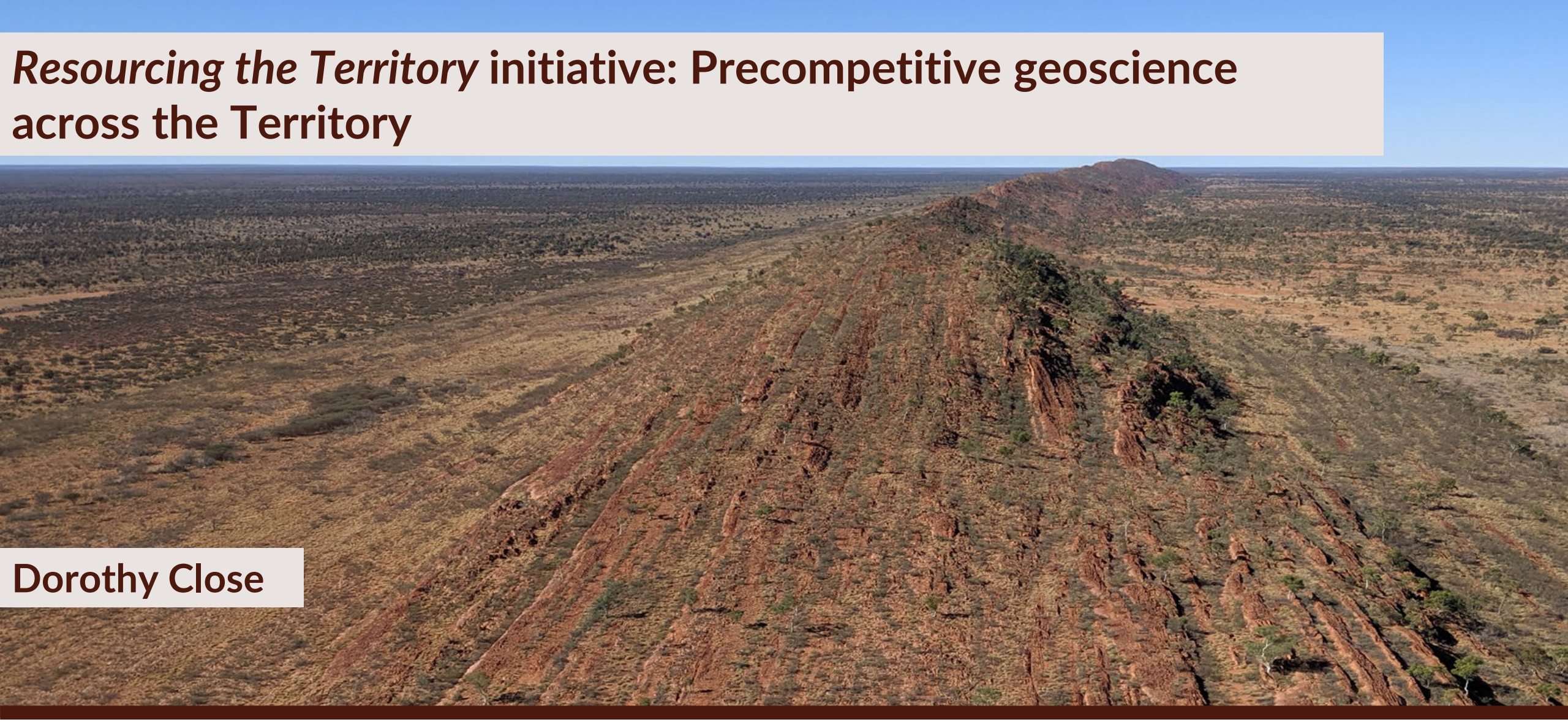
Resourcing the Territory initiative: Precompetitive geoscience across the Territory



Dorothy Close

NORTHERN TERRITORY GOVERNMENT

NORTHERN TERRITORY GEOLOGICAL SURVEY
AGES2021
ANNUAL GEOSCIENCE EXPLORATION SEMINAR
20–21 April 2021, Alice Springs, Northern Territory

Resourcing the Territory initiative (2018-2022)

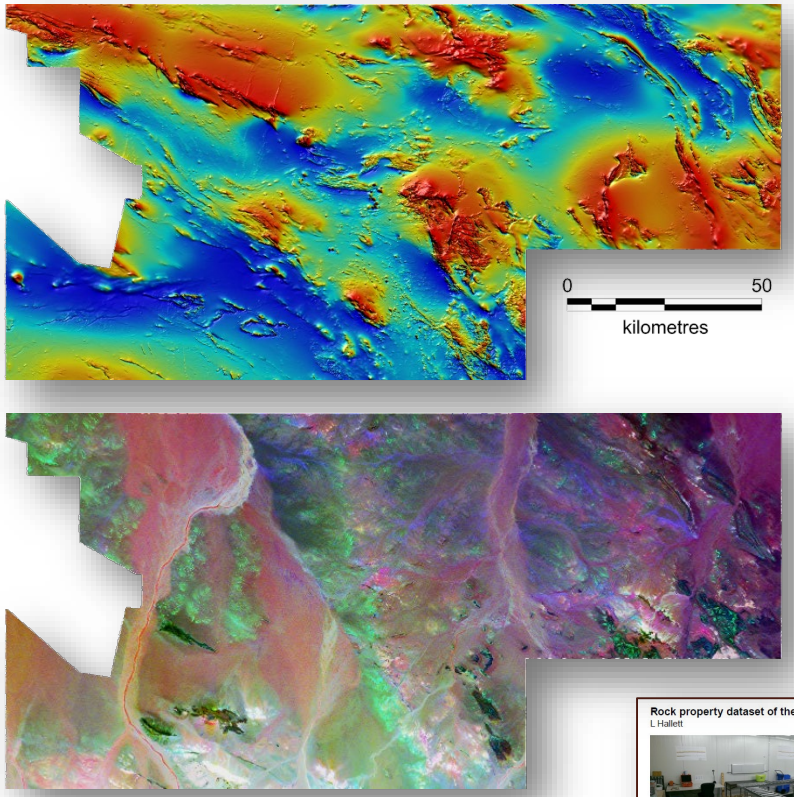
$26 million 4 year initiative providing pre-competitive geoscience, investment attraction and exploration stimulus

Key themes of Resourcing the Territory are:

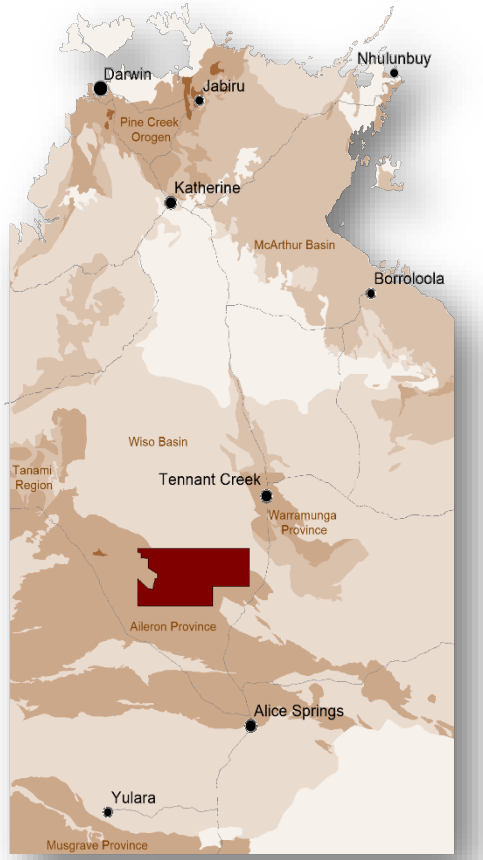
- Upgrading the Territory's coverage of geophysical data
- Supporting industry innovation through grants for greenfields exploration
- Unlocking the resource potential of the Barkly and Gulf regions
- Stimulating greenfields exploration in Central Australia
- Promoting the Territory's resource potential and investment opportunities
- Making exploration and geoscience data more accessible.

