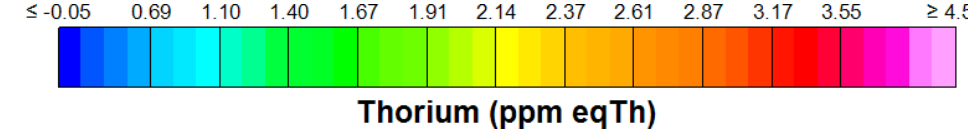
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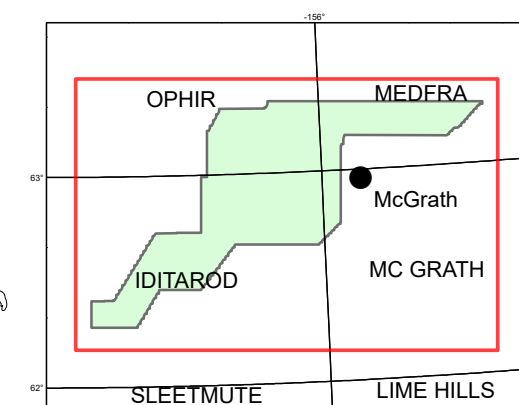
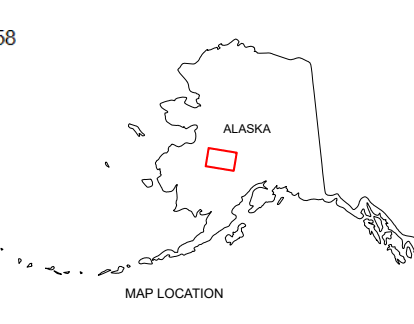


Thorium
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen E.J., Emond, A.¹ and EON Geosciences, Inc.²
2026



