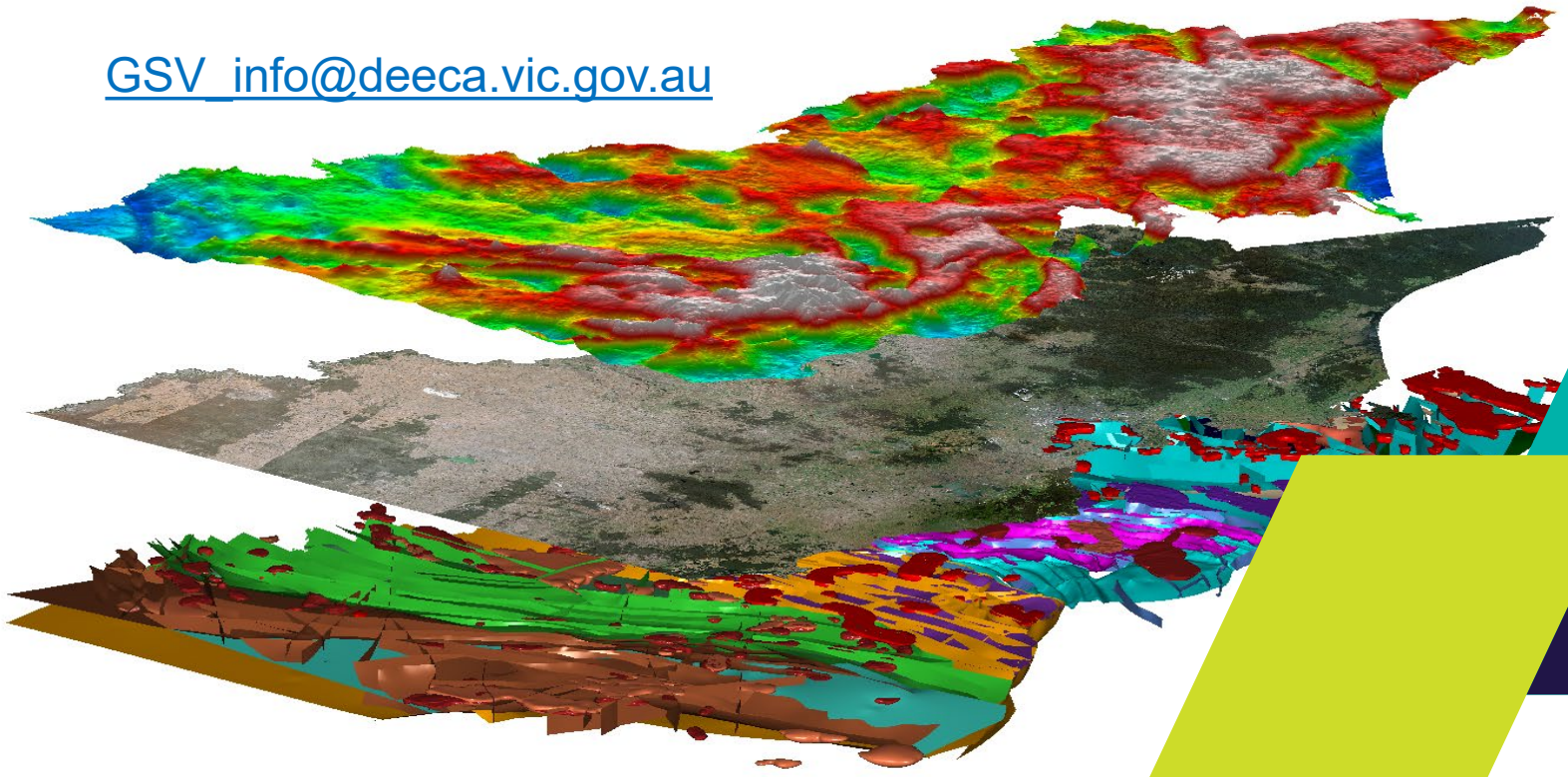
Geophysical data in Victoria

Discoveries in the Tasmanides conference, Orange, NSW

Exploration Geophysics for Geologists workshop presentation, 09/09/2026

Suzanne Haydon, Mark McLean, Phillip Skladzien, Matt Boyd, Luong Tran
Geological Survey of Victoria

GSV_info@deeca.vic.gov.au



VICTORIA State Government | Energy, Environment and Climate Action

Public geophysical data

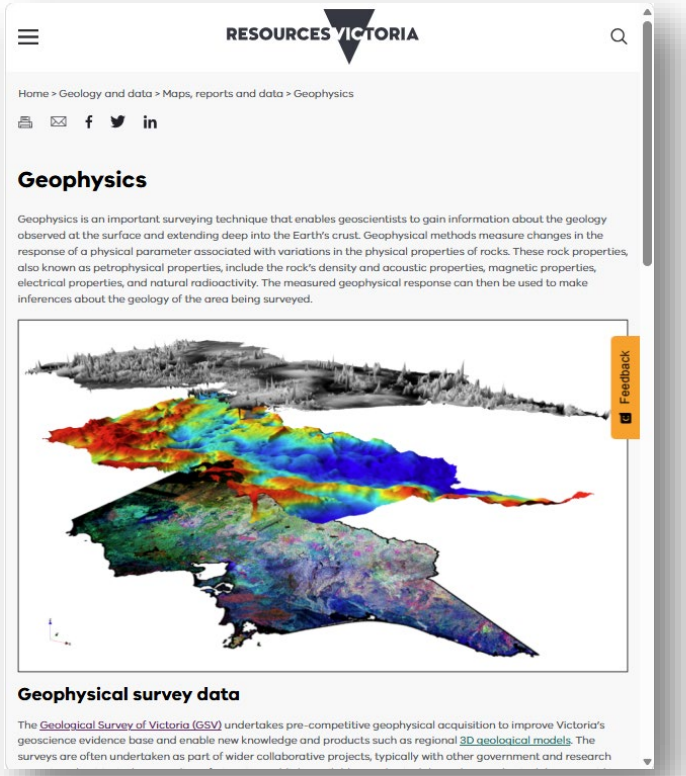
Public datasets

State-wide data compilations

- Airborne magnetics
- Airborne radiometrics
- Ground gravity
- DEM

Government survey data

- Airborne EM
- Airborne gravity/gradiometry
- Magnetotellurics
- Active Seismic/Passive Seismic
- Petrophysics



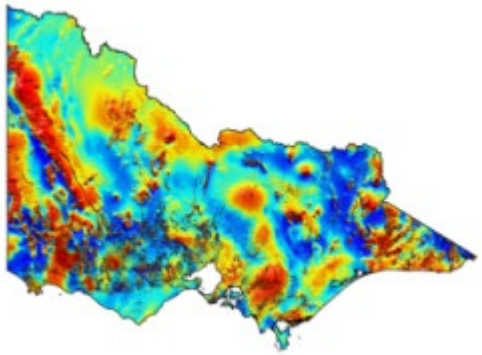
Company survey data

- Airborne mag/rad/EM/gravity
- Active Seismic/Passive Seismic
- Ground electrical and electromagnetic surveys
- Petrophysics

https://resources.vic.gov.au/geology-and-data/maps-reports-data/geophysics

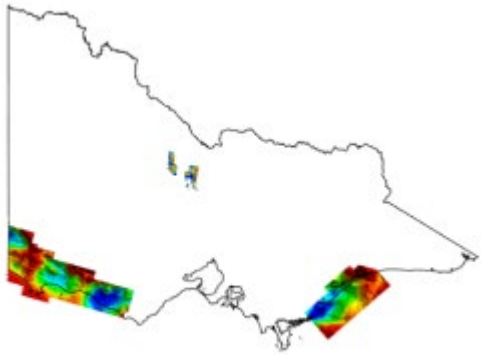
Regional airborne geophysical data

Airborne magnetics



Radiometrics

Airborne gravity and gravity gradiometry

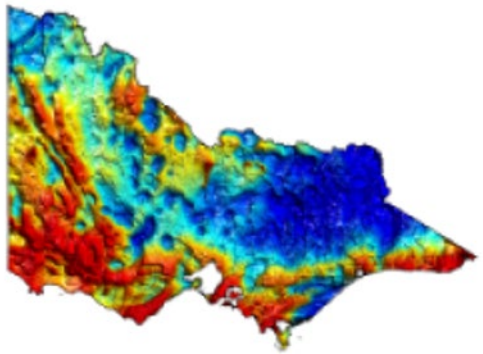


Airborne electromagnetics

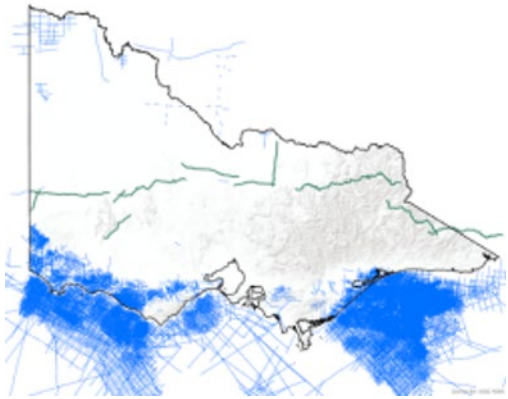
https://resources.vic.gov.au/geology-and-data/maps-reports-data/geophysics/regional-geophysical-data