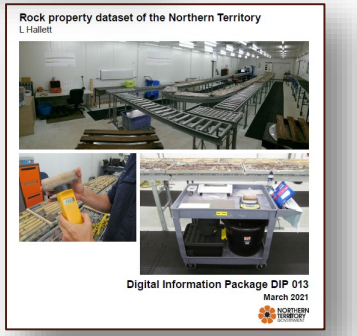
Upgrading the Territory's coverage of geophysical data

- Undertake targeted regional-scale magnetic-radiometric or gravity data acquisition programs to upgrade data quality and density
- Resourcing the Territory geophysical acquisition programs open to industry infill in the area of interest
- No programs undertaken in 2020 due to COVID-19 related access issues
- However… new acquisition through co-funded projects under the Geophysics and Drilling Collaborations program
- Updated release of the Rock property dataset of the Northern Territory (DIP013)



NTGS Mount Peake - Crawford: magnetics and radiometrics survey (released 2020)





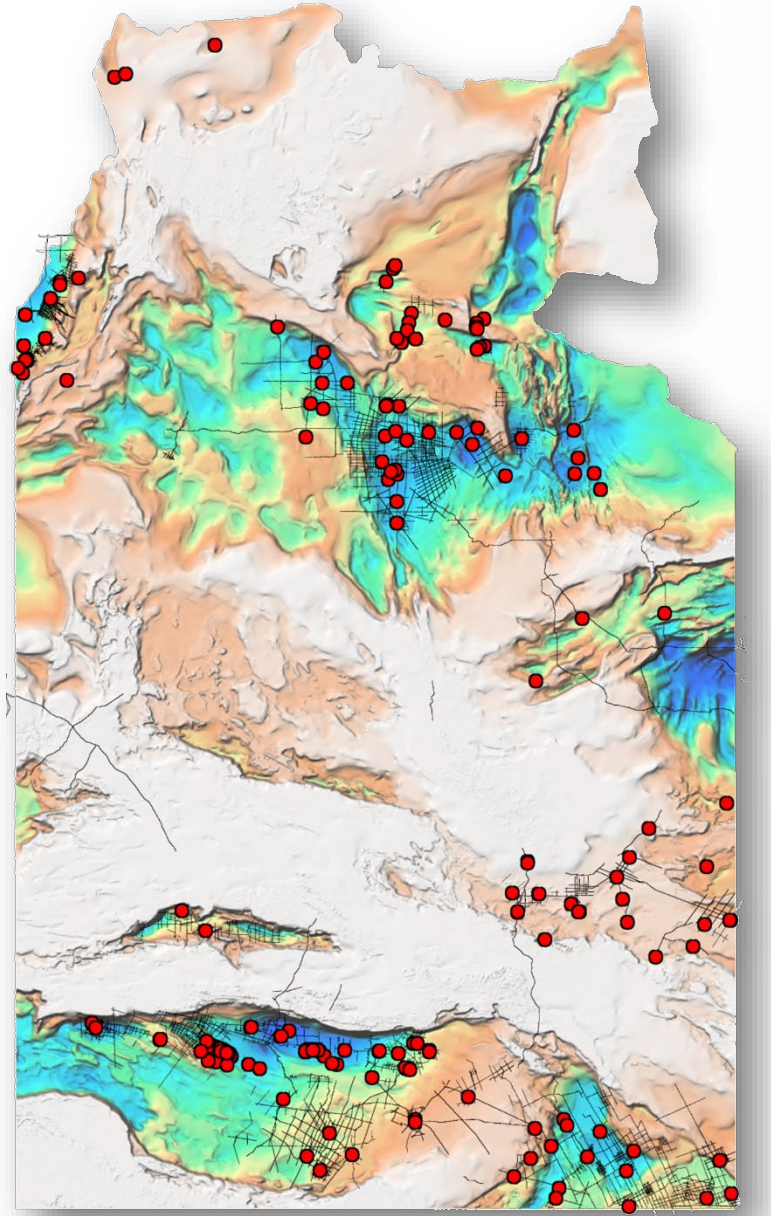
DIP013 Rock property dataset of the Northern Territory

RESOURCING THE TERRITORY

Northern Territory SEEBASE® and GIS

Significantly updated Territory wide study (DIP030)

- Integrated study into the thickness and extent of the Territory's numerous onshore basins
- Significantly updated utilising industry and government funded seismic data, potential field data, updated geological maps and solid geology interpretations and industry well data
- Interpreting and mapping major basement structures and tectonic events from Proterozoic to Palaeozoic
- Provides a consistent approach with testable concepts and is update-able with upon acquisition of significant new datasets
- Designed as tool for both petroleum and mineral explorers



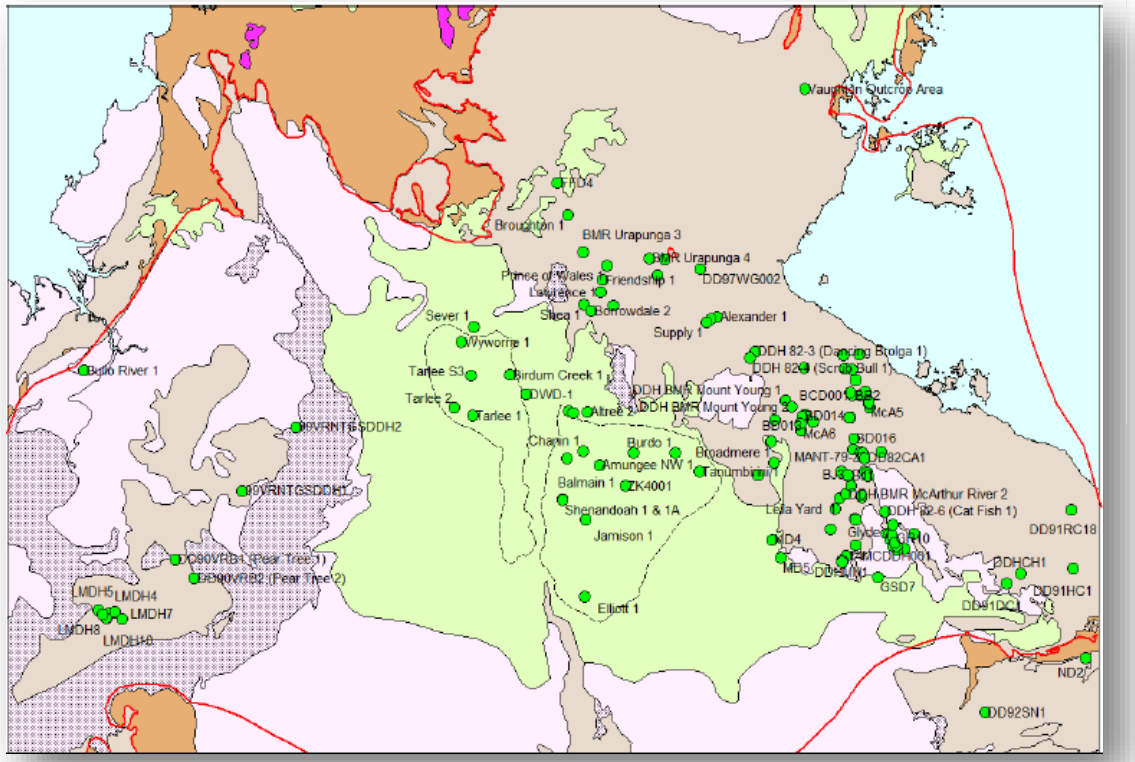
Unlocking the resource potential of the Barkly and Gulf regions