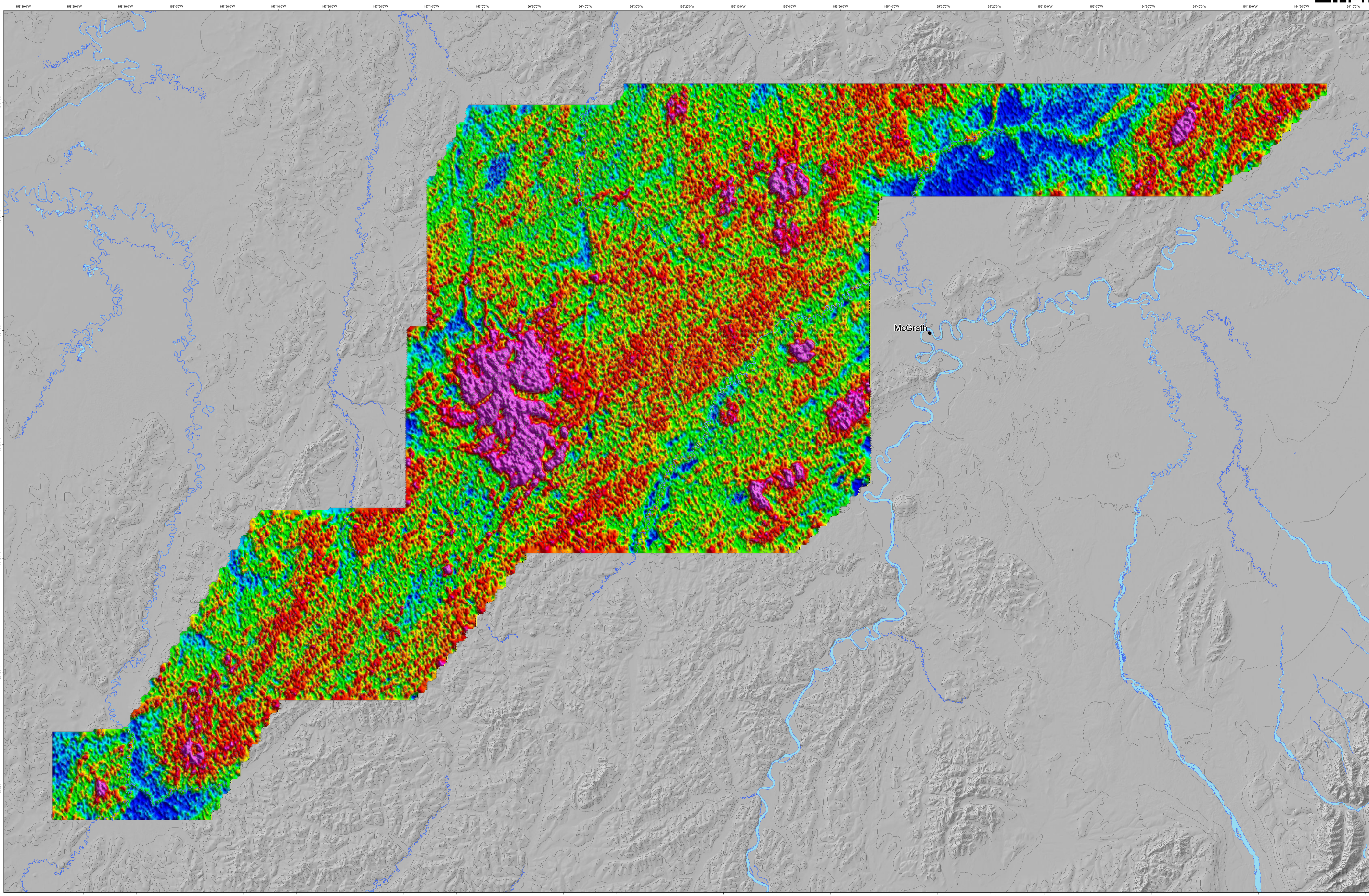
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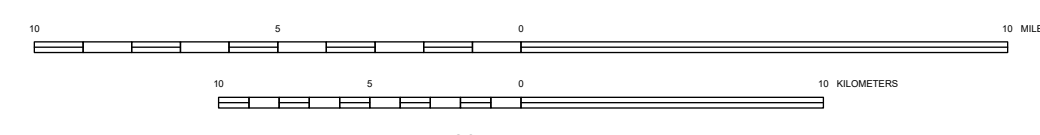
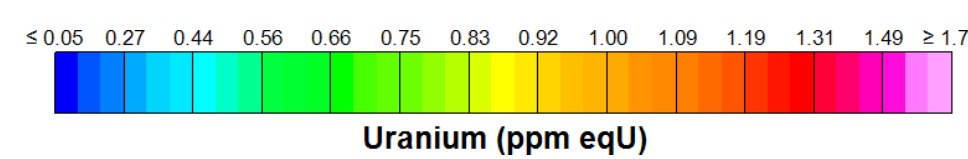
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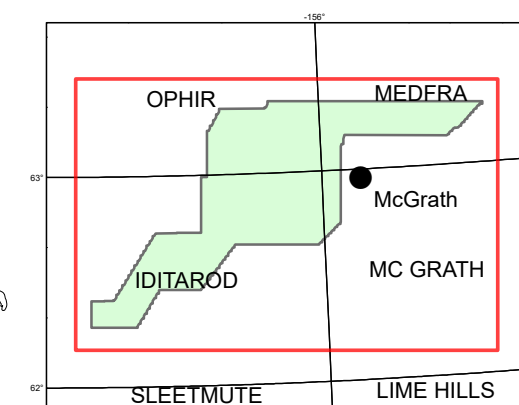


Uranium
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen E.J., Emond, A. and EON Geosciences, Inc.
2026



