

A REVIEW OF THE REGIONAL AEROMAGNETIC, GRAVITY AND ELECTROMAGNETIC DATA OF ZIMBABWE WITH SPECIAL EMPHASIS ON THE LONELY, EMPRESS, AND HUNTERS ROAD AREAS

Government aeromagnetic data

19

83

05

✓ THREE PHASE PROGRAM
(1983 -1992)

✓ PRODUCTS AT ZGS

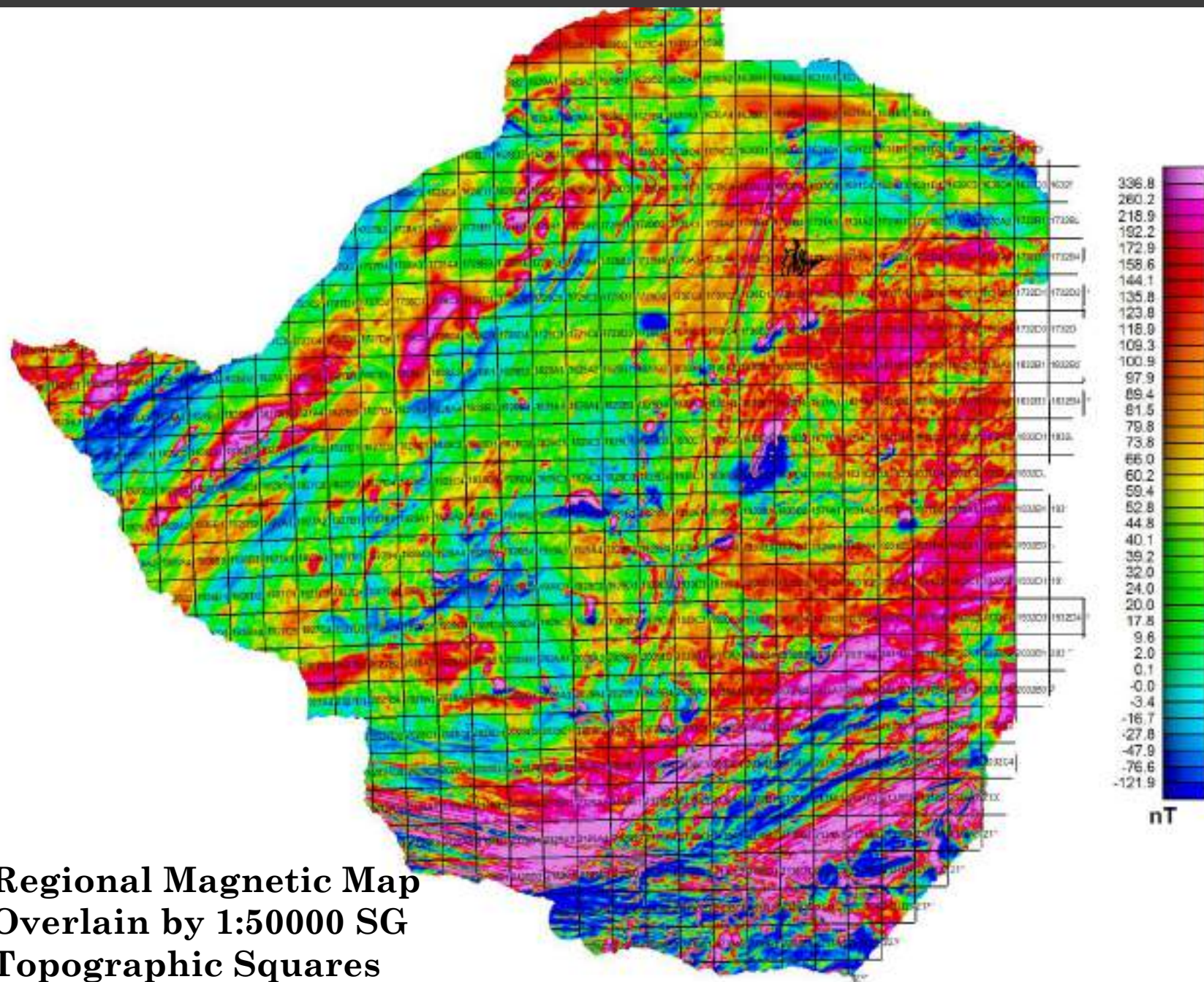
- 1:50,000
- 1:250,000
- **1:100,000**
- 1: 1,000,000

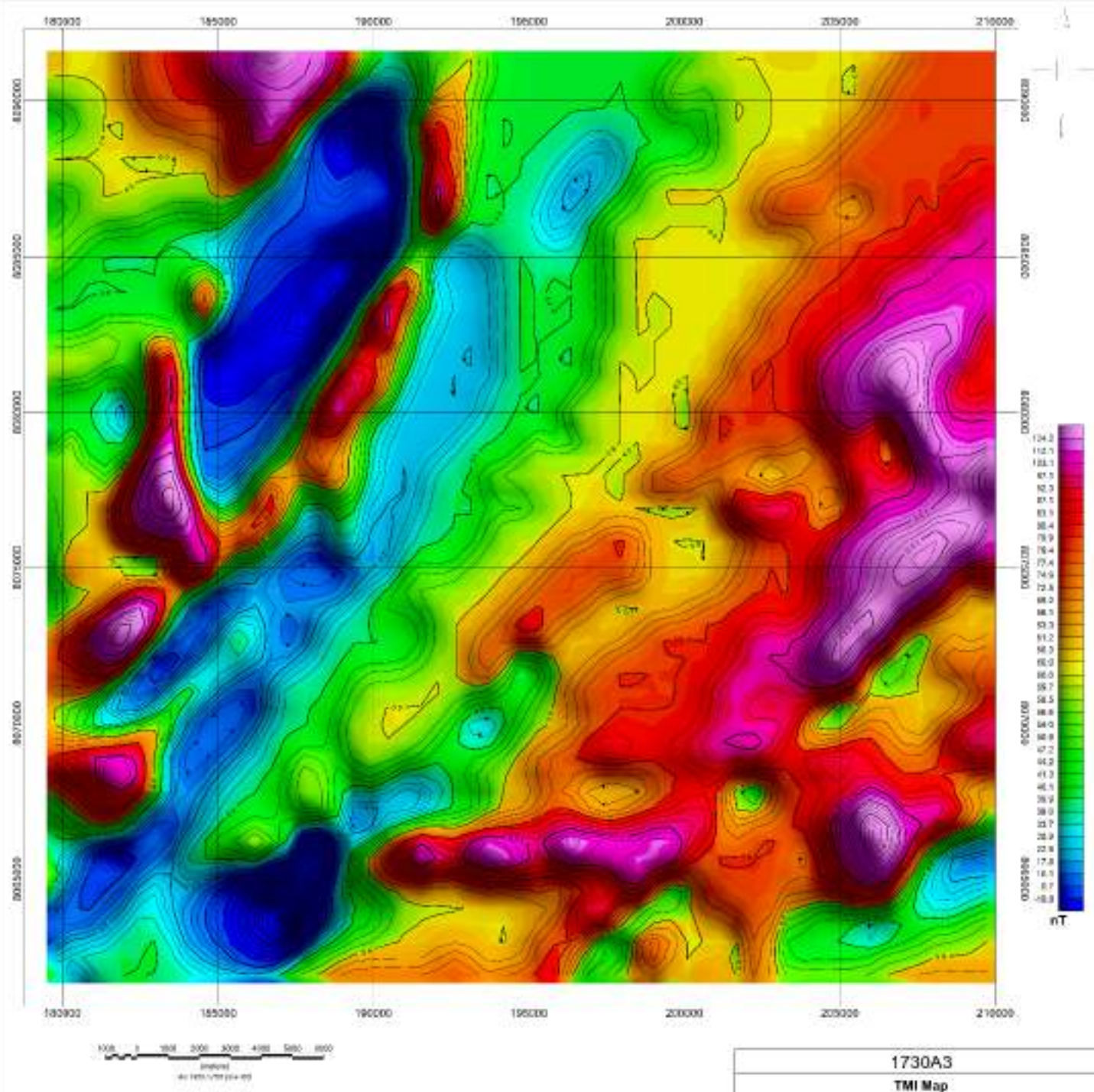
- ✓ 1KM LINE SPACING
- ✓ 305M SURVEY HEIGHT
- ✓ AEROMAG ONLY
- ✓ 401816.5 LINE KM

INPUT DATA (INDUCED PULSE
TRANSIENT E.M)

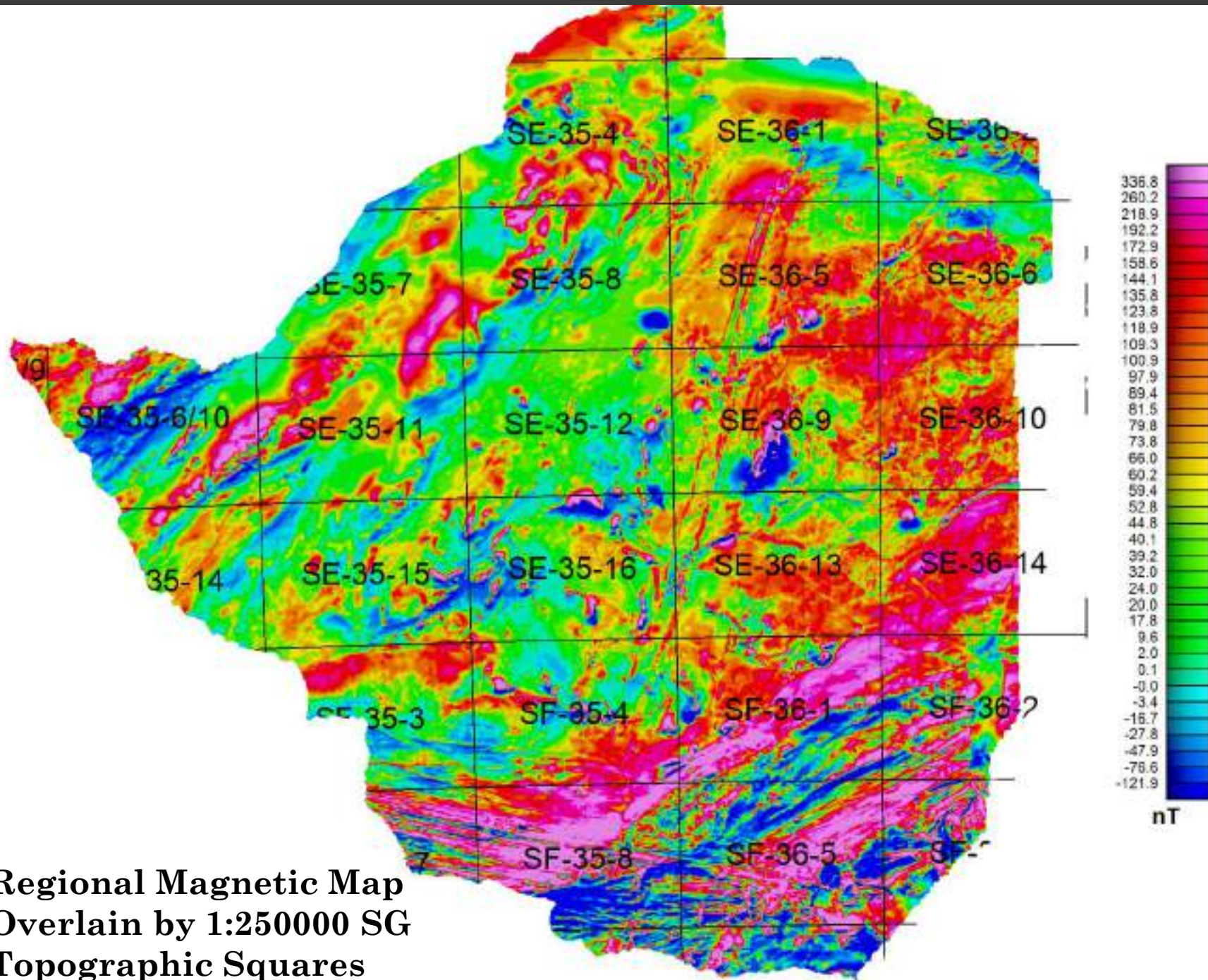
- ✓ SELECTED
GREENSTONES
 - LONELY AREA
 - HUNTERS ROAD AREA
 - EMPRESS AREA

- ✓ 250M LINE SPACING
- ✓ 120M SURVEY HEIGHT
- ✓ AEROMAG AND E.M
- ✓ 20000 LINE KM

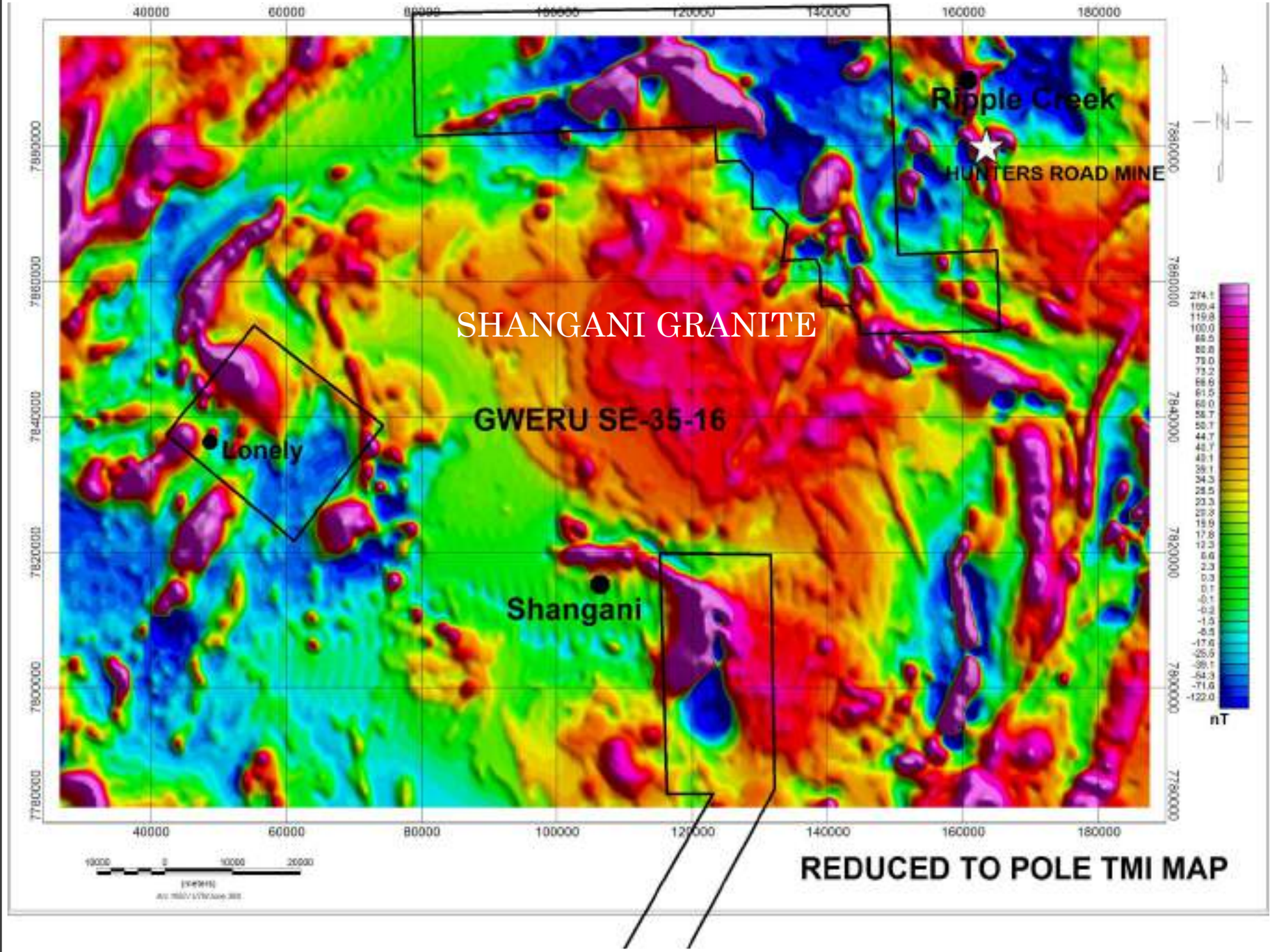




Magnetic Map
1730A3 Square



**Regional Magnetic Map
Overlain by 1:250000 SG
Topographic Squares**



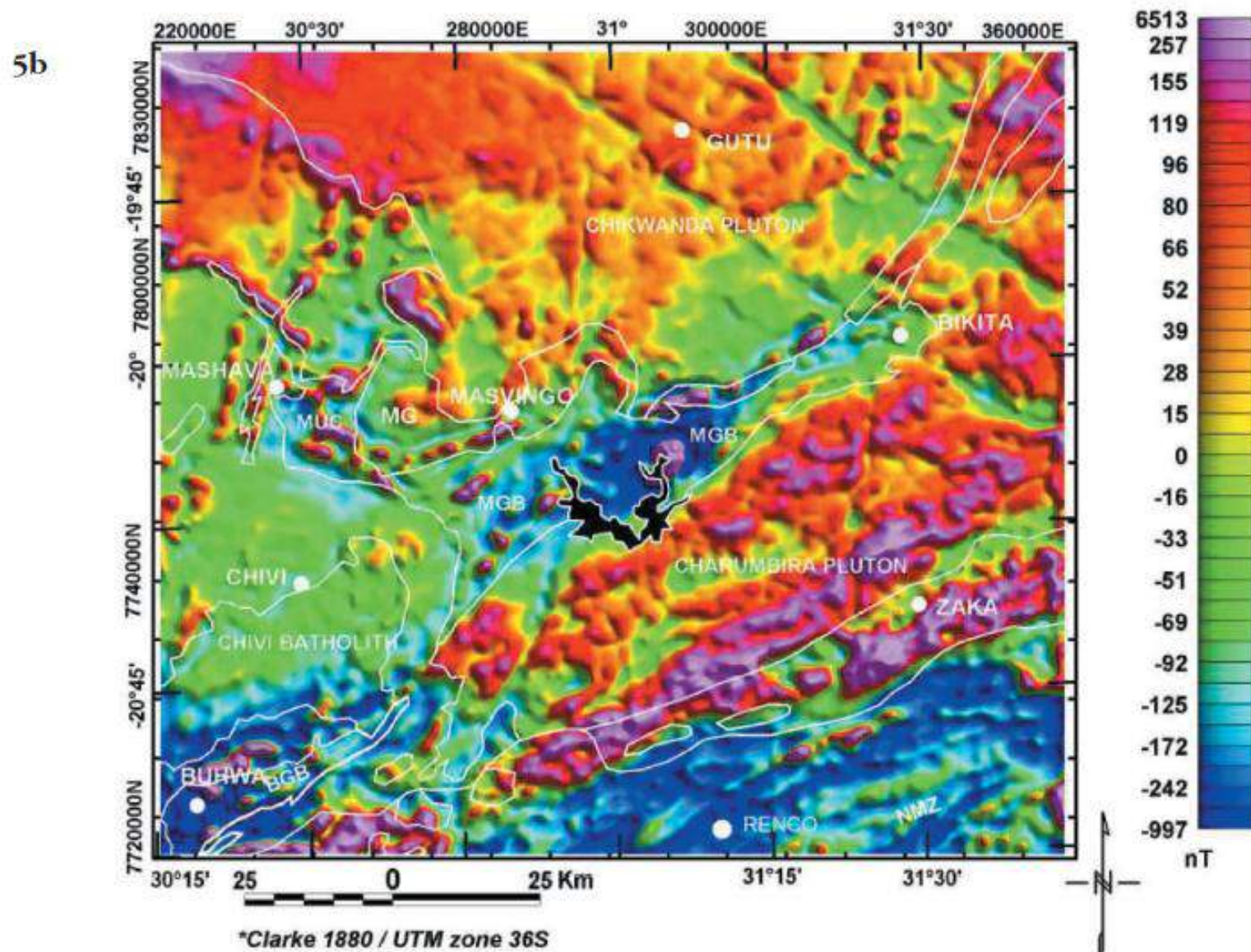


Figure 5. Matched bandpass filtered anomaly maps from the RTP aeromagnetic data corresponding to a depth slice of: (a) ~430 m showing improved structural representation; (b) ~1520 m showing regional features.