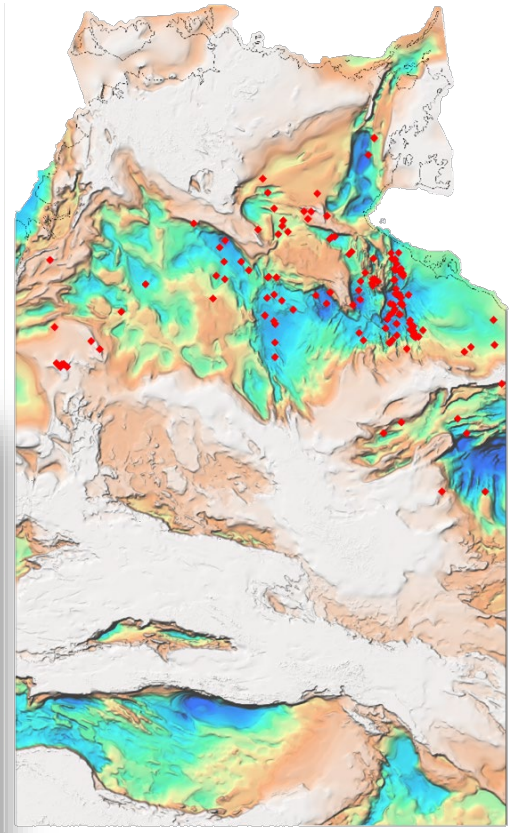
greater McArthur Basin

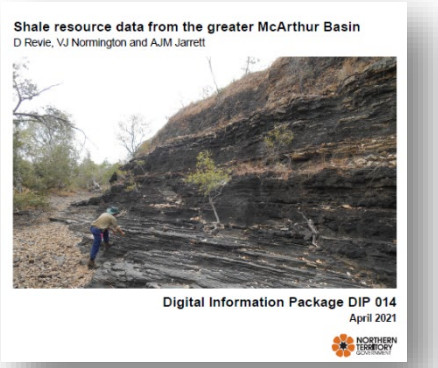
Significant updated compilation of shale resource data (DIP014)

- 10147 samples analysed (↑25%)
- 9146 TOC analyses (↑25%)
- 7358 pyrolysis analyses (↑29%)
- 301 SRP analyses (↑46%)
- 1200 XRD analyses (↑23%)
- 521 elemental kerogen analyses (↑2%)
- 301 petrology & reflectance analyses (↑36%)
- 47 rock mechanics data (↑83%)
- 13 sorption isotherm data (↑13%)
- 922 whole rock geochemistry (↑44%)

- Compiled from open file industry reporting, core sample reports, NTGS and Geoscience Australia analysis
- Stratigraphic and location information provided where possible to assist in petroleum resource modelling





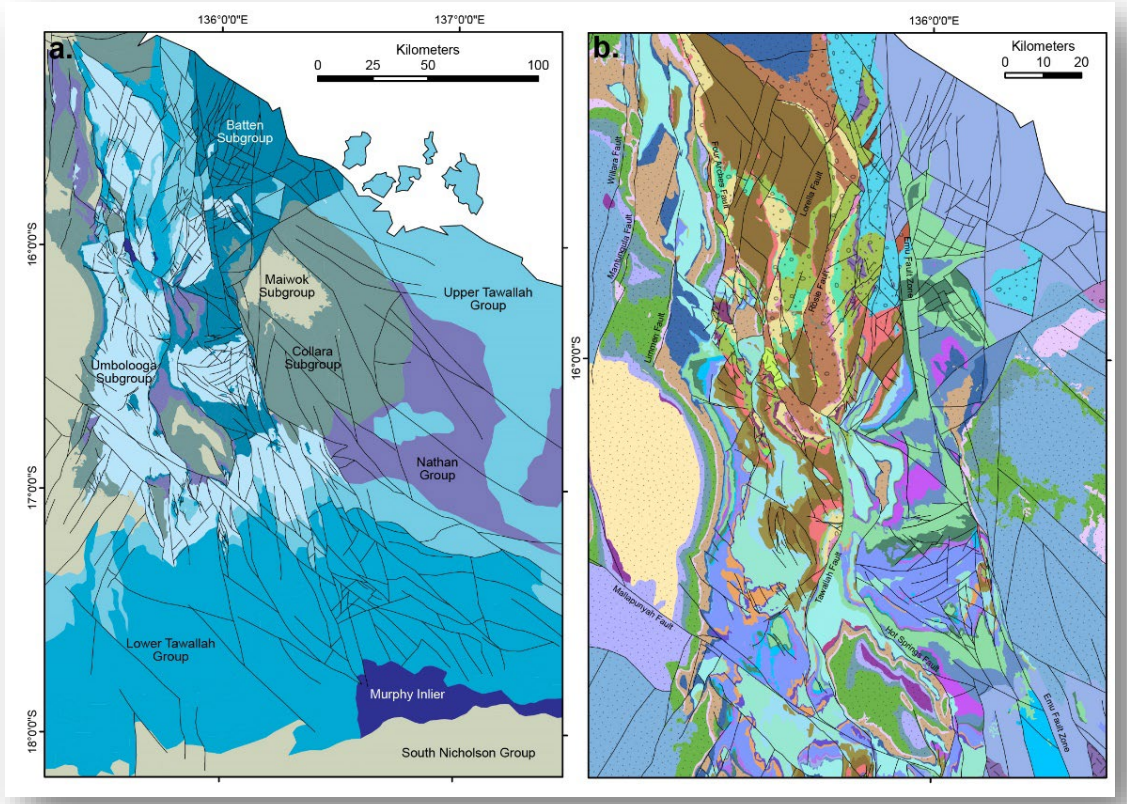


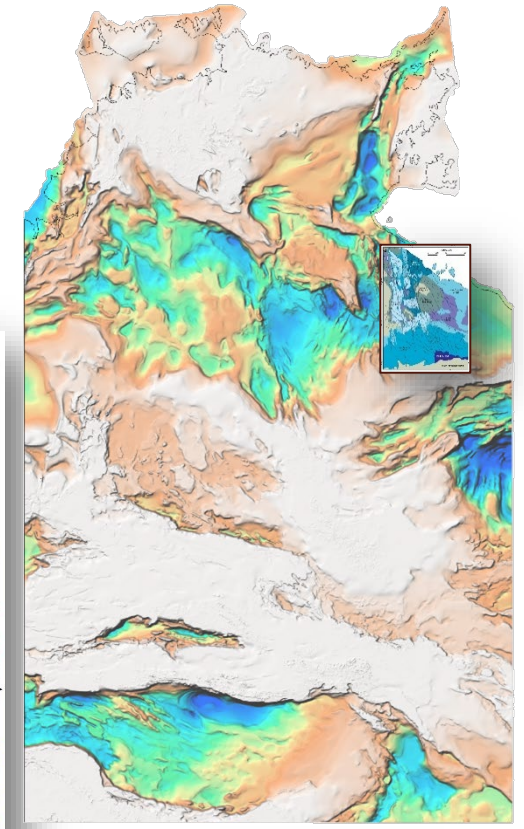
DIP014: Shale resource data from the greater McArthur Basin