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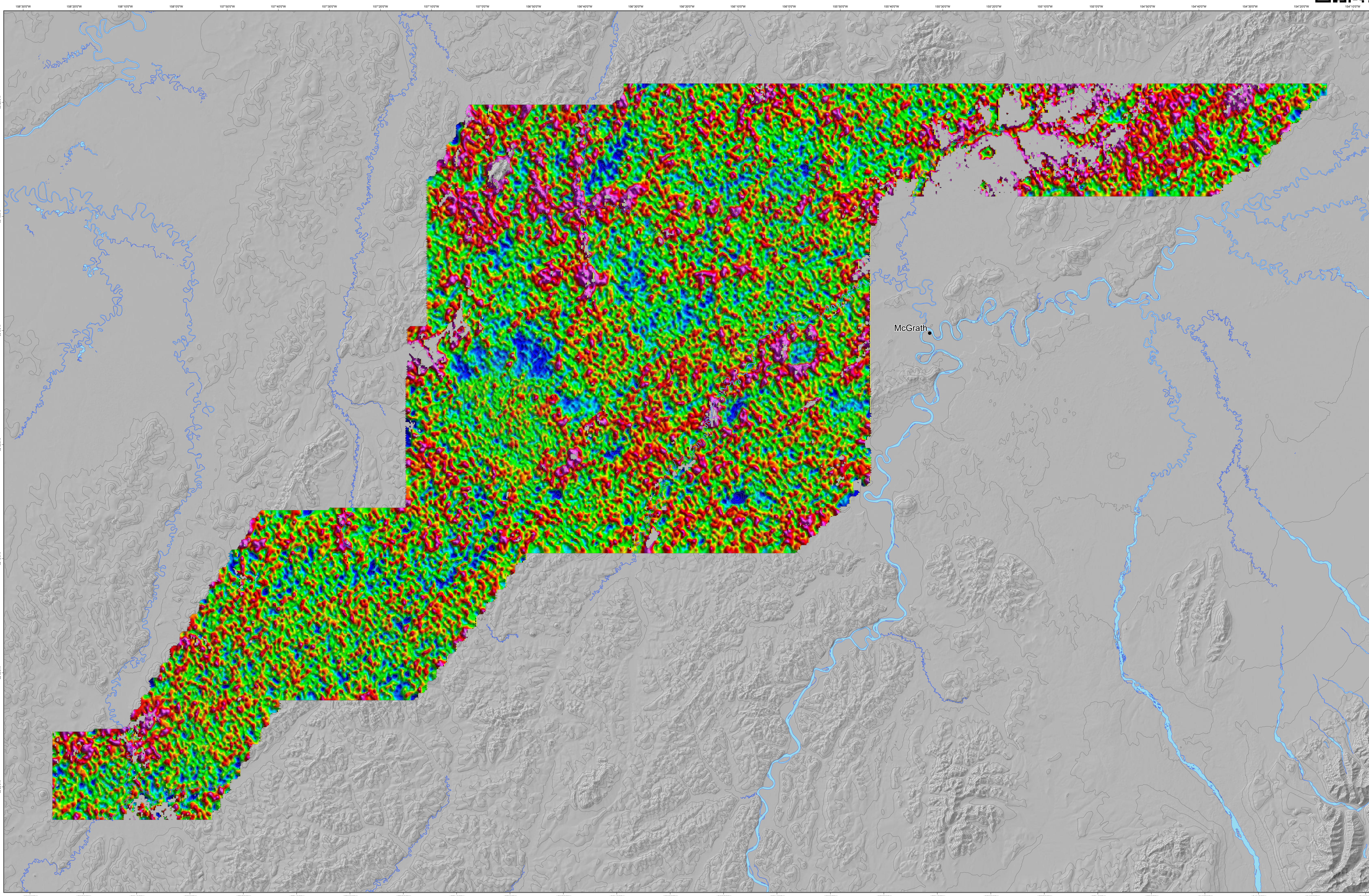
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Projection:
Universal Transverse Mercator Zone 4N

Datum:
WGS 1984

Cartography by:
E.I. Petersen and A.E. Macpherson (2025)

