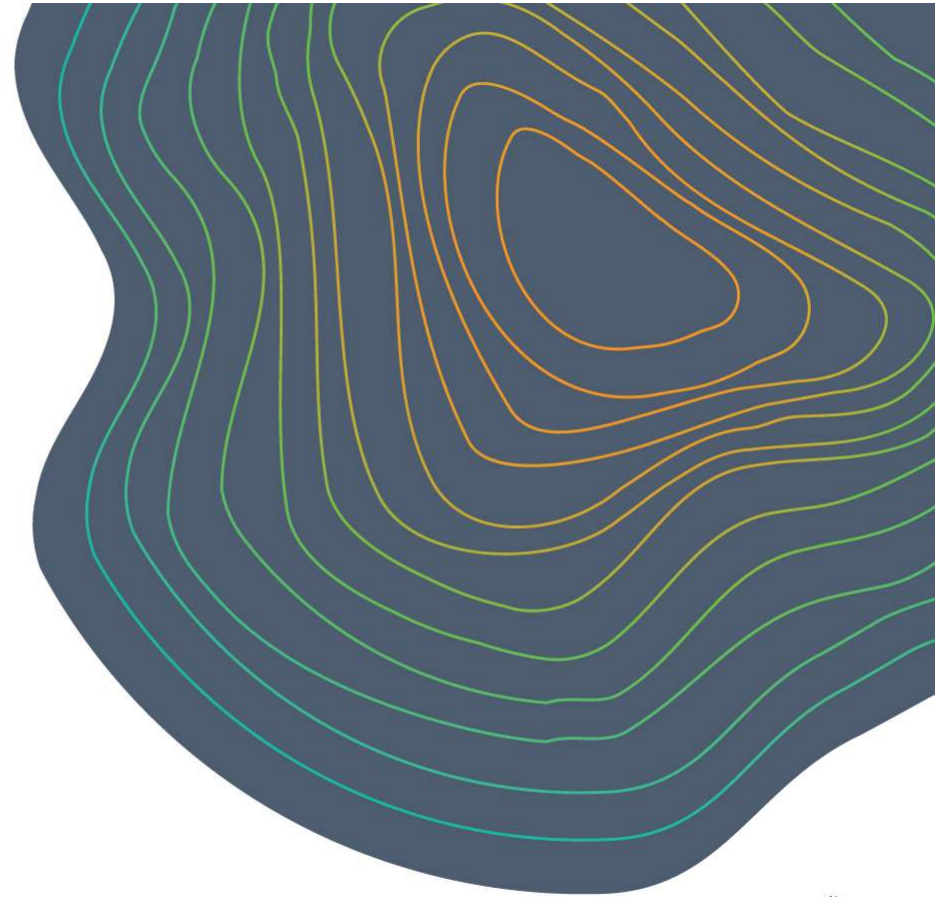


# Pre-competitive Geophysical data acquisition program

Matthew Greenwood  
Manager, Regional Compilations

Geological Survey of Queensland  
**Celebrating 150**  
Exploring Queensland's Resources **Years**





## Outline

- Current state coverage
- Recently acquired and published data
- SREP 'new discoveries' geophysics (\$4.275M)
- Future acquisition planned
- Questions and contacts

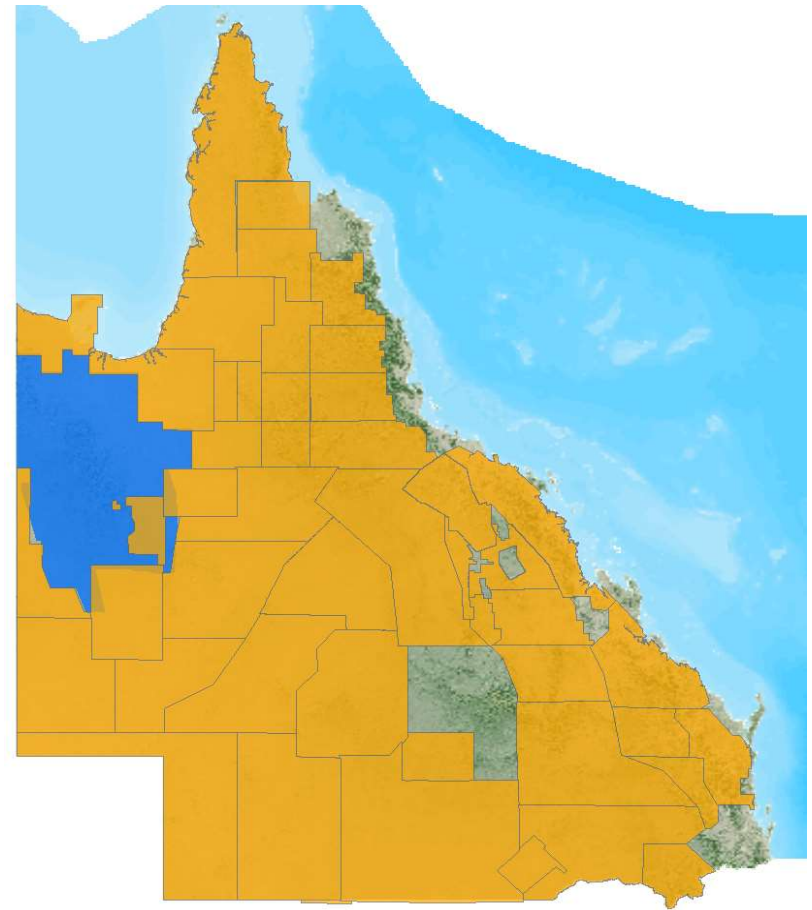


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## Magnetics - Radiometrics

- State coverage >90% at 400m line spacing or better airborne magnetics and radiometrics
- Focus on improving exposed Mt Isa Province and extensions under cover
- Acquisition of high-resolution (>100 m line spacing) data commenced in 2017

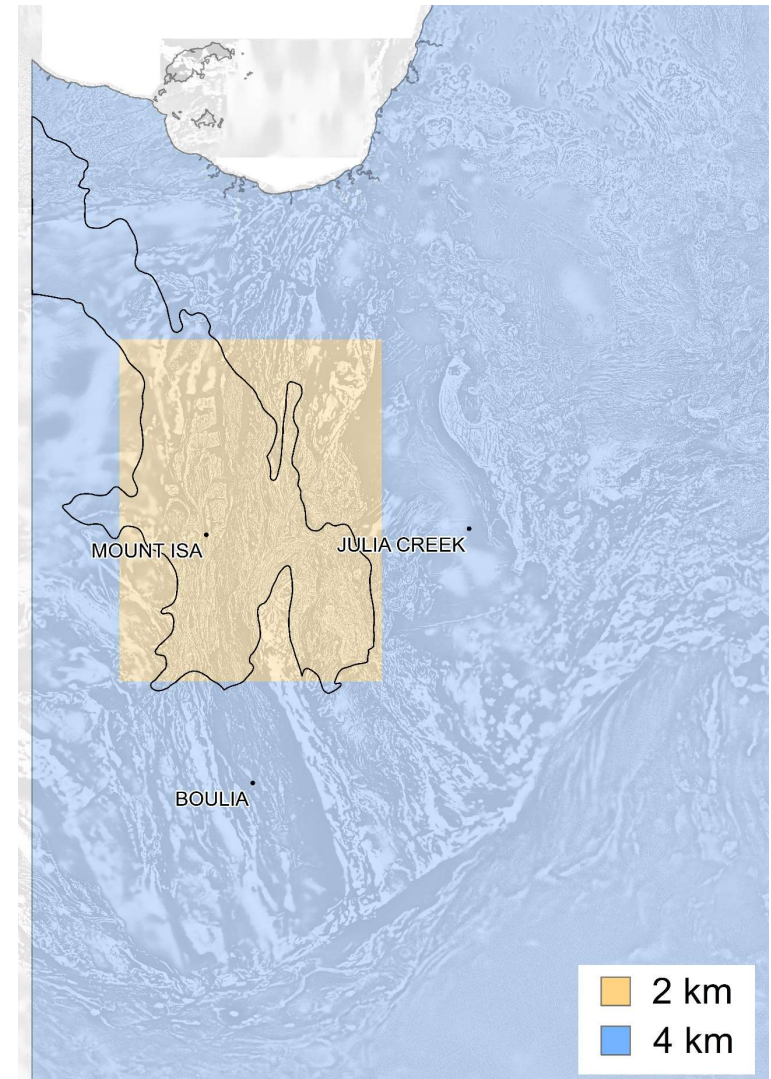


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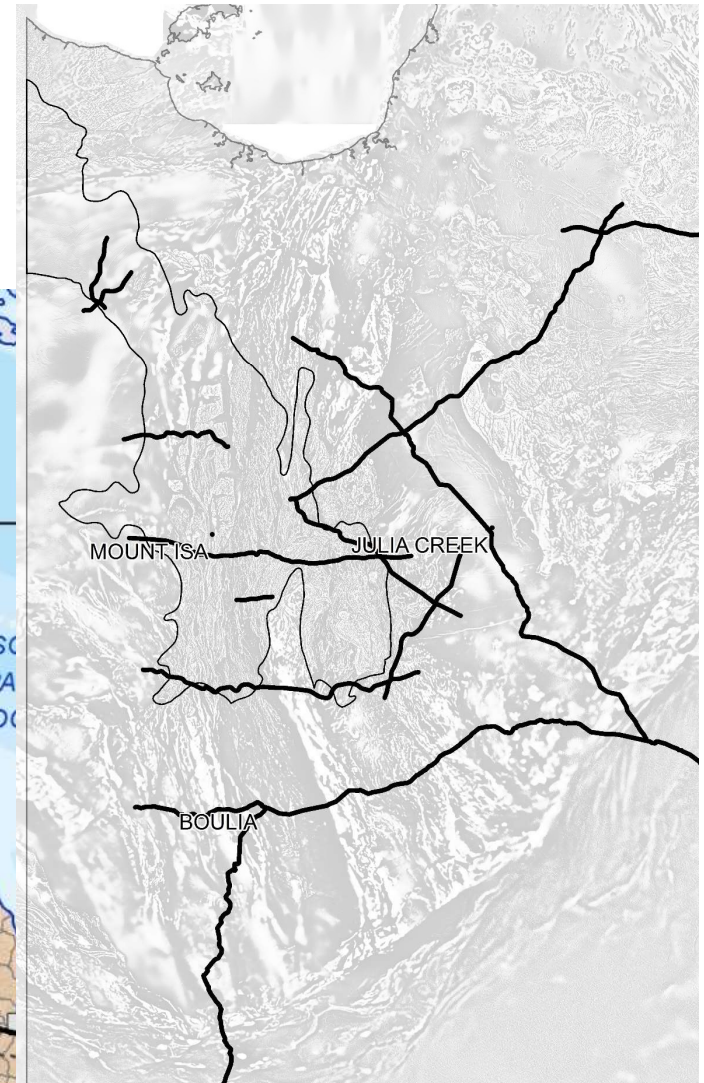
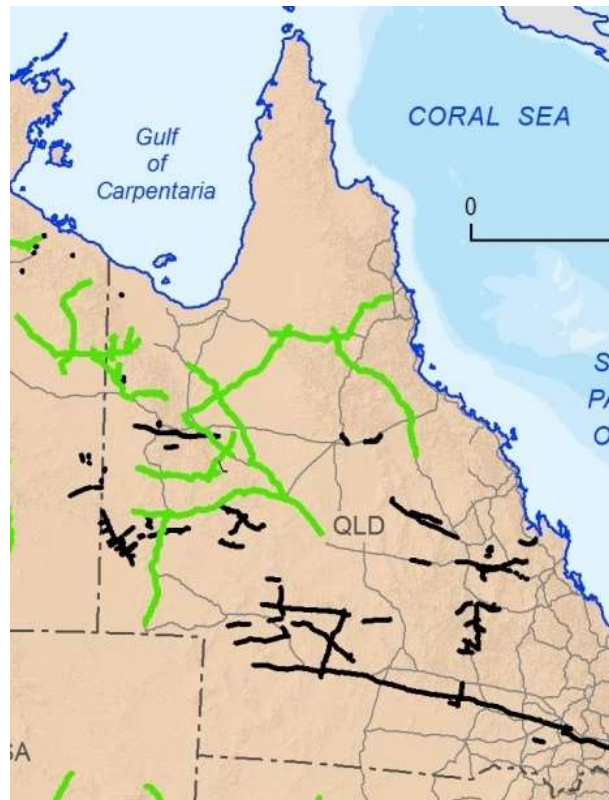
# Ground gravity