Regional ground geophysical data

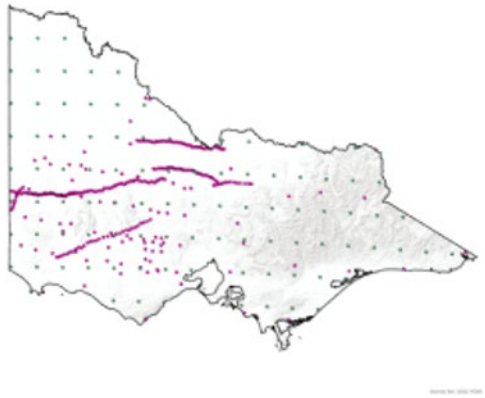
Ground gravity



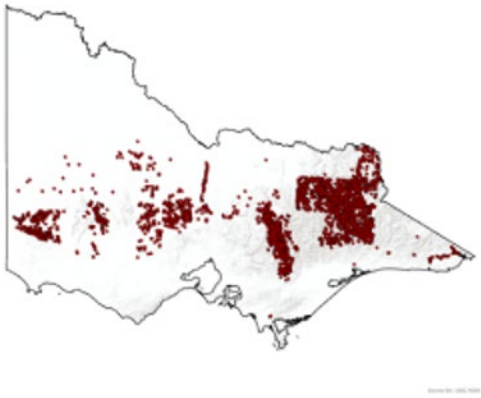
Seismic



Magnetotellurics

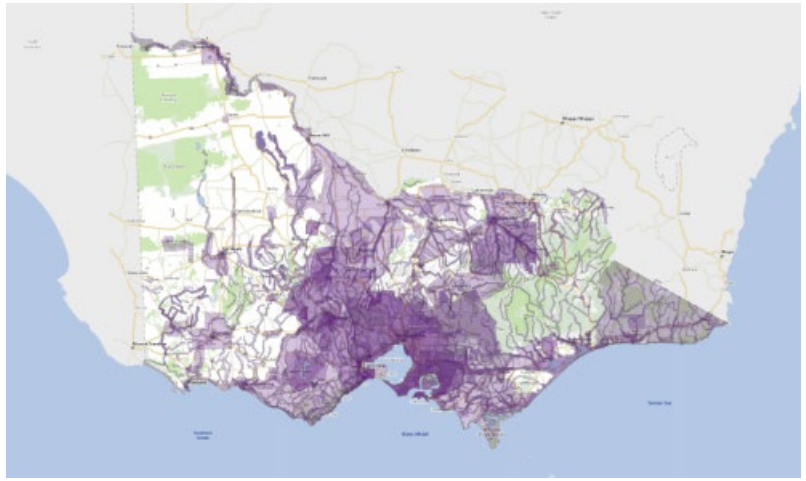


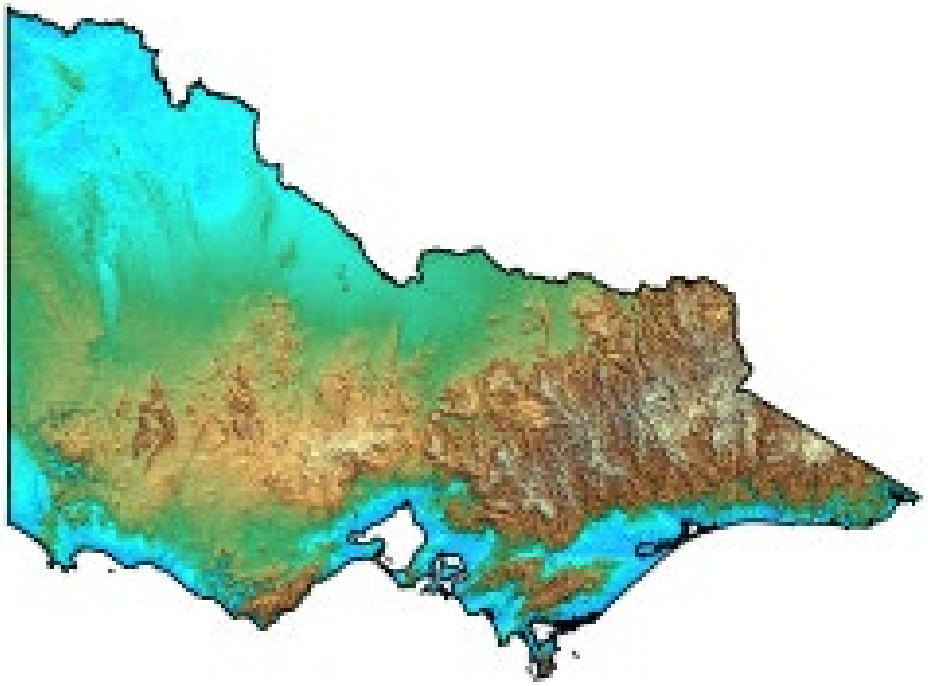
Petrophysics



https://resources.vic.gov.au/geology-and-data/maps-reports-data/geophysics/regional-geophysical-data

Elevation models





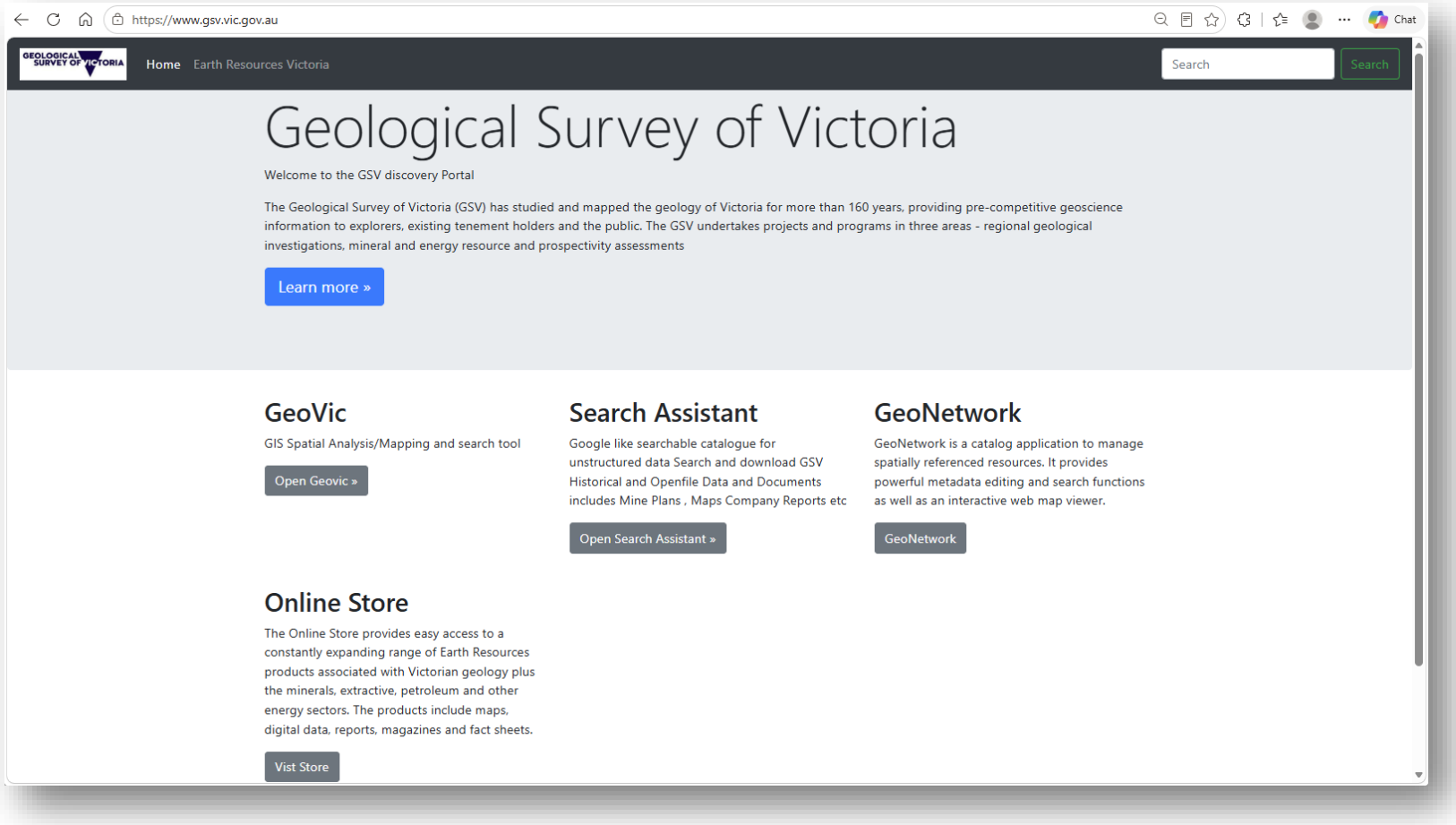
- Vicmap Elevation LiDAR Collection
- Available from approved service providers/resellers

- Vicmap Elevation DEM 10m
- Vertical accuracy +/-5 m
- Available under a Creative Commons licence from Data.Vic and GA's ELVIS platform

https://www.land.vic.gov.au/maps-and-spatial/spatial-data/vicmap-catalogue/vicmap-elevation