GRAVITY

Gravity data -12560 Stations

MOBIL

PODMORE

RANGANAI

LEEDS

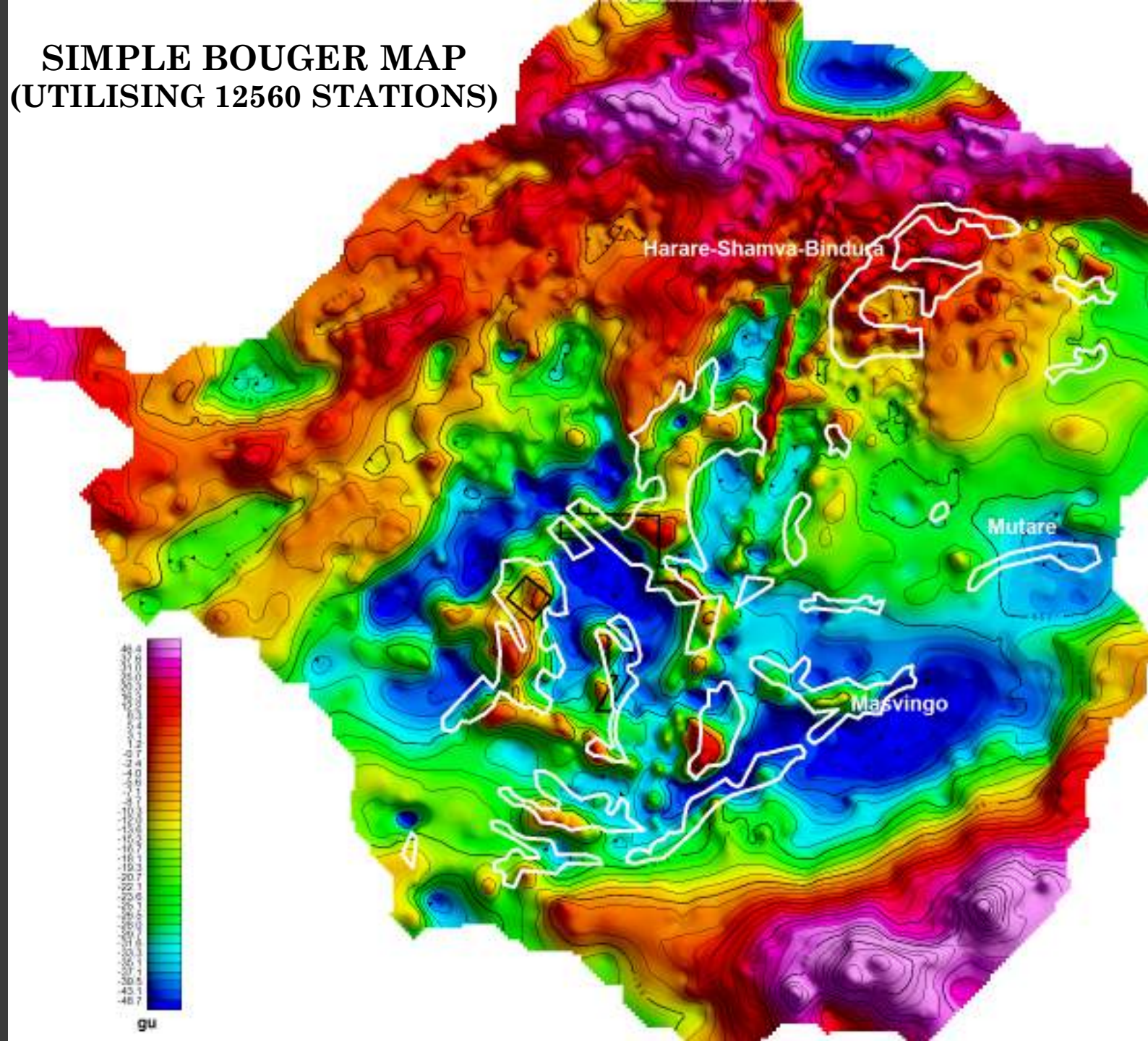
JCI

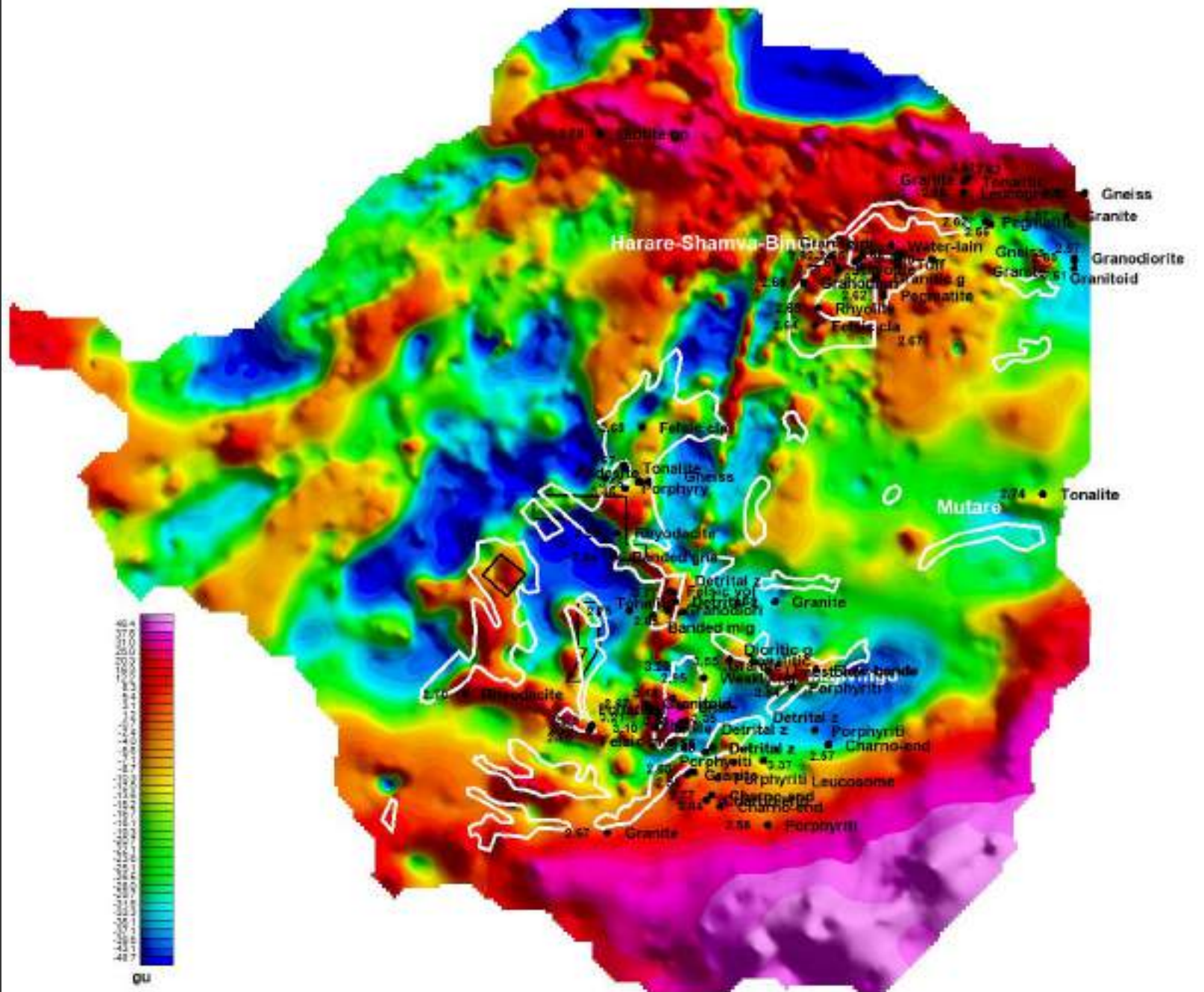
ZGS

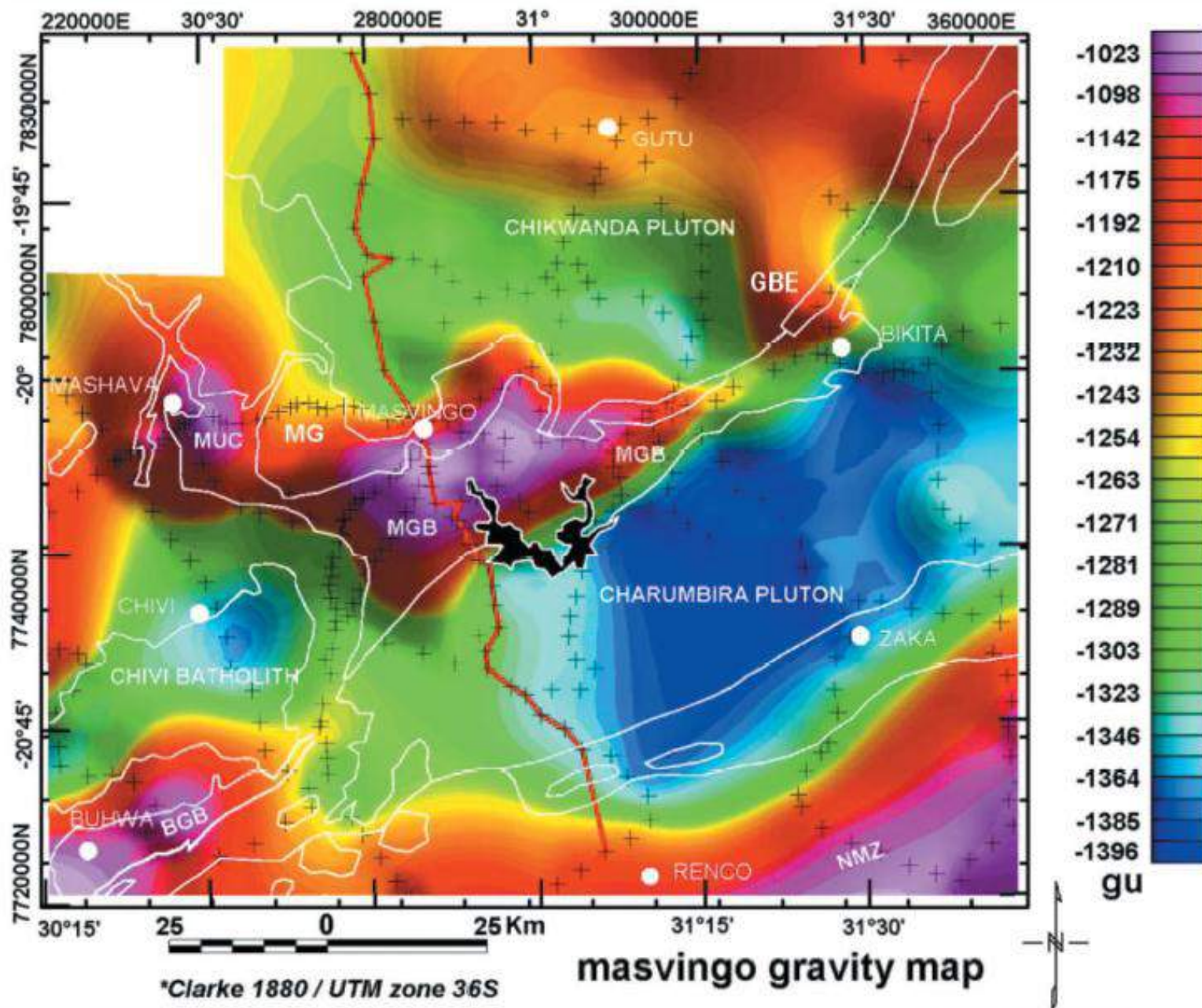
✓ L1988:0	lat	lon	elev	grav	SBA	tcor	station	X	Y
0.0	-17.40	32.22	1258.30	978134.15	-112.75	0.00	mtoko_base	1054831.80	8068348.21
1.0	-17.39	32.25	1224.50	978138.98	-114.04	0.00	1732-a4-01	1058764.77	8069406.84
2.0	-17.38	32.29	1165.60	978149.90	-113.99	0.00	1732-a4-02	1062400.57	8070884.13
3.0	-17.39	32.33	1116.30	978158.74	-115.26	0.00	1732-a4-03	1066779.63	8069907.09
4.0	-17.38	32.36	1111.30	978159.50	-115.13	0.00	1732-a4-04	1070340.81	8070585.27
5.0	-17.37	32.39	1044.90	978170.78	-116.33	0.00	1732-a4-05	1073128.11	8071806.96
6.0	-17.35	32.42	993.20	978175.77	-120.40	0.00	1732-a4-06	1076523.39	8074133.48
7.0	-17.31	32.44	975.50	978175.05	-122.75	0.00	1732-a4-07	1079143.93	8078092.99
8.0	-17.28	32.47	978.50	978171.84	-123.81	0.00	1732-a4-08	1082515.17	8081386.57
9.0	-17.27	32.52	958.00	978193.50	-105.89	0.00	1732-b3-01	1087633.28	8081873.72
10.0	-17.28	32.55	917.20	978206.09	-101.68	0.00	1732-b3-02	1090876.89	8081035.69
11.0	-17.29	32.58	888.40	978212.83	-100.89	0.00	1732-b3-03	1093879.17	8080348.56
12.0	-17.28	32.62	857.60	978218.83	-100.67	0.00	1732-b3-04	1097610.66	8080862.36
13.0	-17.30	32.66	781.20	978232.83	-102.56	0.00	1732-b3-05	1102551.52	8078905.46
14.0	-17.28	32.62	857.60	978217.55	-101.95	0.00	1732-b3-04	1097610.66	8080862.36
15.0	-17.24	32.64	826.40	978199.70	-124.04	0.00	1732-b1-01	1100111.69	8084935.42
16.0	-17.22	32.65	788.00	978196.11	-133.82	0.00	1732-b1-02	1101405.35	8087887.78
17.0	-17.19	32.65	749.50	978200.95	-135.48	0.00	1732-b1-03	1102105.14	8090257.28
18.0	-17.17	32.63	812.90	978185.73	-137.05	0.00	1732-b1-04	1099305.93	8092840.07
19.0	-17.15	32.67	794.60	978190.48	-134.78	0.00	1732-b1-05	1104236.98	8095175.00
20.0	-17.13	32.64	774.40	978193.13	-135.33	0.00	1732-b1-06	1100911.80	8096972.88
21.0	-17.10	32.64	694.20	978207.76	-134.82	0.00	1732-b1-07	1101189.29	8100633.07
22.0	-17.08	32.63	737.30	978199.94	-132.90	0.00	1732-b1-08	1099666.47	8103422.83
23.0	-17.05	32.59	776.30	978193.25	-130.44	0.00	1732-b1-09	1096201.66	8106746.16
24.0	-17.06	32.56	842.50	978179.89	-131.55	0.00	1732-b1-10	1092498.57	8105129.47
25.0	-17.07	32.53	819.30	978185.16	-131.12	0.00	1732-b1-11	1089586.84	8104623.42
26.0	-17.09	32.50	861.20	978179.33	-129.65	0.00	1732-b1-12	1086119.63	8102610.22

Base stations-created being points of known gravity value to enable tying other surveys to known values

SIMPLE BOUGER MAP (UTILISING 12560 STATIONS)