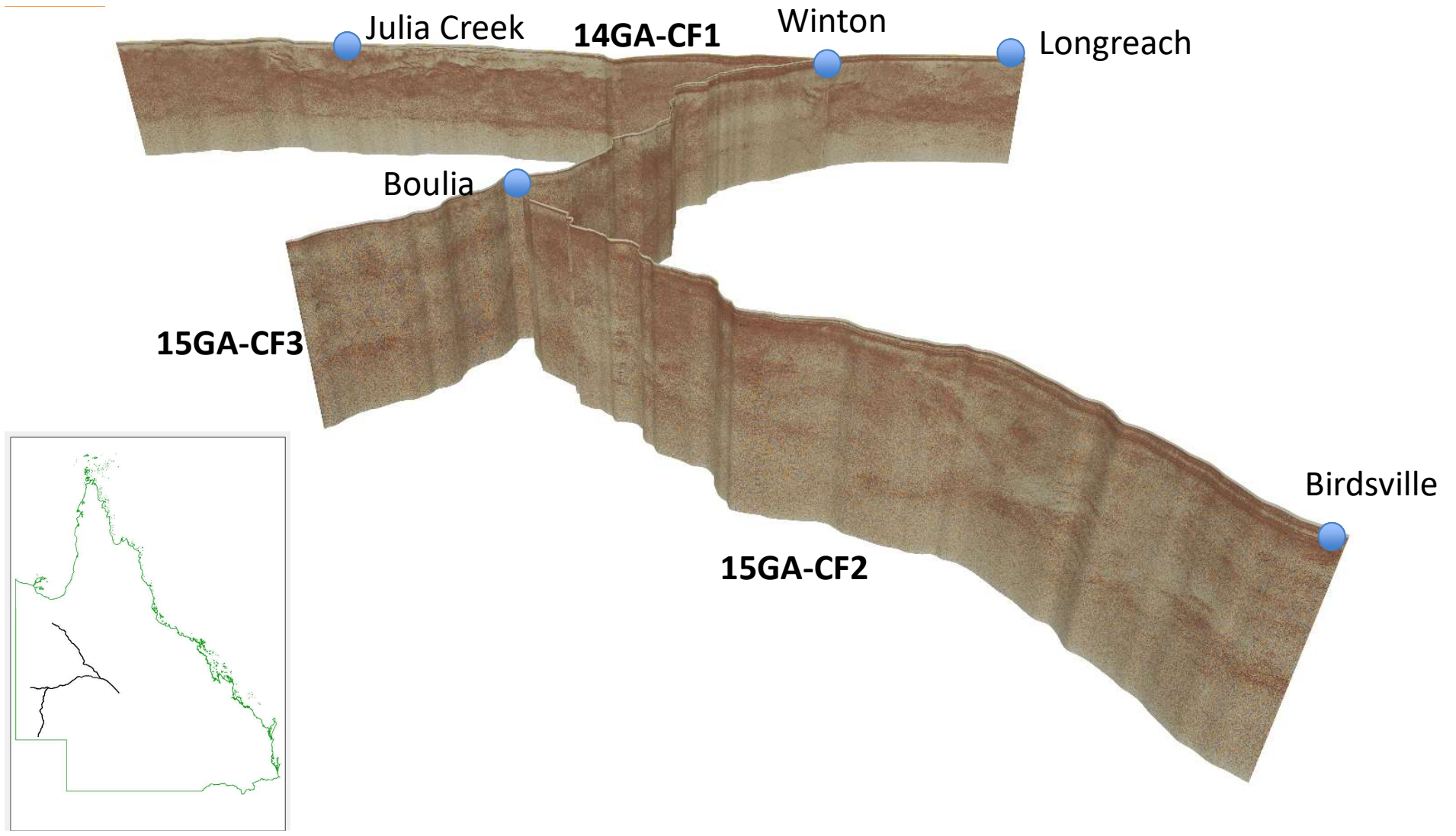
- Most of the exposed Mt Isa Province – 2 km ground gravity or better
- Elsewhere – ~4 km station spacing
- Merge of Federal, state and exploration open file data (ANGD)



# Deep crustal seismic

- Deep (20s TWT) seismic profiles collected by GSQ and GA
- New 2D line in planning stages near Camooweal

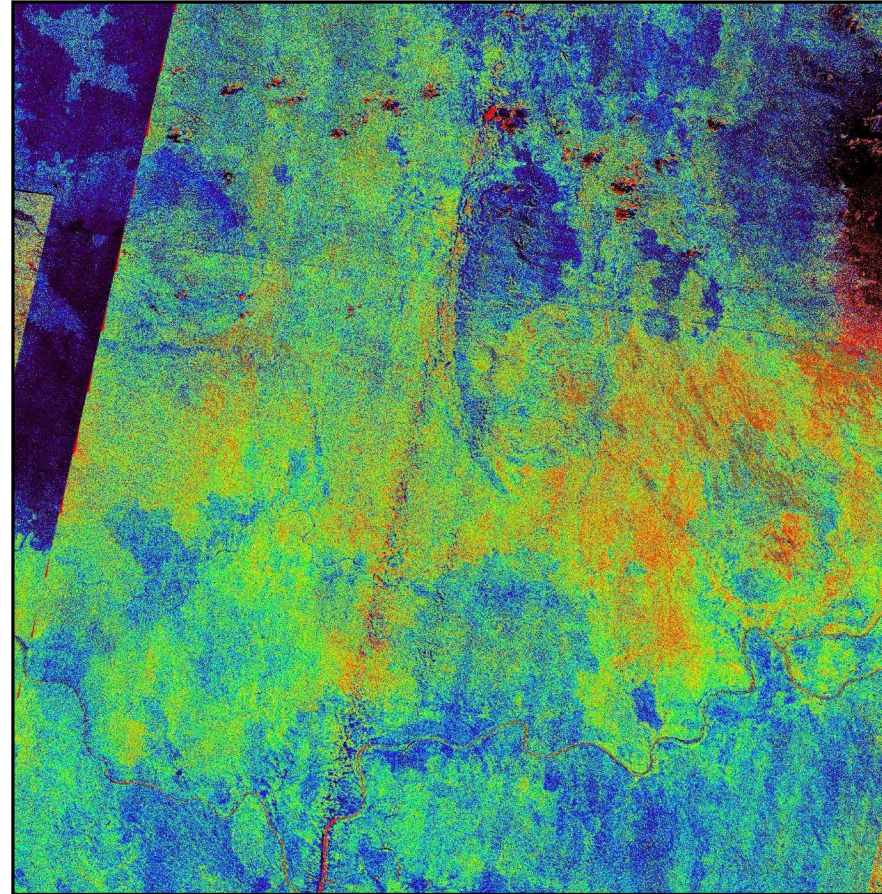






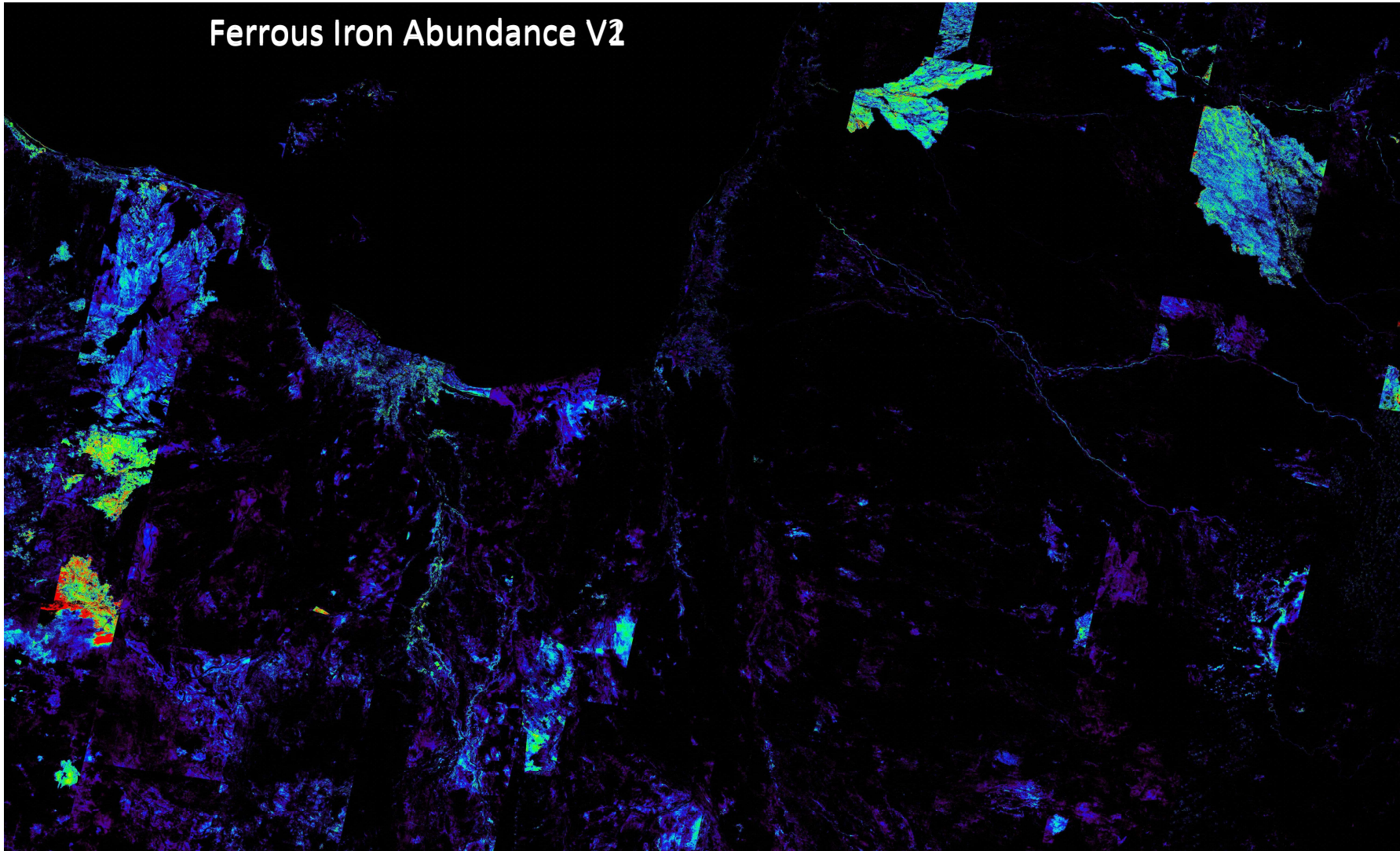
# ASTER v.2 – Queensland

- Improved vegetation unmixing compared to v. 1
- As a result, heavy masking not required - pixel coverage increased to 90%
- Released in early 2017



