Petersville Electromagnetic and Magnetic Airborne Geophysical Survey data Compilation

State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys, and
Fugro Airborne Surveys Corp., and Stevens Exploration Manangement Corp.

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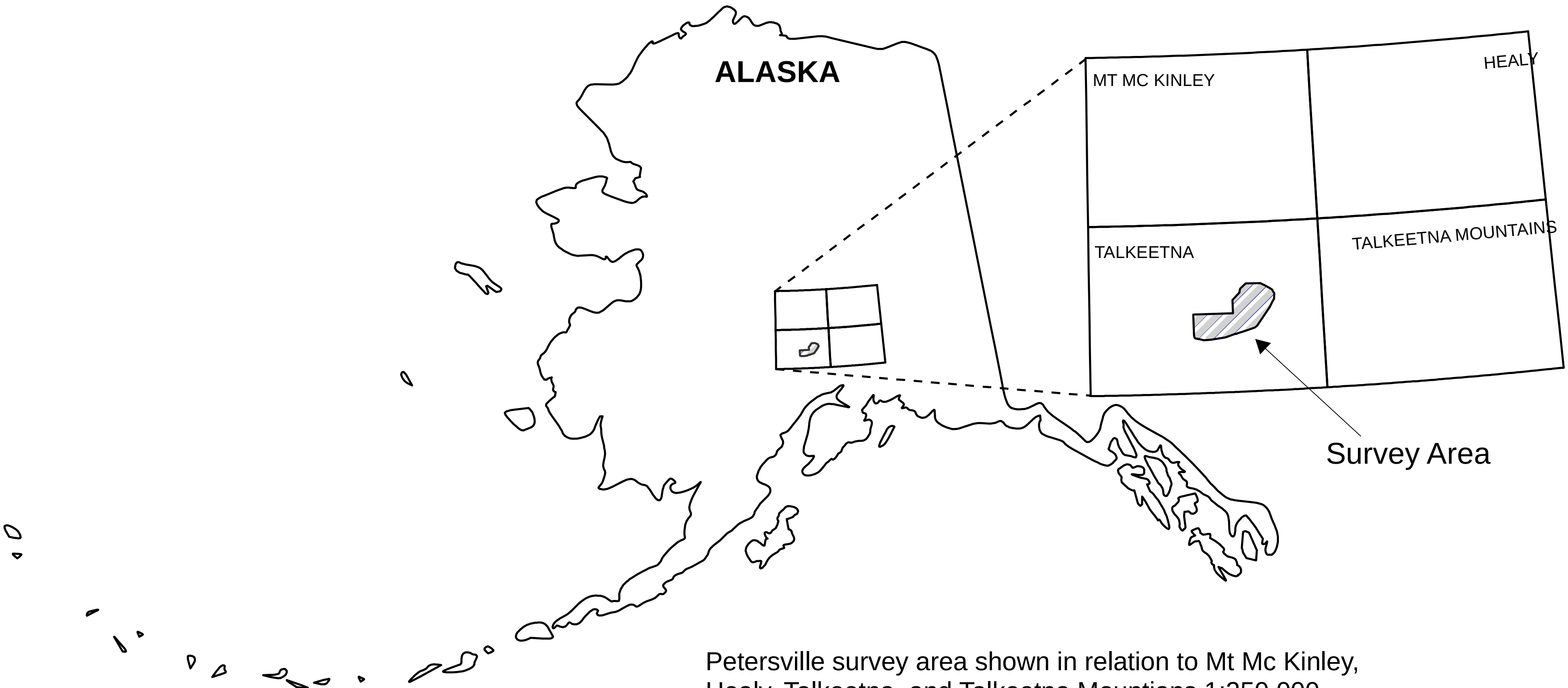
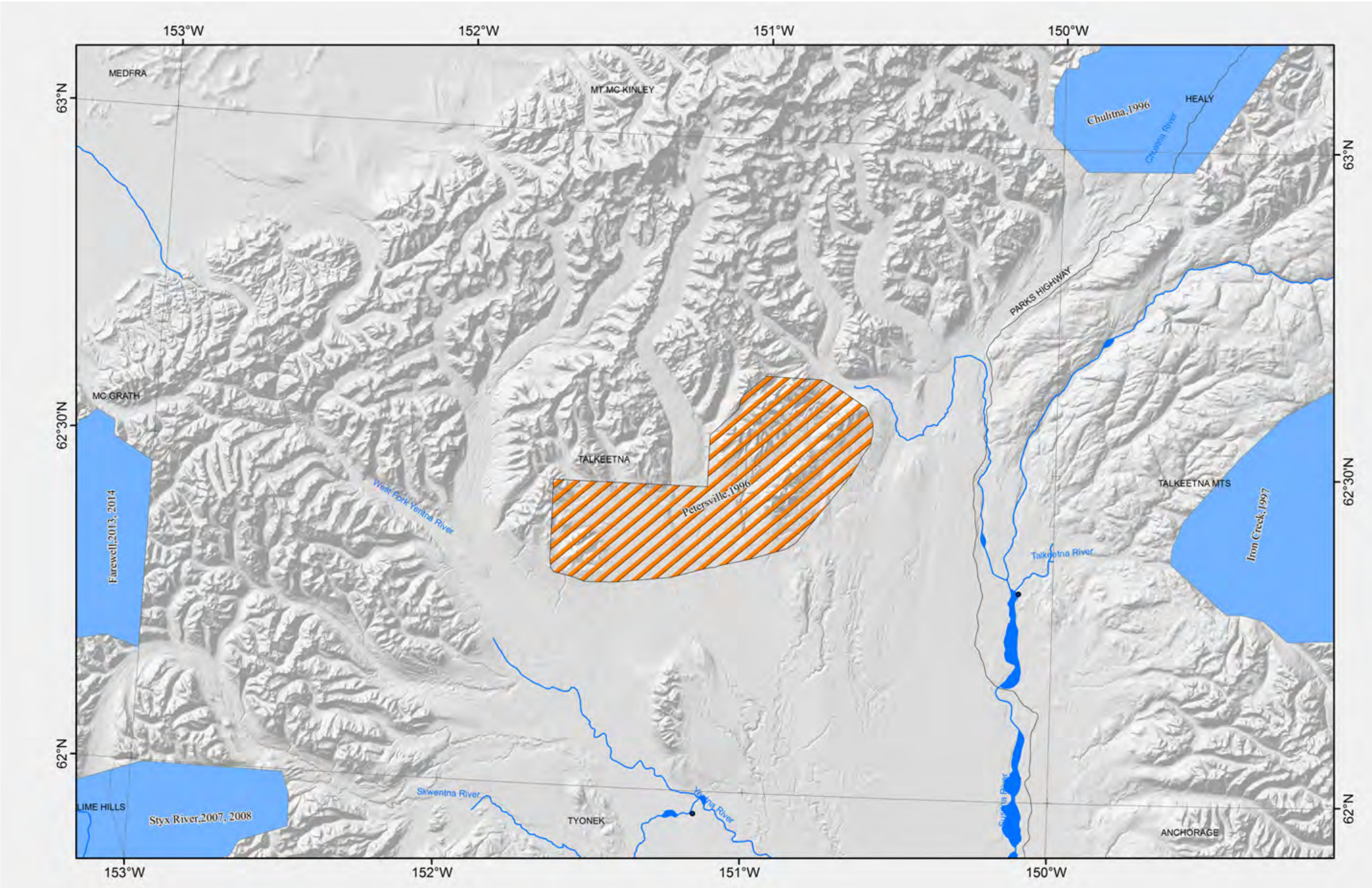
Survey Overview