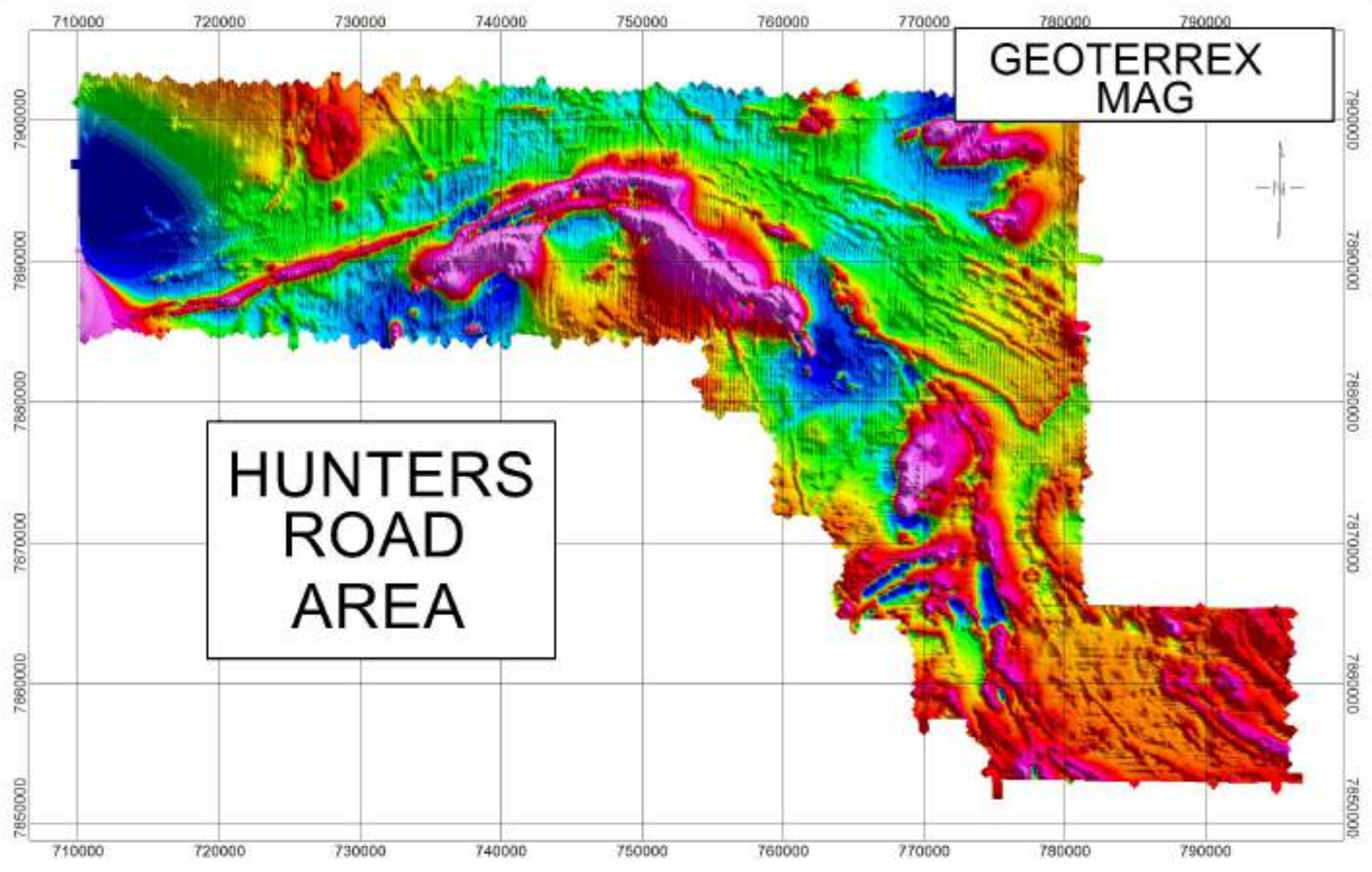




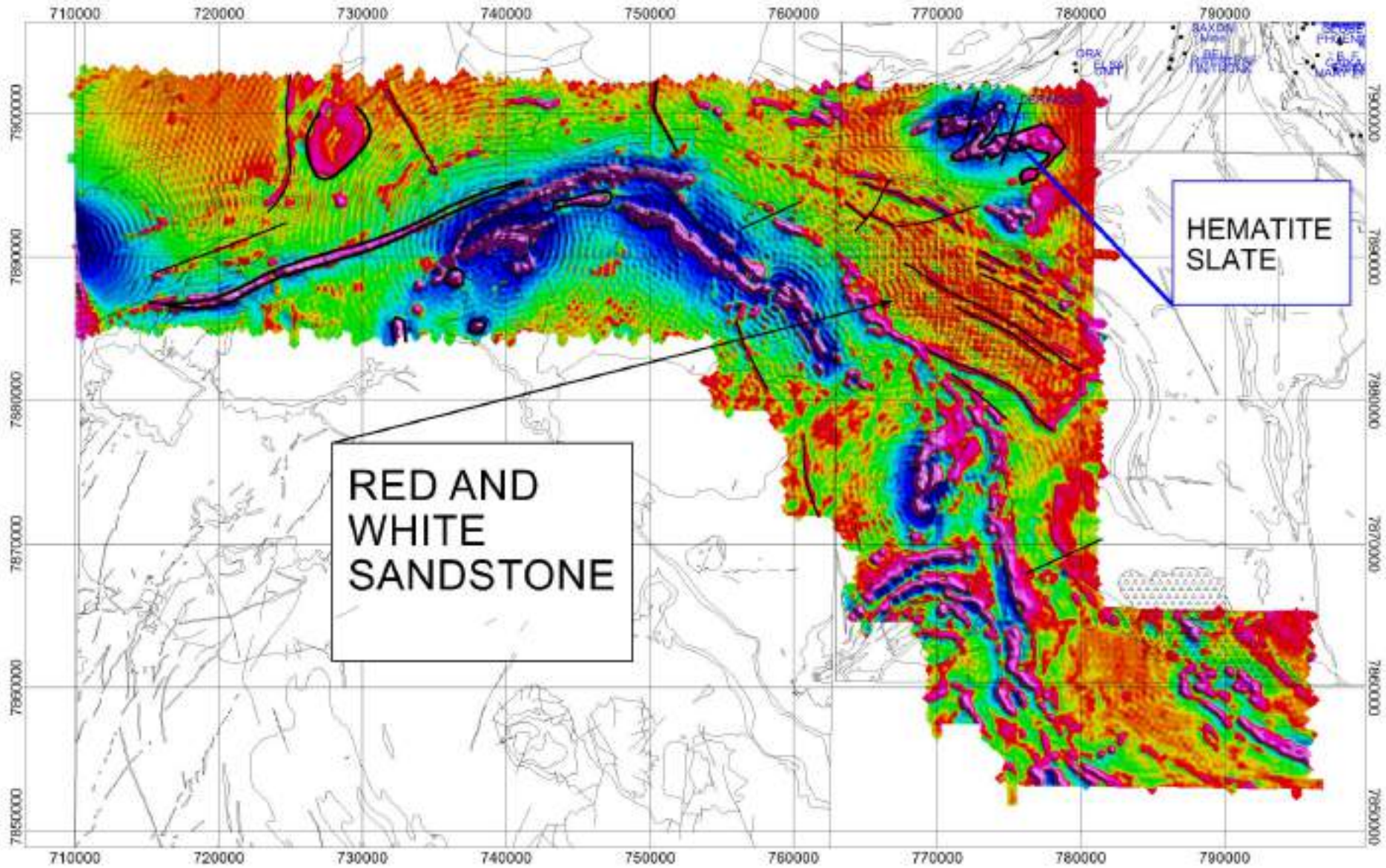
- ✓ Greenstone formations are generally more dense
- ✓ Granites are generally less dense
- ✓ Gneissic terrane, to the north, south and west are dense as evidenced in areas like Inyala, Mberengwa

GEOTERREX HIGH RESOLUTION MAGNETIC AND INPUT ELECTROMAGNETICS

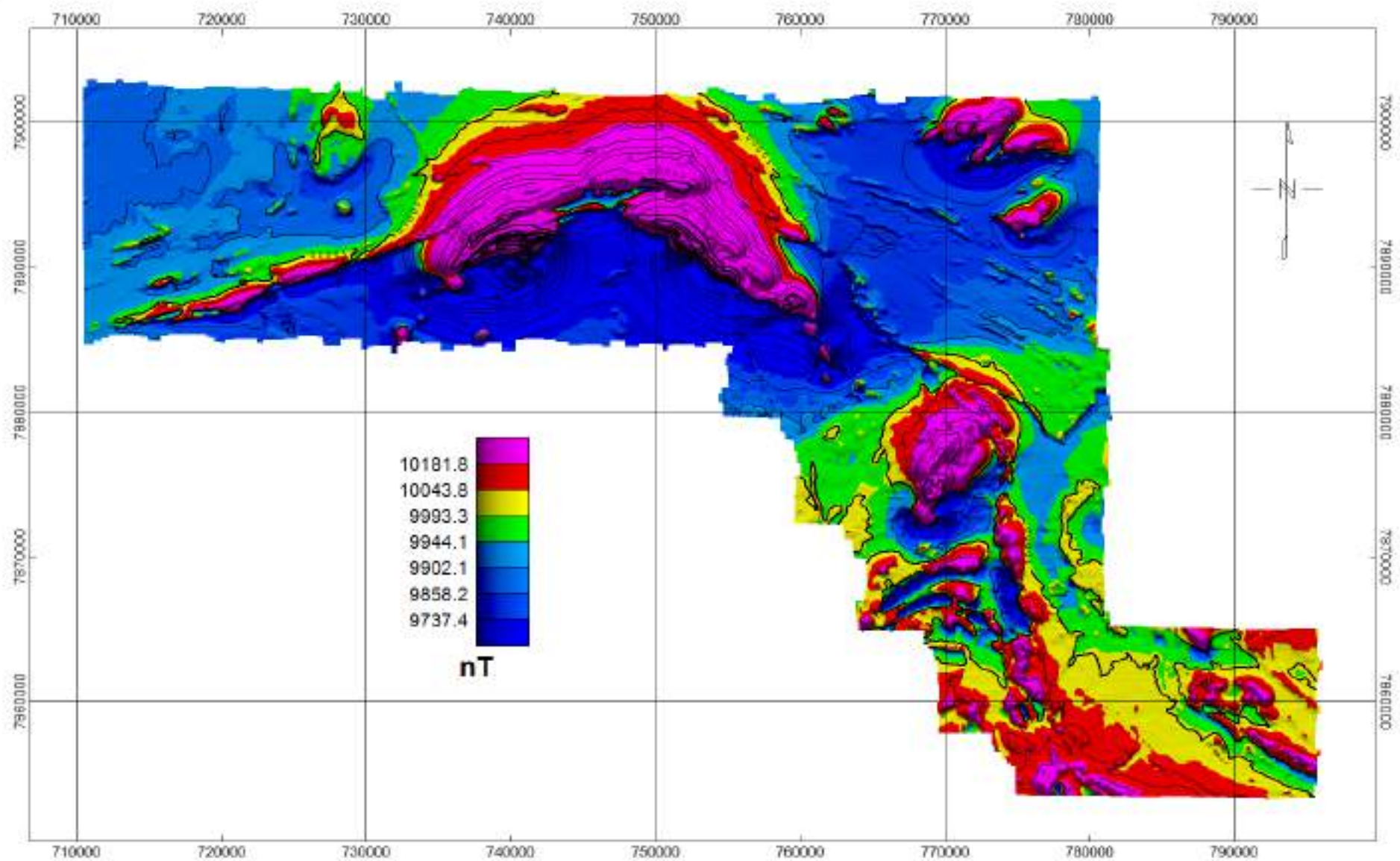
- ✓ DATA WAS RE-LEVELLED
- ✓ NAUDY FILTER WAS APPLIED
- ✓ EDITED FOR DATA BACK TRACKING
- ✓ GRIDDING IS BI-DIRECTIONAL -
AKIMA SPLINE ACROSS AND ALONG
LINE
- ✓ WHERE 2 FLIGHT DIRECTION
ORIENTATION IS PRESENT, DATA WAS
SPLIT INTO 2. 2 GRID ARE PRODUCED
AND STITCHED