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# Ferrous Iron Abundance V1



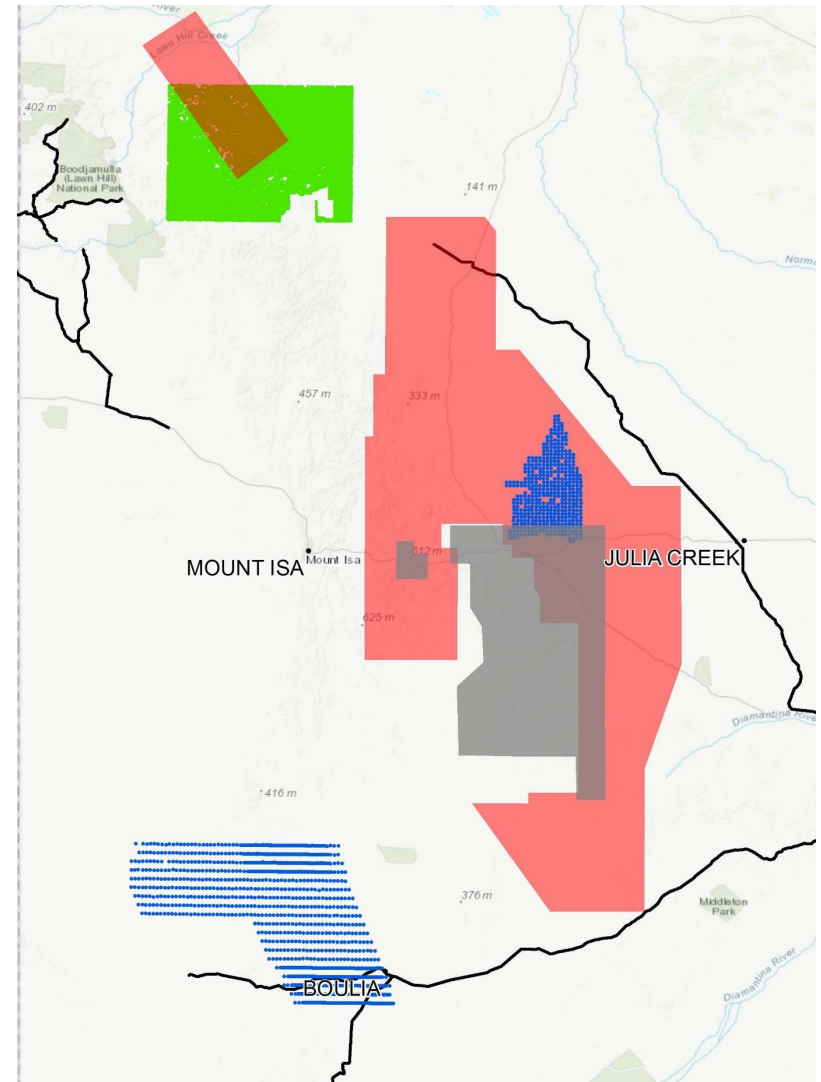




# Recently completed geophysics

-  • Airborne EM ( $\leq 2.5$  km)
-  • Magnetotelluric ( $\leq 2.5$  km)
-  • 1 km ground gravity
-  • High resolution magnetics ( $\leq 100$  m)
-  • Deep crustal seismic

All released data available at QDEX Data <http://qdexdata.dnrm.qld.gov.au>





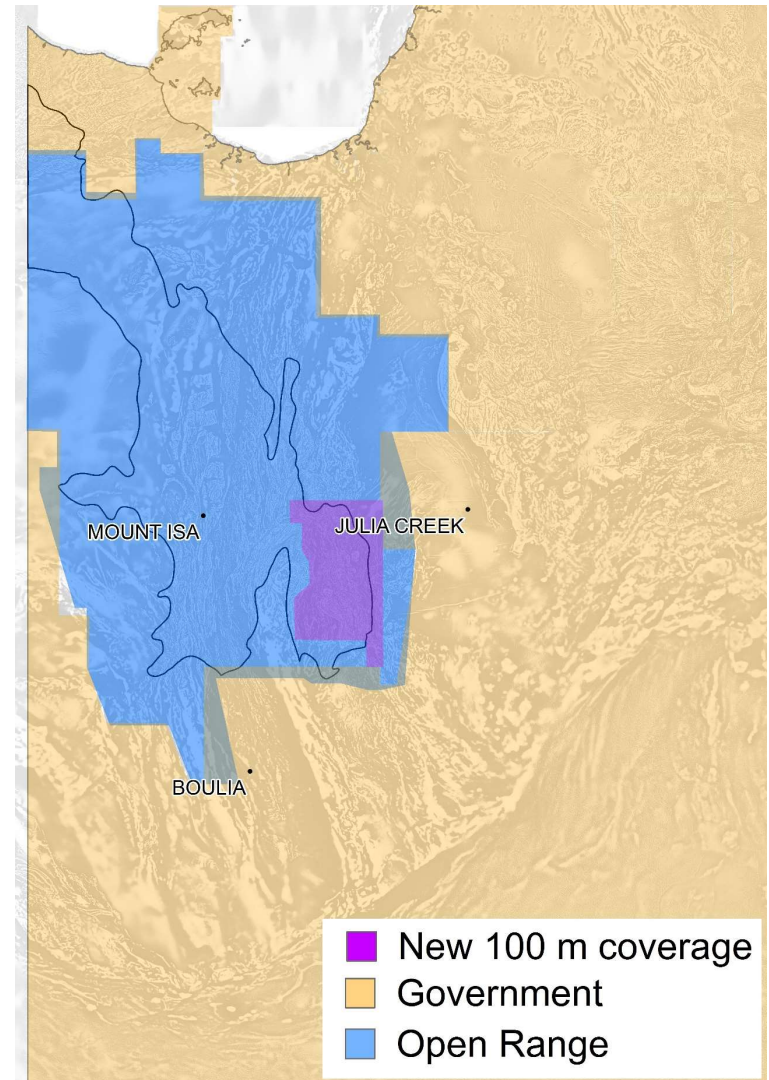
## GSQ New Discovery Program – geophysics

- Expanding 100-m airborne magnetics and radiometrics
  - Cloncurry South - 2017
  - Cloncurry North – 2018
  - Central Isa – Due to fly 2019



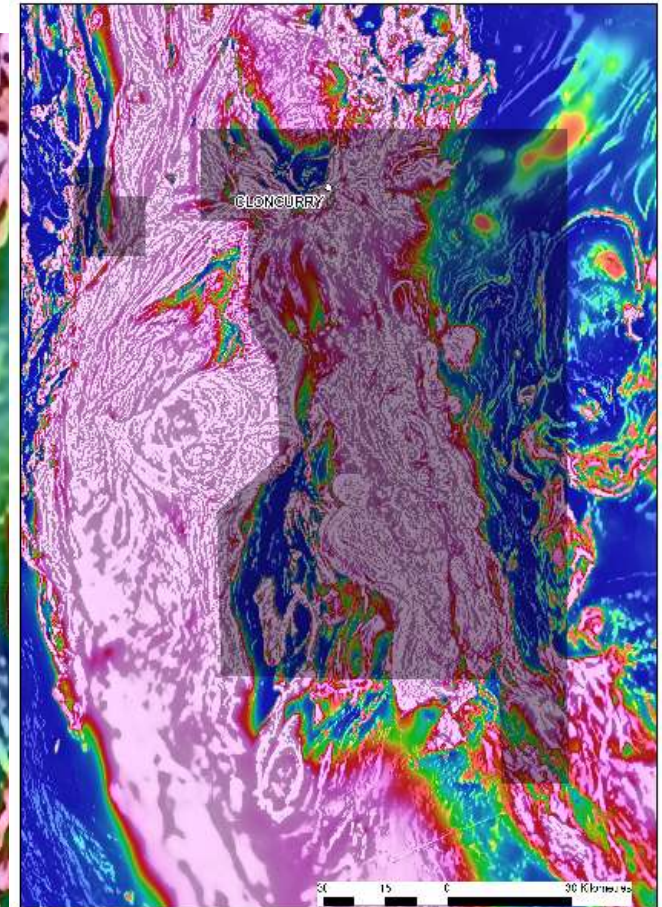
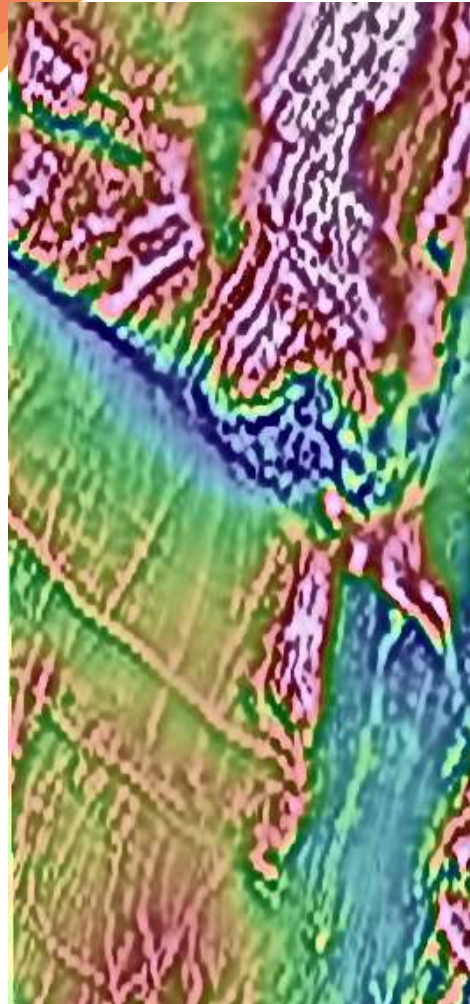
## High-resolution magnetics and radiometrics

- Acquisition of high-resolution (100 m line spacing) data commenced in 2017
- South Cloncurry and Mary Kathleen released April 2018
- North Cloncurry releases February 2019
- Central Isa Belt area tender awarded, flying from Mid-April