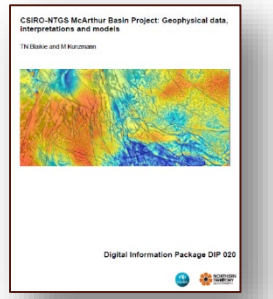
greater McArthur Basin

Southern McArthur Basin solid geological interpretation and geophysical modelling (DIP020)

- Identifying regional structural architecture and sub-basin development in the resource-rich Batten Fault Zone & southern McArthur Basin through geophysical interpretation & modelling.
- highlight the overprinting relationships of major fault systems, regional scale folding, broad scale variations in the preserved thickness of stratigraphy, sub-basin controlling structures and the potential source rocks of base metals.
- DIP020 contains interpretation, processed geophysical imagery, attributed GIS files and located cross sections.







[DIP020:CSIRO-NTGS McArthur Basin Project: geophysical data, interpretations and models]

CSIRO

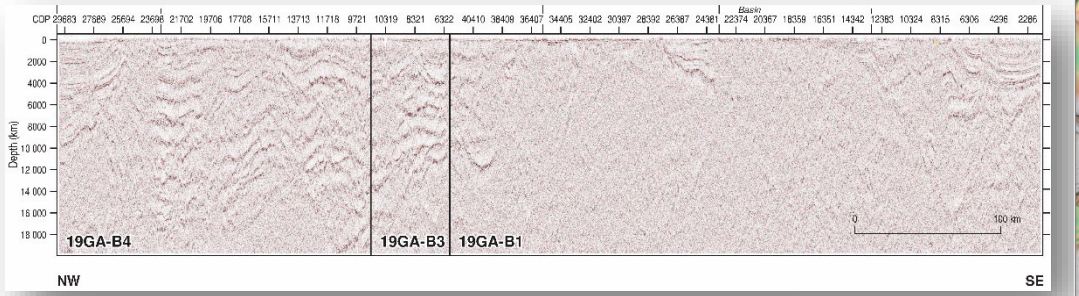
RESOURCING THE TERRITORY

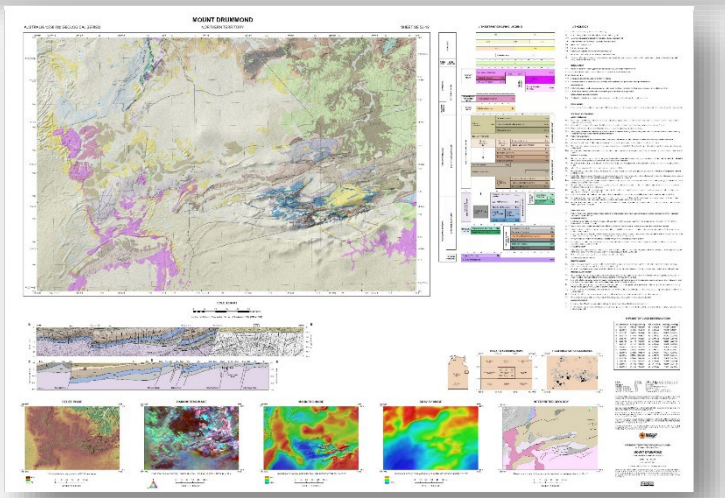
Unlocking the resource potential of the Barkly and Gulf regions

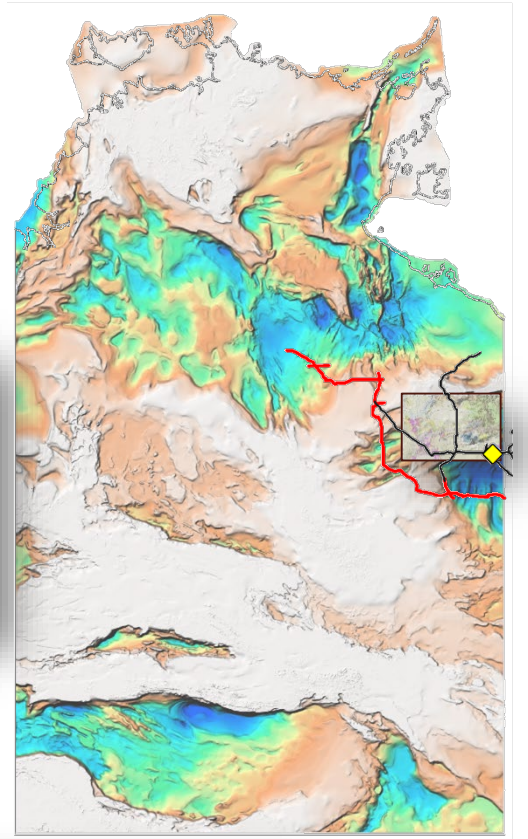
greater McArthur Basin

Barkly 2D reflection seismic survey, MinEx CRC Carrara-1, Mount Drummond 250k geology map

- Deep crustal seismic data linking South Nicholson Basin/Lawn Hill Platform to the Beetaloo Sub-basin/McArthur Basin-funded through Exploring for the Future & Resourcing the Territory
  (L212 Barkly 2D Seismic Survey)
- MinEx CRC National Drilling Initiative campaign in South Nicholson Basin: 1750m Carrara-1 well
- Outcrop mapping of Mount Drummond 1:250k mapsheet utilising geochronological interpretations from Exploring for the Future
  (New U-Pb geochronology for the South Nicholson region and implications for stratigraphic correlations)







MinEx CRC

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Exploring for the Future
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RESOURCING THE TERRITORY