Petersville survey area shown in relation to Mt Mc Kinley, Healy, Talkeetna, and Talkeetna Mountians 1:250,000 scale quadrangles.

Petersville survey location map, showing the survey area (hatched), prior surveys (blue areas), highways, towns, rivers and relevant quadrangle boundaries.



Flight Lines and Topography

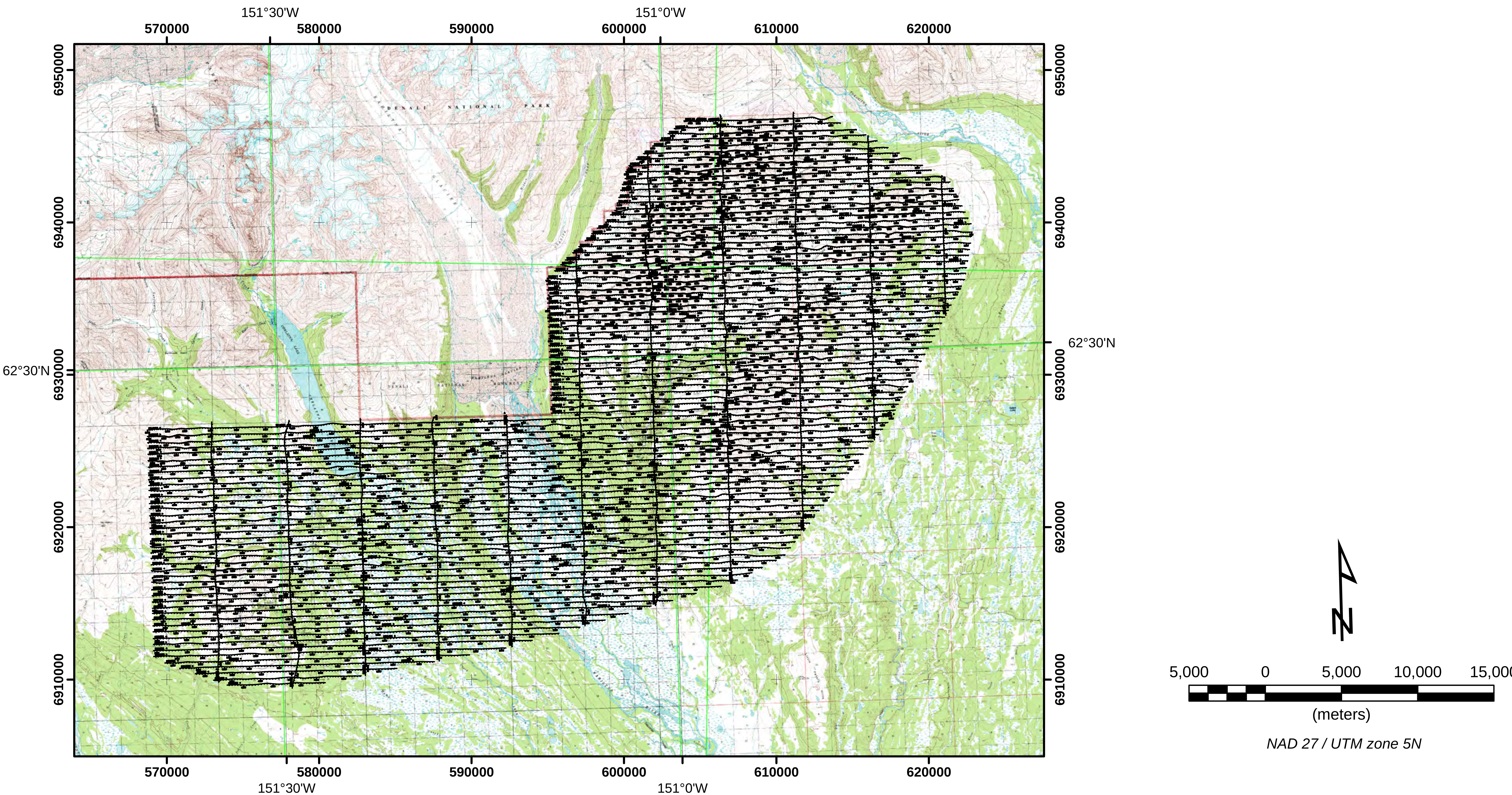
Data Types: Frequency Domain Electromagnetic and Magnetic

System: DIGHEMV

Nominal Frequencies: coaxial 900 and 5500 Hz; coplanar 900 Hz, 7200 Hz and 56000 Hz

Line spacing: 400 meters

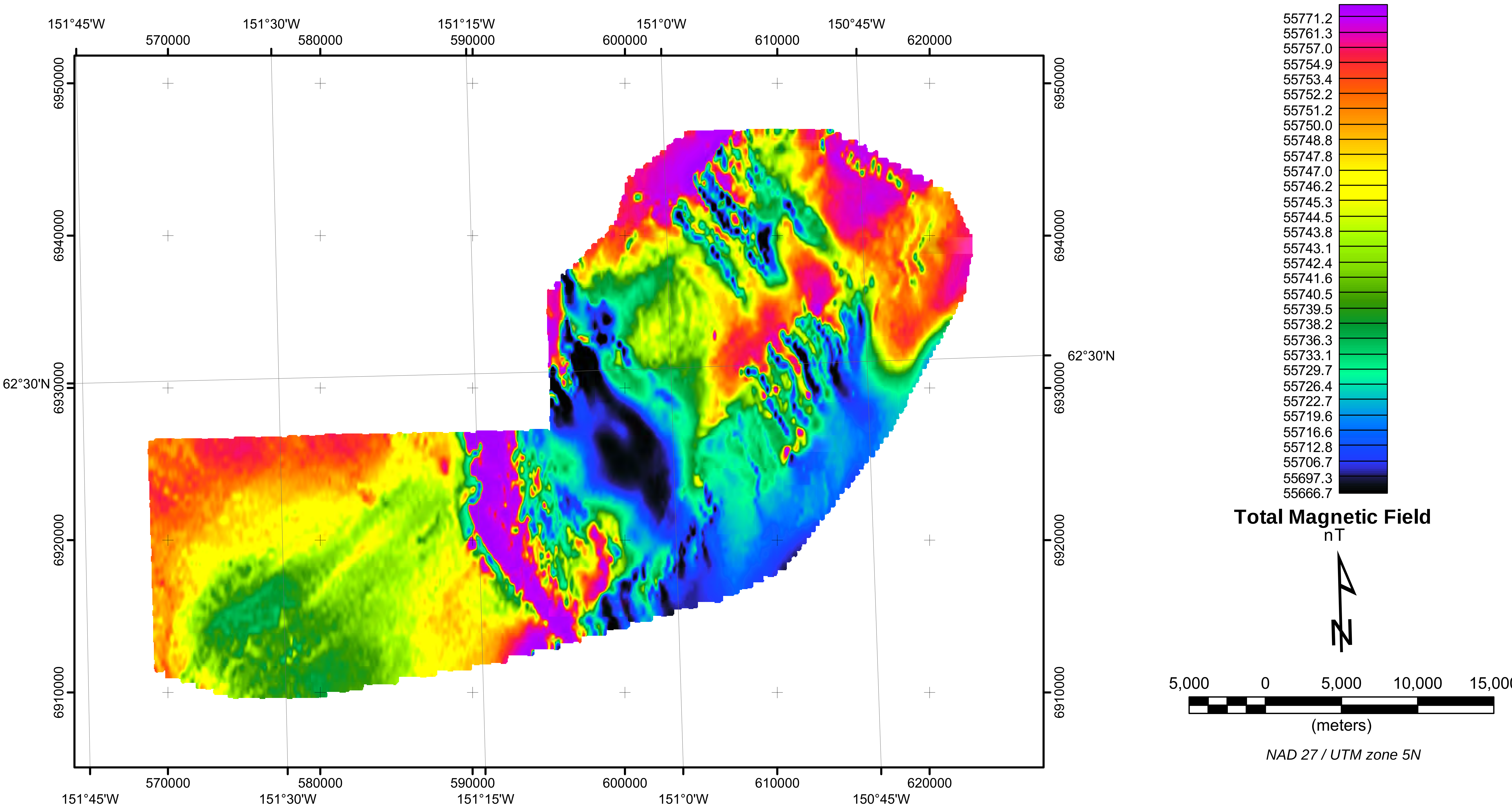
Nominal Sensor Terrain Clearance: 30 meters