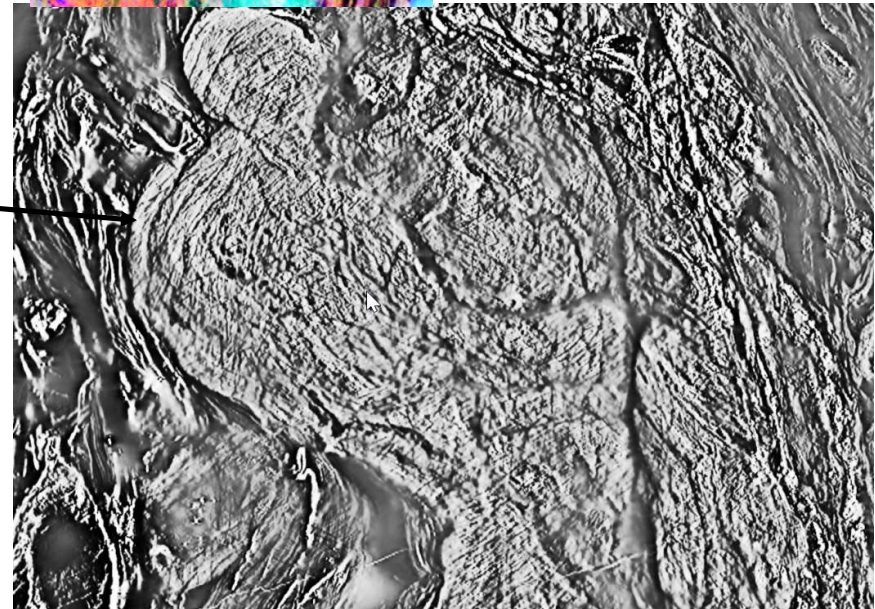
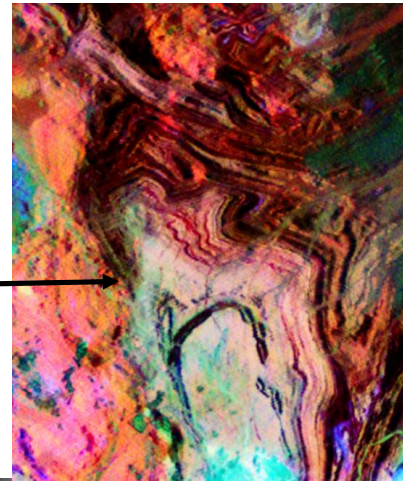
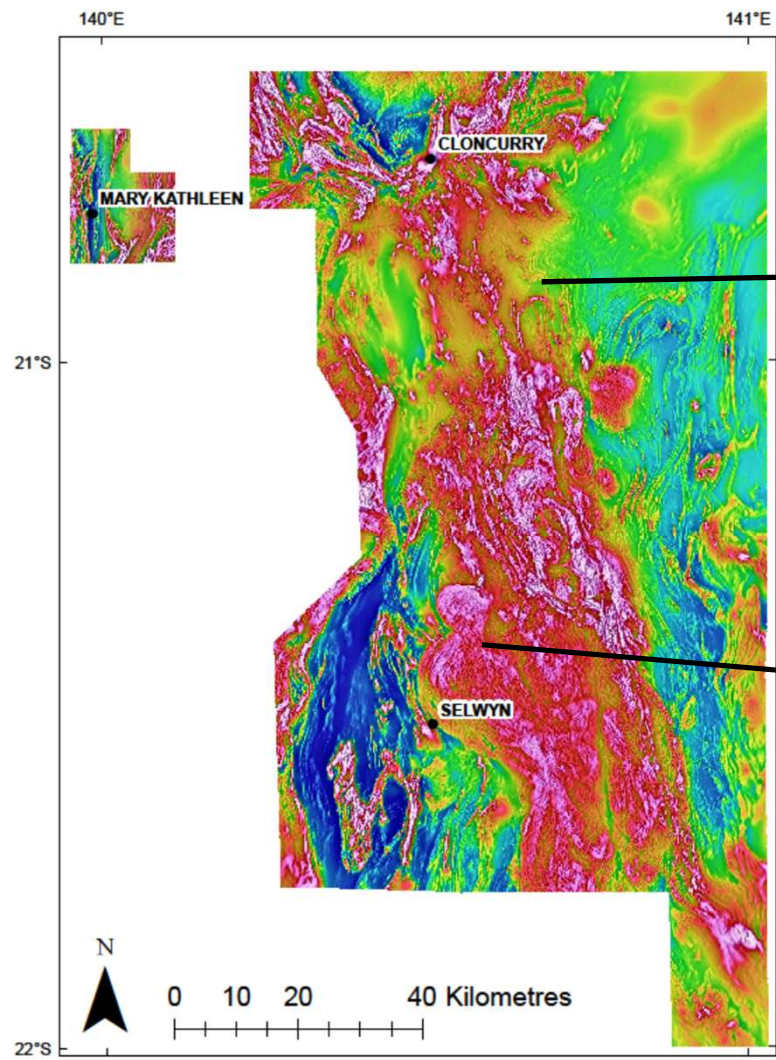


## High-resolution magnetics

- South Cloncurry – 100m line spacing, 50m terrane clearance (Survey #1370)
- Mary Kathleen - 50m line spacing (Survey #1371)
- Significantly better resolution than existing open range data



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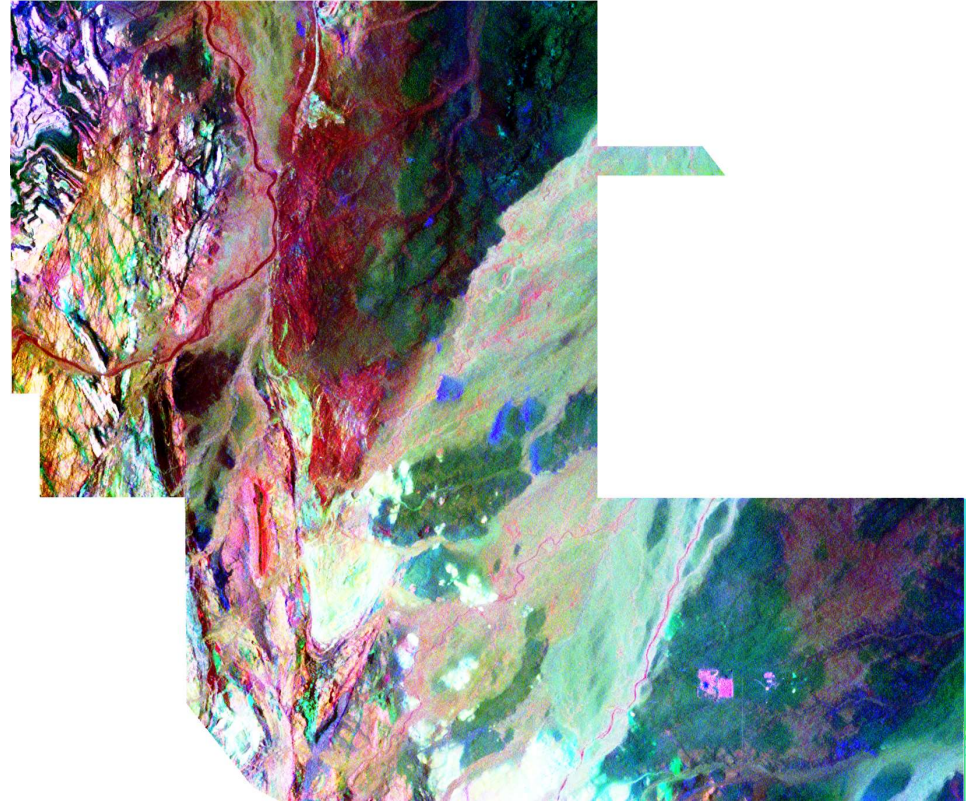




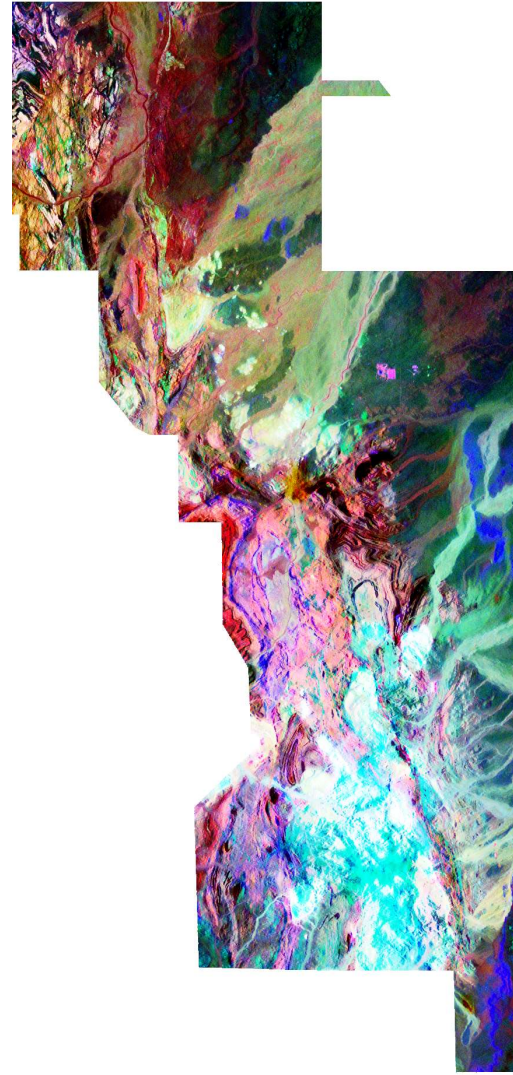
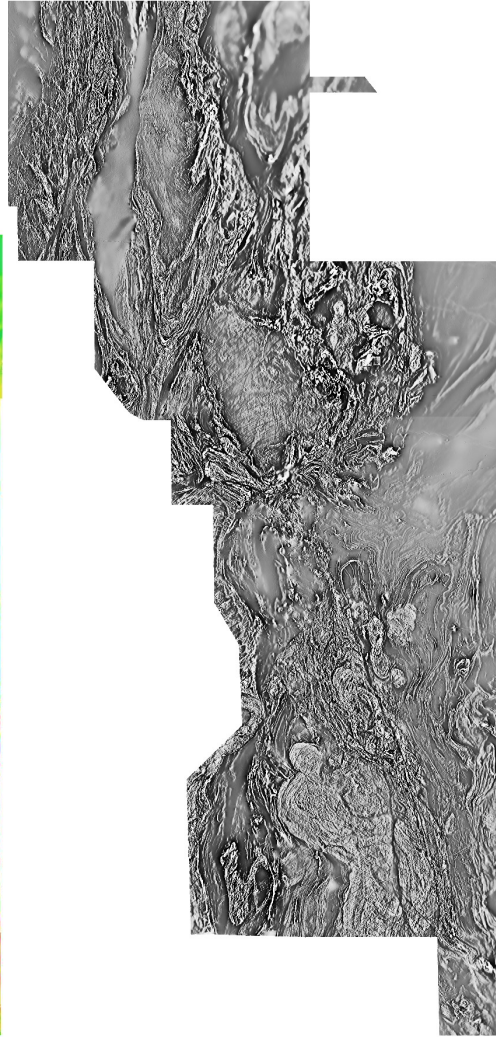
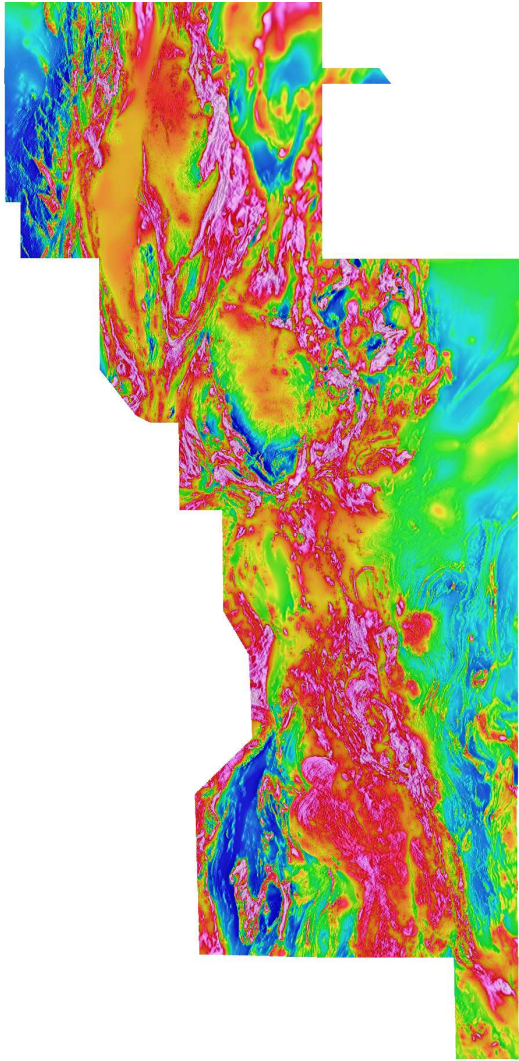
## North Cloncurry Survey