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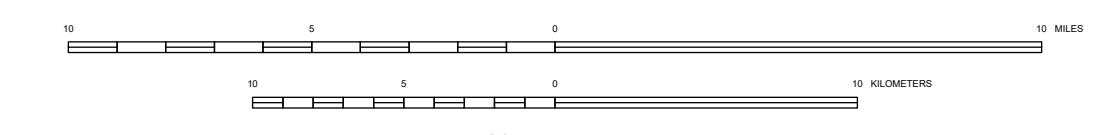
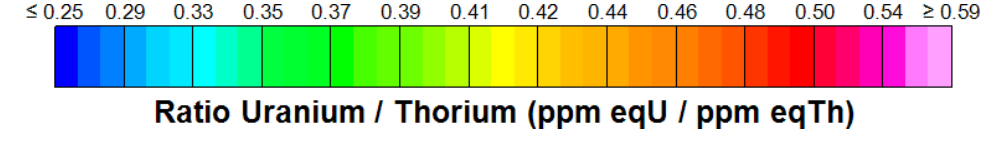
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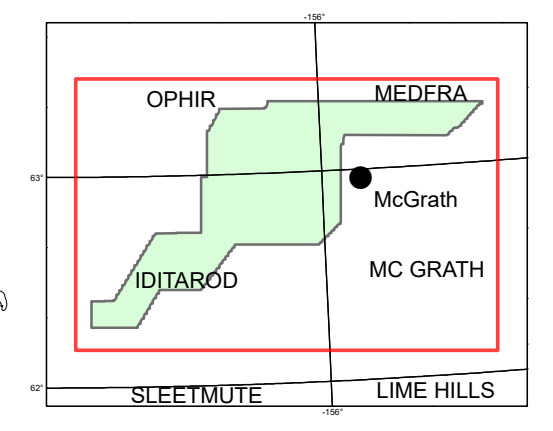
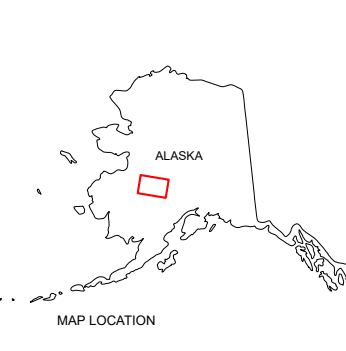


Ratio Uranium / Thorium
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen E.J., Emond, A.¹ and EON Geosciences, Inc.²
2026



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³ EON Geosciences Inc., 4018 South 20th Street, Fort Lauderdale, FL 33309