Residual Magnetic Field

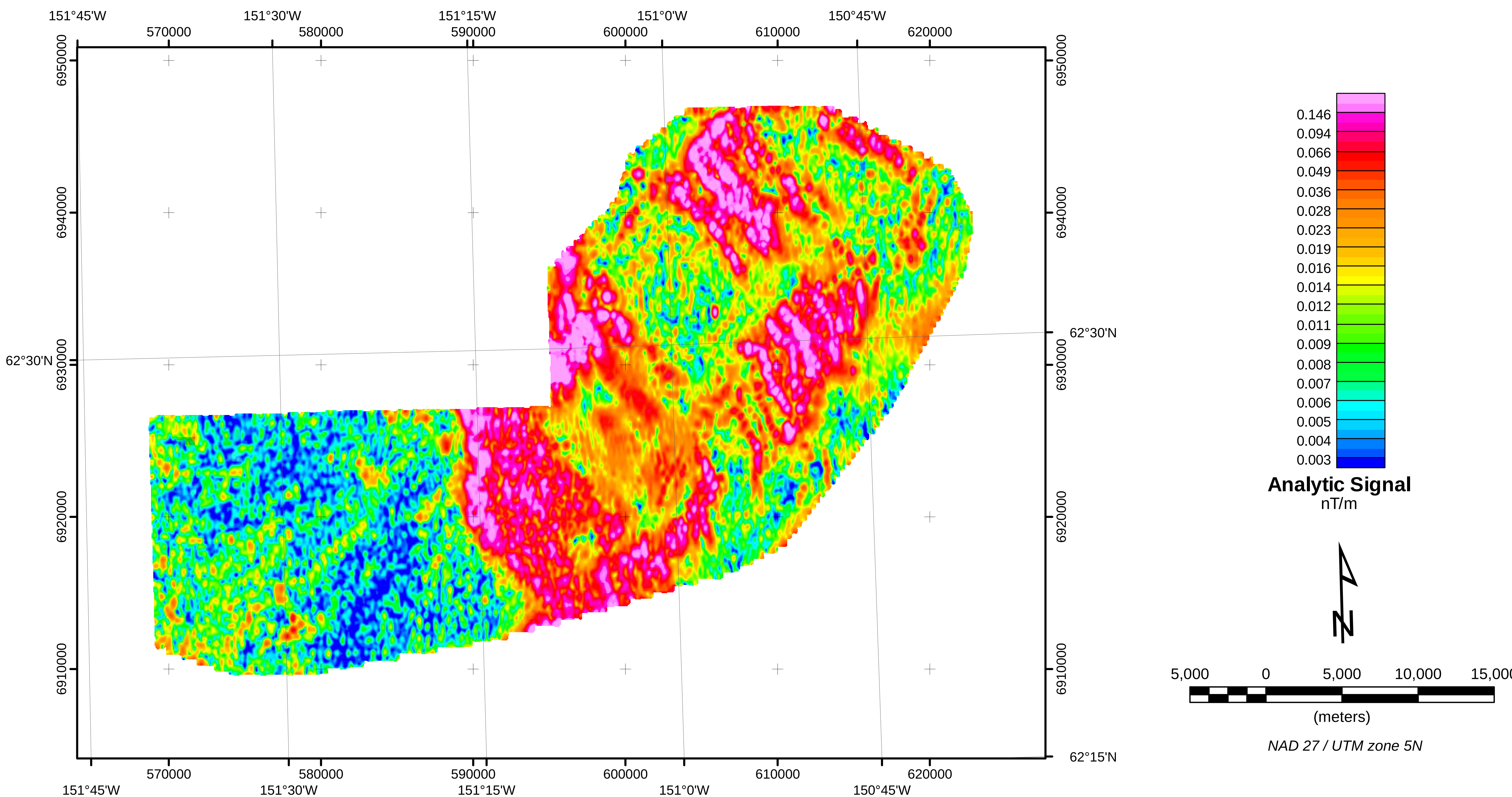
The magnetic total field data were processed using digitally recorded data from a Picodas 3340 magnetometer. Data were collected at a sampling interval of 0.1 seconds. The magnetic data were (1) corrected for diurnal variations by subtracting the recorded base station magnetic data, then (2) manual corrections were made on the basis of tie line intercepts and visual analysis on the I-POWER VISION Imaging Workstation. (3) The IGRF gradient was subtracted, and (4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique. All grids were then resampled from the 80 m cell size down to a 25 m cell size to produce the maps and final grids in this publication.

Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no. 4, p. 589–602.



Analytic Signal

Analytic signal is the total amplitude of all directions of magnetic gradient calculated from the sum of the squares of the three orthogonal gradients. Mapped highs in the calculated analytic signal of magnetic parameter locate the anomalous source body edges and corners (such as contacts, fault/shear zones, etc.). Analytic signal maxima are located directly over faults and contacts, regardless of structural dip, and independent of the direction of the induced and/or remnant magnetizations.



First Vertical Derivative of the Magnetic Field

The magnetic total field data were processed using digitally recorded data from a Picodas 3340 magnetometer. Data were collected at a sampling interval of 0.1 seconds. The magnetic data were corrected for diurnal variations by subtracting the recorded base station magnetic data, then (2) manual corrections were made on the basis of tie line intercepts and visual analysis on the I-POWER VISION Imaging Workstation. (3) The IGRF gradient was subtracted, and (4) interpolated onto a regular 80 m grid using a modified Akima (1970) technique. All grids were then resampled from the 80 m cell size down to a 25 m cell size to produce the maps and final grids in this publication.

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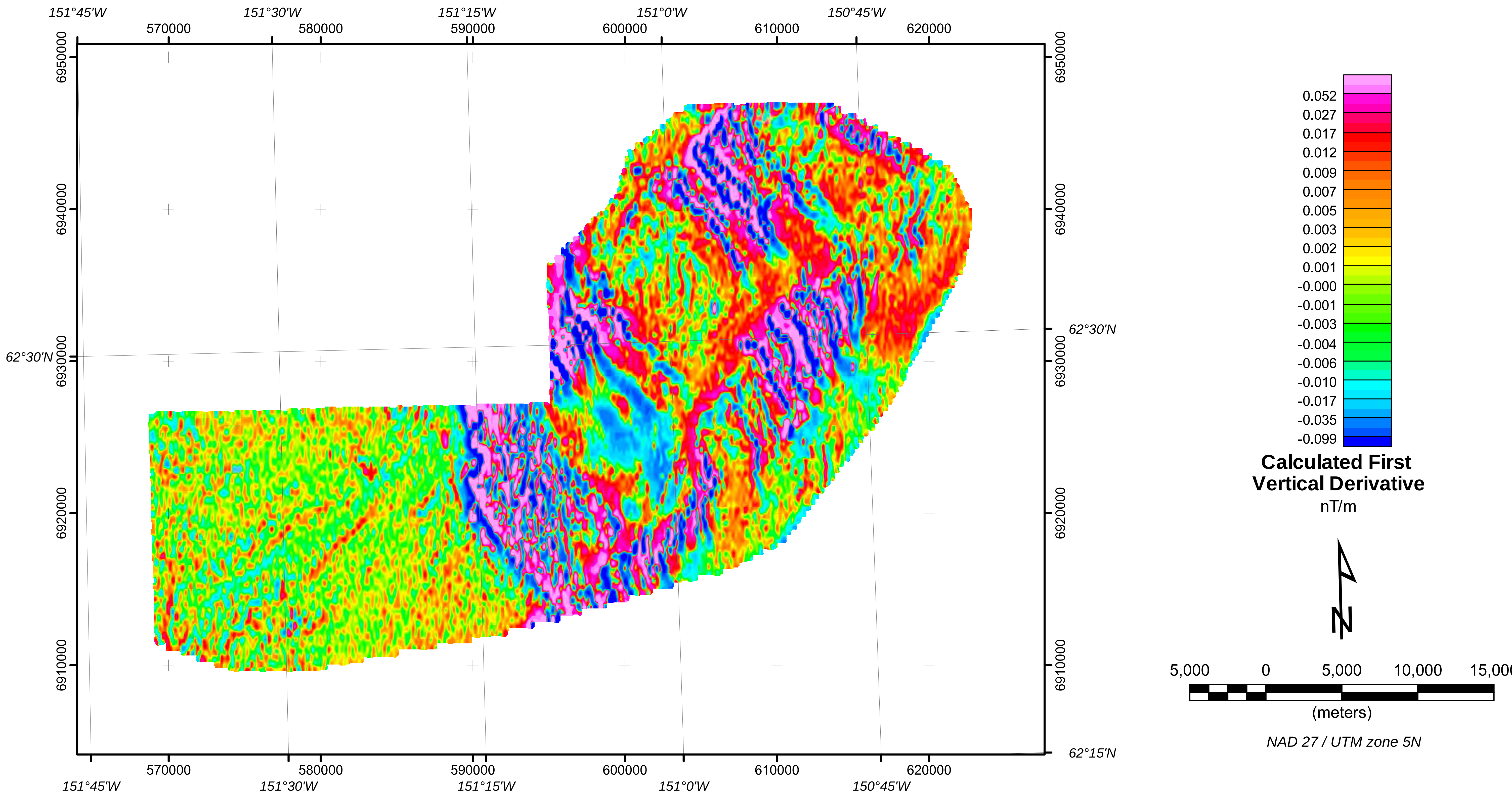