- 102,441 line km @100m line spacing, 50m terrane clearance.
- Data collection completed end of October.
- Data released on QDEX Data February 2019 (Survey #1377)

<http://bit.ly/GSQCloncurryNorth>



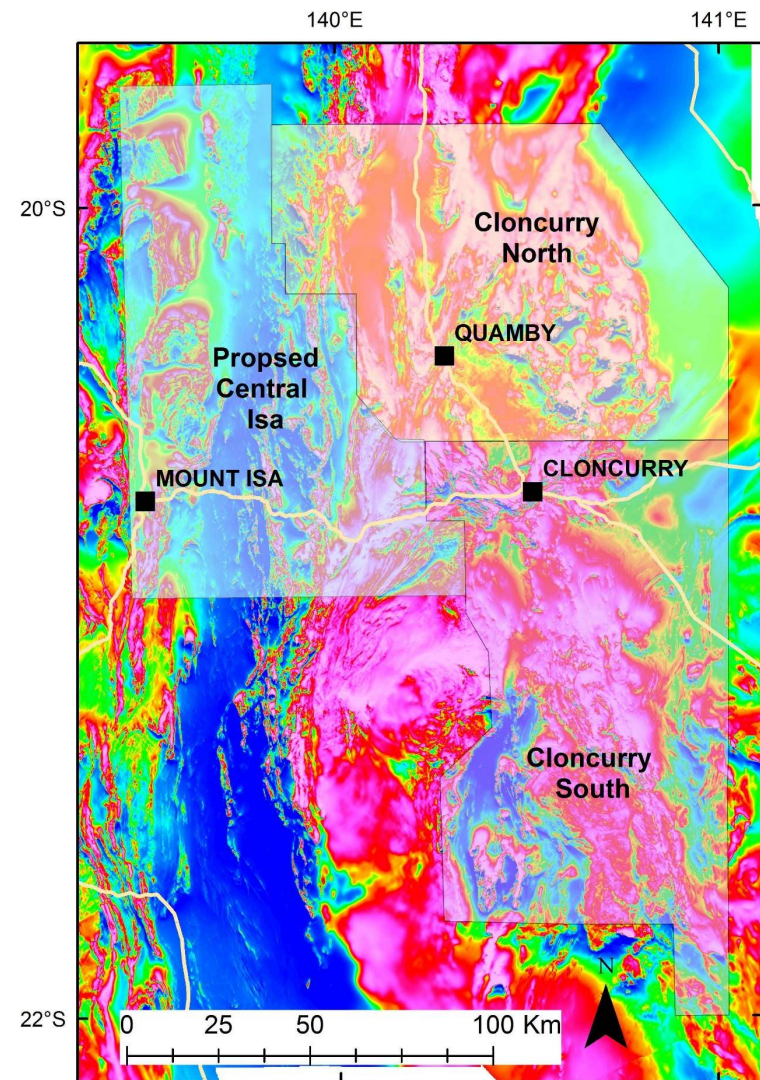
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## Central Isa Survey

- Approximately 85,000 line km.
- Thomson Aviation due to start mid-April
- All new data will be combined to create a large high resolution merge of region.
- ~28,000 Sq km covered by 3 surveys

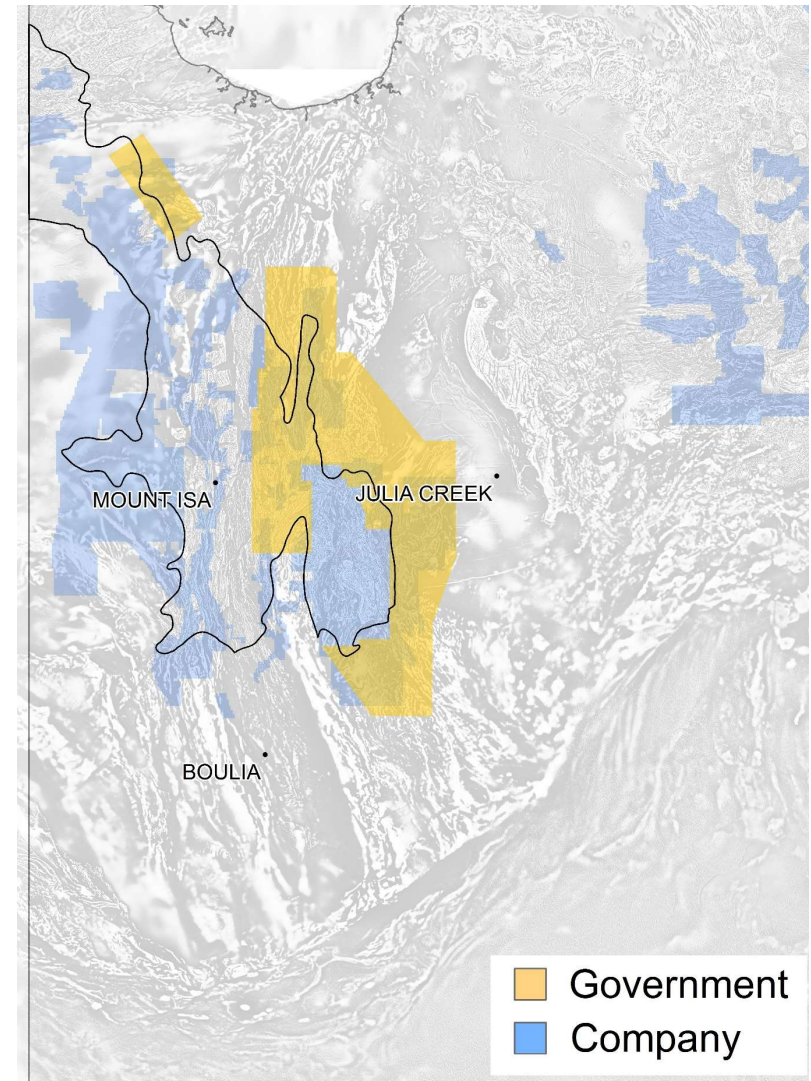






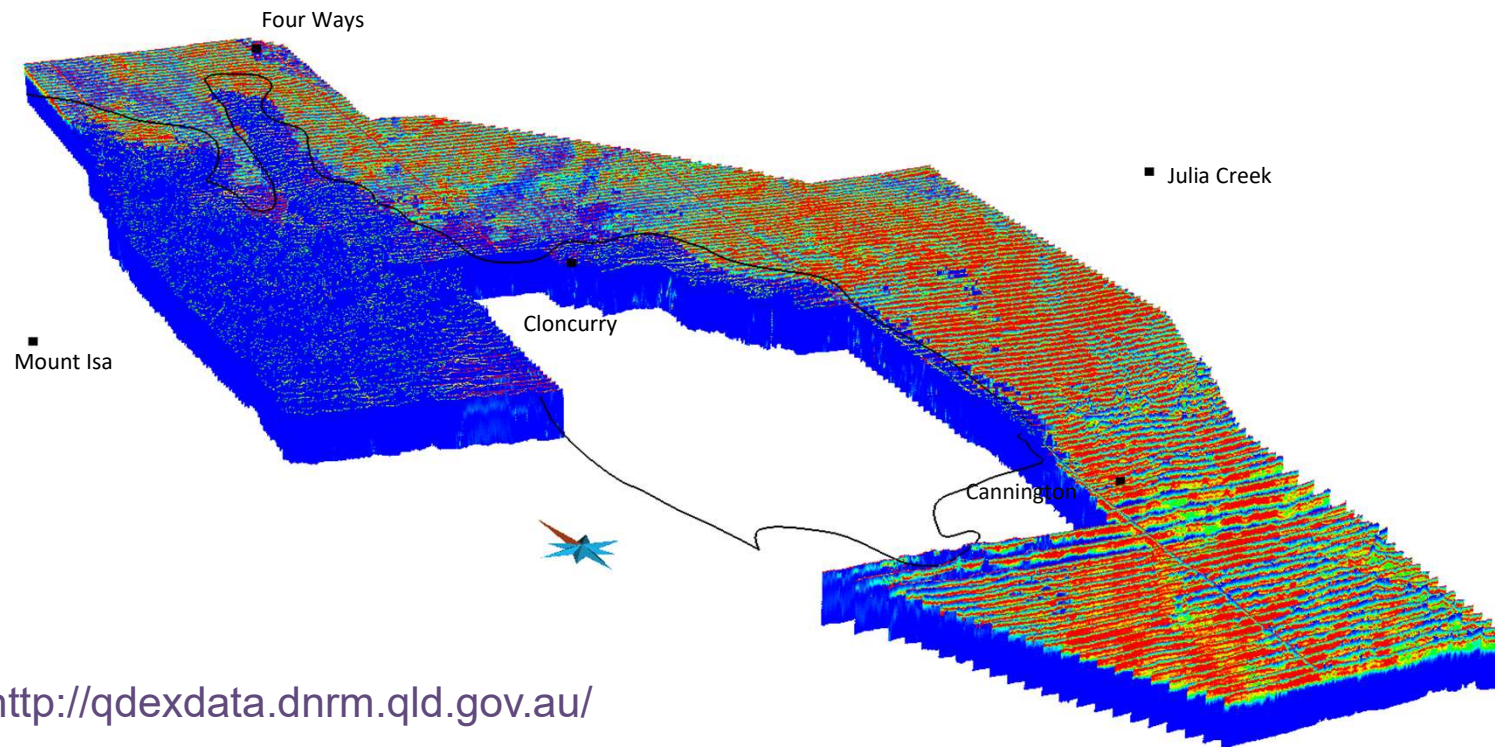
## Airborne EM

- GSQ AEM – VTEM, acquired in 2016-17
- Much company AEM – 1990's
- More targeted regional AEM is warranted
- New AEM systems are lower base frequency, more powerful better noise reduction → deeper penetration and definition