Unlocking the resource potential of the Barkly and Gulf regions

Tennant area

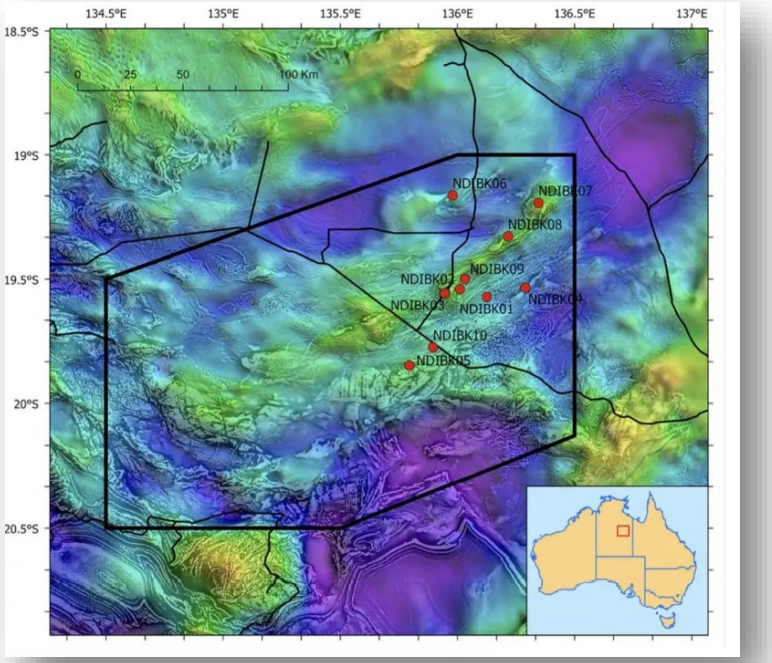
MinEx CRC NDI East Tennant campaign

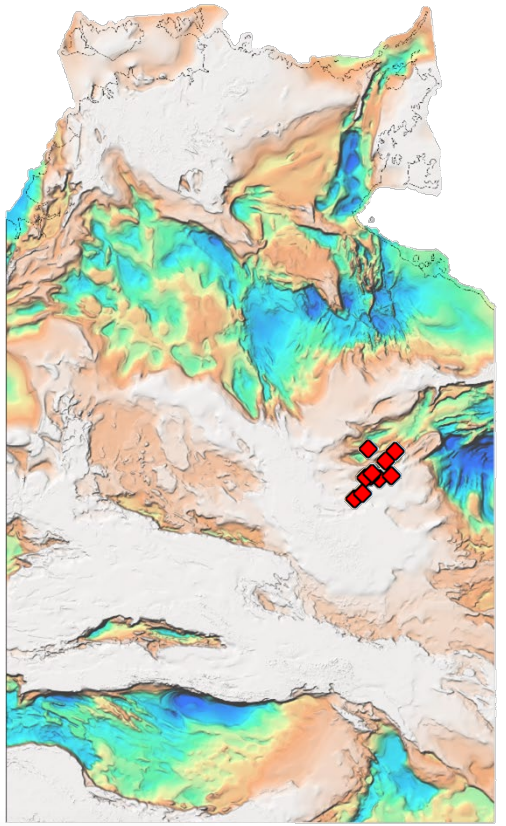
- 10 stratigraphic holes drilled through Phanerozoic cover to understand geological framework and mineral potential of concealed Palaeoproterozoic basement

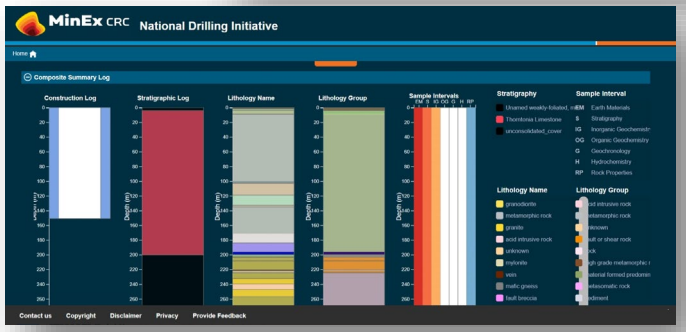
- Borehole Completion Reports for each drill hole available through GA and MinEx CRC https://minexcrc.com.au/ndi-data-portal/

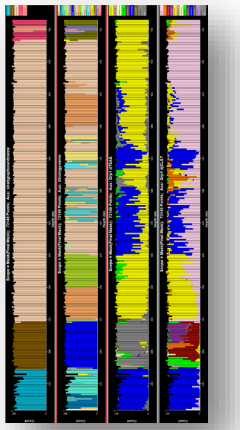
- HyLogger data and high resolution images available through NTGS, GA and MinEx CRC

- All drillholes are stored at NTGS's Alice Springs Core Facility will be open filed and available to industry on April 23rd









RESOURCING THE TERRITORY

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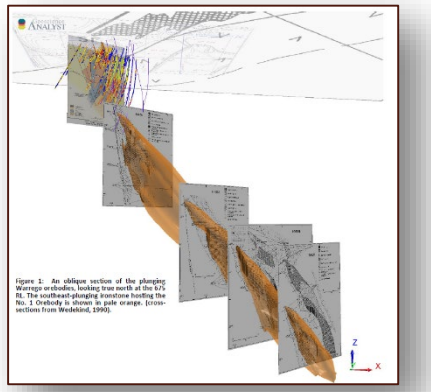
MinEx CRC

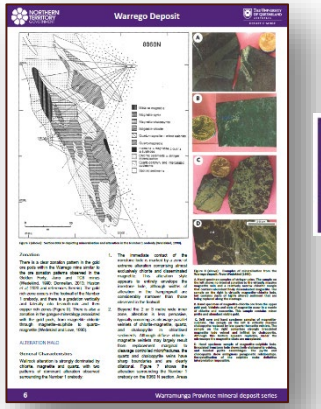
Tennant area

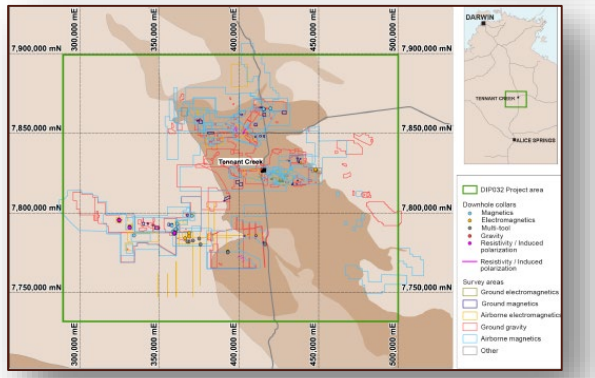
Tennant mineral field & Rover field– Deposit atlases, 3D visualisation & geophysical package

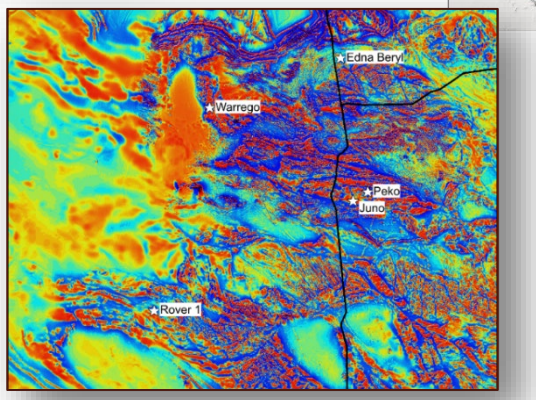
- Warramunga Province mineral deposit series: compilations of new and existing regional datasets of key deposits in the Tennant and Rover fields
  - Regional settings
  - Rover 1
  - Explorer 108 and Curiosity
  - Explorer 142
  - White Devil
  - Warrego

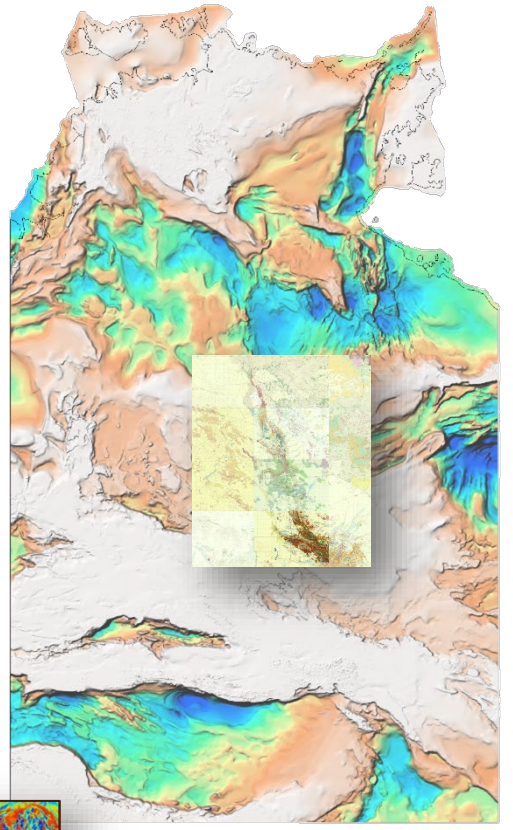
- DIP032: Open file geophysical survey data in GIS format, magnetic and gravity grids in ERmapper format, and reprocessed gravity data in ASCII (csv) format.