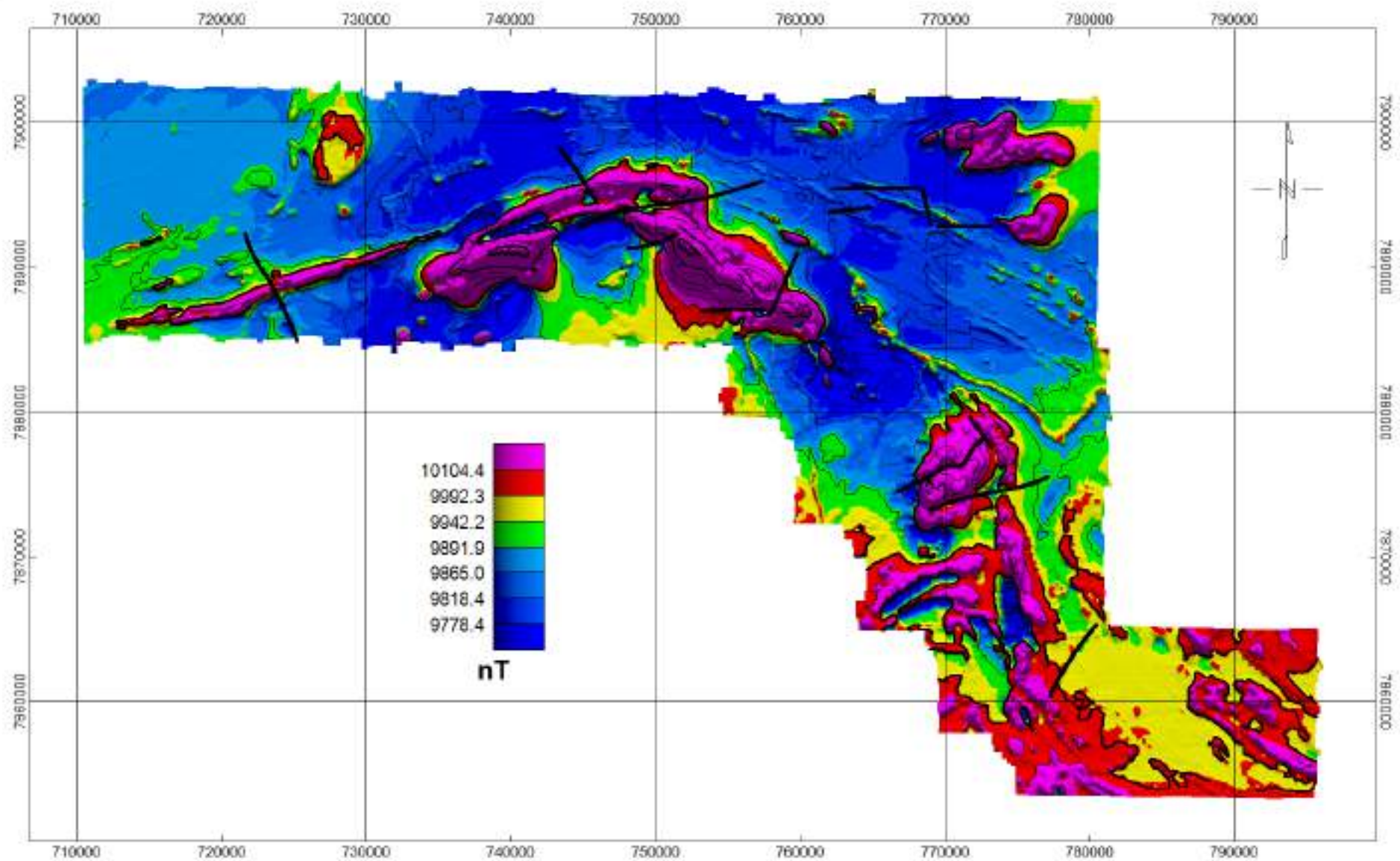


UNLEVELED DATA

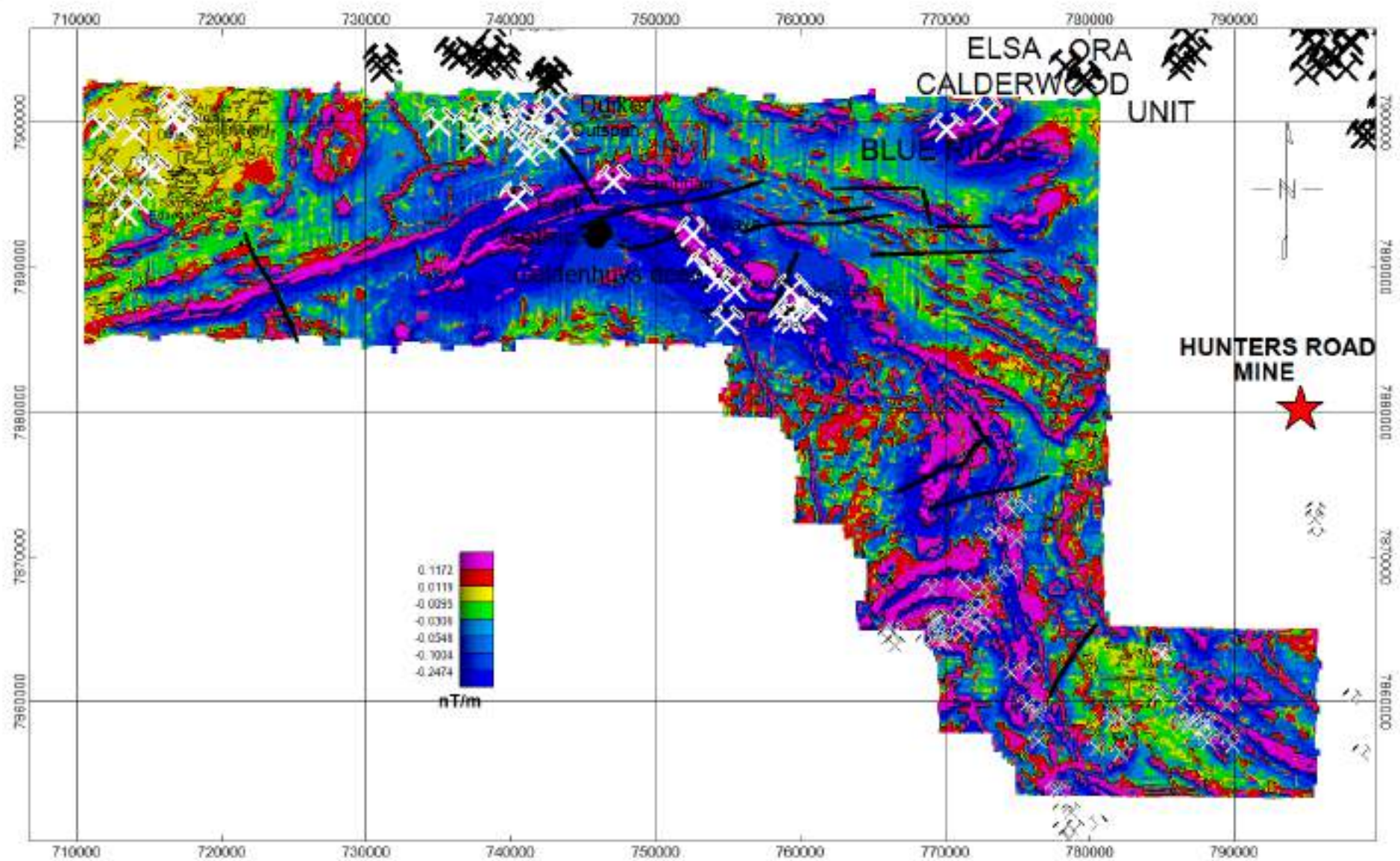


SR48, B31, B67

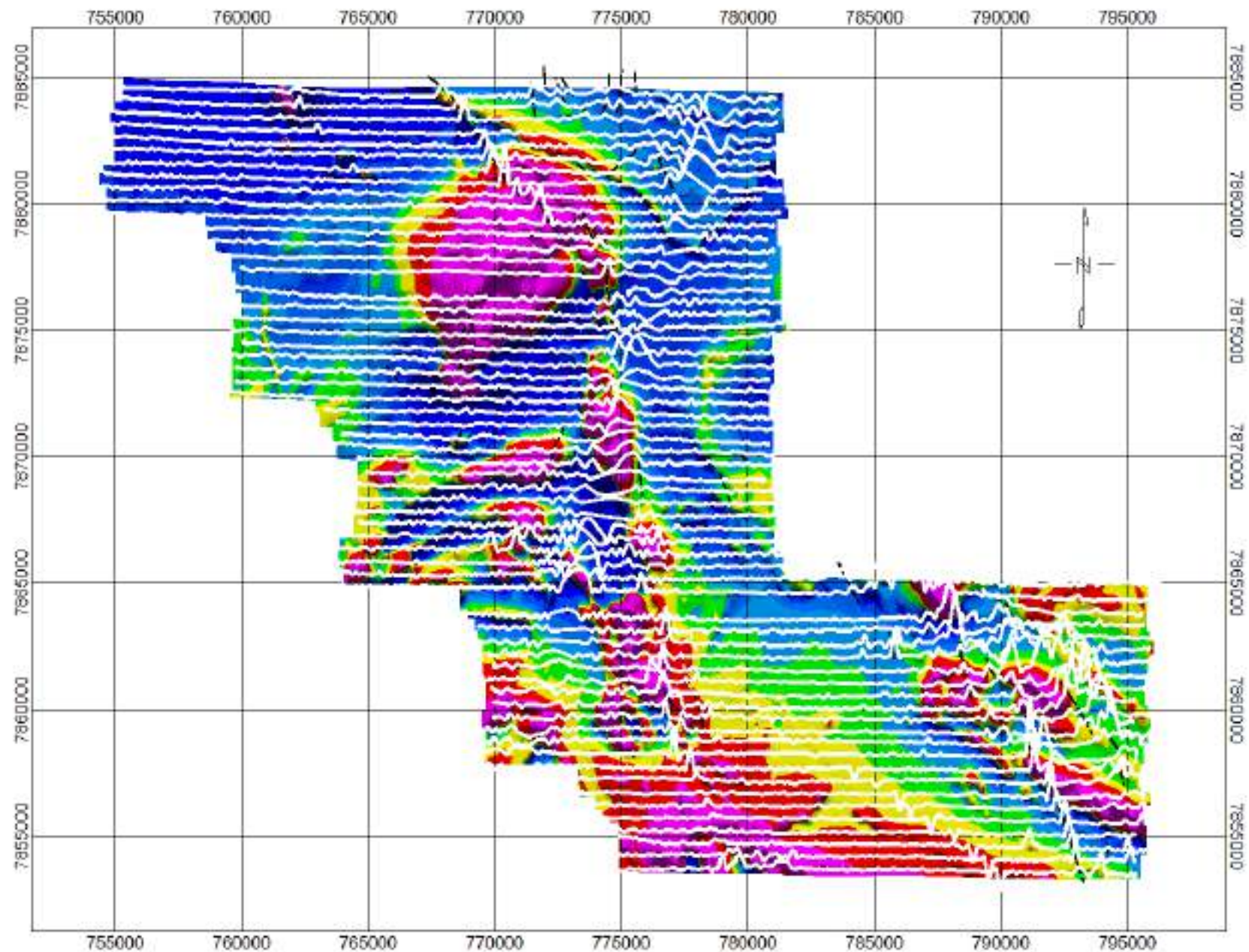


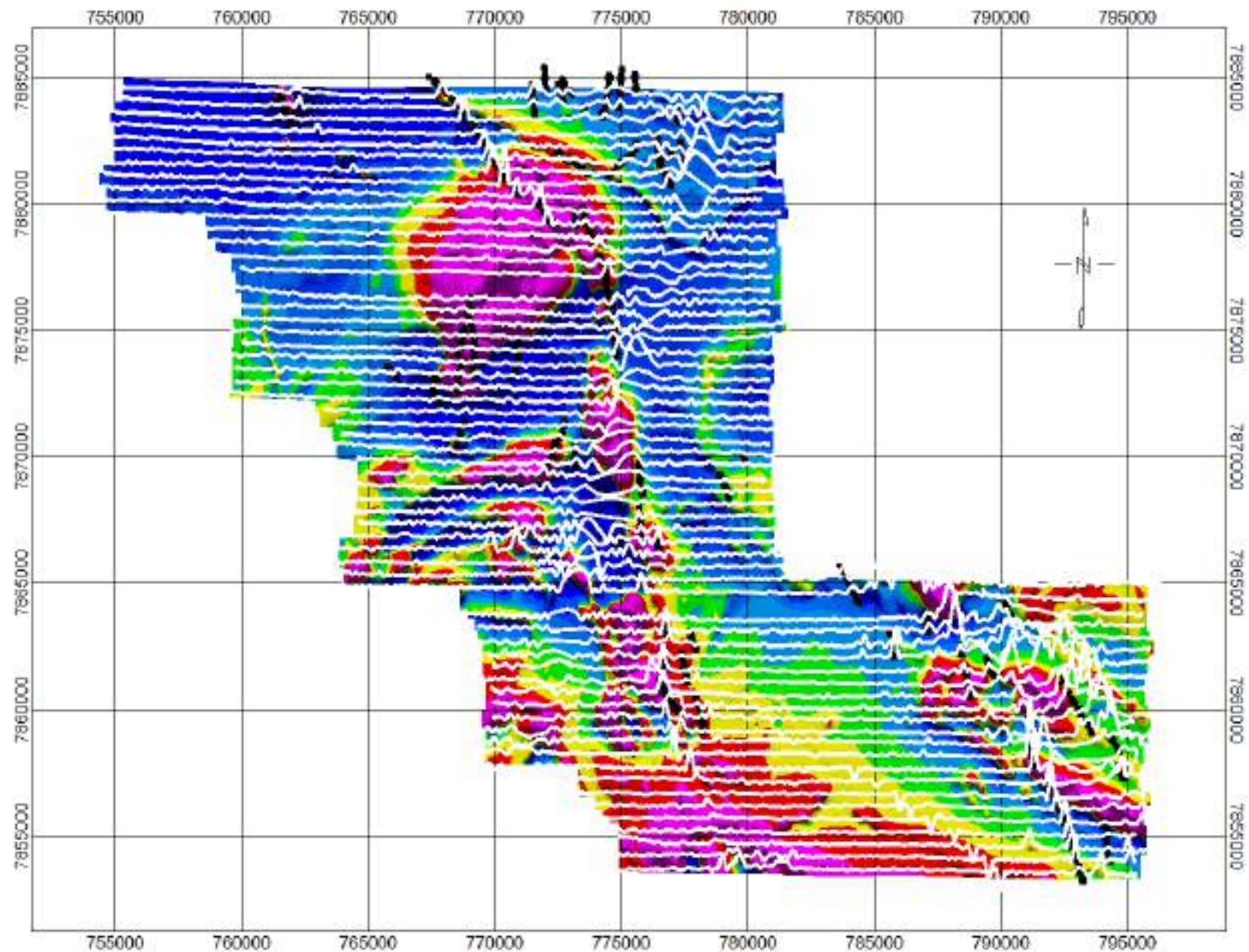


Geological Society of Zimbabwe 2021 Symposium
 Hunters/Silobela High Resolution Reduced to Pole TMI Map

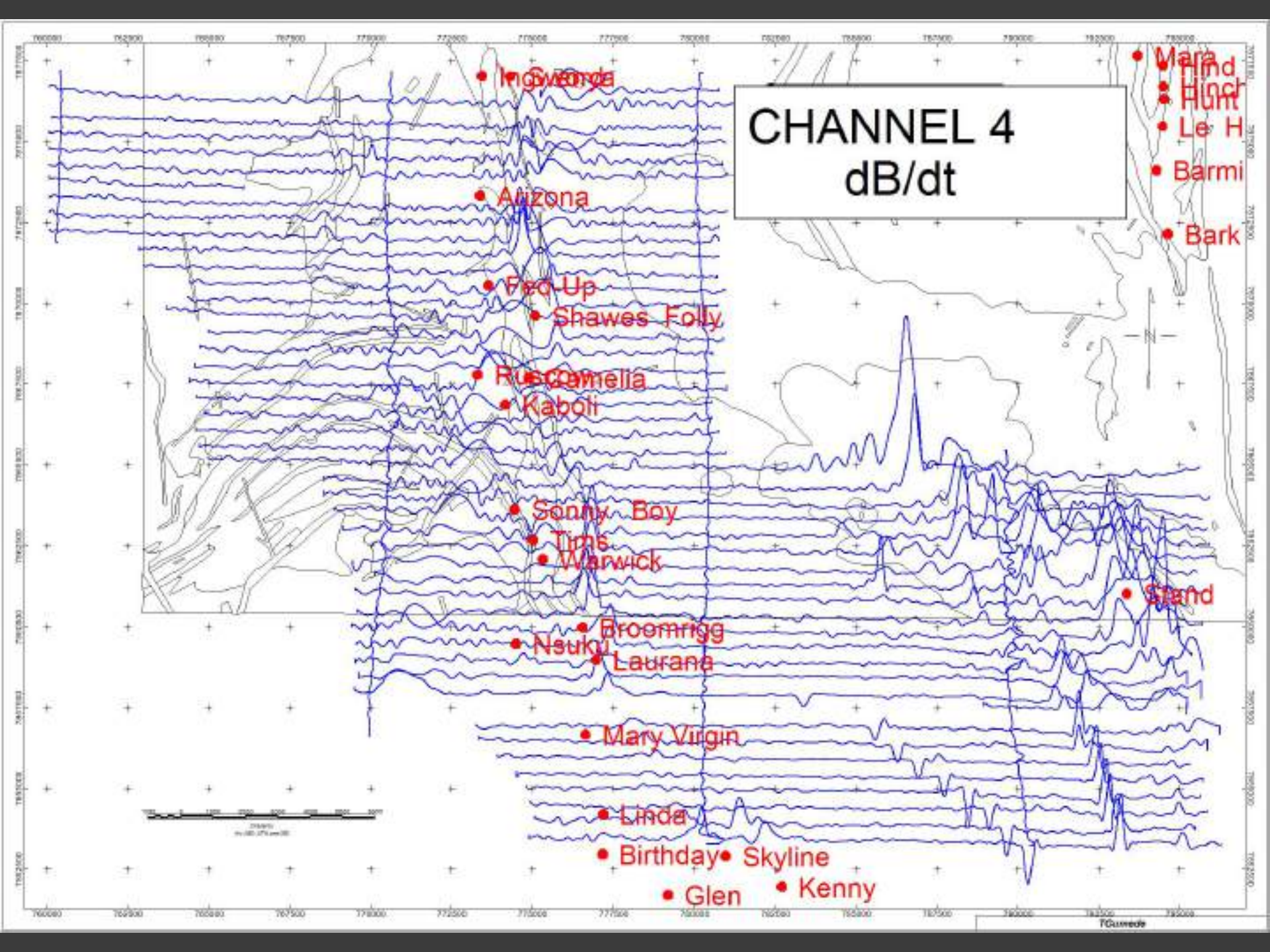


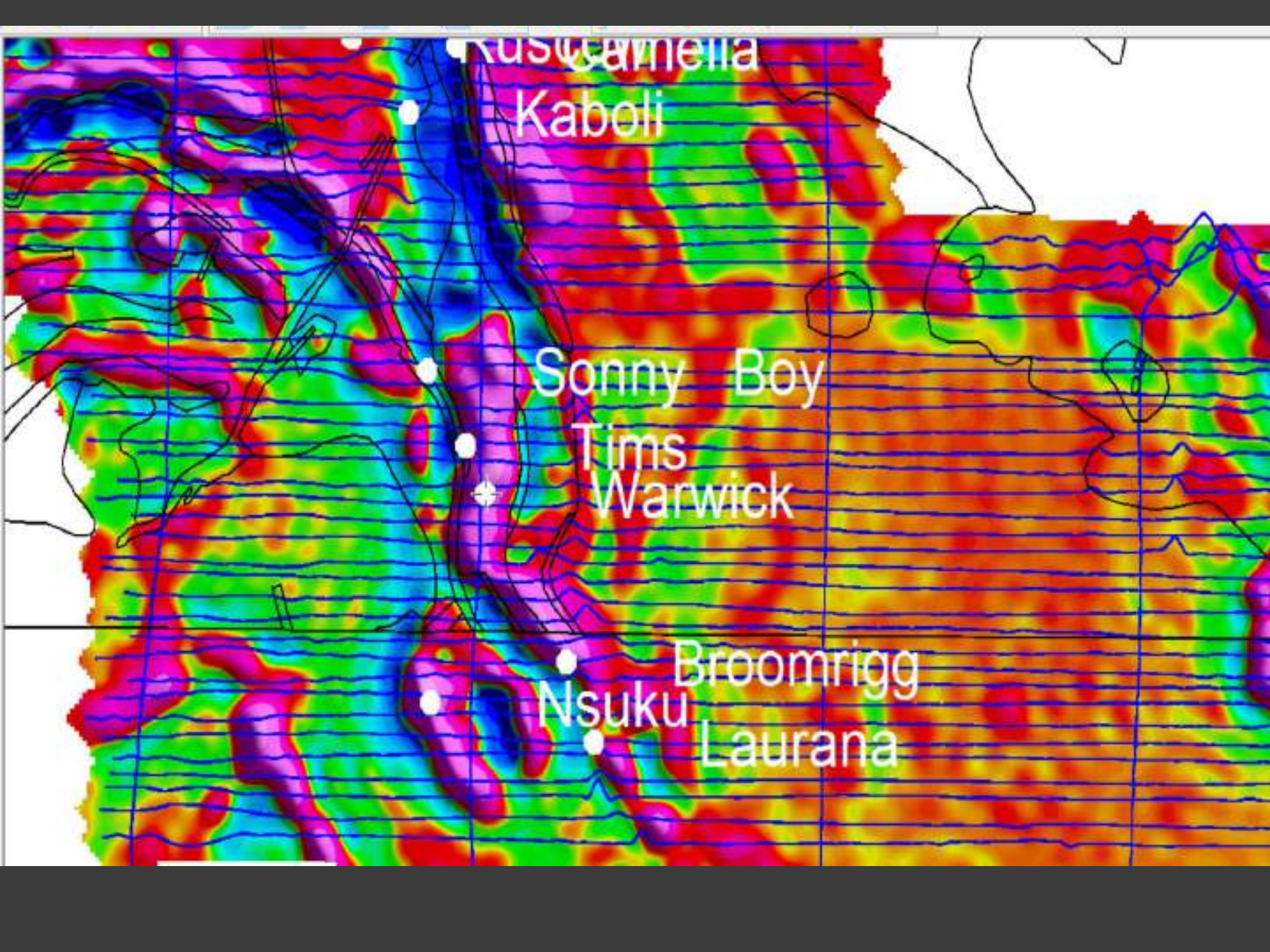
Geological Society of Zimbabwe 2021 Symposium
Hunters/Silobela High Resolution Vertical Derivative of TMI Map