Accessing and discovering geophysical data

Geological Survey of Victoria discovery portal

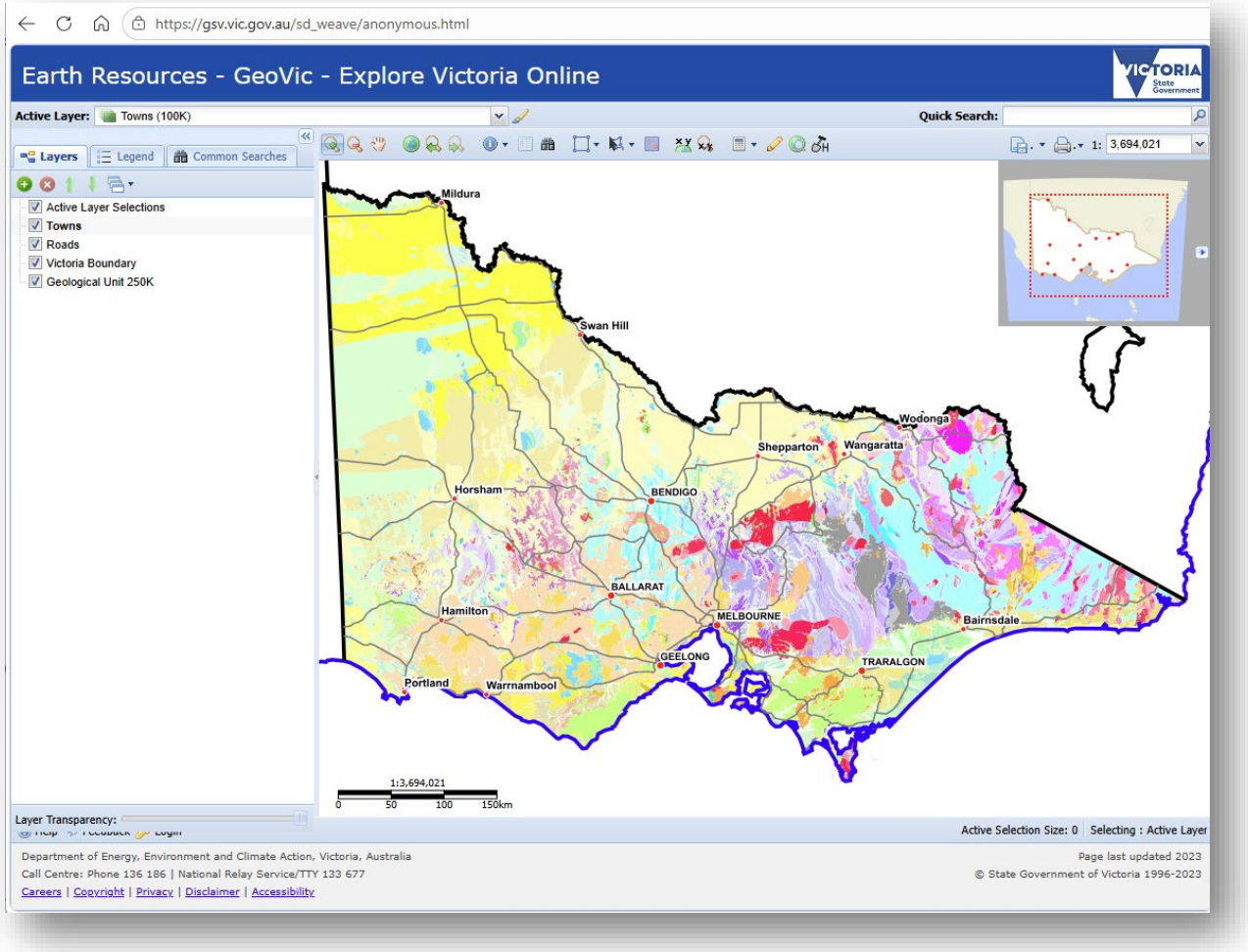


www.gsv.vic.gov.au

GeoVic

Online GIS

- Geological interpretations
- Geophysical interpretation layers
- Images of magnetics, radiometric, gravity
- Airborne geophysical surveys
- Gravity points
- Seismic points and lines
- Petrophysics points

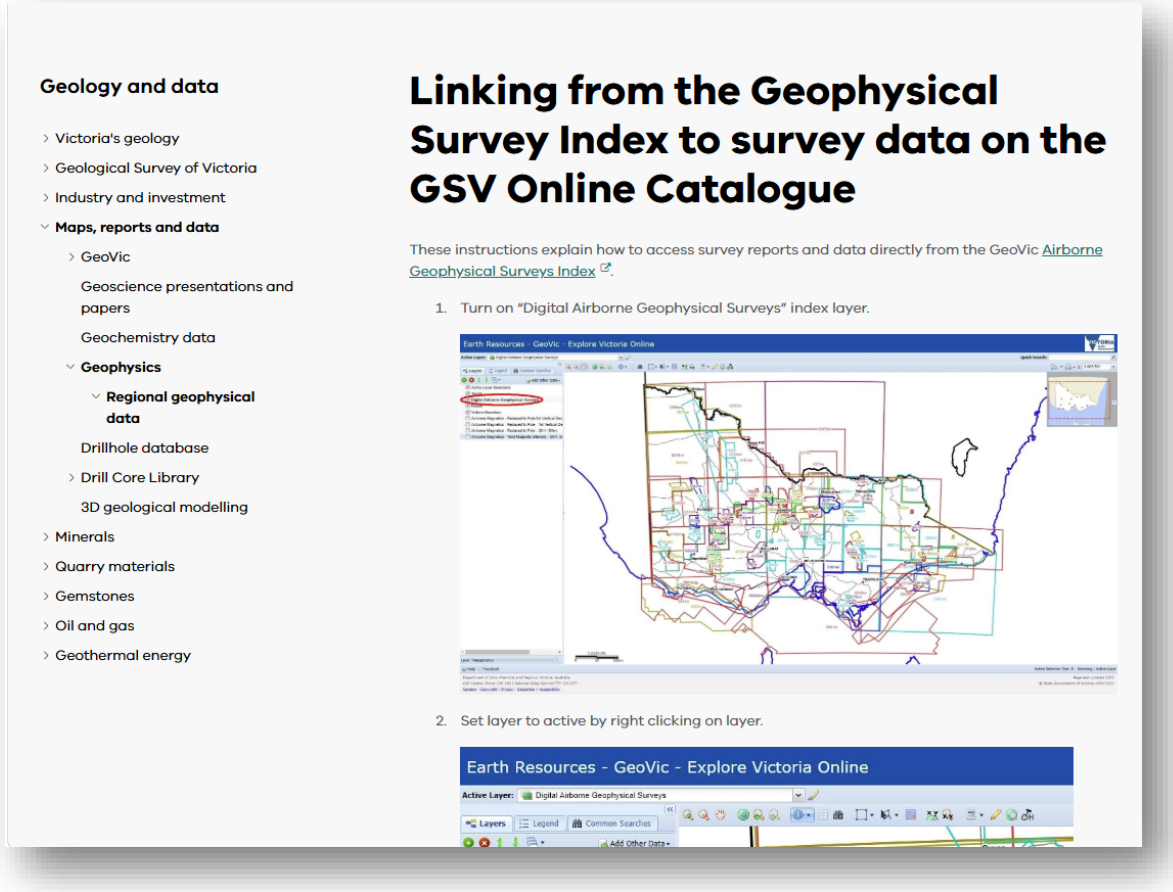


https://resources.vic.gov.au/geology-and-data/maps-reports-data/geovic

GeoVic: Airborne Geophysical Survey Index

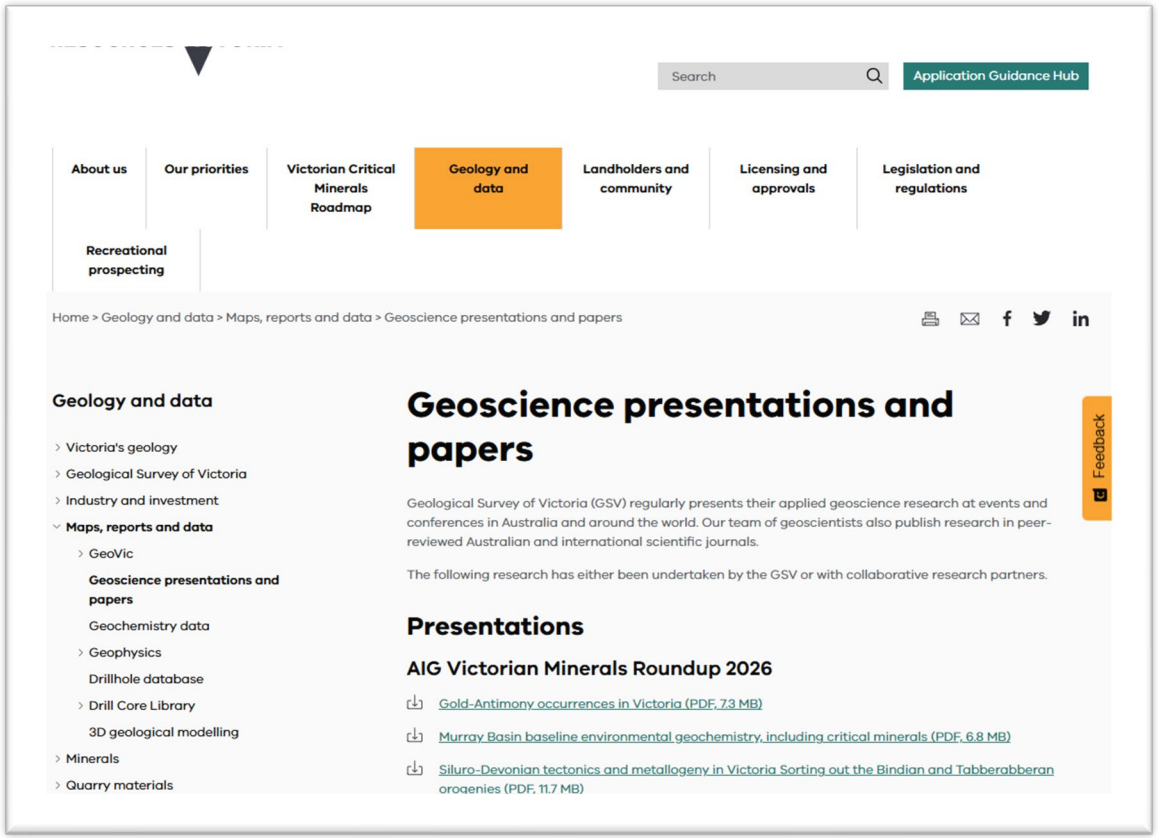
Step-by-step instructions:

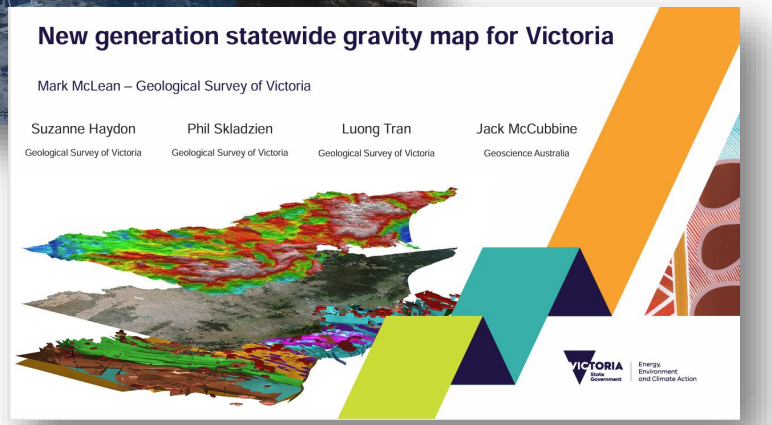
How to use GeoVic to find airborne survey data held in the GSV Online Catalogue



https://resources.vic.gov.au/geology-and-data/maps-reports-data/geophysics/regional-geophysical-data/linking-gsv-catalogue

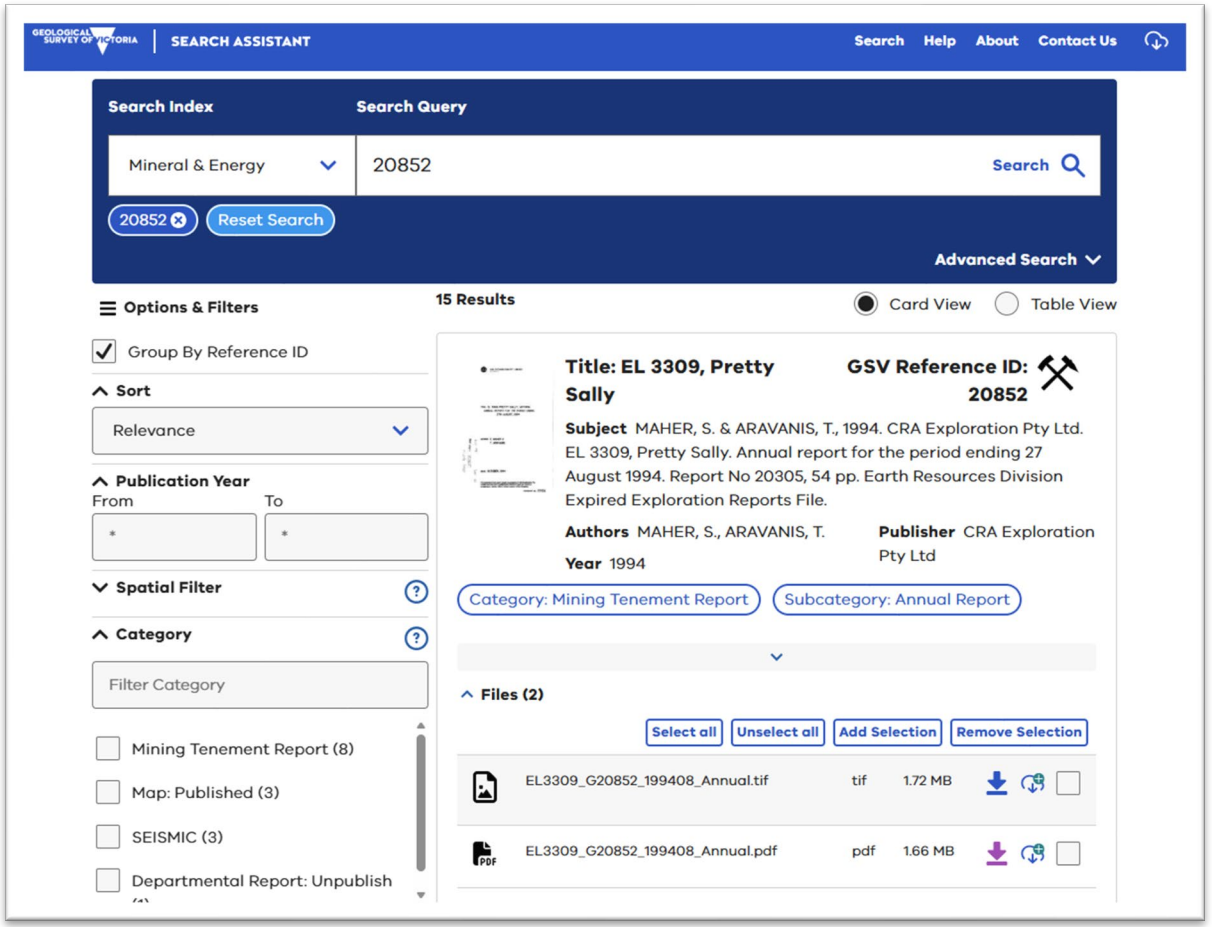
Resources Victoria website: GSV presentations and papers

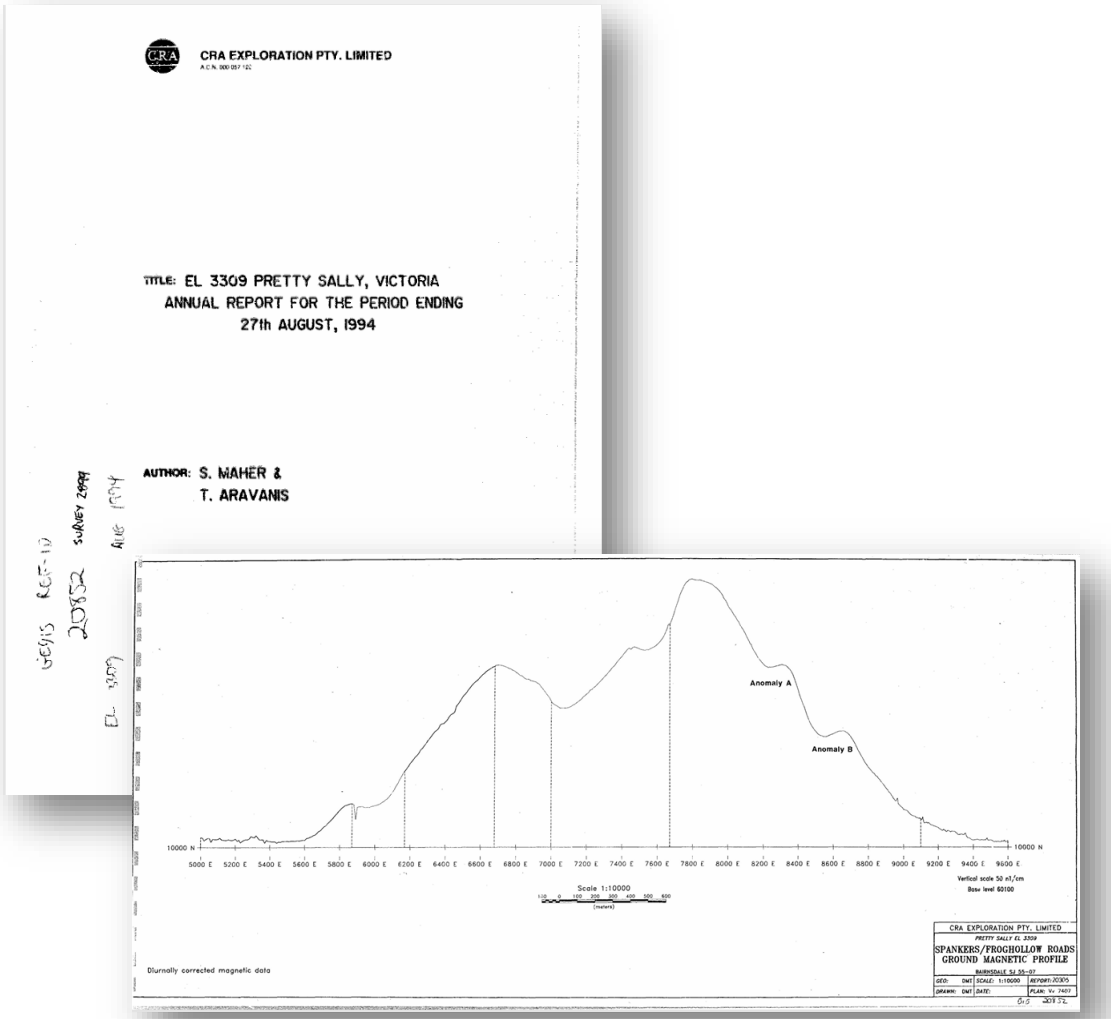




https://resources.vic.gov.au/geology-and-data/maps-reports-data/presentations-and-papers