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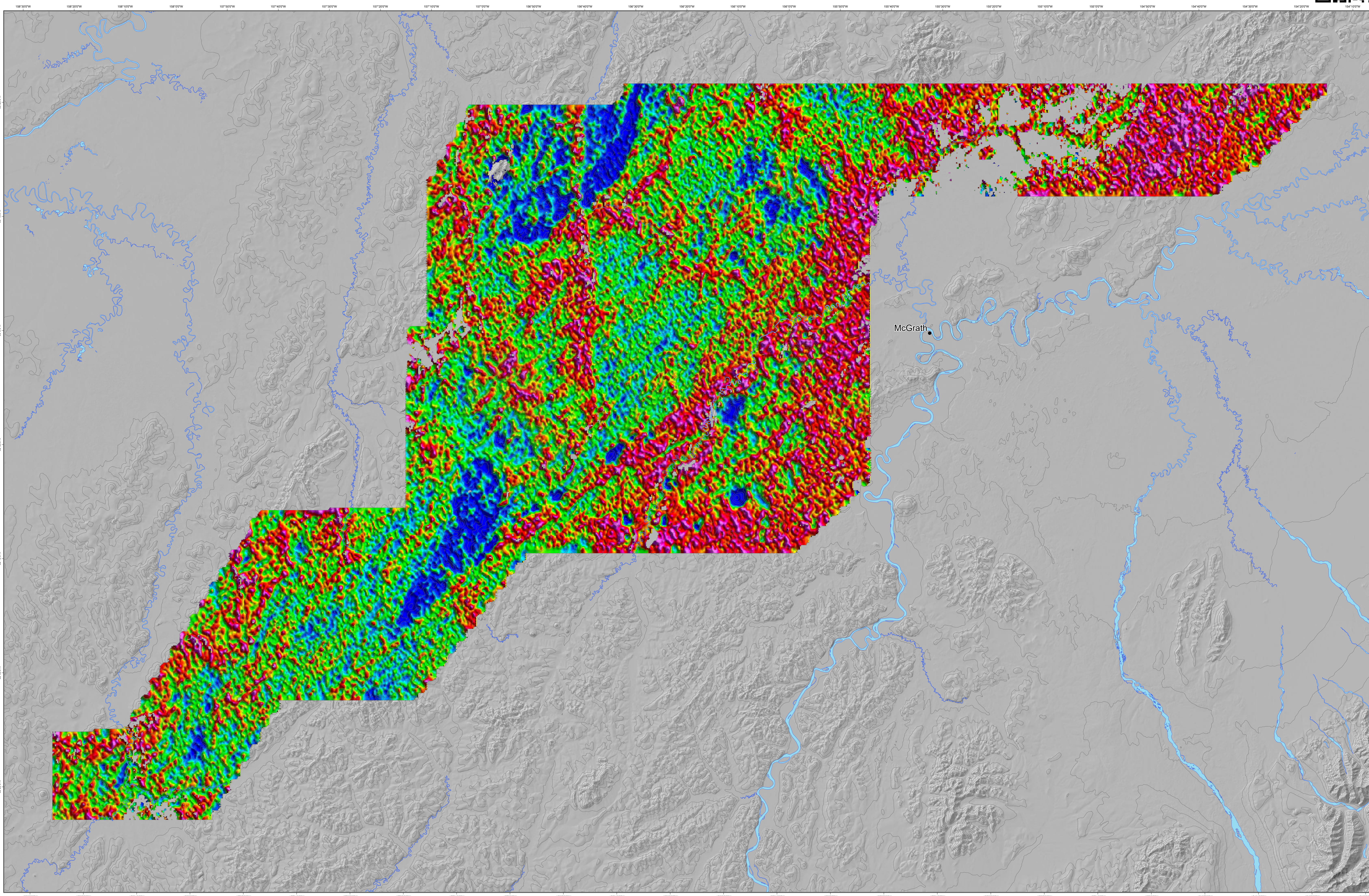
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Projection:
Universal Transverse Mercator Zone 4N

Datum:
WGS 1984

Cartography by:
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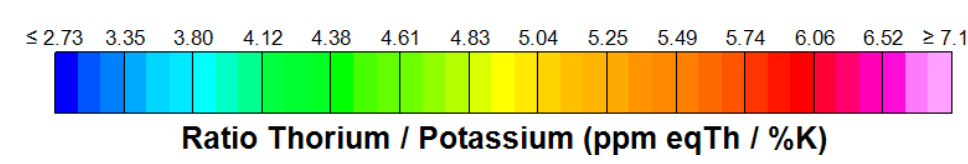
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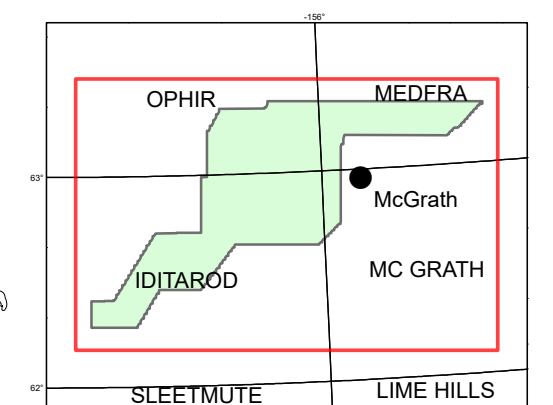