CHANNEL 4
dB/dt

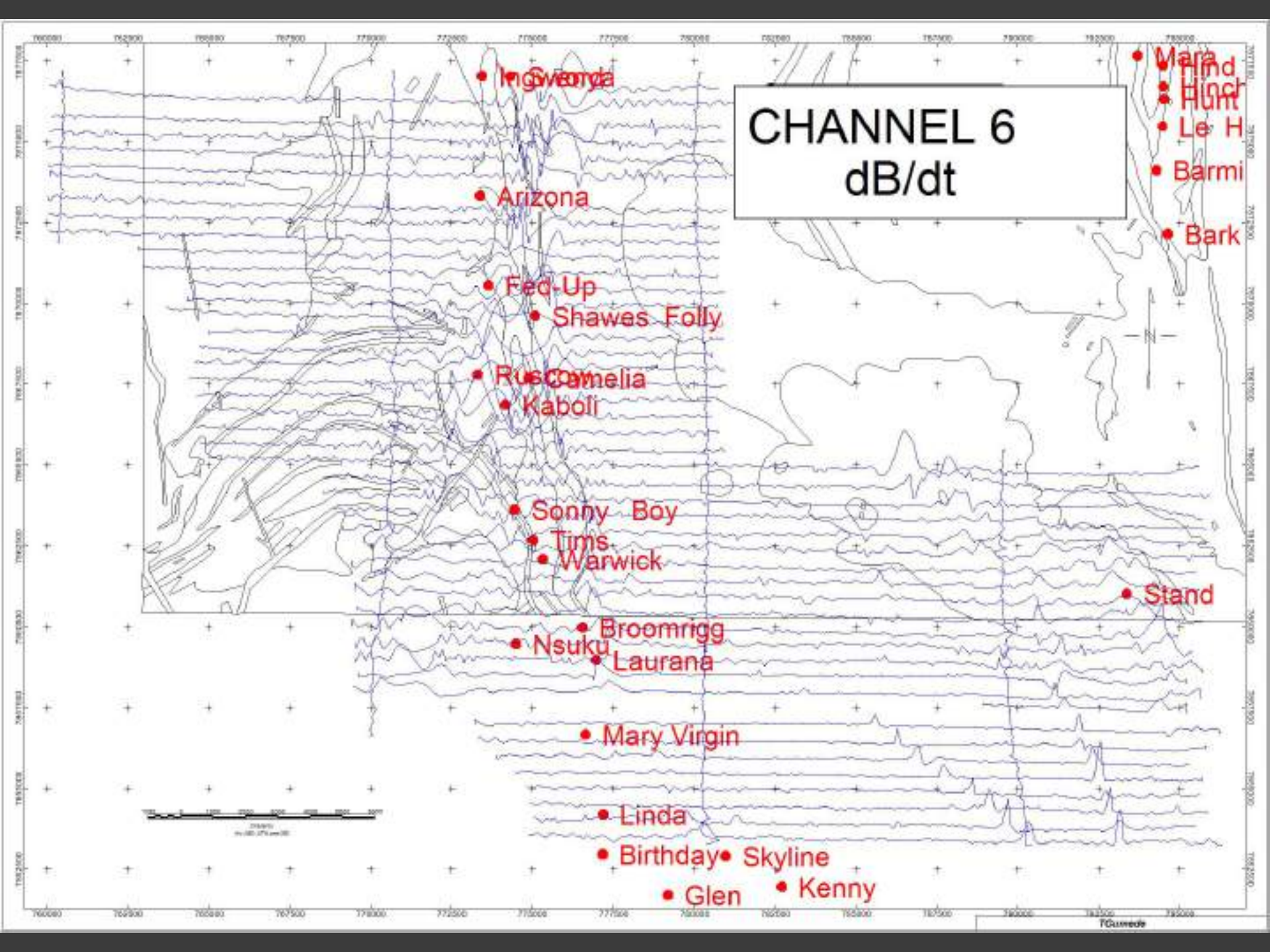




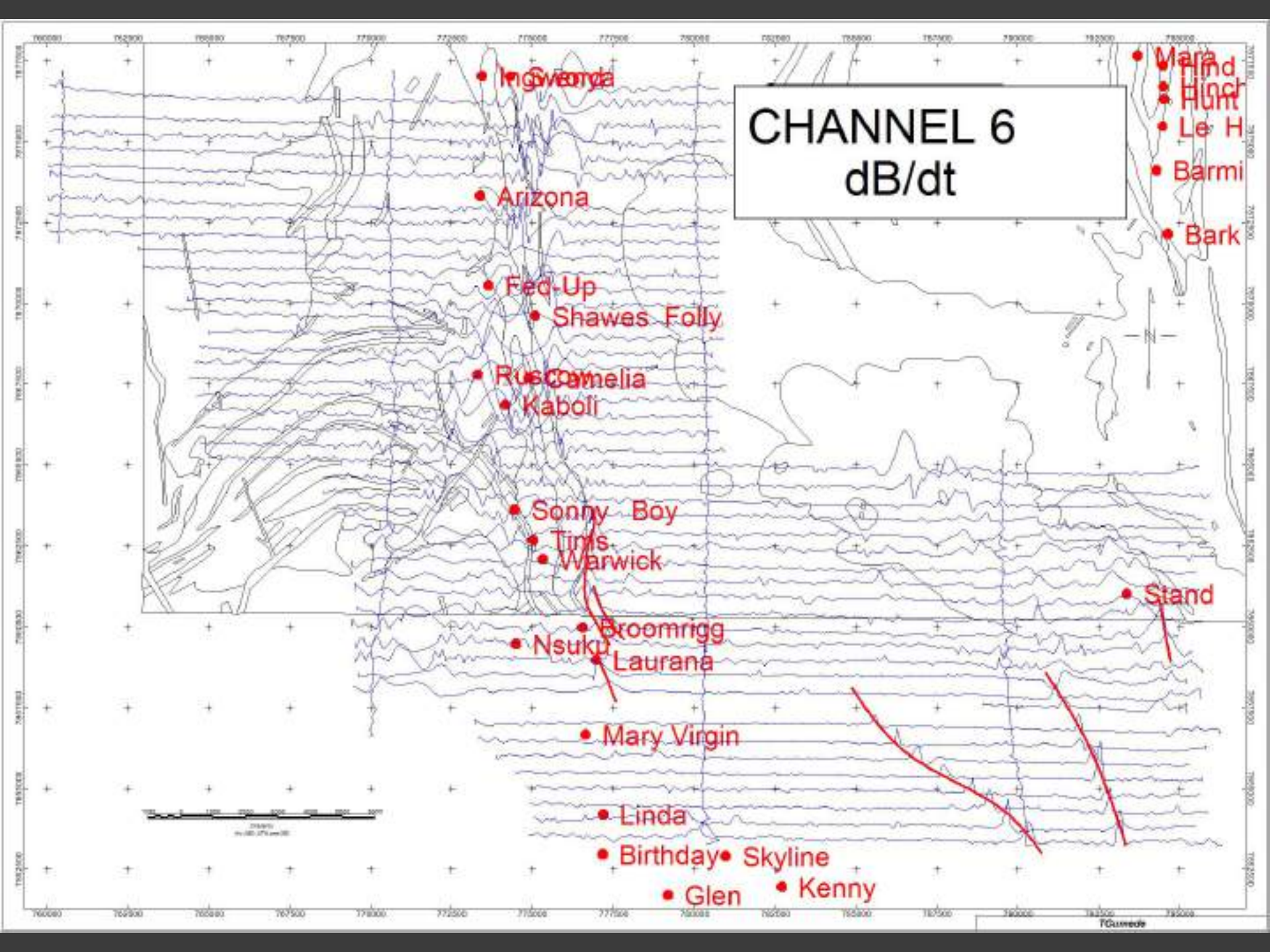
Kust
Gannella
Kaboli

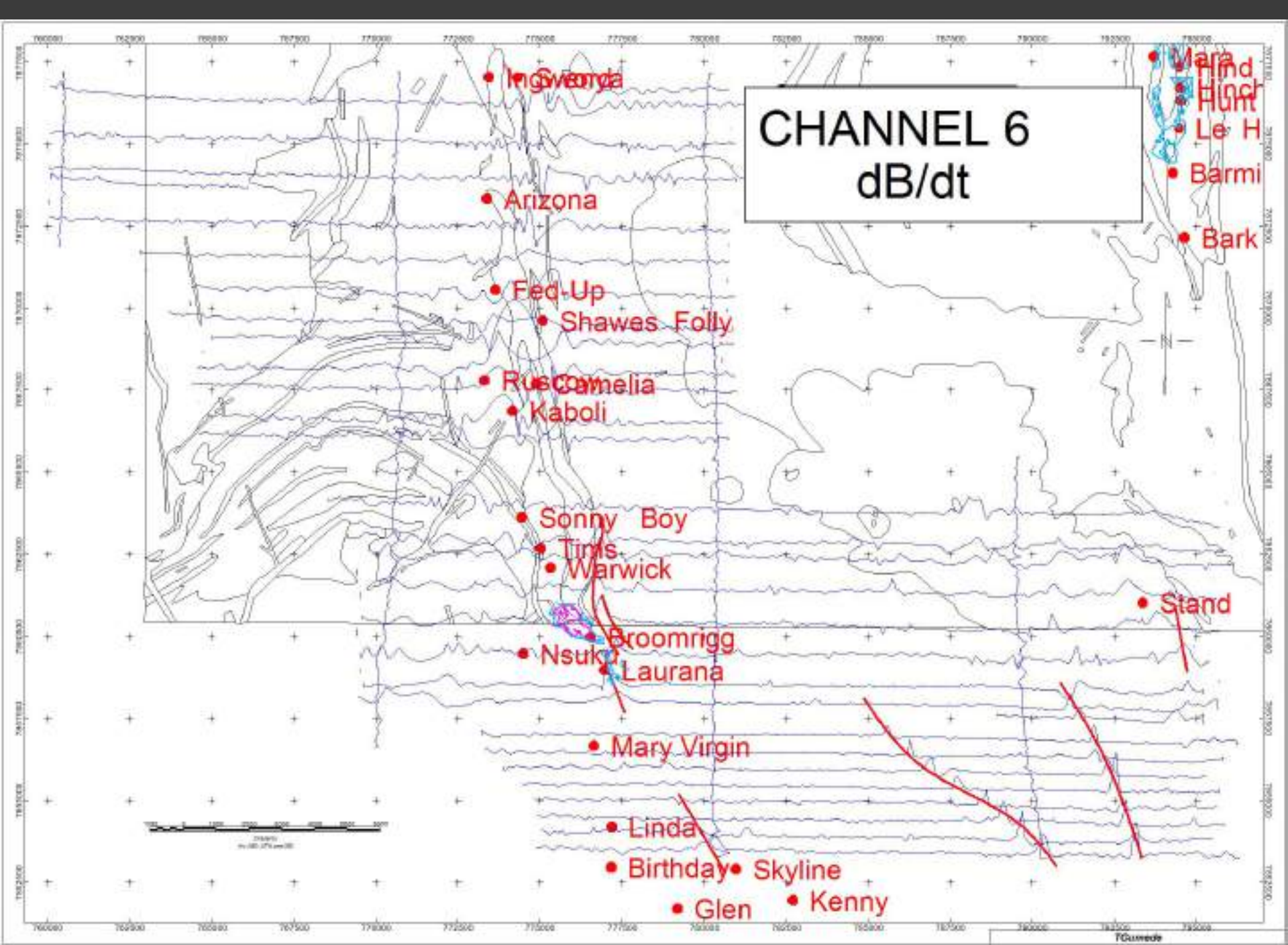
Sonny Boy
Tims
Warwick

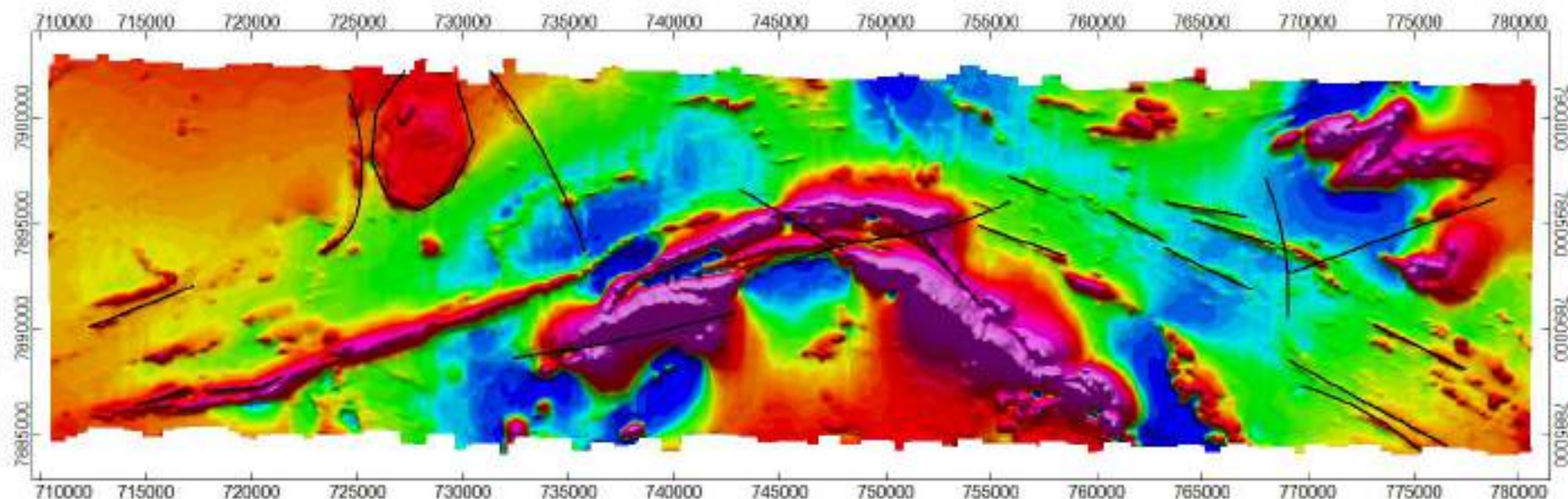
Broomrigg
Nsuku
Laurana



CHANNEL 6 dB/dt

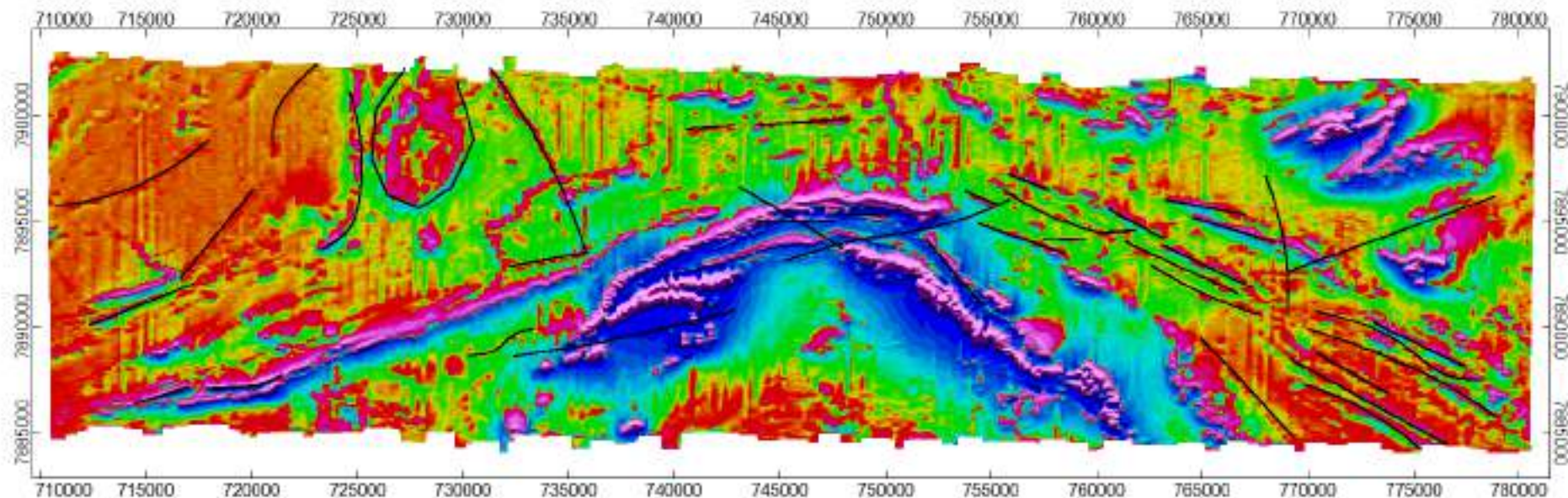




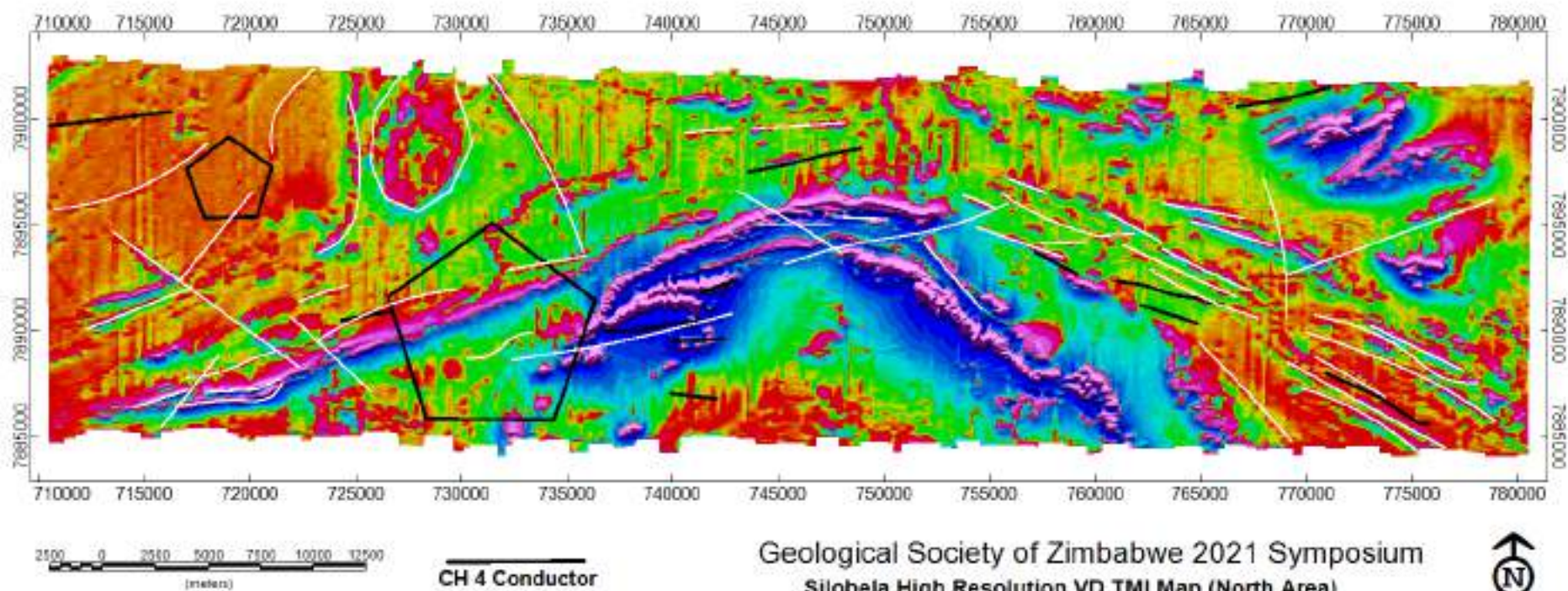