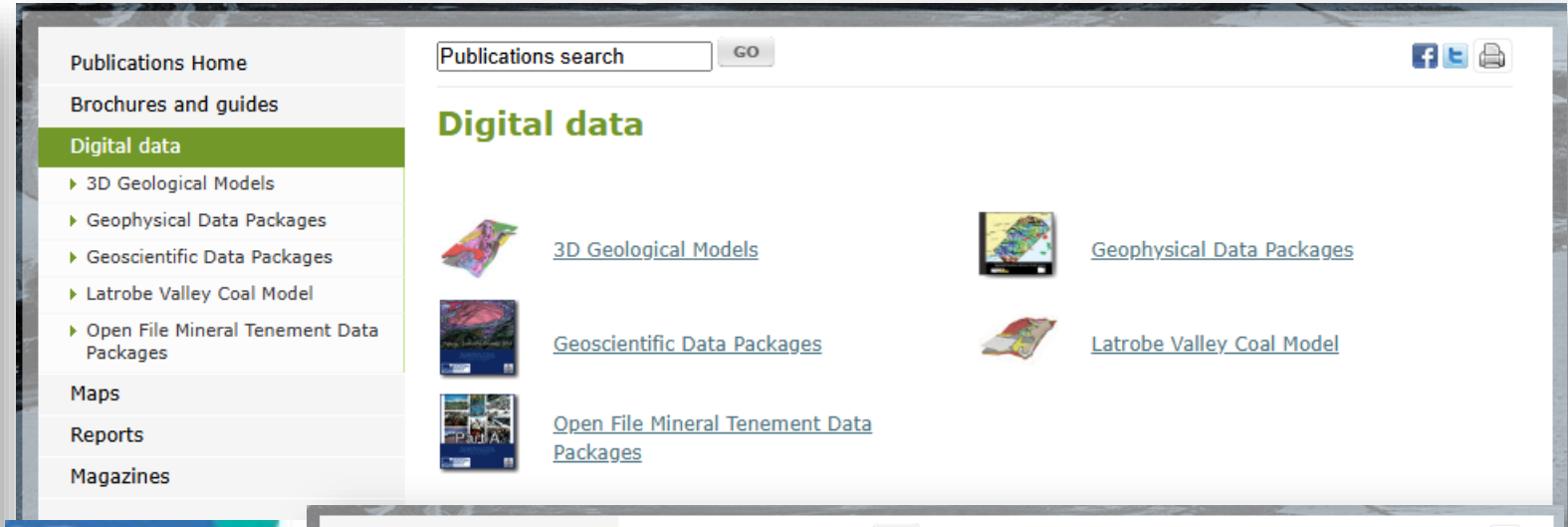
Geological Survey of Victoria catalogue (Search Assistant)

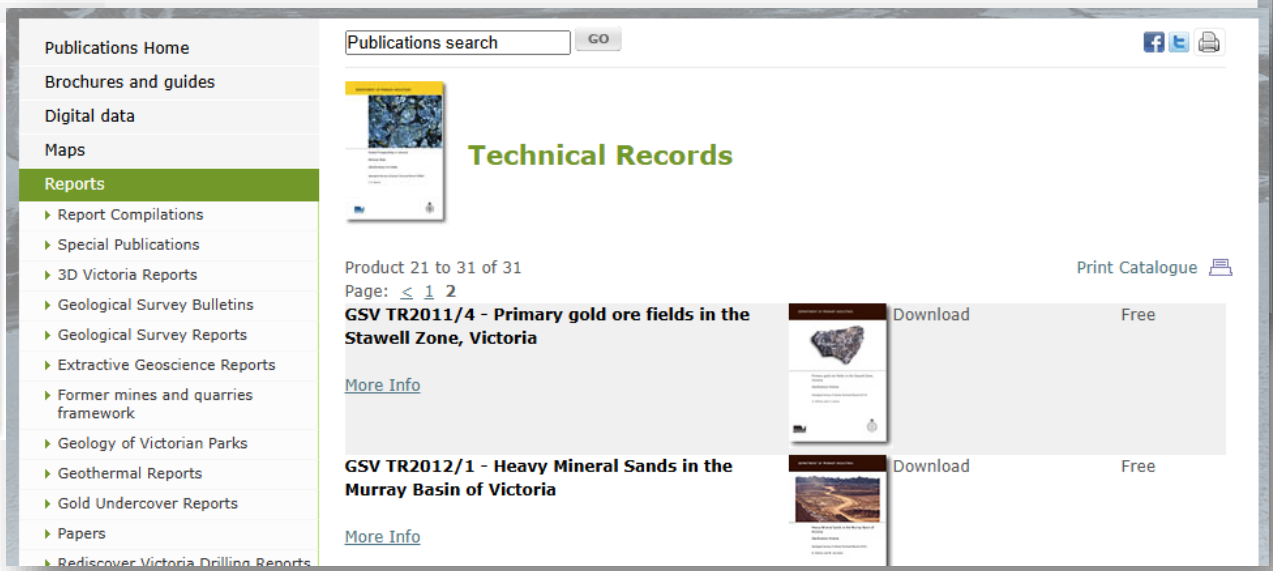




https://gsv.vic.gov.au/SearchAssistant2/search?q=

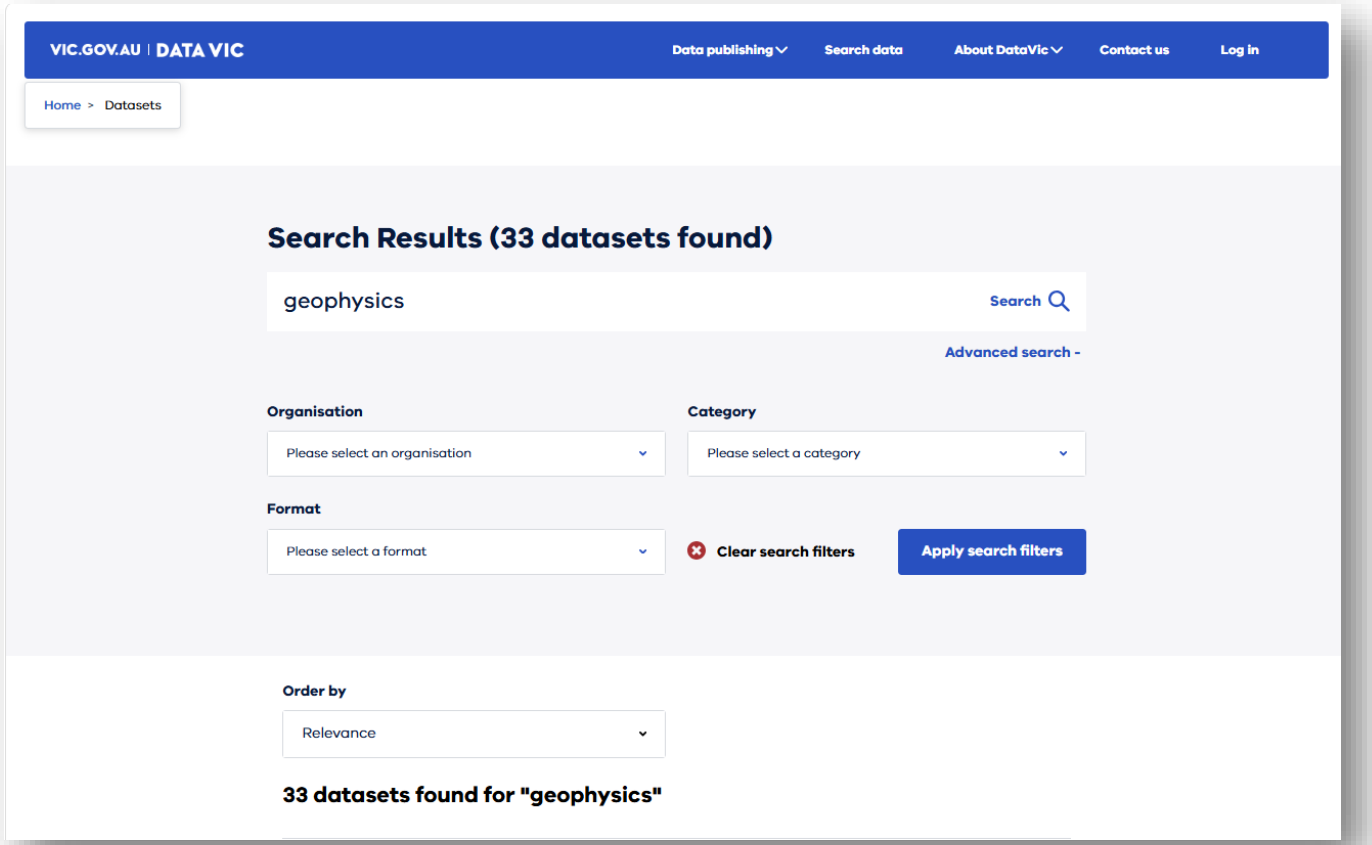
Earth Resources Publications (online store)