DIP032:Compilation of industry geophysical data over the Tennant Creek and Rover mineral fields

Unlocking the resource potential of the Barkly and Gulf regions

Tennant area

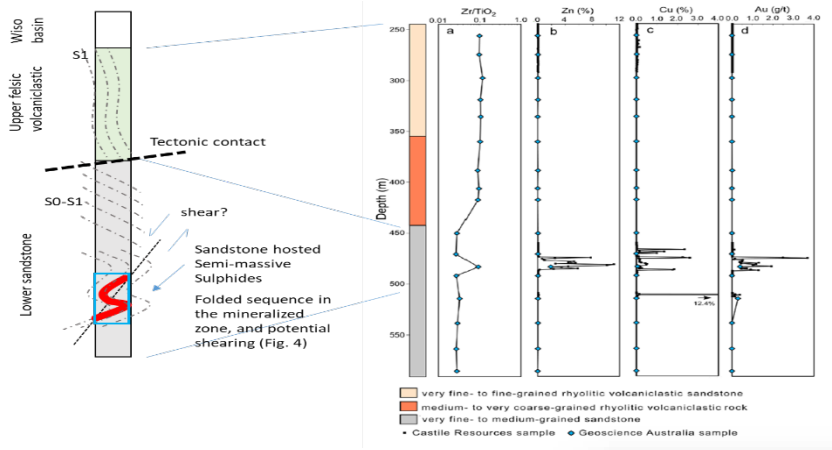
Rover field mineral system study

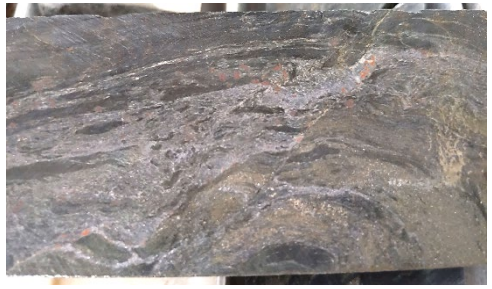
- NTGS/Geoscience Australia collaborative project: investigate the geological framework and mineral paragenesis of the concealed Rover field: compare and contrast with the Tennant mineral field

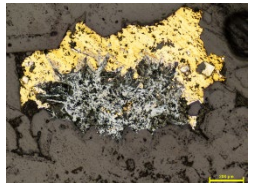
- Focus on Explorer 108 Pb-Zn-Ag-Cu & Curiosity Cu-Pb-Zn: identify the age and composition of host rock, alteration assemblages, structural setting, and age of mineralisation

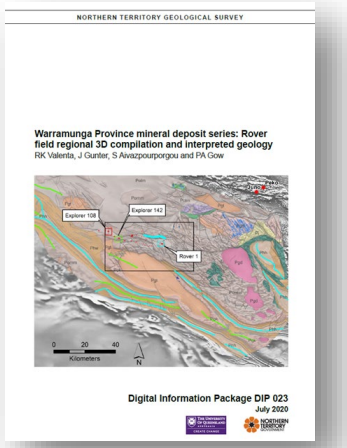
- Huston et al, 2020. The Tennant Creek mineral field and Rover fields: Many similarities but some important differences

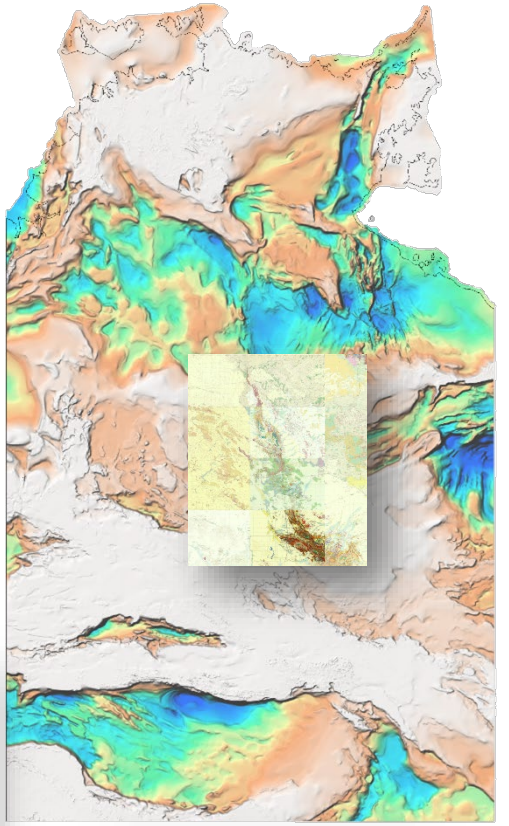
- DIP023: Warramunga Province mineral deposit series: Rover field regional 3D compilation and interpreted geology

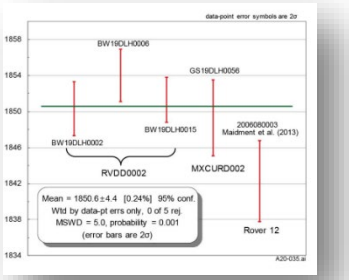












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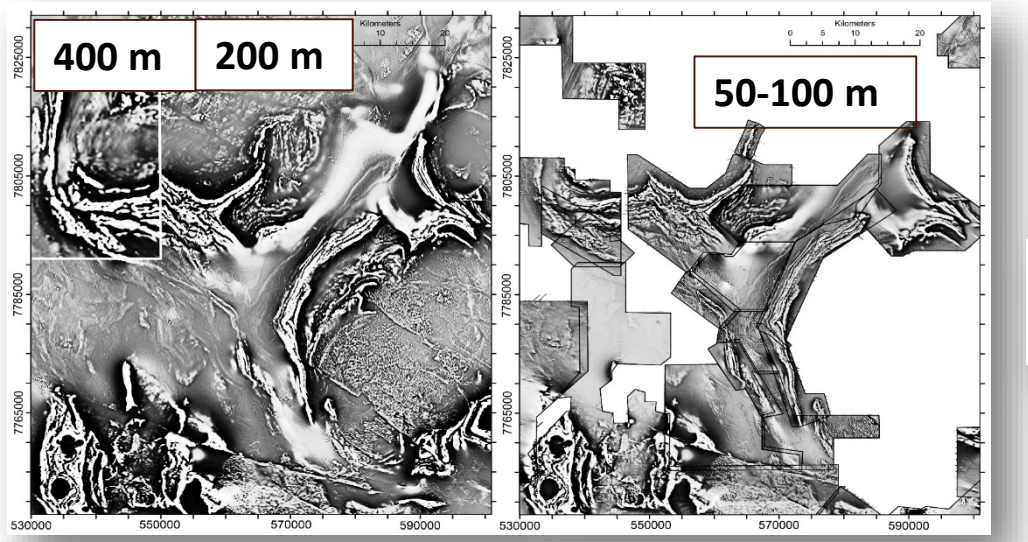
RESOURCING THE TERRITORY