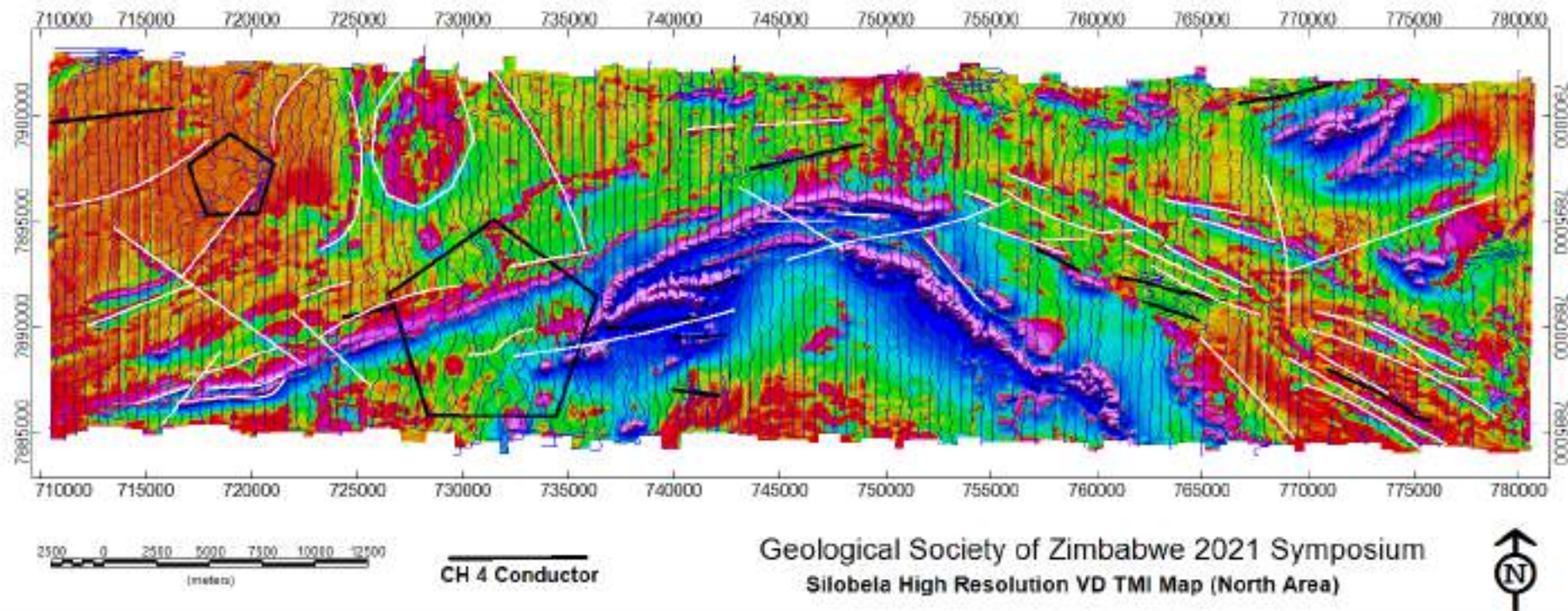
Geological Society of Zimbabwe 2021 Symposium
Silobela High Resolution RTP TMI Map (South Area)

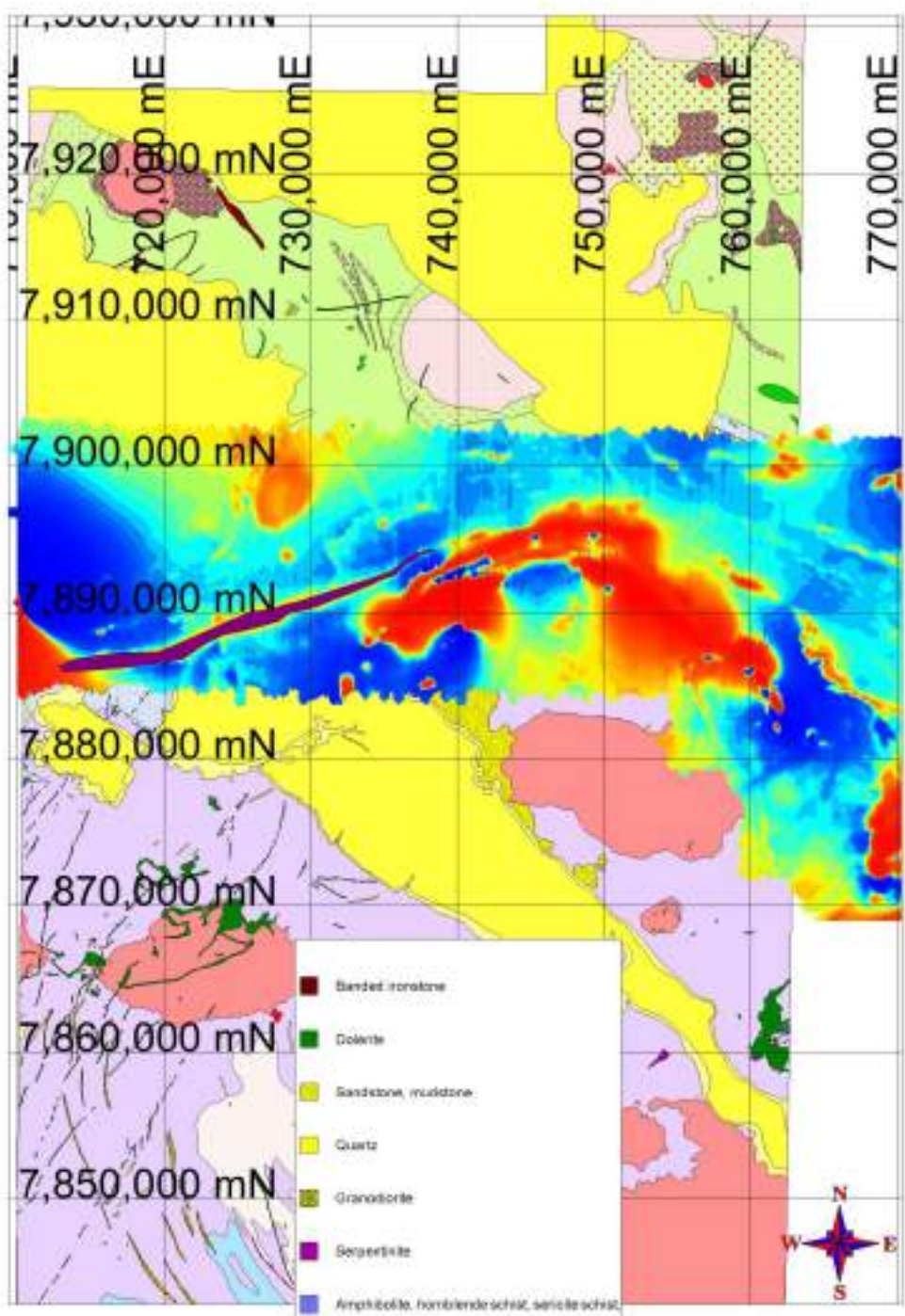


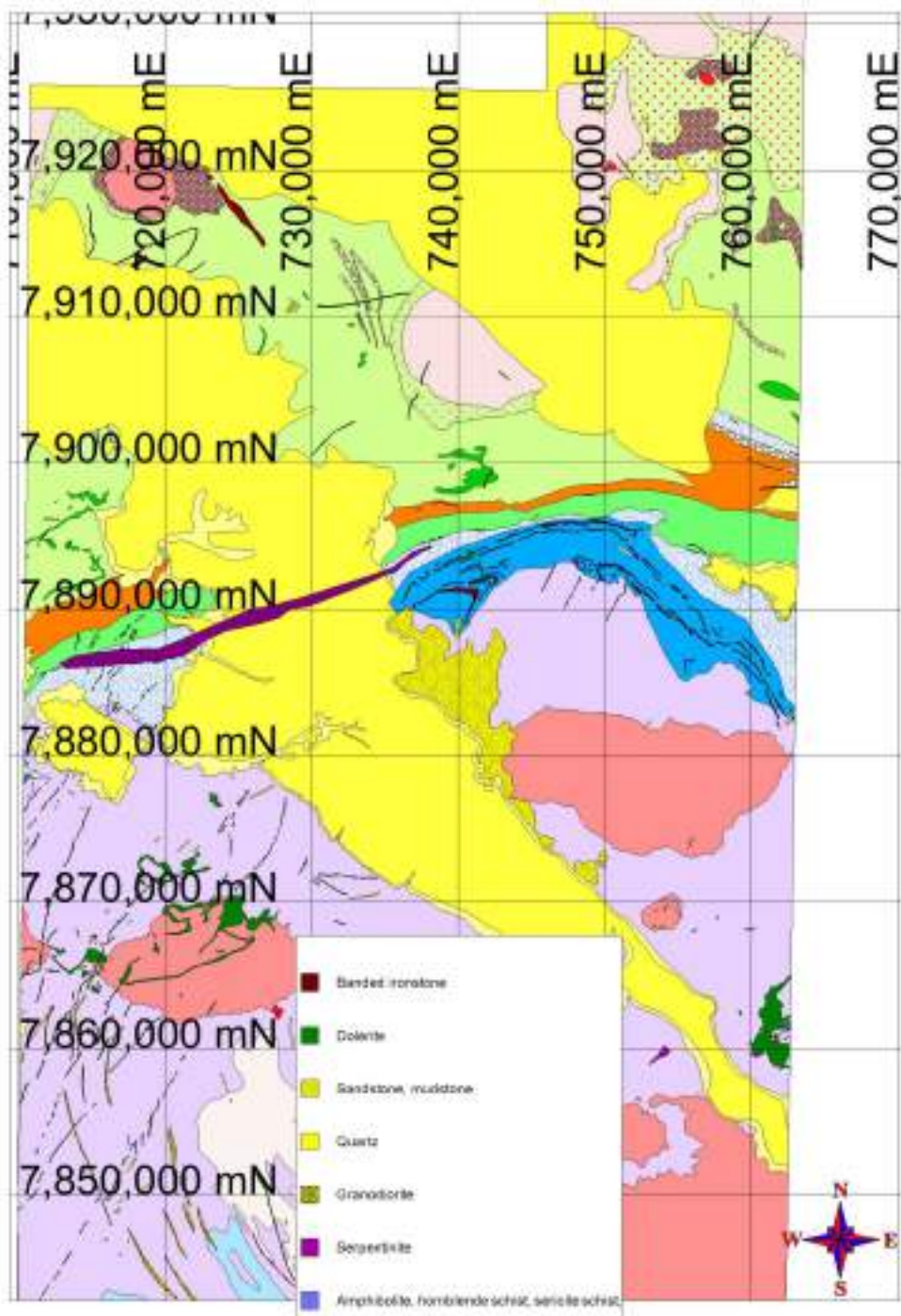


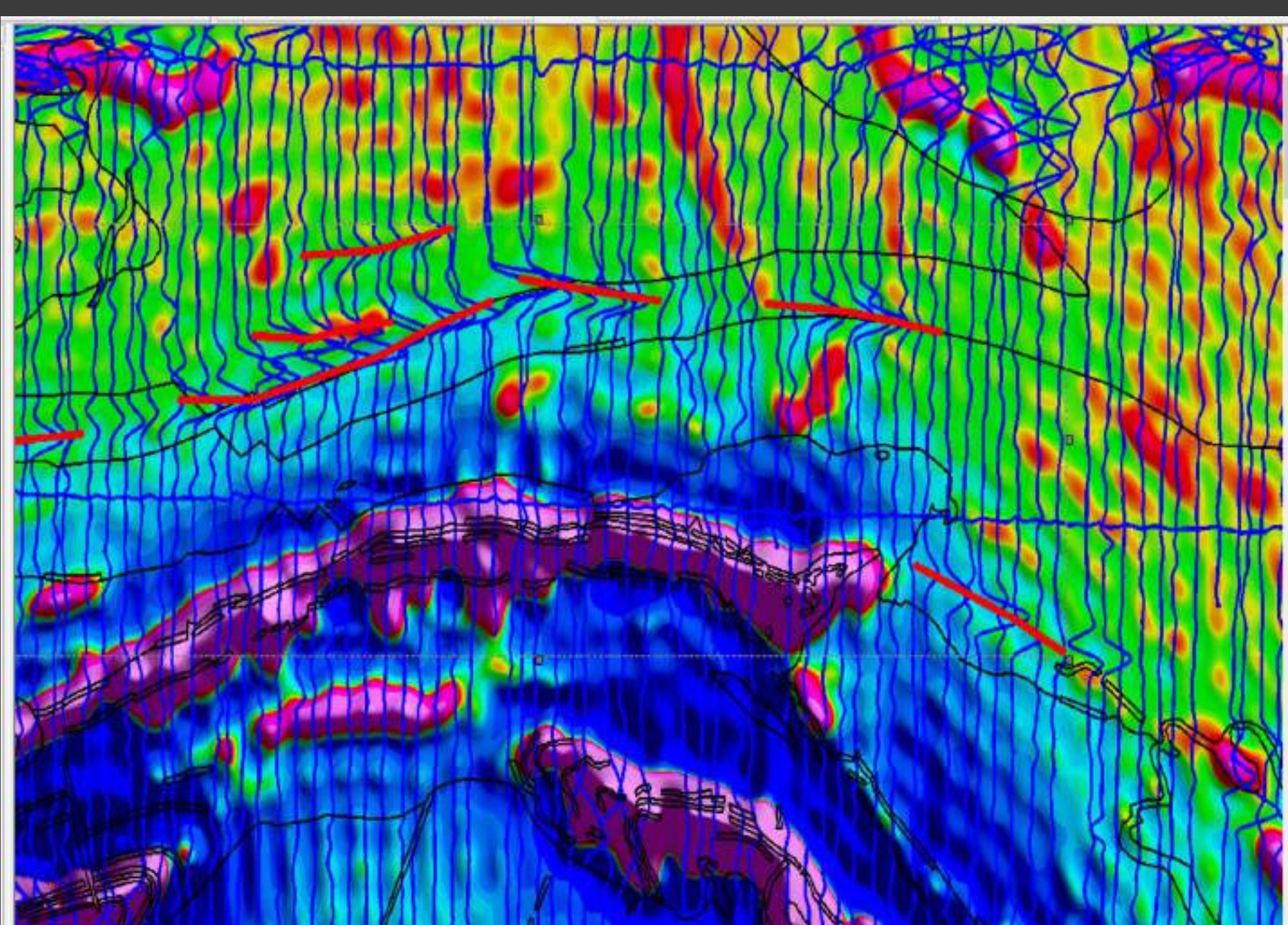
Geological Society of Zimbabwe 2021 Symposium
Silobela High Resolution RTP TMI Map (South Area)