Resistivity 56,000 Hz Coplanar

DIGHEM EM system measured in-phase and quadrature components at five frequencies. Two vertical coaxial coil pairs operated at 1,000 and 5,500 Hz while three horizontal coplanar coil pairs operated at 900, 7,200 and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the in-phase and quadrature component of the coplanar 56,000 Hz measurement using the pseudo-layer half-space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique. All grids were then resampled from the 80 m cell size down to a 25 m cell size to produce the maps and final grids in this publication.

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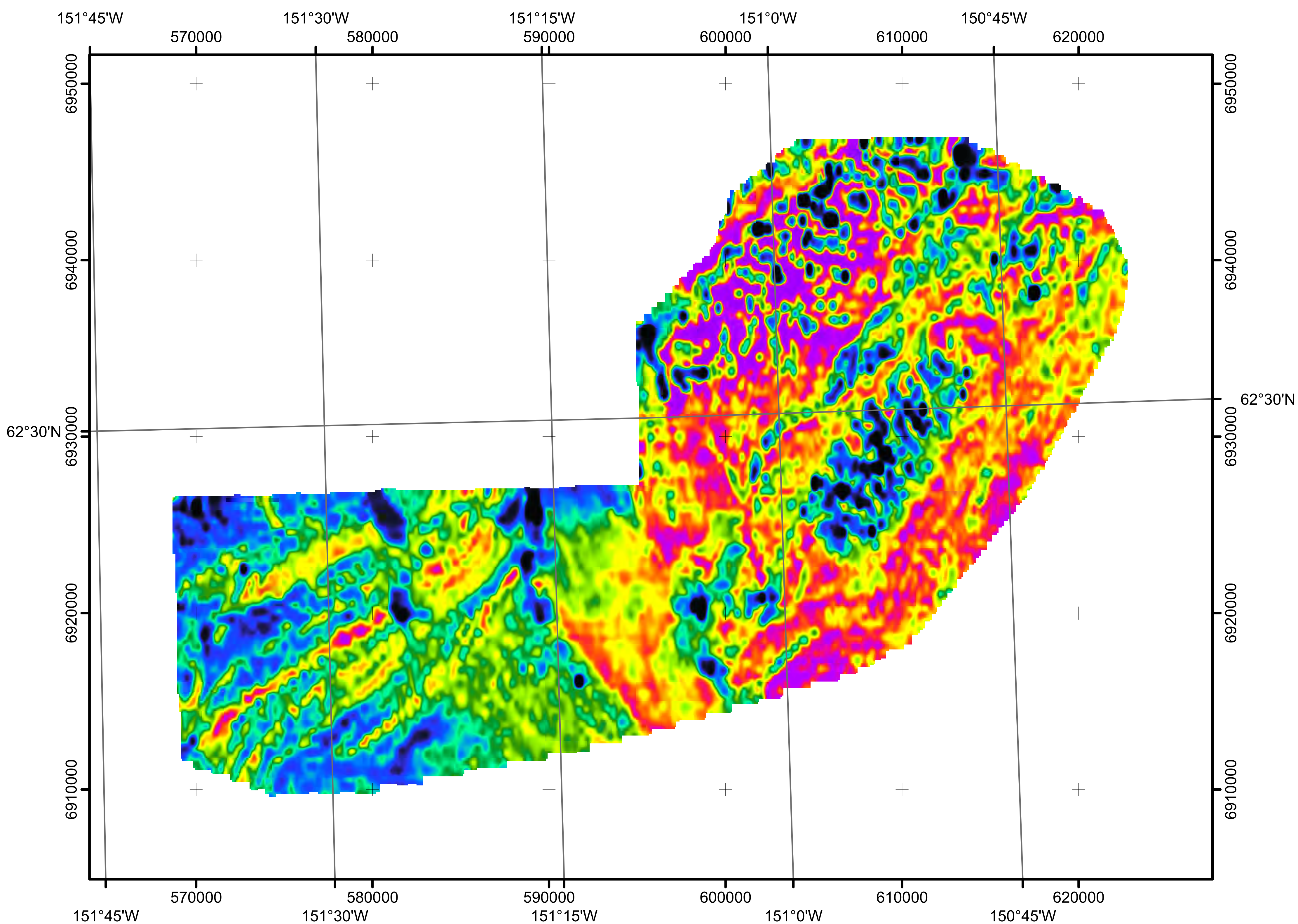