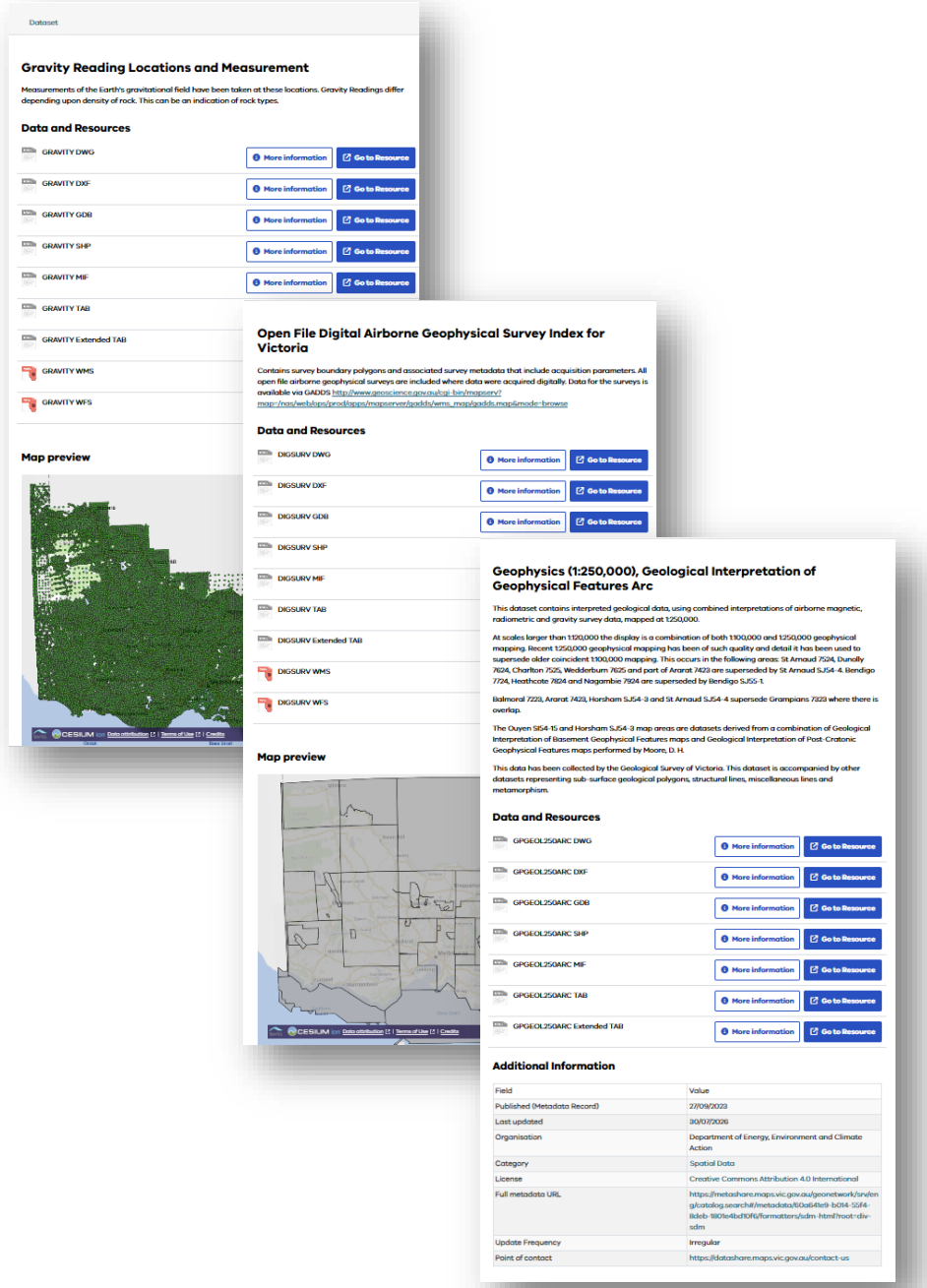




www.earthresources.efirst.com.au

Victorian Government open data





www.data.vic.gov.au

Current Projects

Victorian ground gravity

Land based gravity stations acquired prior to 2008.

- Nominal 1.5 km spacing
- 147,166 stations (black)

GEOSCIENCE VICTORIA., 2008. Statewide airborne magnetic and radiometric grids, 2005. Victoria - Gridded Airborne Geophysical Data, and Located and Gridded Gravity CD-Rom, updated 2008. GeoScience Victoria. www.gsv.vic.gov.au/rid/167394

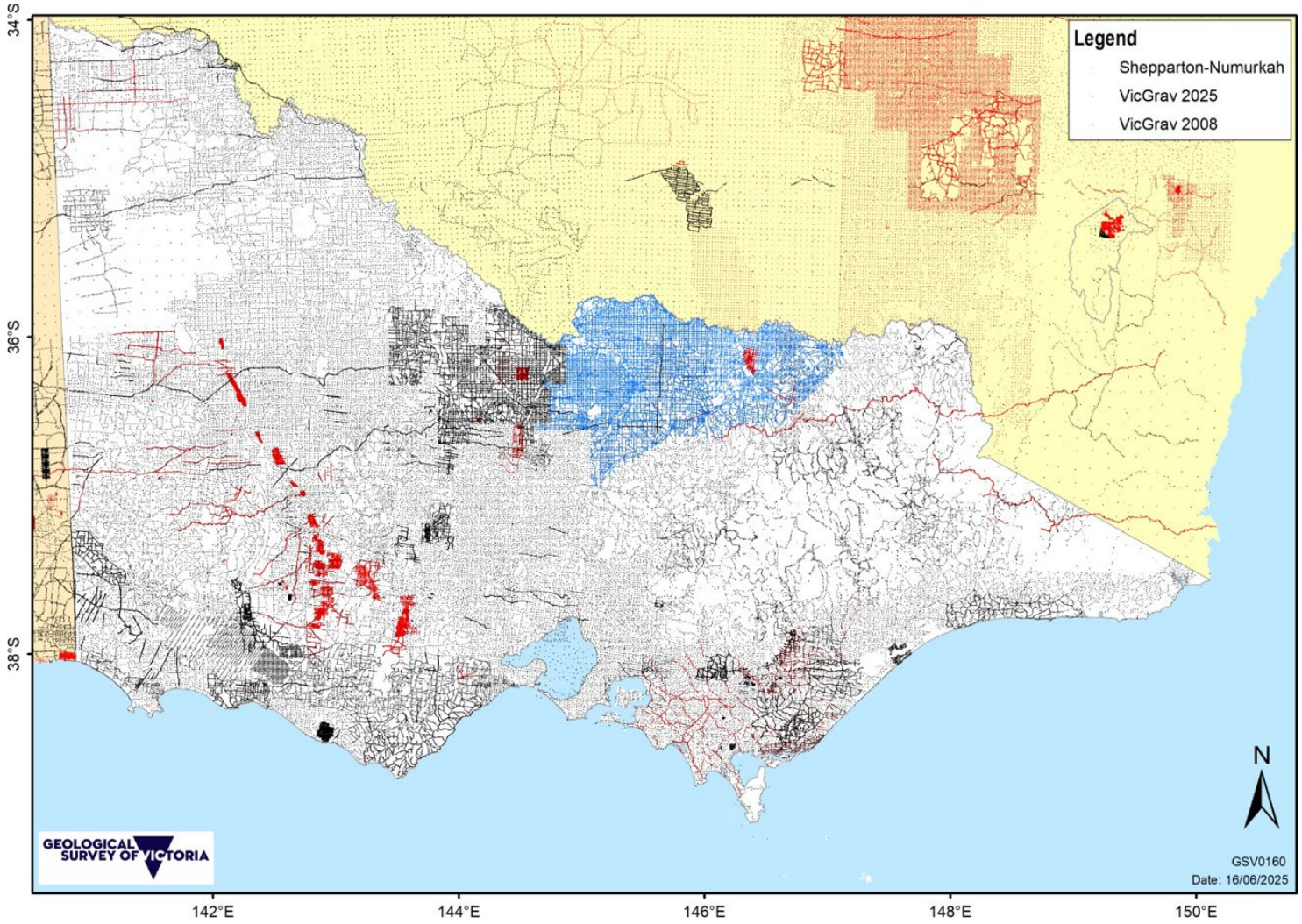
Shepparton-Numurkah survey

- 23,456 new stations (blue)

Haydon, S.J. & Skladzien, P.B., 2025. Shepparton-Numurkah Regional Ground Gravity Survey. Geological Survey of Victoria Technical Record 2025/1. Geological Survey of Victoria. Department of Energy, Environment and Climate Action. Melbourne, Victoria. 32 p. www.gsv.vic.gov.au/rid/172763

Additional government, industry, student surveys

- 48,839 new stations (red)