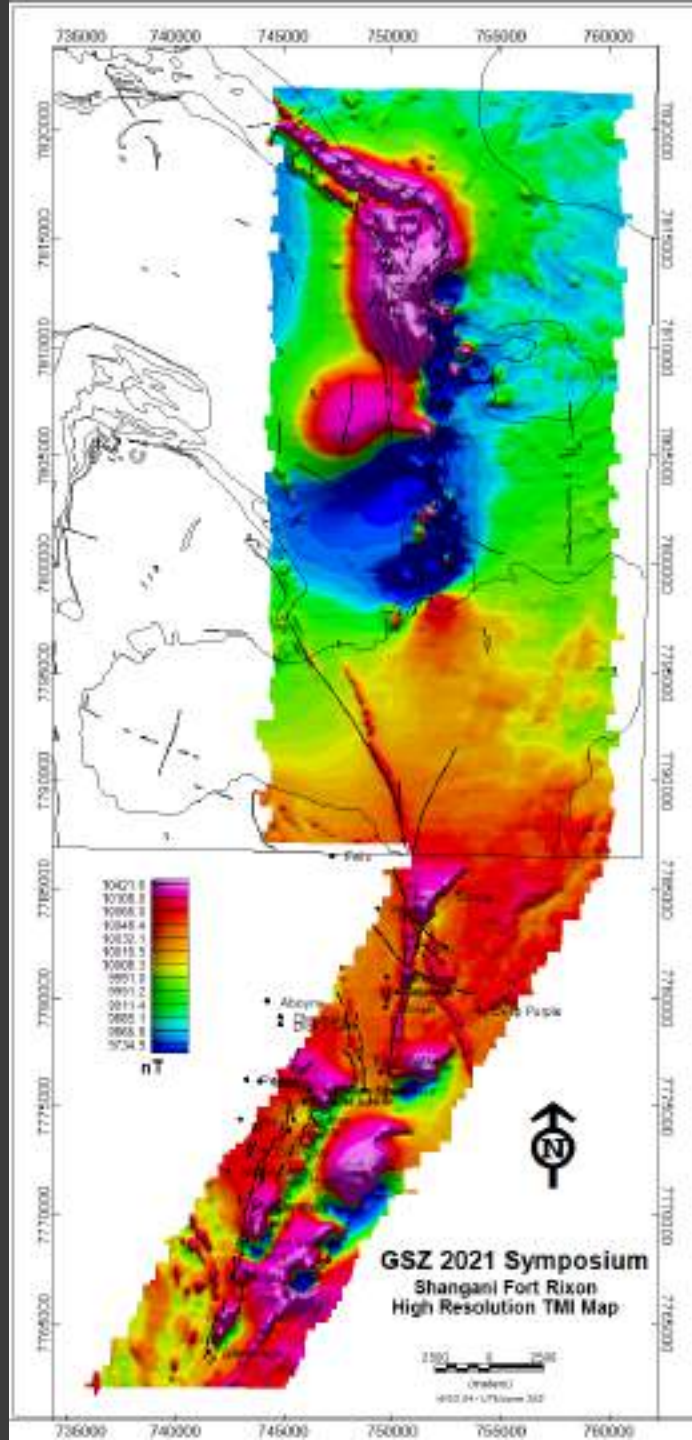




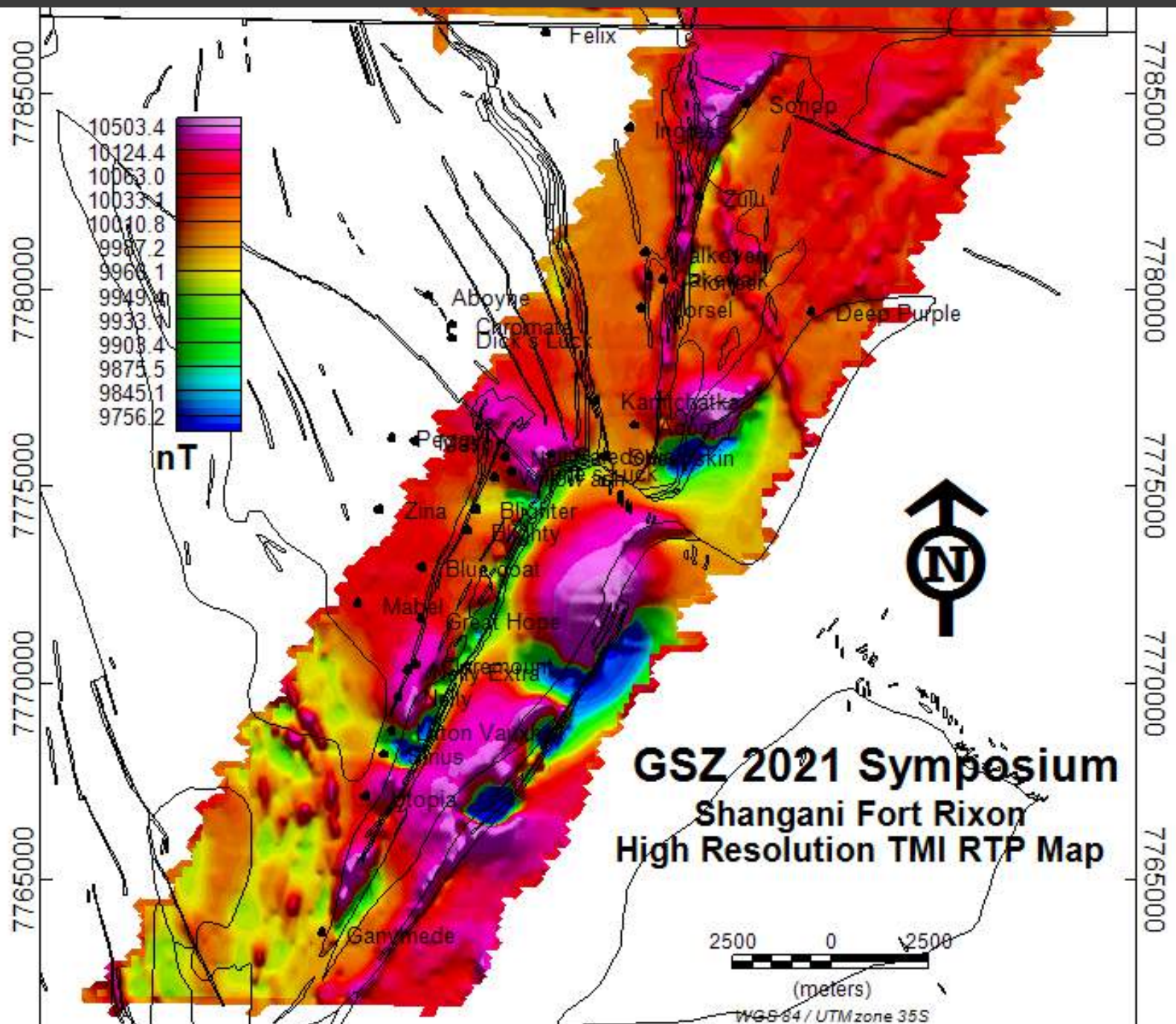


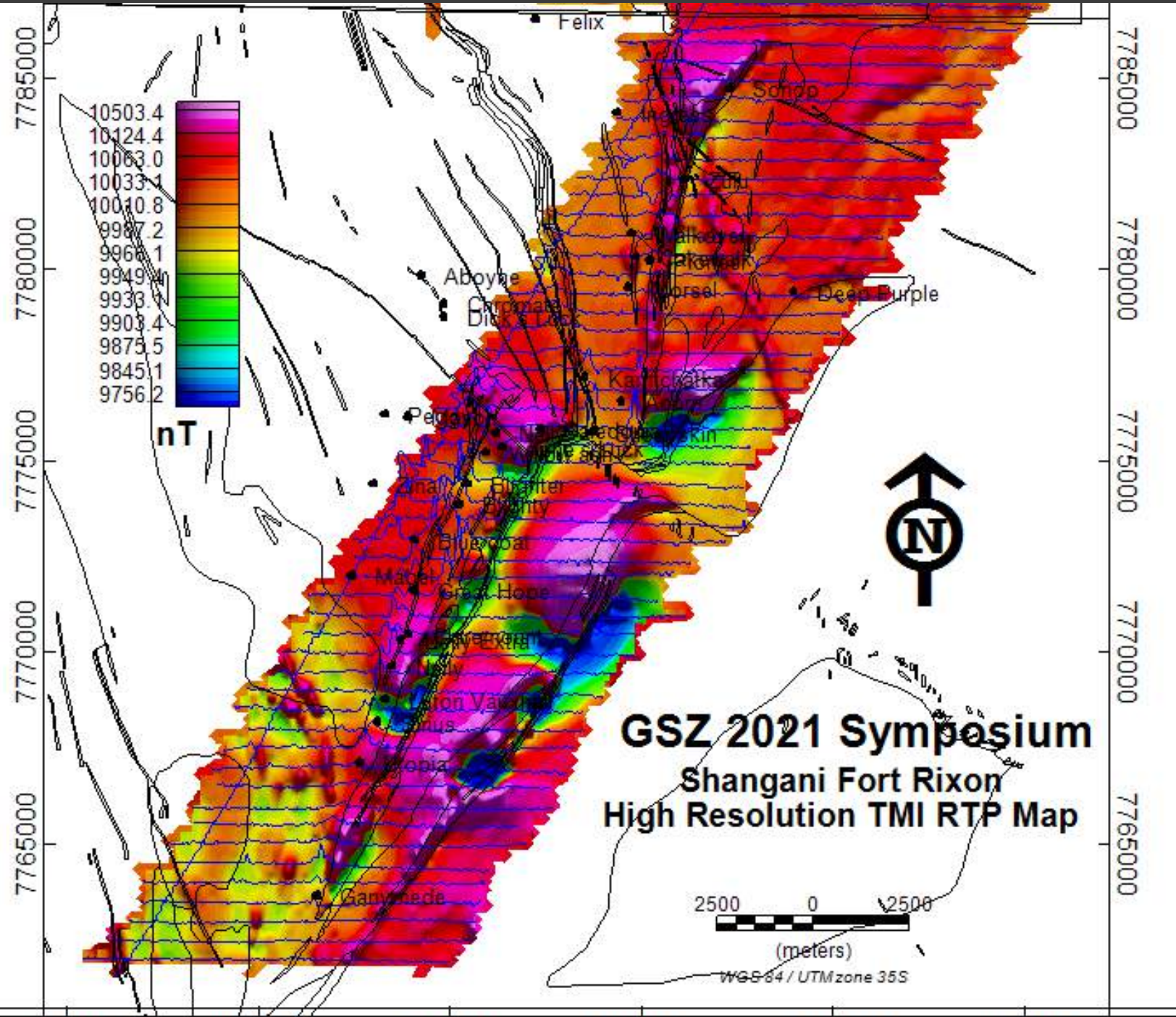


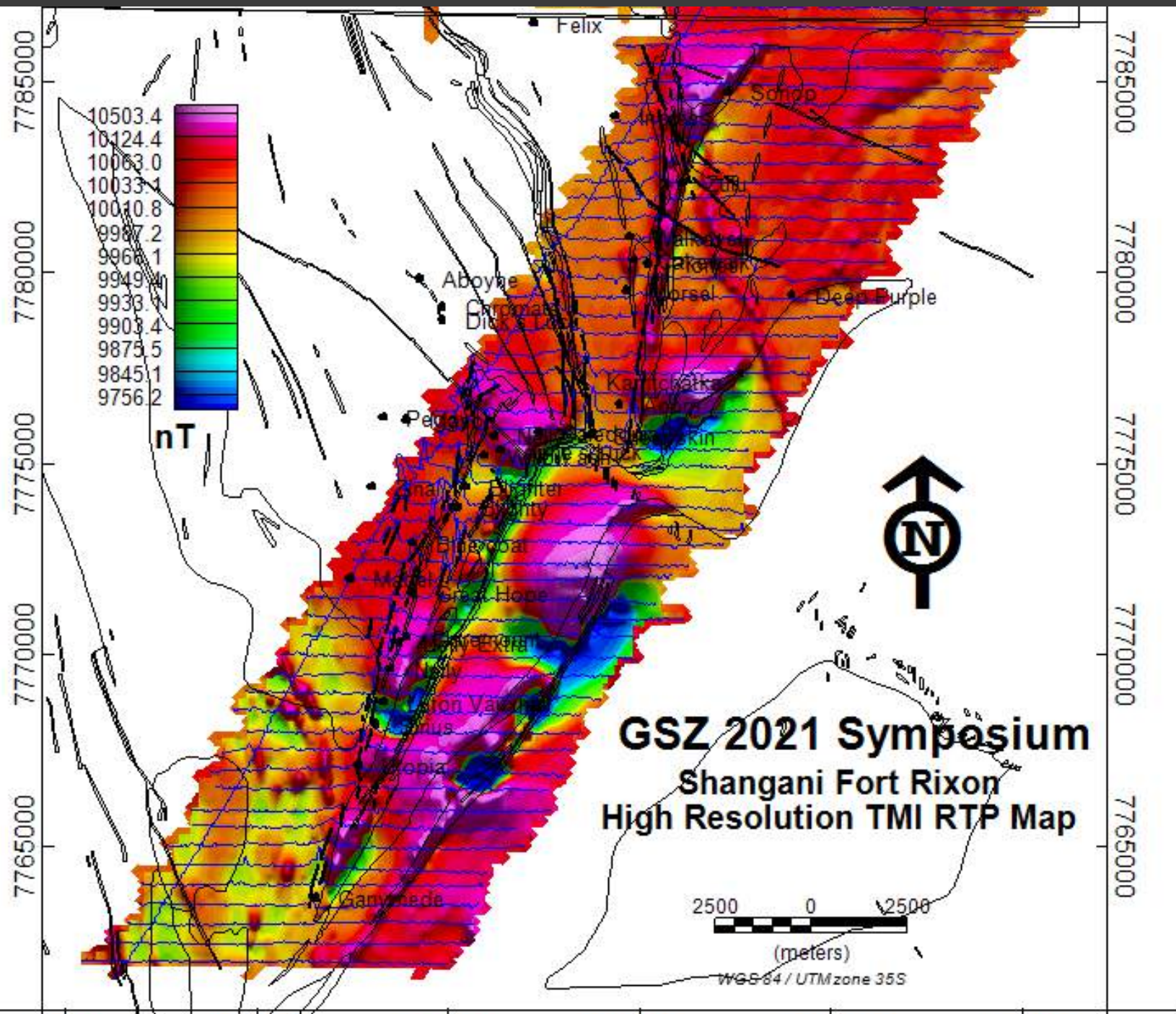




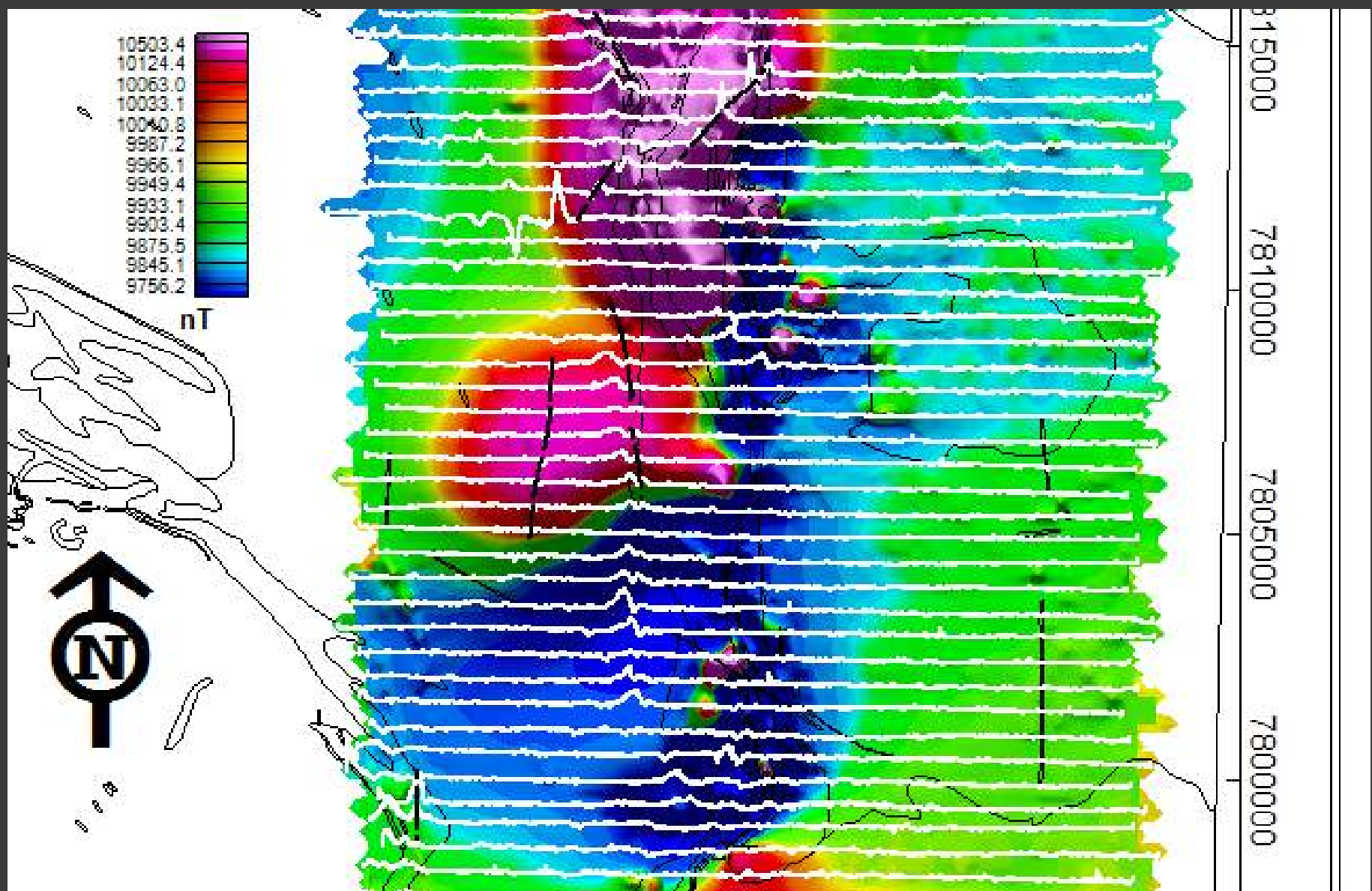
- ✓ Magnetic North and South associated with mapped ultramafic units
- ✓ Magnetic South associated with mapped ultramafic
- ✓ North West South East trending ironstone
- ✓ Mtshingwe Fault is mapped
- ✓ Granites give ambient field to low magnetic field







- ✓ Very strong conductors to the south
- ✓ Lowest Priority 1 conductivities of 7 S
- ✓ Highest Priority 1 conductivities of up to 40 S
- ✓ Associated with gold mineralisation
- ✓ Likely to be some massive sulphides at depth