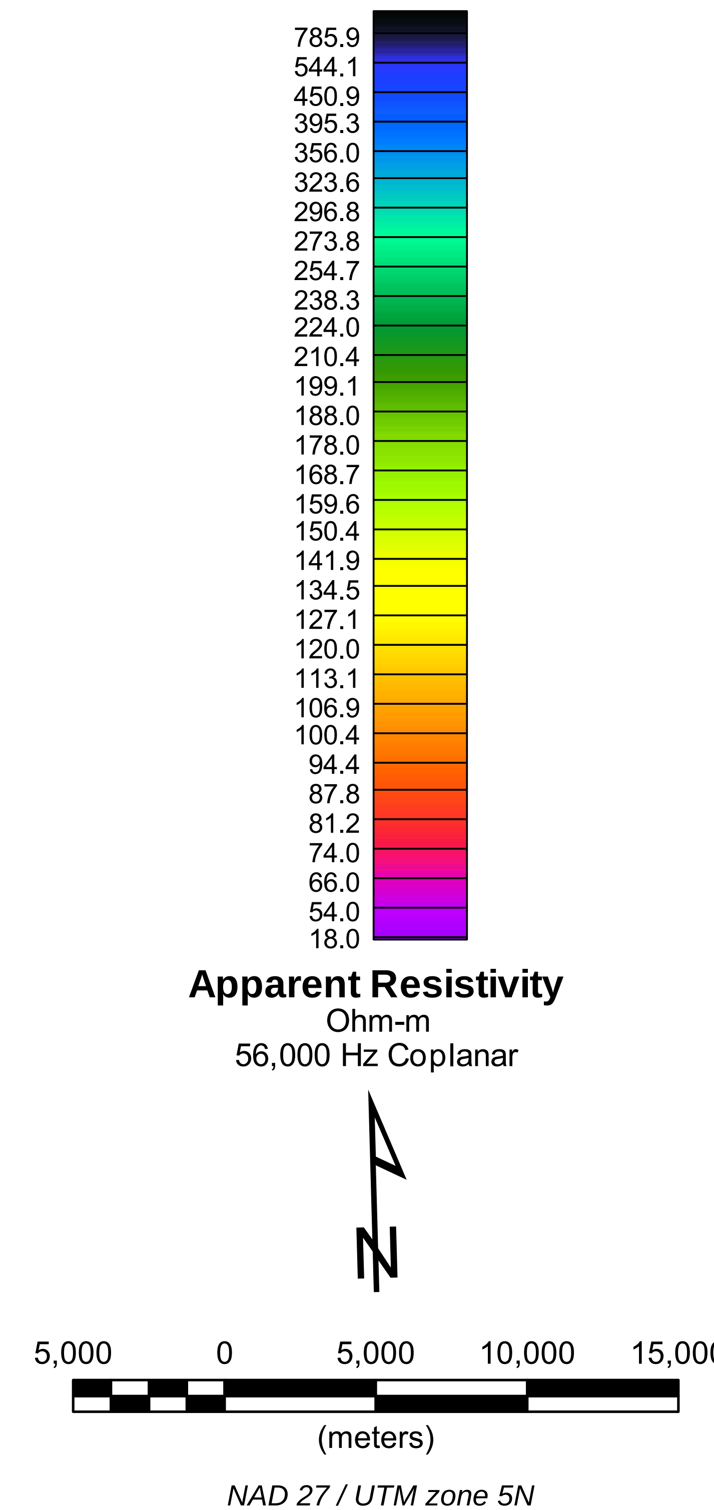

Resistivity 7200 Hz Coplanar

DIGHEM EM system measured in-phase and quadrature components at five frequencies. Two vertical coaxial coil pairs operated at 900 and 5,500 Hz while three horizontal coplanar coil pairs operated at 900, 7,200 and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the in-phase and quadrature component of the coplanar 7200 Hz measurement using the pseudo-layer half-space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique. All grids were then resampled from the 80 m cell size down to a 25 m cell size to produce the maps and final grids in this publication.