Ratio Thorium / Potassium
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
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2026



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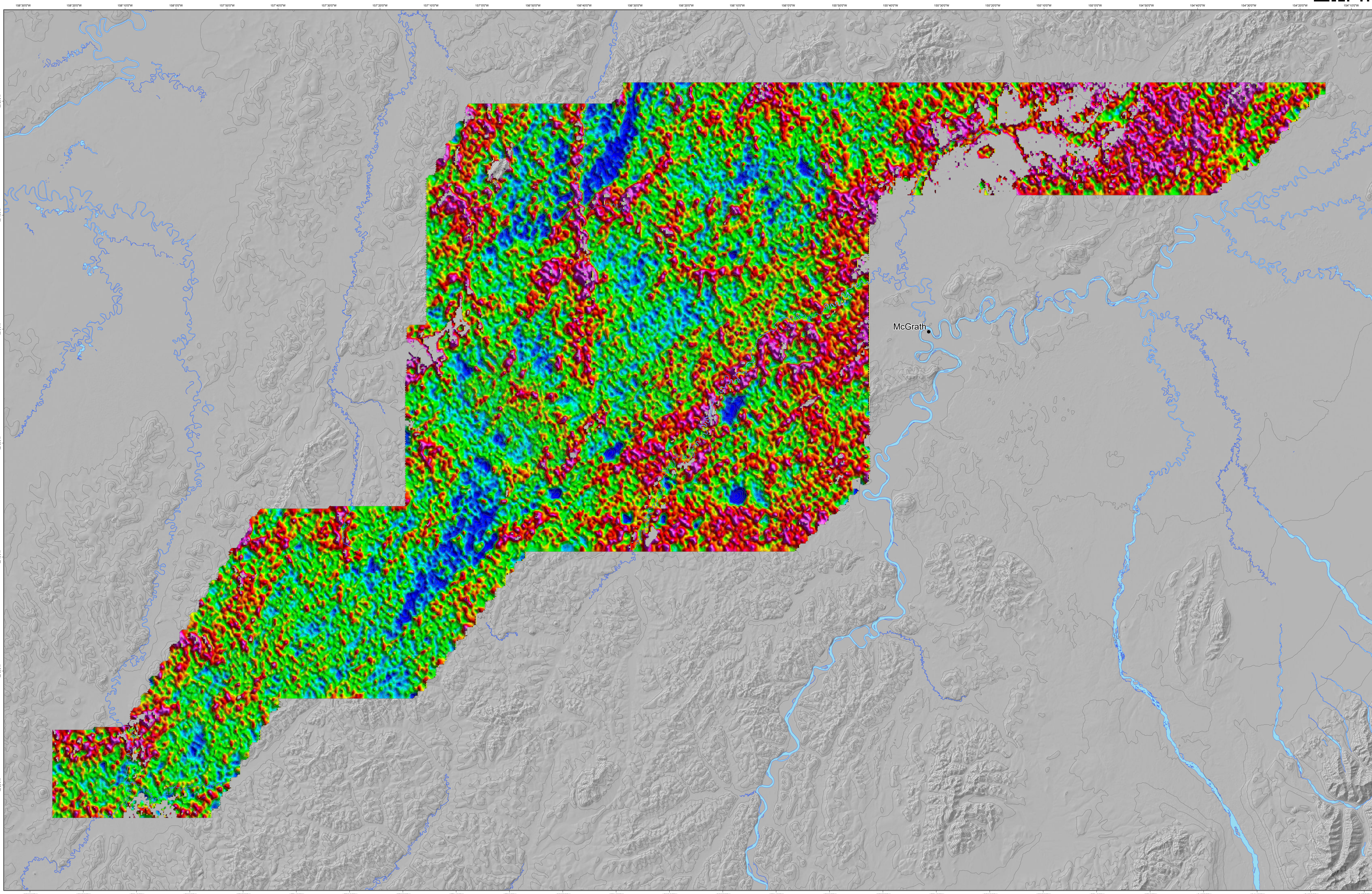
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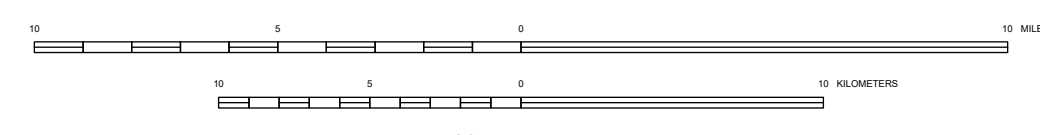
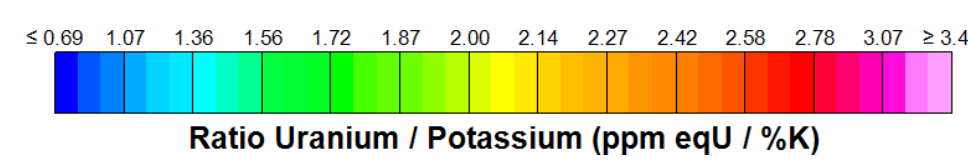
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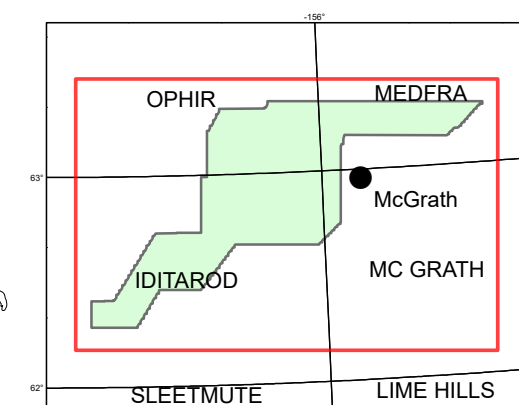