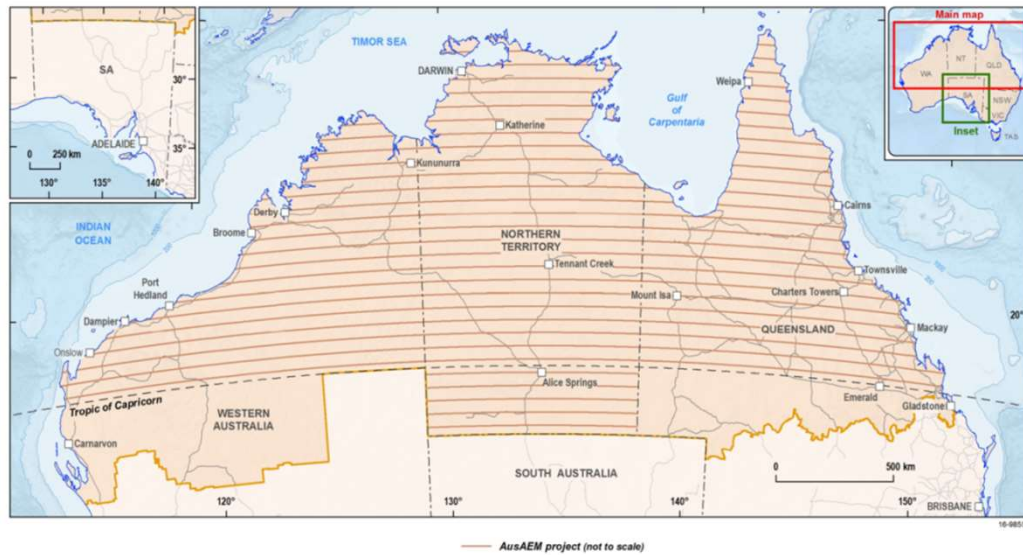


# AEM results - East Isa AEM - CDI

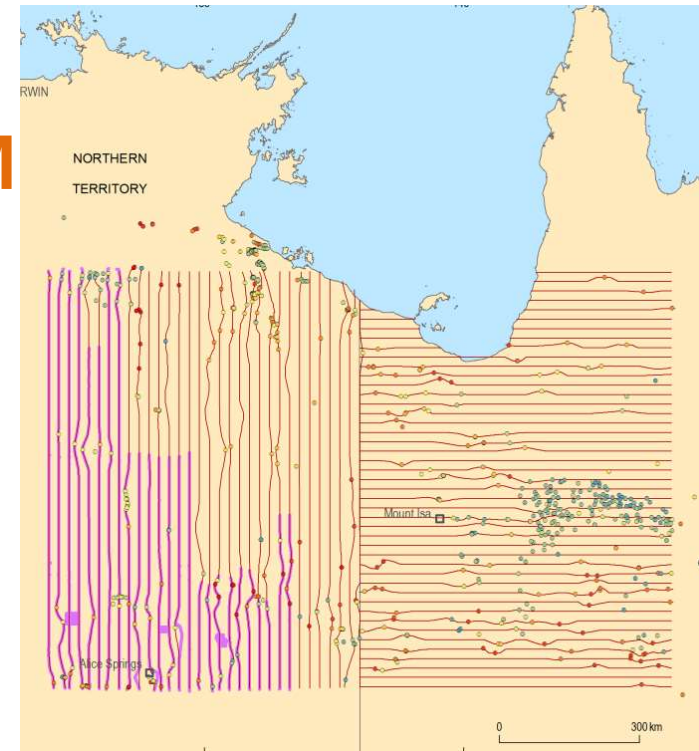


<http://qdexdata.dnrm.qld.gov.au/>

# Geoscience Australia - AusAEM

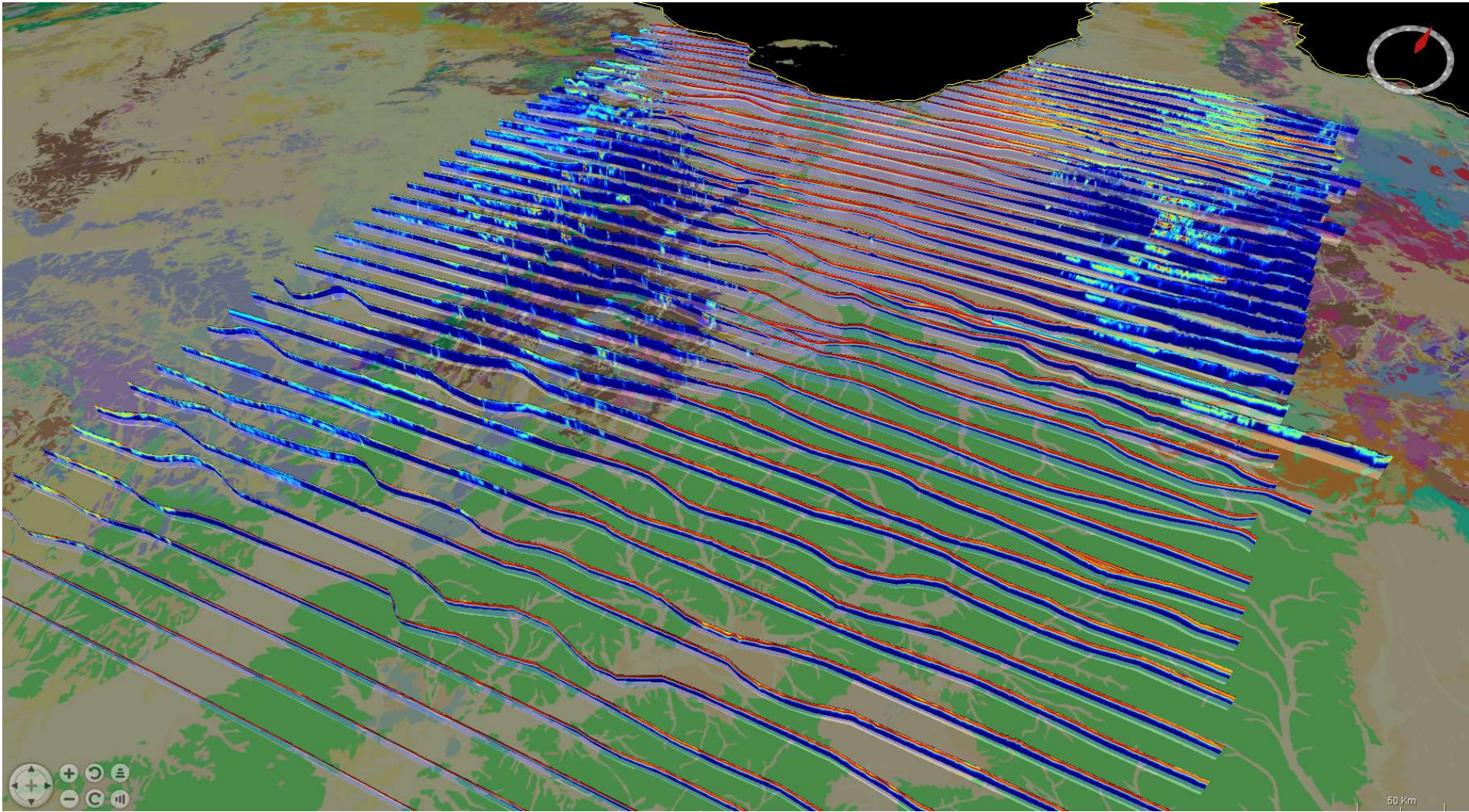


4-year program to 2020



2017-18

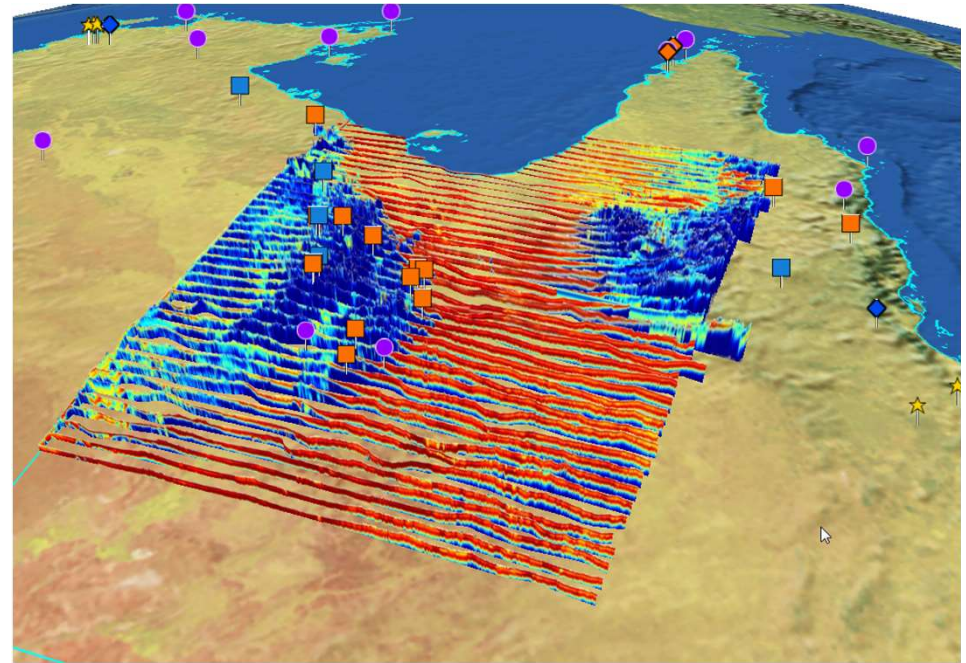






## AusAEM Data release

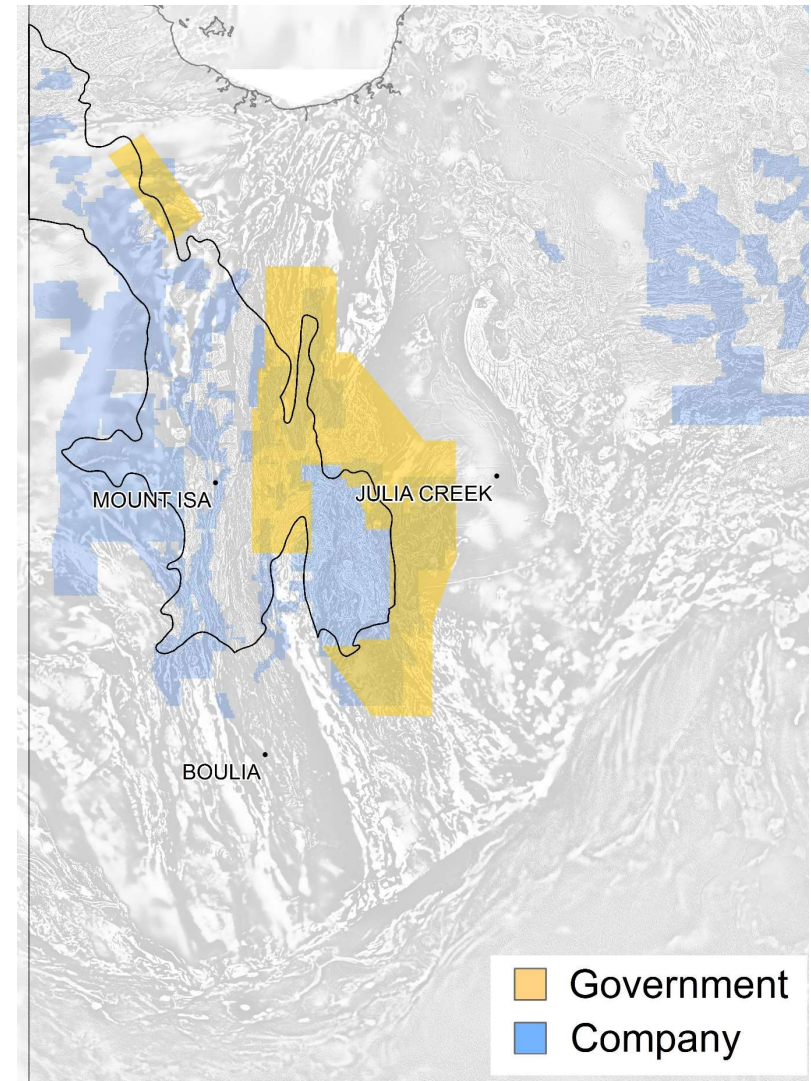
- Contractor data and EM Flow CDI released Dec 11<sup>th</sup>
- Future releases with value add
- QDEX Data: <http://bit.ly/GSQAusAEM>  
(<http://qdexdata.dnrm.qld.gov.au/QDEXDataDownloadManager/Results?type=airborne%20geophysics&subtype=&id=1378>)
- Geoscience Australia:  