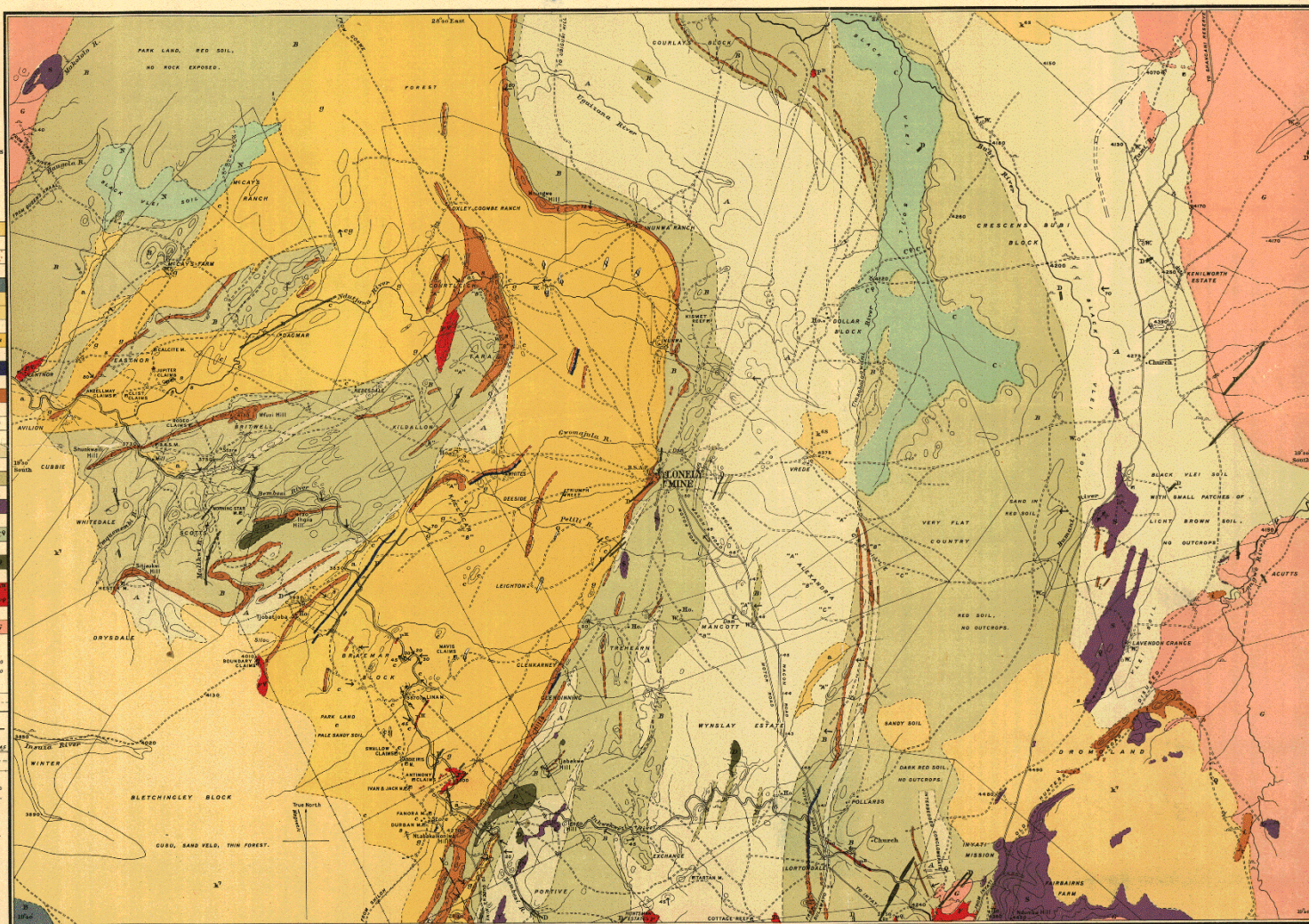


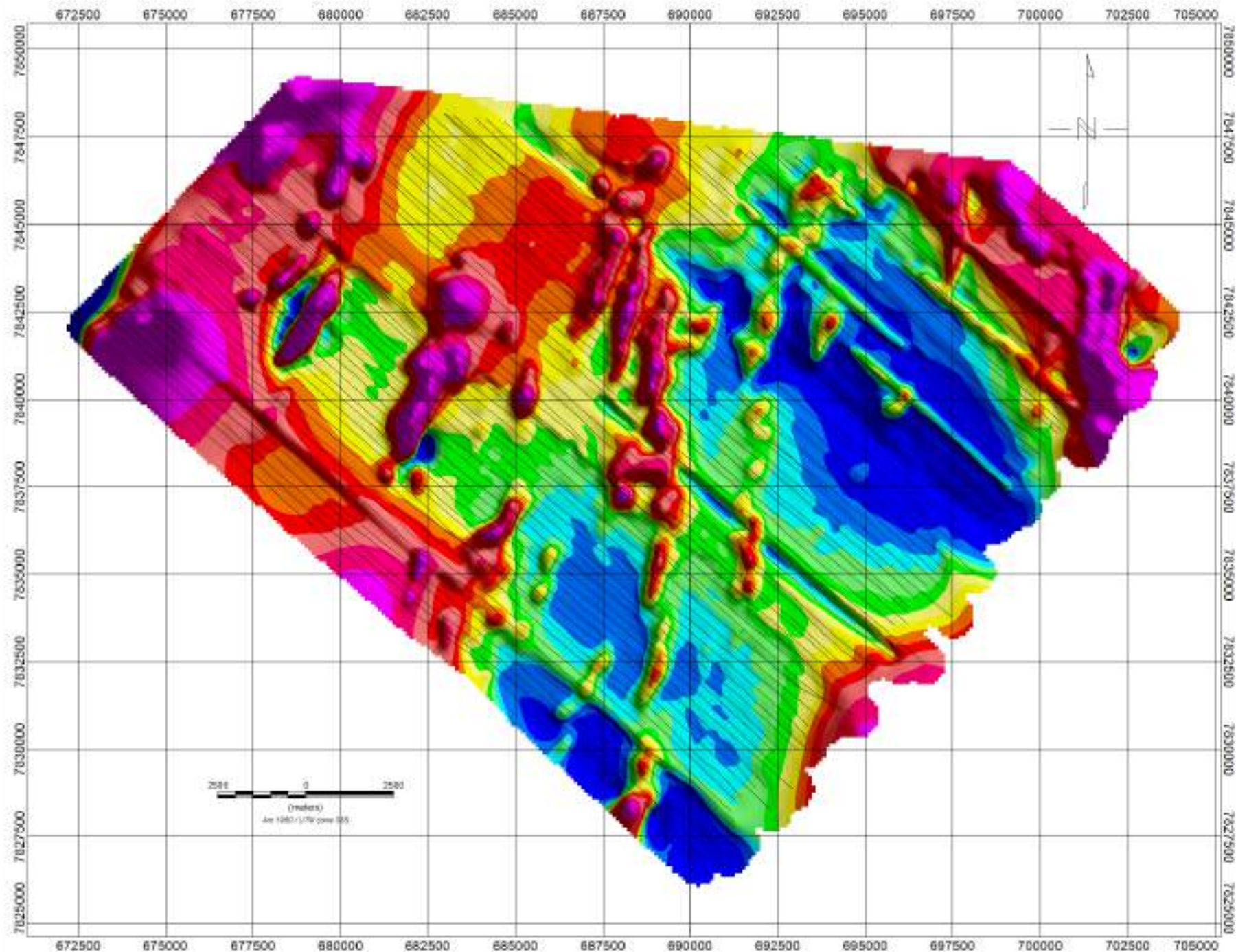
OTHER DATA – PART LONELY AREA BULLETIN 11

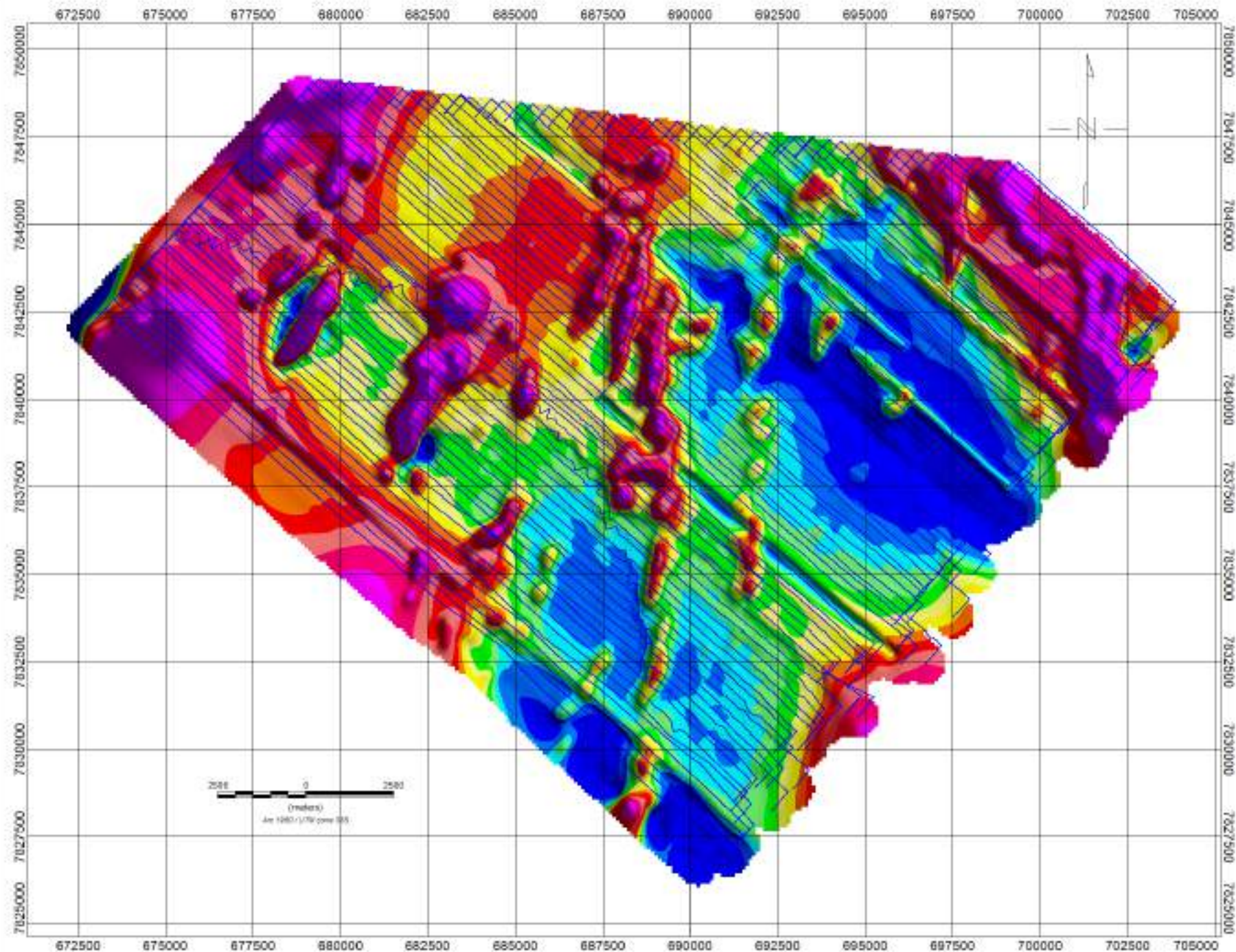
GEOLOGICAL SURVEY OF SOUTHERN RHODESIA
**GEOLOGICAL MAP
 OF THE COUNTRY AROUND THE
 LONELY MINE, BUBI DISTRICT.**
 Scale 500 Cape roads to one inch, or 1:119,000.
 Geologically surveyed in 1922-22 by A.M. McGregor.

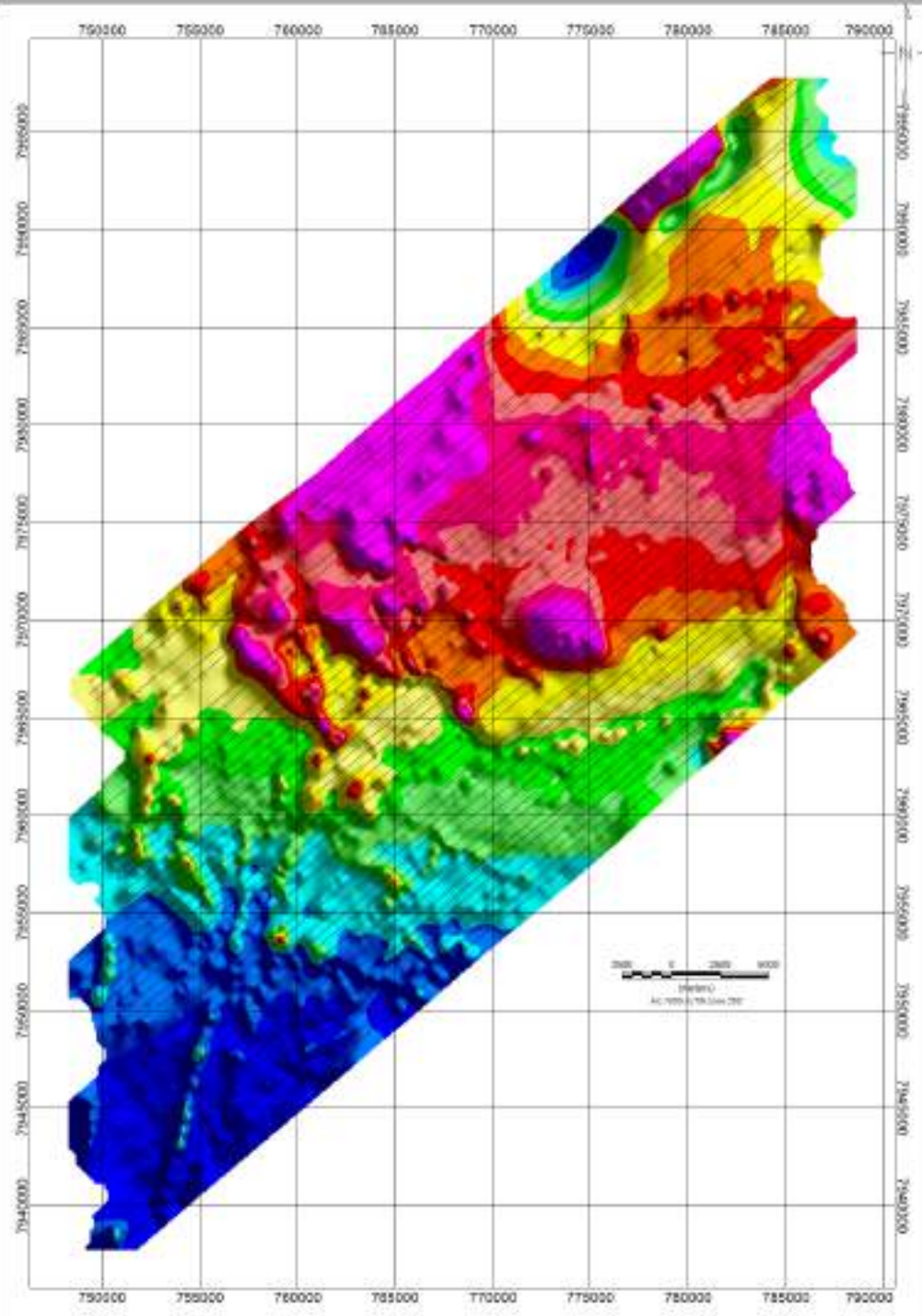
EXPLANATION

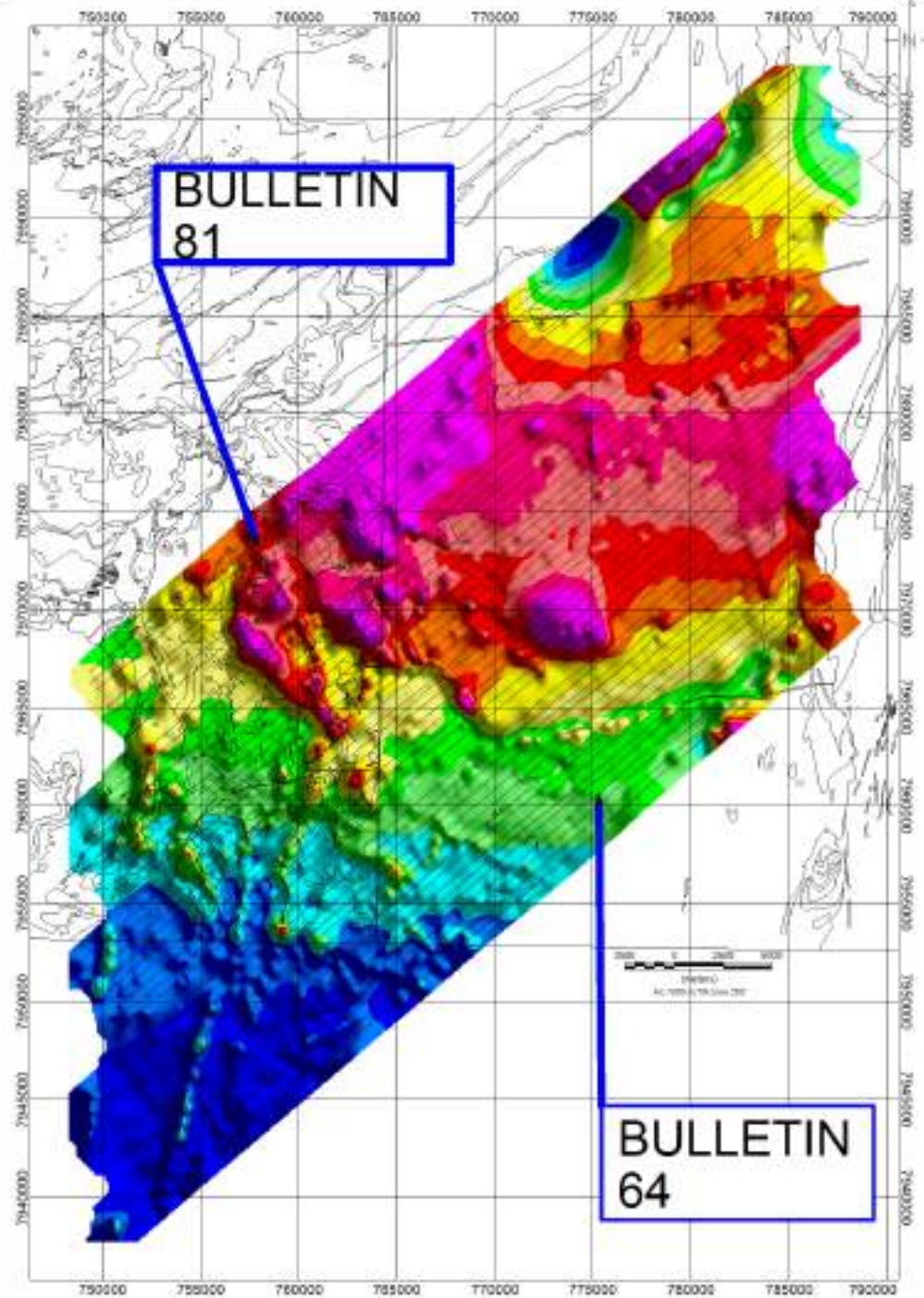
ALFVIM	
KALAHARI SYSTEM	
KARROO SYSTEM	
SOMALIA BEDS	
Nitajana Series	
Interbedded in the Nitajana Series and Greenstone Schists	
Basalt	
Porphyritic andesite	
Granite and quartz	
Applamaton, tuffs and lavas of intermediate composition	
Epilite and Carbonated Greenstones of basic composition (including pillow-lavas)	
Serpentine and silicified serpentine, peridotite	
Nurite, gabbro and quartz-gabbro	
Dolerite dykes, doleritic greenstone	
Porphyry, barabenda porphyry, quartz porphyry (later)	
Porphyry, Gabbro, quartz porphyry	
Granite, gneissic granite	
Dip of strata, amount in degrees	
Dip of cleavage or foliation, amount in degrees	
Geological boundaries	
Outcrop of reef, arrow shows direction of dip	
Fault	
Mine or shaft	
Chief roads	
Other	
Fence boundaries	
Beacon	
Height in feet above sea level	
House	
Windmill	
Well	
Dipping track	
Native trail	











BULLETIN
81

BULLETIN
64

0 1000 2000
METERS
ACROSS (1:100,000)

GOLDEN
CORPUS
CITY
SANTA
FE
GILTED
EDGE
BIRTHDAY
LIBRARY
SANTA
FE
SANTA
FE

CONCLUSIONS

- ✓ THE VINTAGE DATA, PARTICULARLY GRAVITY NEEDS TO BE DEVELOPED BY TO A BETTER SPACING.
- ✓ THE REGINAL DATA IS STILL VERY COURSE
- ✓ ONLY SELECTED GREENSTONE AREAS HAVE HIGH RESOLUTION DATA
- ✓ SELECTED AREAS HAVE AIRBORNE ELECTROMAGNETICS