Ratio Uranium / Potassium
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

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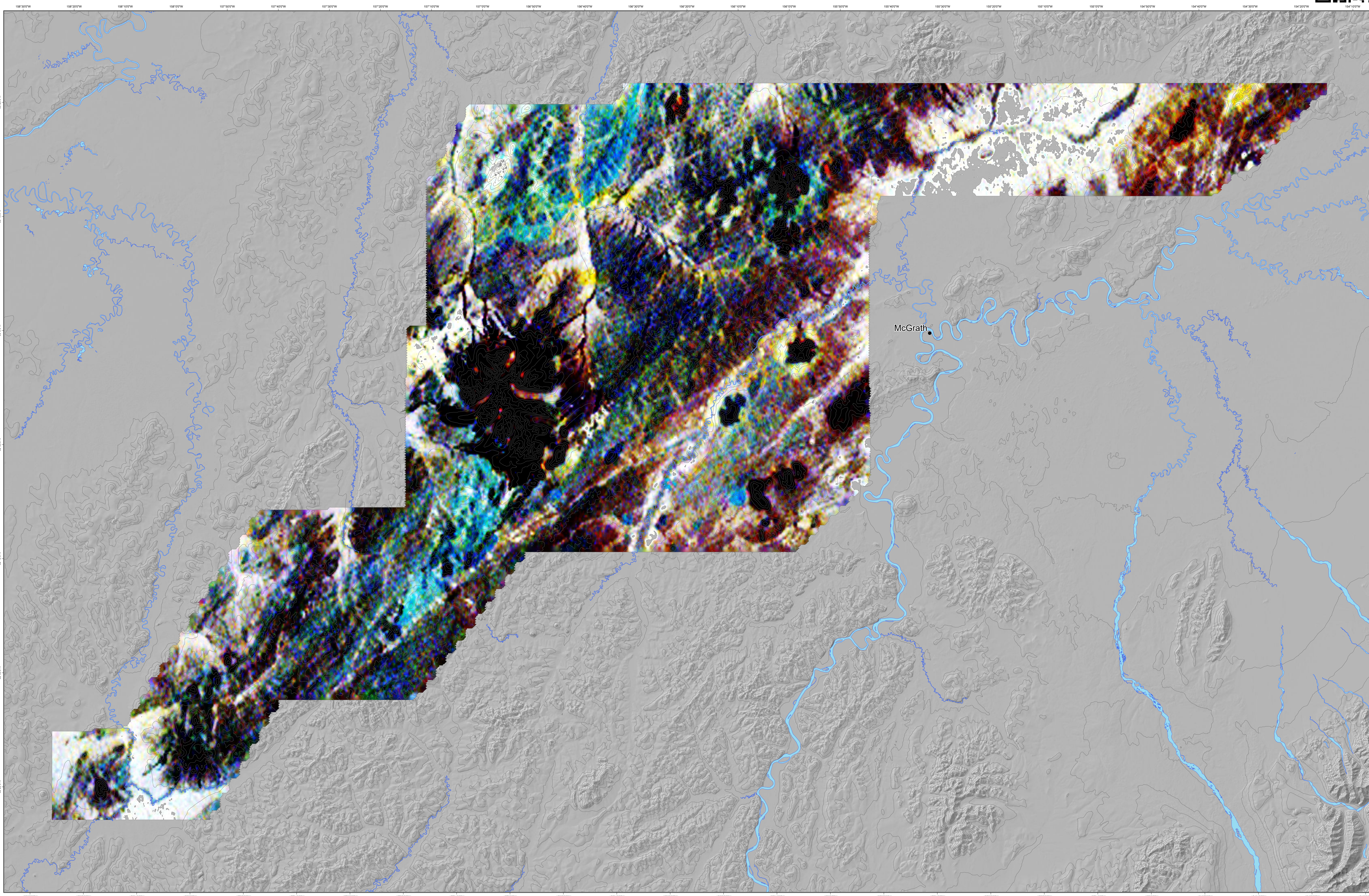
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Projection:
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Datum:
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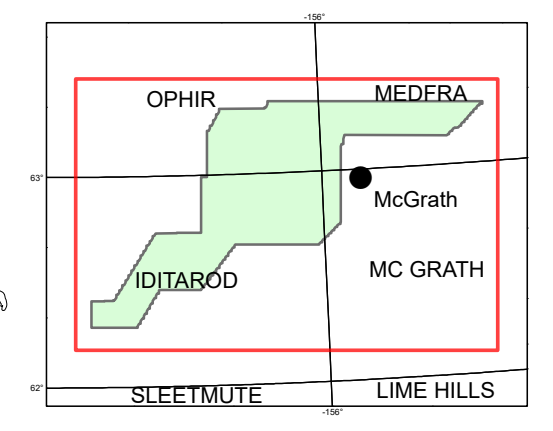
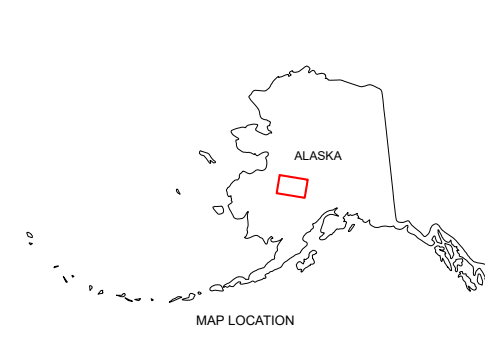
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Radiometric Ternary Map
Kuskokwim airborne magnetic and radiometric survey, Ganes Creek, Alaska

by
Fusso, L.A., Petersen E.J., Emond, A.¹ and EON Geosciences, Inc.²
2026

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high combined %K eqTh eqU
low combined %K eqTh eqU



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