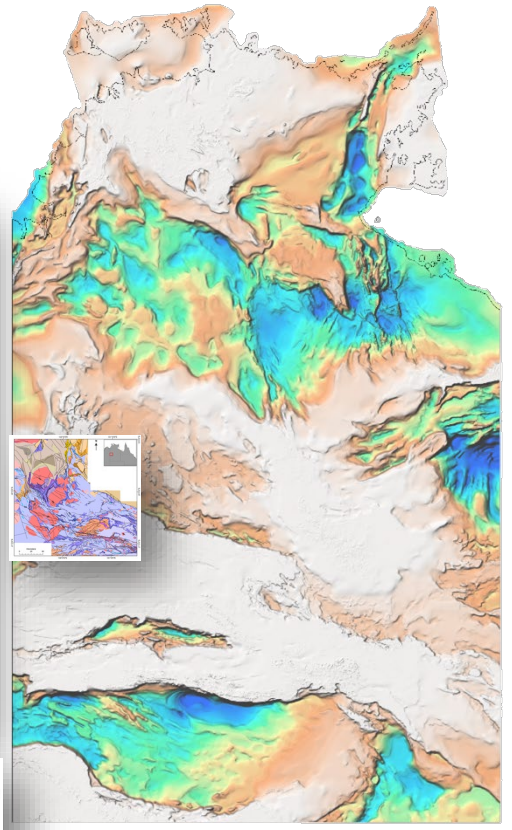
Tanami Region

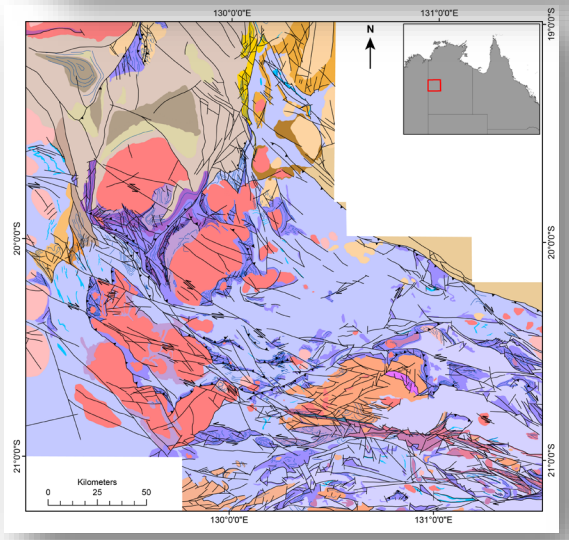
Solid geology and structural interpretation of Tanami Region and NW Aileron Province

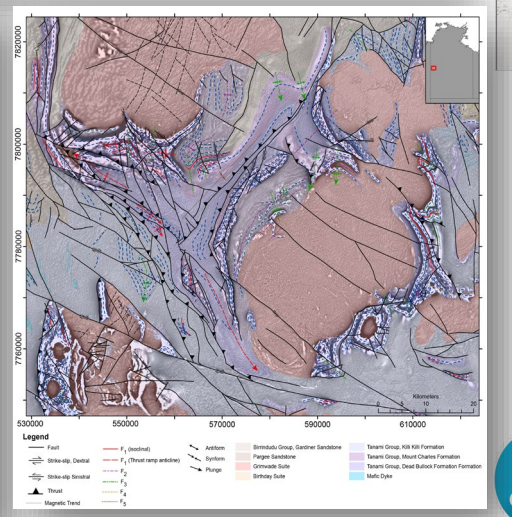
- NTGS/CSIRO collaborative project: utilise recently acquired regional scale magnetics and radiometrics to improve understanding of the geological framework

- processing and interpreting the NTGS Tanami Region: magnetics and radiometrics survey with pre-existing geophysical surveys to produce a new seamless geological interpretation of the 1:250,000 TANAMI and THE GRANITES map sheets, as well as parts of the MOUNT THEO, MOUNT SOLITAIRE and HIGHLAND ROCKS maps sheets.









DIP021: CSIRO-NTGS Tanami Project: aeromagnetic interpretation of the Tanami Region - GIS

CSIRO

RESOURCING THE TERRITORY

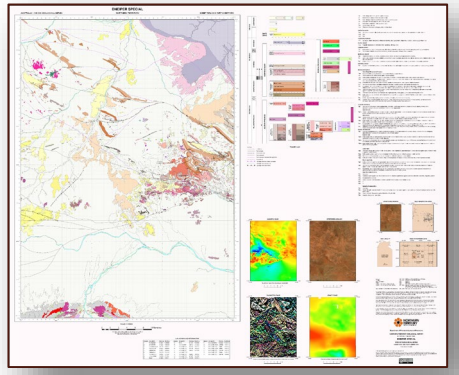
Aileron Province

Geological framework and mineral system studies

- Geoscience outcrop mapping at 1:250 000 and 1:100 000 across NE Aileron and Irindina provinces to update geological framework of these polymetallic provinces. An updated framework is designed to provide context to a new understanding of the base metals potential of the Aileron Province, including studies of copper-bearing mineral systems in the region.

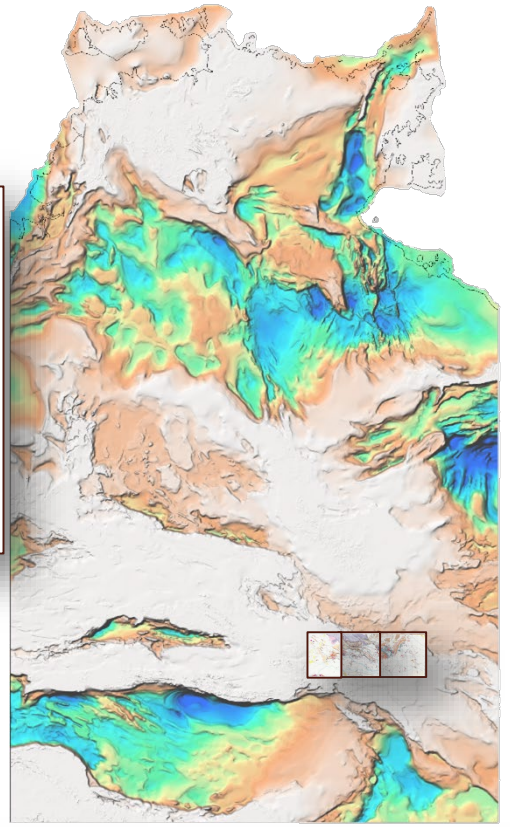
- ongoing geoscience outcrop mapping at 1:100 000 scale across the northeastern Aileron Province (Jervois Range Special, Jinka, Dneiper 1:100,000 scale geological map and explanatory notes)

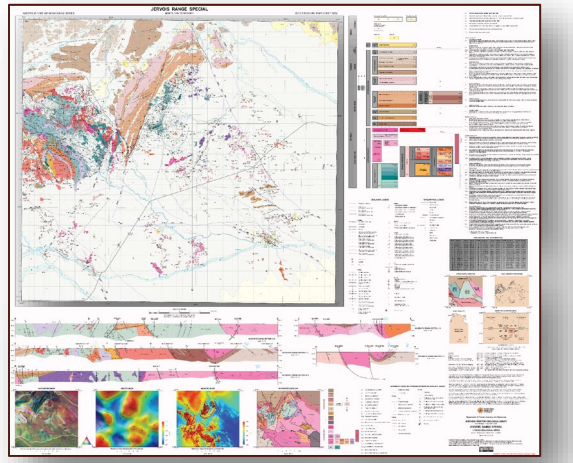
- release of products on the mineral deposits and potential of copper and tungsten mineral systems across the Aileron Province, including stable isotope and geochronology studies.