<http://pid.geoscience.gov.au/dataset/ga/124092>





## Airborne EM

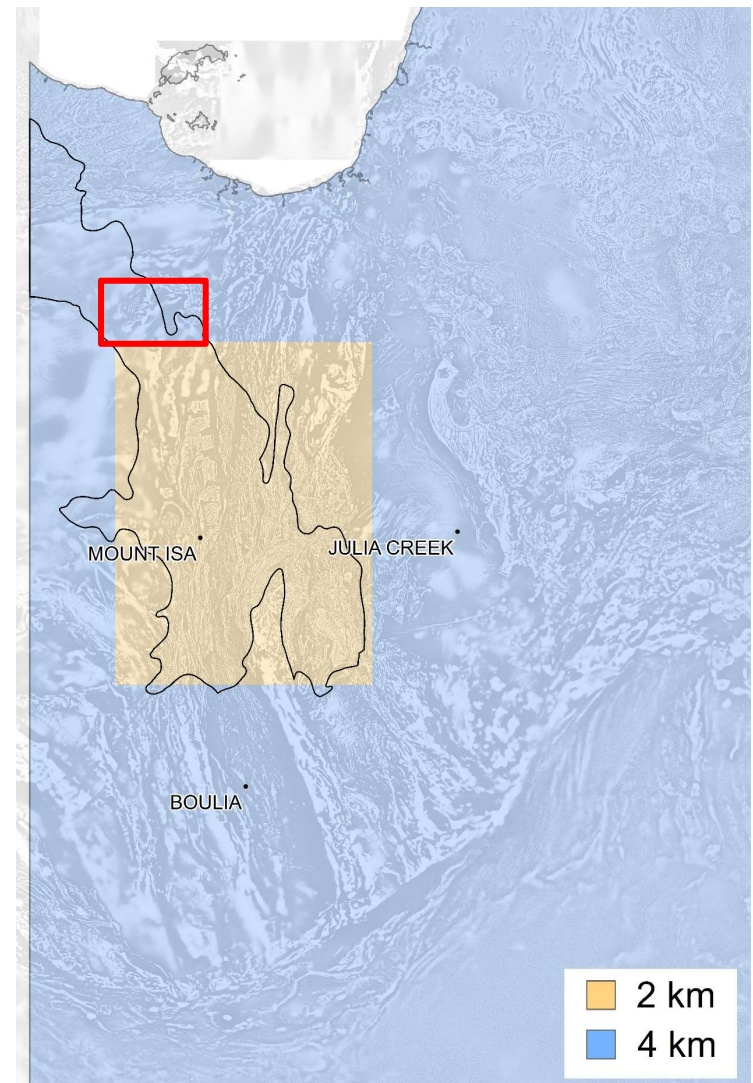
- Future targeting AEM planned for FY 2019-2020
- Targeting western succession geology
- AusAEM regional results to drive area selection.
- ~2-2.5km line spacing with company infill potential

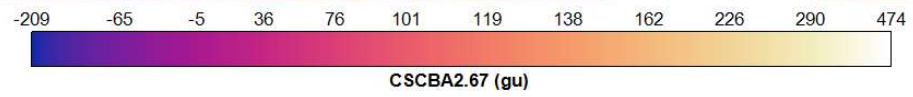
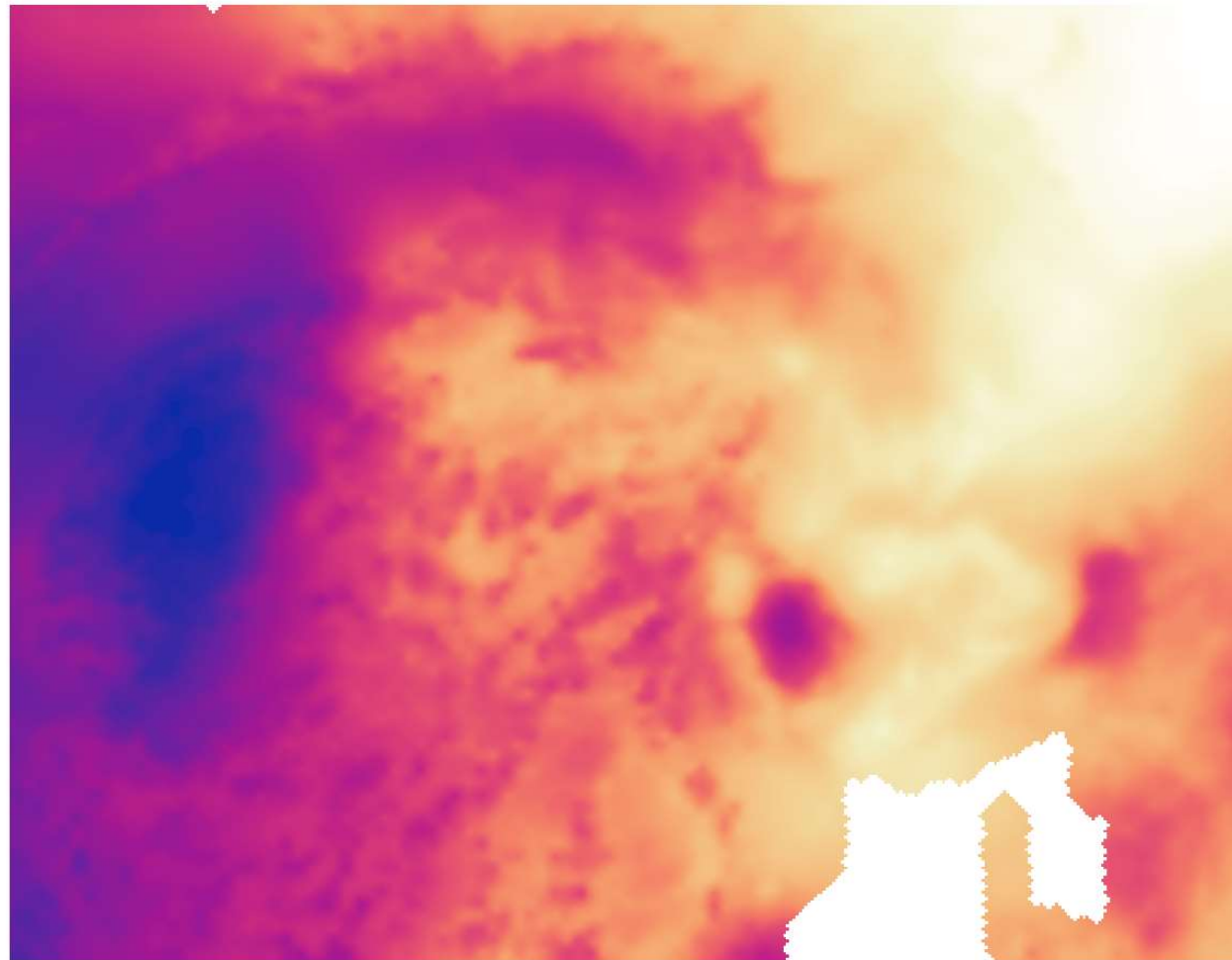




## Ground gravity

- Most of the exposed Mt Isa Province and extensions under cover – 2 km ground gravity or better
- Data released – over 7000 stations of 1 km ground gravity in the Lawn Hill / Gregory area on QDEX Data 10 September 2018