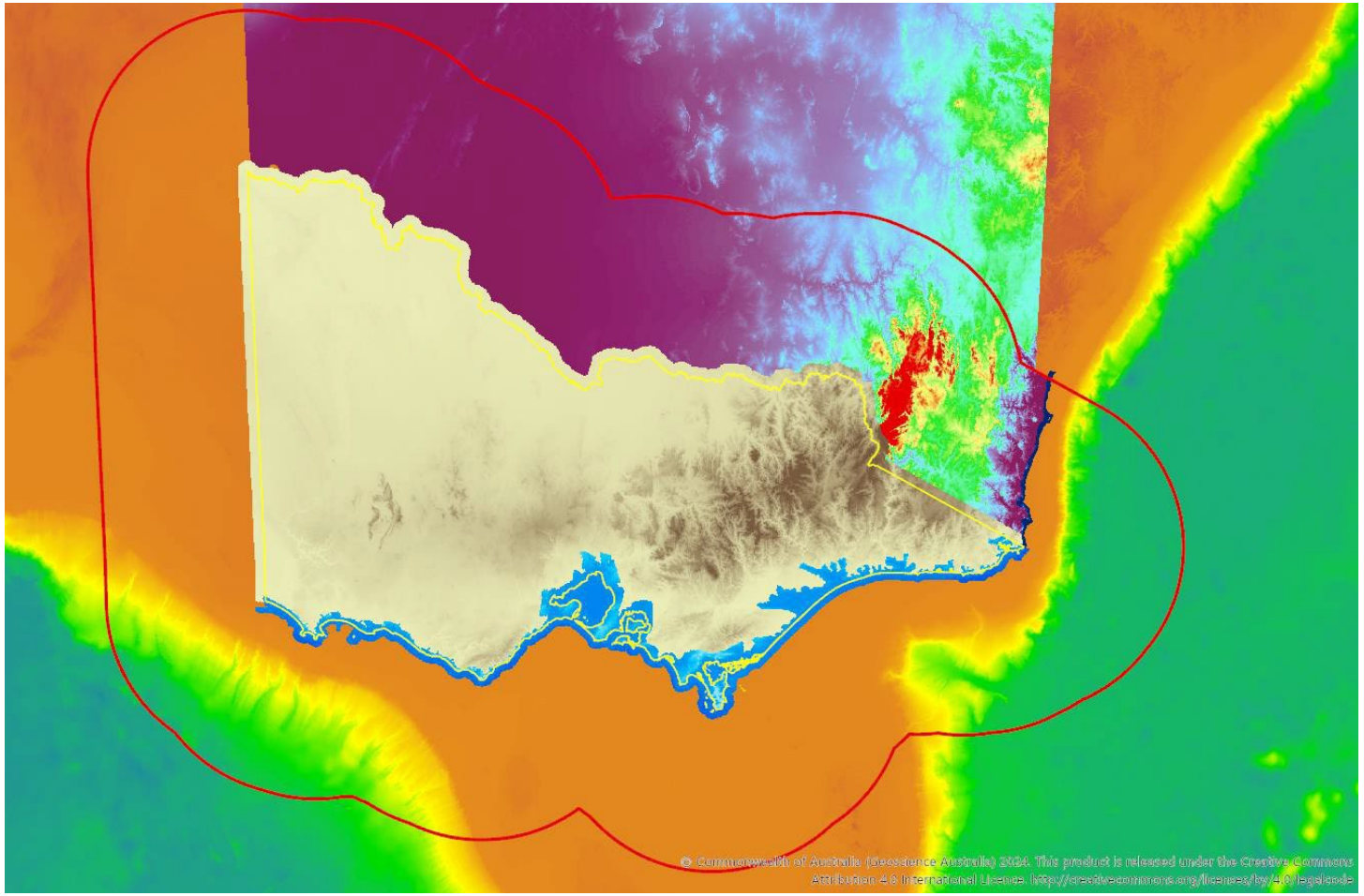
In progress: New VicGrav compilation

New statewide DEM

GSV is building a new DEM using LiDAR and Vicmap Elevation DEM 10m with surrounding data to 167 km

To support new gravity terrain corrections

Will be released as a product by GSV



In progress: New statewide DEM

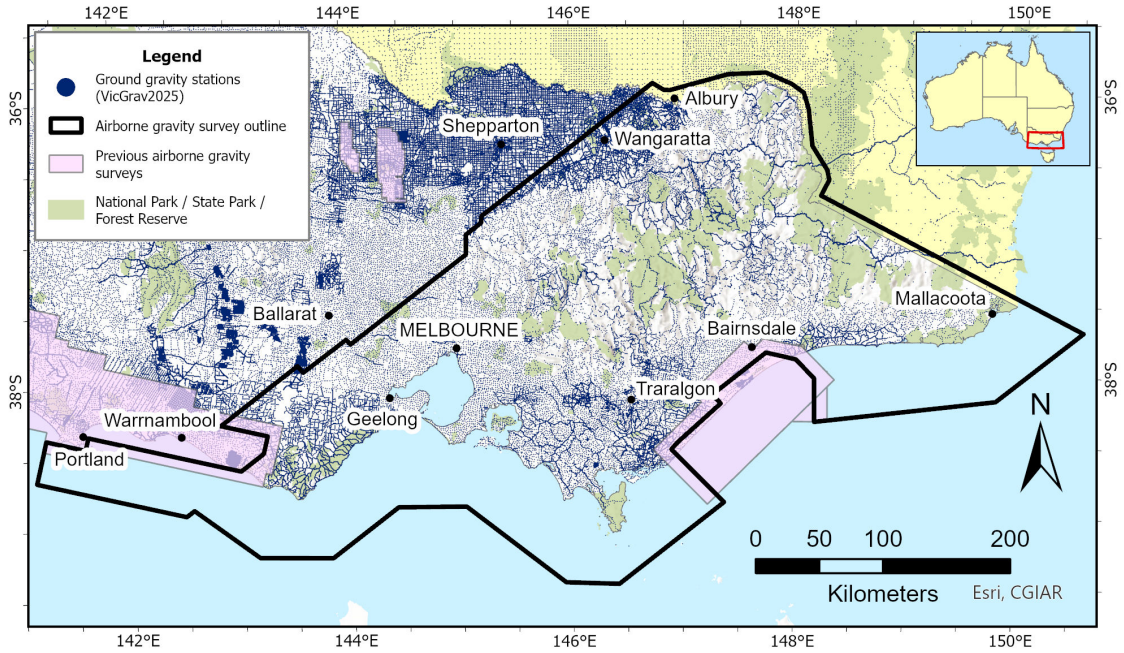
Greater Melbourne and eastern Victoria airborne gravity survey

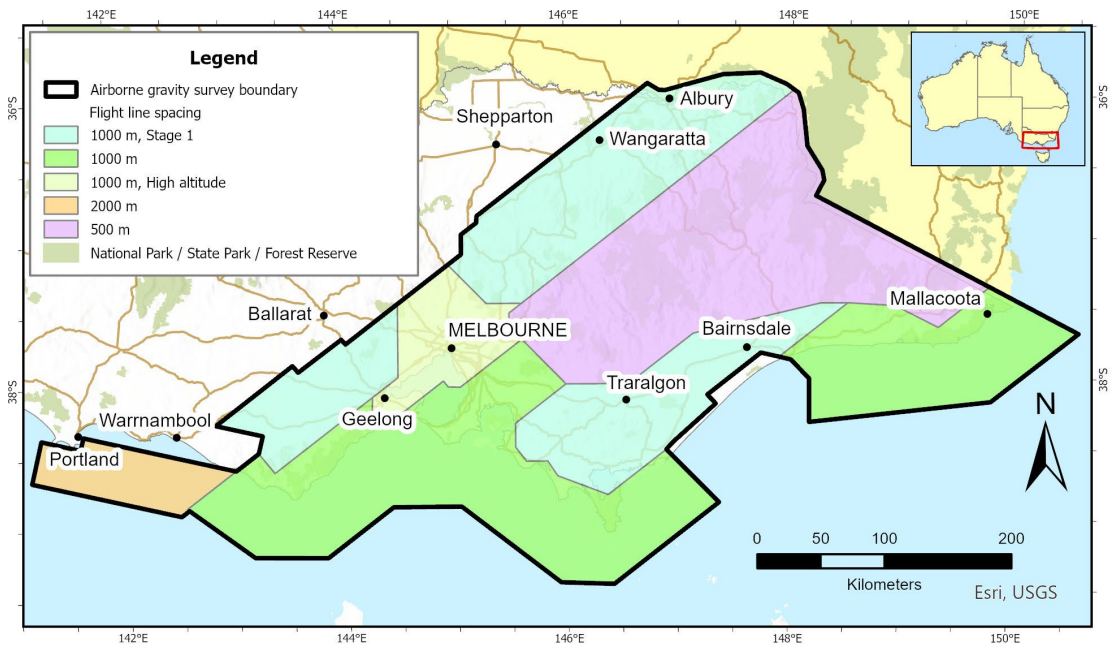
- Survey covers approximately 150,000 square kilometres
- Total line km = 197217.37 km

Report and data released 2026

Collaboration:

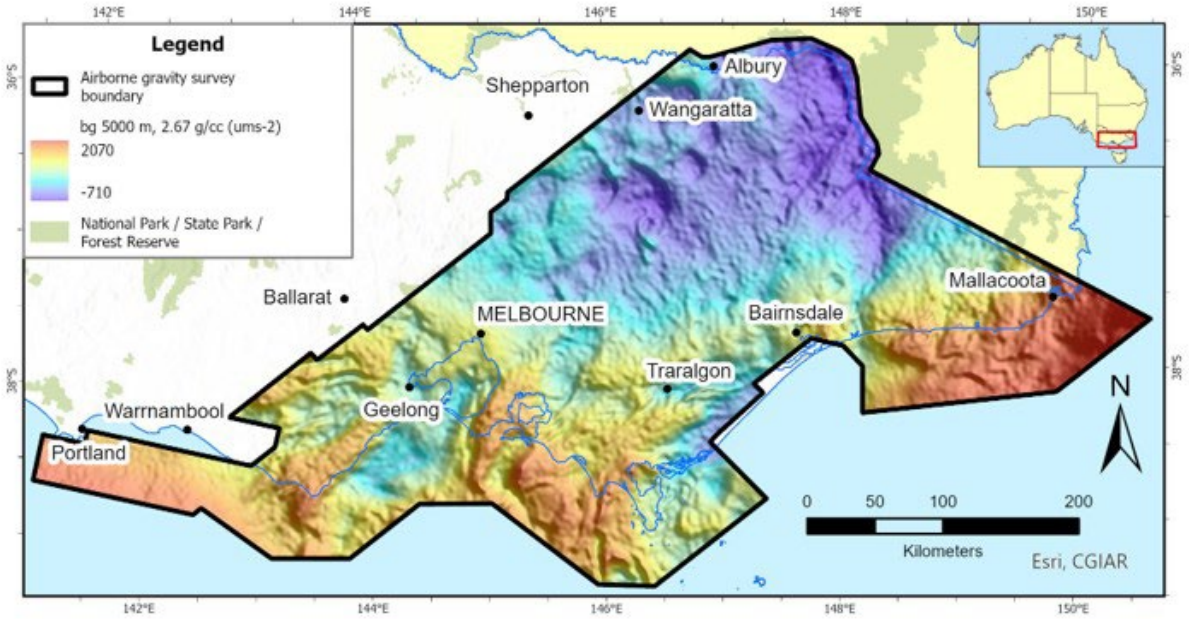
- Geological Survey of Victoria
- Surveyor General Victoria
- Geoscience Australia