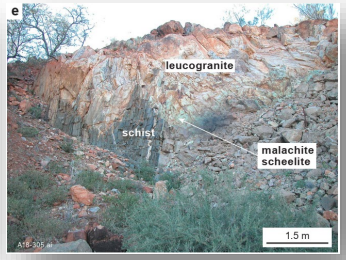
Dneiper 100K

Jinka 100K





Jervois Range Special 100K map and explanatory notes



RESOURCING THE TERRITORY

Amadeus Basin

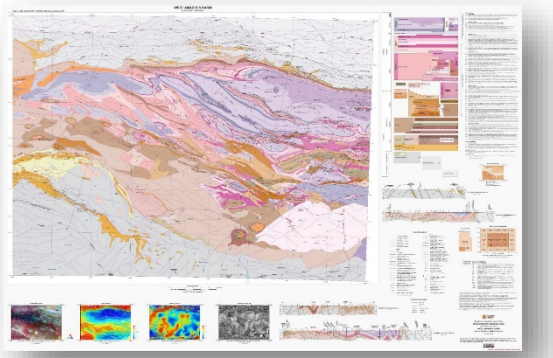
Geological framework and basin-wide stratigraphic correlation

- Geoscience mapping to produce updated outcrop maps at 1:250 000 and 1:100 000 across the central and western Amadeus Basin delivering consistent basin-wide stratigraphic correlation and improve the understanding of stratigraphy, structural evolution and palaeogeography.

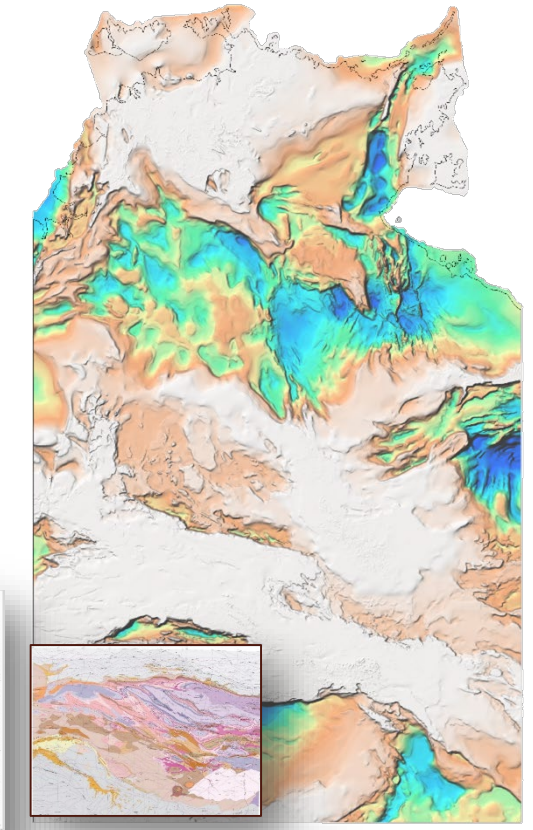
- Revision of the Neoproterozoic to early Cambrian stratigraphic framework of the basin

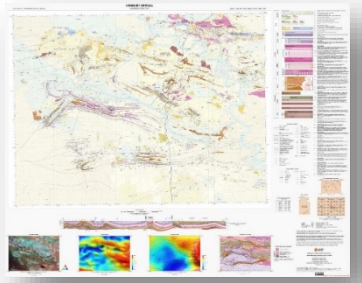
- Basin-wide 1:500 000 pre-Mesozoic interpretative geology maps produced with integration of the seamless stratigraphic approach with regional scale geophysics.

- Updated Henbury, Lake Amadeus and Bloods Range 1:250,000 scale geological map and explanatory notes and Henbury Special 1:100,000 scale geological map and explanatory notes

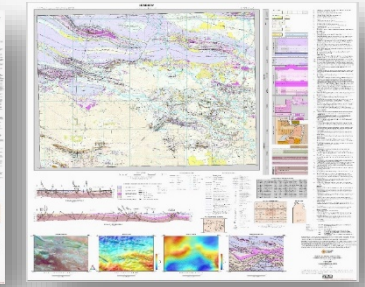


West Amadeus Basin 500K interpreted geology

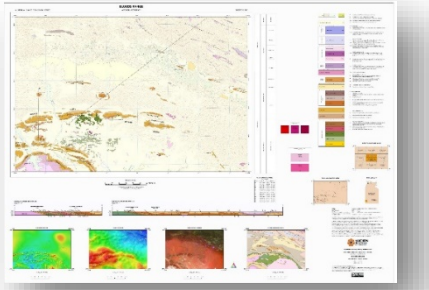




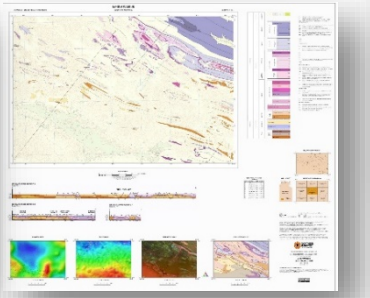
Henbury Special 100K



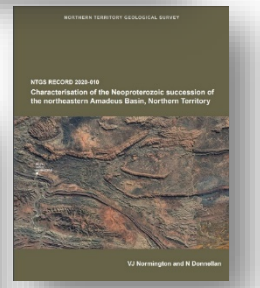
Henbury 250K



Bloods Range 250K



Lake Amadeus 250K



RESOURCING THE TERRITORY

Geophysics and Drilling Collaborations program

Round 14 now open for applications

- aims to increase the intensity of exploration drilling and geophysics in the Northern Territory.

- awards approximately $1 million in exploration grants annually, to be shared between the successful applicants.

Tanami airborne survey: *Photo courtesy of Prodigy Gold*

- co-funding for drilling and geophysical acquisition projects where the outcomes are expected to improve geological knowledge and mineralisation targeting within a region, particularly at depth.

- All reports, drill core and data are made public six months after completion of project field work.

RESOURCING THE TERRITORY

Geophysics and Drilling Collaborations program

Round 14 now open for applications

- Round 14 expanded to include drilling in brownfields areas (close to known mineral deposits) as recommended in the Territory Economic Reconstruction Commission report.
- Provides co-funding assistance for 50% of the exploration program cost:
  - up to $125 000 for selected greenfields diamond drilling programs
  - up to $100 000 for selected brownfields diamond drilling, greenfields RC drilling, and geophysical acquisition projects.

- Additional funding is available through the Territory Supplier Incentive (TSI), which offers an additional $10 000 of co-funding per project to engage NT enterprises to complete works in the NT.

- Round 14 funding is for projects to be undertaken during 2021; applications will close on 4 May 2021.

Key dates

Date	Action
22 February 2021	Applications open for round 14 through GrantsNT.
4 May 2021	Applications for round 14 close through GrantsNT.
May / June 2021	Assessment panel meet and applicants notified of funding outcome.
June / July 2021	Funding agreements negotiated and signed with successful applicants.
1 December 2021	Fieldwork to be complete.
30 June 2022	Funding agreement ends.

RESOURCING THE TERRITORY


Thank you