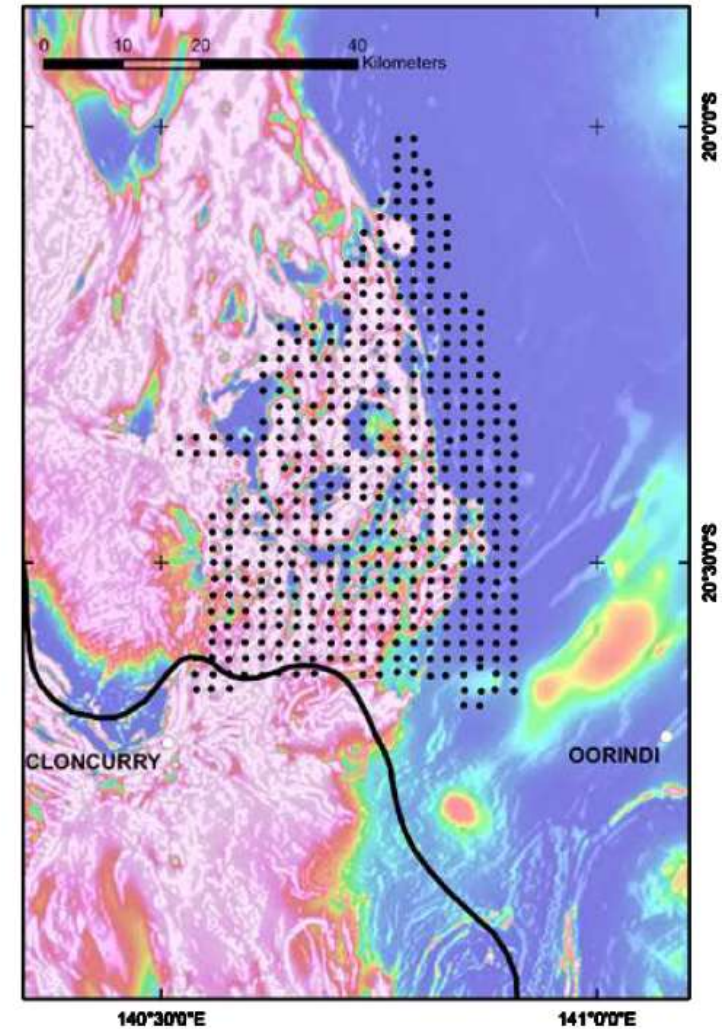


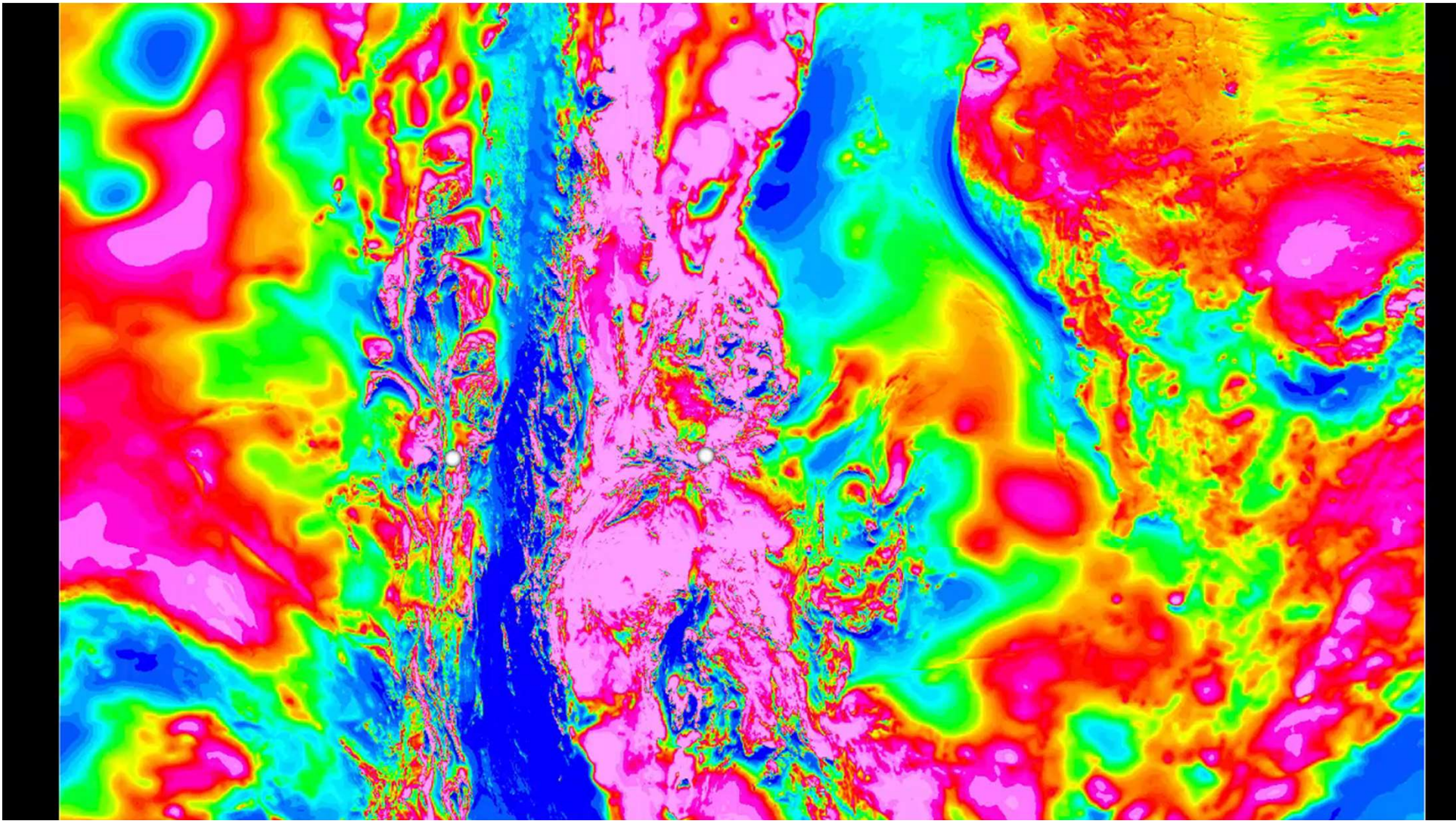


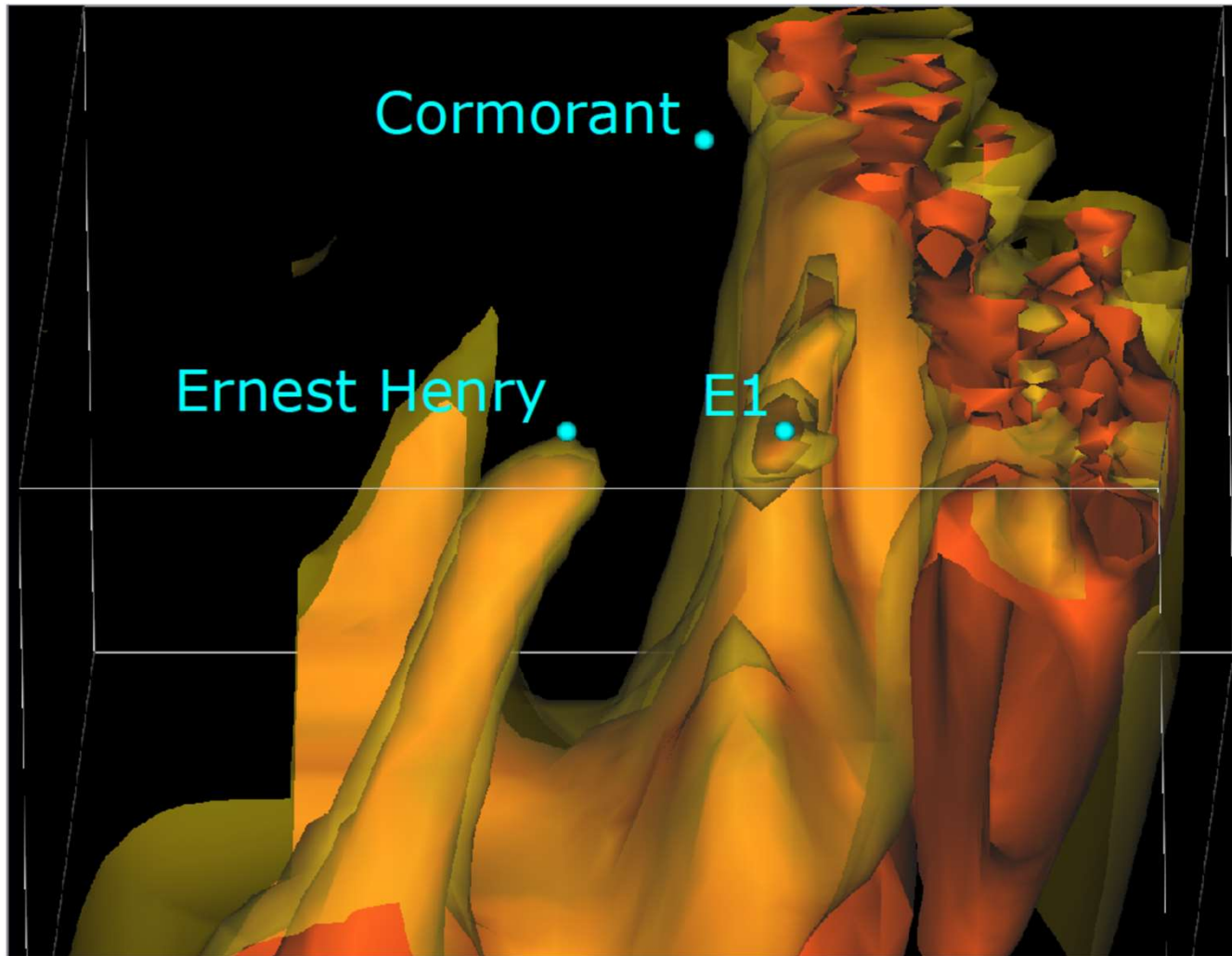


## Magnetotellurics (MT)

- Historically deep crustal MT along seismic lines
- MT grid surveys – S of Mt Isa (Isa Extension MT) and N of Cloncurry (covering area of Ernest Henry)
- Planning new survey area for collection in 2019









## GSQ New Discovery Program – geophysics

Expanding 100-m airborne magnetics and radiometrics

- Cloncurry South - released
- Cloncurry North – released
- Central Isa – in tender process

AEM in targeted areas –  $\leq 2$  km line spacing

- In planning

Ground gravity – 1 km or better

- Lawn Hill – released

MT – new lines and  $\leq 2$  km grids

- In planning and initial land access phase



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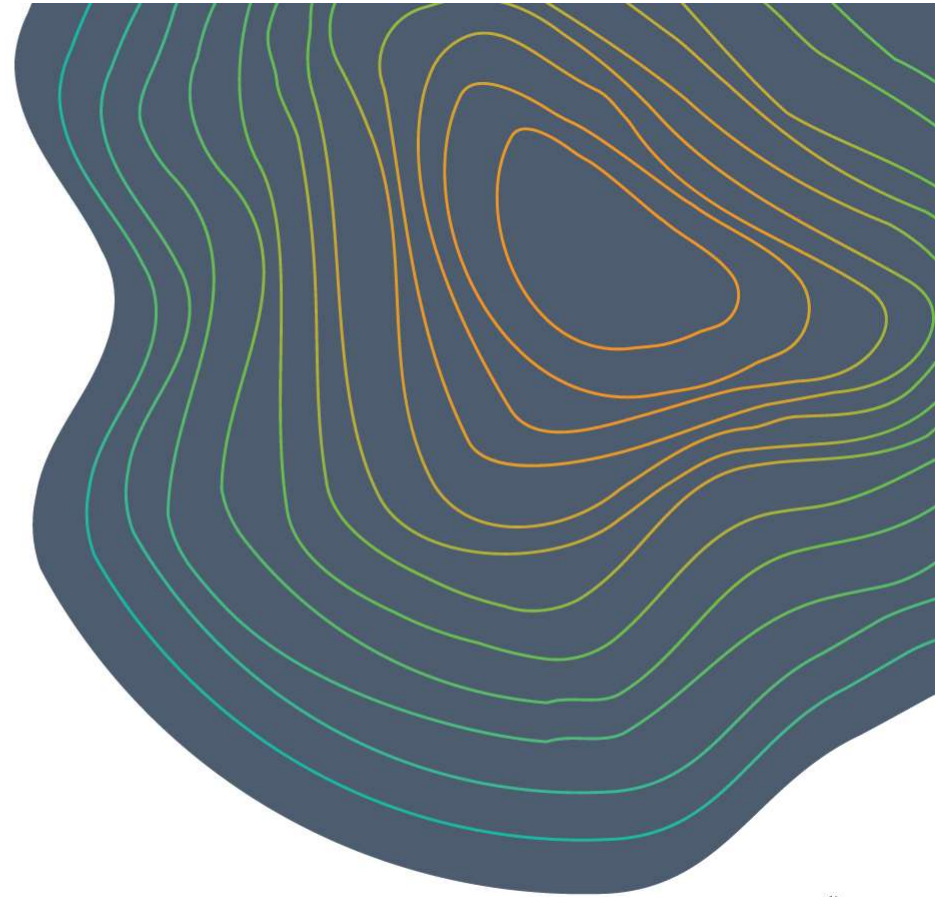
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