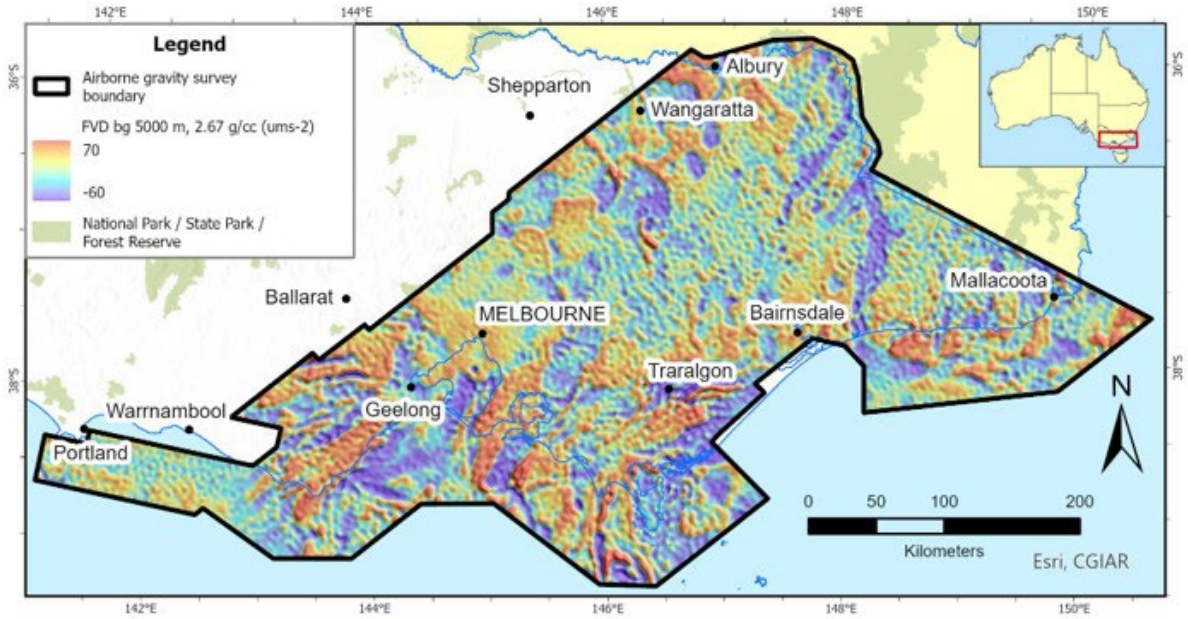


Haydon S.J., 2026. Greater Melbourne and Eastern Victoria Airborne Gravity Survey. Geological Survey of Victoria Technical Record 2026/1. Geological Survey of Victoria. Department of Energy, Environment and Climate Action. Melbourne, Victoria. 45p. www.gsv.vic.gov.au/rid/173526

Greater Melbourne and eastern Victoria airborne gravity survey



Final Topographic Gravity, 5000 m full-wavelength spatial filter, 2670 kg/m3, Vertical



First Vertical Derivative of Final Topographic Gravity, 5000 m full-wavelength spatial filter, 2670 kg/m3, Vertical

Haydon S.J., 2026. Greater Melbourne and Eastern Victoria Airborne Gravity Survey. Geological Survey of Victoria Technical Record 2026/1. Geological Survey of Victoria. Department of Energy, Environment and Climate Action. Melbourne, Victoria. 45p. www.gsv.vic.gov.au/rid/173526

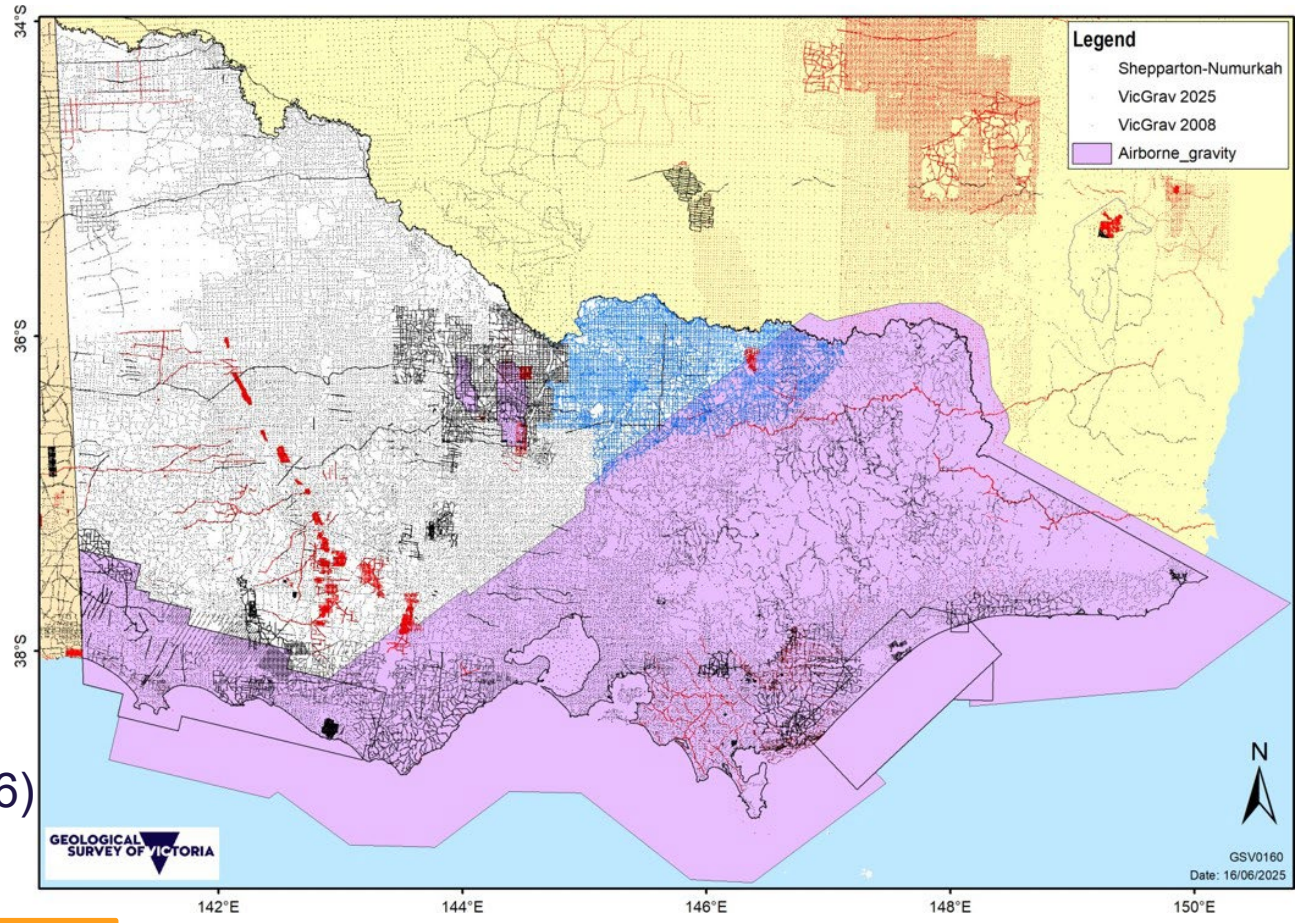
Merge Victorian ground and airborne gravity

Ground gravity

- VicGrav 2008
- Additional 72,295 stations (to 2025)

Airborne gravity/ gradiometry

- Bass Strait AGG (2002)
- Lakes Entrance AGG (2002)
- Four Eagles AGG (2004)
- Gippsland Nearshore AG (2011)
- Otway AGG (2019)
- Fosterville AGG (2019)
- Greater Melbourne and Eastern Victoria AG (2026)



In progress: GSV and GA collaboration

Central Victoria AEM survey

Joint project between GSV and Geoscience Australia

Tempest fixed-wing system
Lines at 10 km spacing east-west
Central area at 2.5 km line spacing

Flying now

Data and products for public release after QAQC

In progress: GSV and GA collaboration

Australian Government
Geoscience Australia

GEOLOGICAL SURVEY OF VICTORIA

Proposed Activity Information

Central Victoria Airborne Electromagnetic Survey

Geoscience Australia and the Geological Survey of Victoria, will carry out an Airborne Electromagnetic (AEM) survey north and west of Melbourne in 2026. Industry and local experts led by Geoscience Australia will gather, analyse and interpret new and existing geoscience data and knowledge to improve understanding of Victoria's and Australia's geology for the benefit of all Australians.

Why is this survey important?

This survey is being carried out to obtain data that will enhance understanding of geology and natural resources of the region. This information will support long-term informed decision making for resource management.

What you may see or hear

An aeroplane, towing equipment behind, will fly at approximately 120 metres above the ground, along flight lines 2.5 km and 10 km apart. If you would like more information or have any concerns, please contact Geoscience Australia.

Survey method

Light aircraft are fitted with instruments to map variations in the natural electrical conductivity of the ground to a depth of several hundred metres.

During the survey, a signal will be transmitted from the aircraft into the ground. The signal passes quickly as the aircraft moves and is similar to that produced by an electric fence. Towed antennae detect the returned signals that are analysed to map variations in the electrical conductivity of the ground caused by the presence of groundwater and some minerals.

An AEM system in action.

How AEM surveys work:
https://www.ga.gov.au/scientific-topics/disciplines/geophysics/airborne-electromagnetics

For other information about AEM surveys:
https://www.ga.gov.au/scientific-topics/disciplines/geophysics/airborne-electromagnetics

Timing and location

The airborne survey is expected to be carried out between July and November 2026 across the area outlined in the figure below.

Important to know

Pre-competitive data acquired by Geoscience Australia will be publicly available after quality control and assurance checks have been performed. Public release of this information may contain explicit spatial location information such as specific deployment locations and/or areas which may be interpreted as containing gas industry site investment potential.

For further information:
Geoscience Australia
Email: geophysical.survey@ga.gov.au
Phone: 1800 800 175

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