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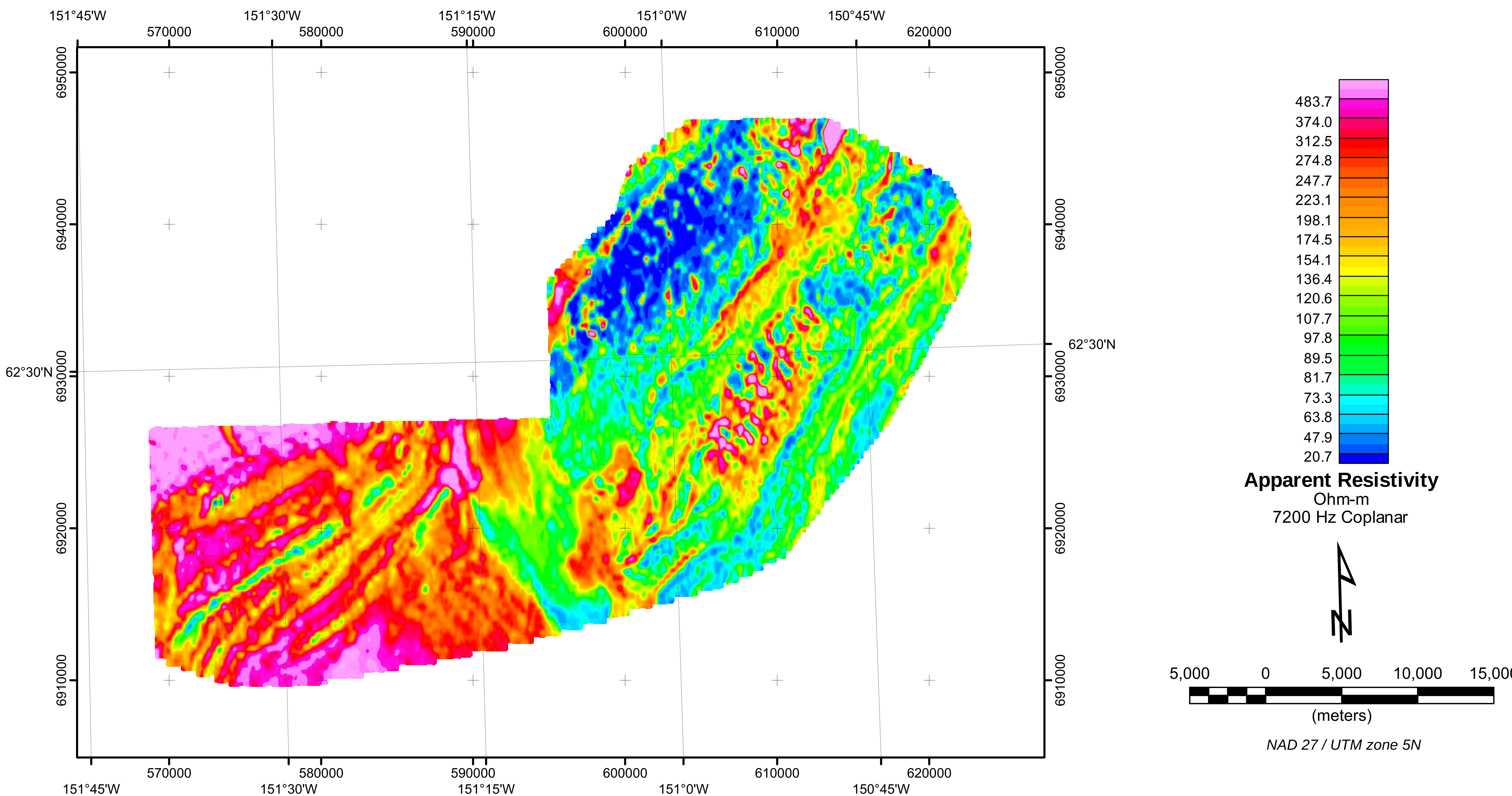

Resistivity 900 Hz Coplanar

DIGHEM EM system measured in-phase and quadrature components at five frequencies. Two vertical coaxial coil pairs operated at 900 and 5,500 Hz while three horizontal coplanar coil pairs operated at 900, 7,200 and 56,000 Hz. EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. Apparent resistivity is generated from the in-phase and quadrature component of the coplanar 900 Hz measurement using the pseudo-layer half-space model. The data were interpolated onto a regular 80 m grid using a modified Akima (1970) technique. All grids were then resampled from the 80 m cell size down to a 25 m cell size to produce the maps and final grids in this publication.

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