

**Title**

3D Geological Model of Yilgarn-Officer-Musgrave Region, WA  
GeoCat # 77699

**Author(s)**

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**Custodian**

Geoscience Australia

**Jurisdiction**

Western Australia

**Theme**

3D Model,

**Abstract**

This release comprises the 3D geological model of the Yilgarn-Officer-Musgrave (YOM) region, Western Australia (location shown in Figure 1) as Gocad voxets and surfaces. The YOM 3D geological model was built to highlight the broad-scale crustal architecture of the region and extends down to a depth of 60 km to incorporate the Mohorovičić discontinuity.

The data for this 3D map are located in 3 folders:

**Geology:** Geological data for this 3D map

- Ausmoho 2012 (depth to Moho)
- Solid geology
- Surface geology
- Geological surfaces, horizons and faults
- Geological voxel model

**Geophysics:** Geophysical data for this 3D map

- Forward models of gravity and magnetic data
- Bouguer gravity grid (Gocad image voxel)
- Gravity worms
- Magnetic grid (Gocad image voxel)
- Magnetic worms
- Seismic reflection data image, locations and interpretation
- Seismic shallow lines

**Additional\_Data:** Additional and supporting data for this 3D map.

- Cultural information (roads and towns)
- Digital elevation model
- Drill hole locations
- Earthquake epicentres
- Project Boundaries

The 3D geological model and the supporting data used to create it have been documented in the 'Yilgarn Craton-Officer Basin-Musgrave Seismic and MT workshop manual 2013' by Geoscience Australia, the Geological Survey of Western Australia and the Centre for Exploration

Targeting. For the full report detailing the aims, methodologies, results and conclusions of this study please refer to: *Goodwin, J., Jones, T., Brennan, T. and Nicoll, M., Geophysical Investigation and 3D Geological Model of the Yilgarn-Officer-Musgrave Region, Yilgarn Craton-Officer Basin-Musgrave Province Seismic and MT workshop, (2013). Geoscience Australia, Record 2013/28, GeoCat #76664*

### **Search Words**

3D, Geological, Model, Yilgarn Craton, Officer Basin, Musgrave Province, YOM, Gravity, Magnetism, Seismic

### **Software**

Created with ArcGIS 10 and Gocad 2009.4

### **File Format**

Gocad objects - Points, Polylines, Surfaces, Voxels  
ArcGIS Shapefiles

### **Geographic Extent:**

**Data Extent** – in metres – the voxel rectangle (plus 30 km buffer on all sides)

Projection: GA Lambert Conformal Conic (GALCC)

Top -2810000 m

Left -988000 m

Bottom -3178000 m

Right -520000 m

**Data Extent** – in decimal degrees – the bounding rectangle of the voxel (plus 30 km buffer on all sides)

Projection: Geographic GCS GDA94 (lat long)

Top -24.3°

Left 123.8°

Bottom -28.0°

Right 128.9°

**Extent of Voxel Model** – in metres - voxel rectangle

Projection: GA Lambert Conformal Conic (GALCC)

Top -2840000 m

Left -958000 m

Bottom -3148000 m

Right -550000 m

### **Voxel Depth**

Upper limit: 2000m

Lower limit -60000m

### **Projection**

Geoscience Australia Lambert Conformal Conic

Central meridian 134°, Standard Parallels -18° & -36°, Latitude of origin 0°

Datum GDA94

Spheroid GRS 1980

Vertical datum: Australian height datum (AHD)

### **Resolution**

Voxel resolution: 2000 m (X) × 2000 m (Y) × 200 m (Z)

**Creation Date**

20-Sept-2013

**Last Revision Date**

20-Sept-2013

**Progress**

Complete

**Maintenance and Update Frequency**

Not planned

**Lineage**

Product developed primarily from interpretations of seismic reflection data of seismic line 11GA-YO1, solid geology interpretations and forward modelling of potential field data.

**Positional Accuracy**

This is an interpretive dataset based on a combination of raw data and geological interpretations, each with variable positional accuracy not meaningfully quantifiable.

**Attribute Accuracy**

Attribute data is the best available at the time of publication.

**Logical Consistency**

The horizon and fault surfaces, which for the most part were constrained by the solid geology, seismic interpretation, and potential field data, have water tight joins where they intersect. This enabled the creation of the 3D voxet model

**Completeness**

The data are complete within the bounding polygon.

**Contact Organisation**

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**Metadata Date**

20-Sept-2013

**Bibliographic Reference**

It is recommended that these data be referred to as:

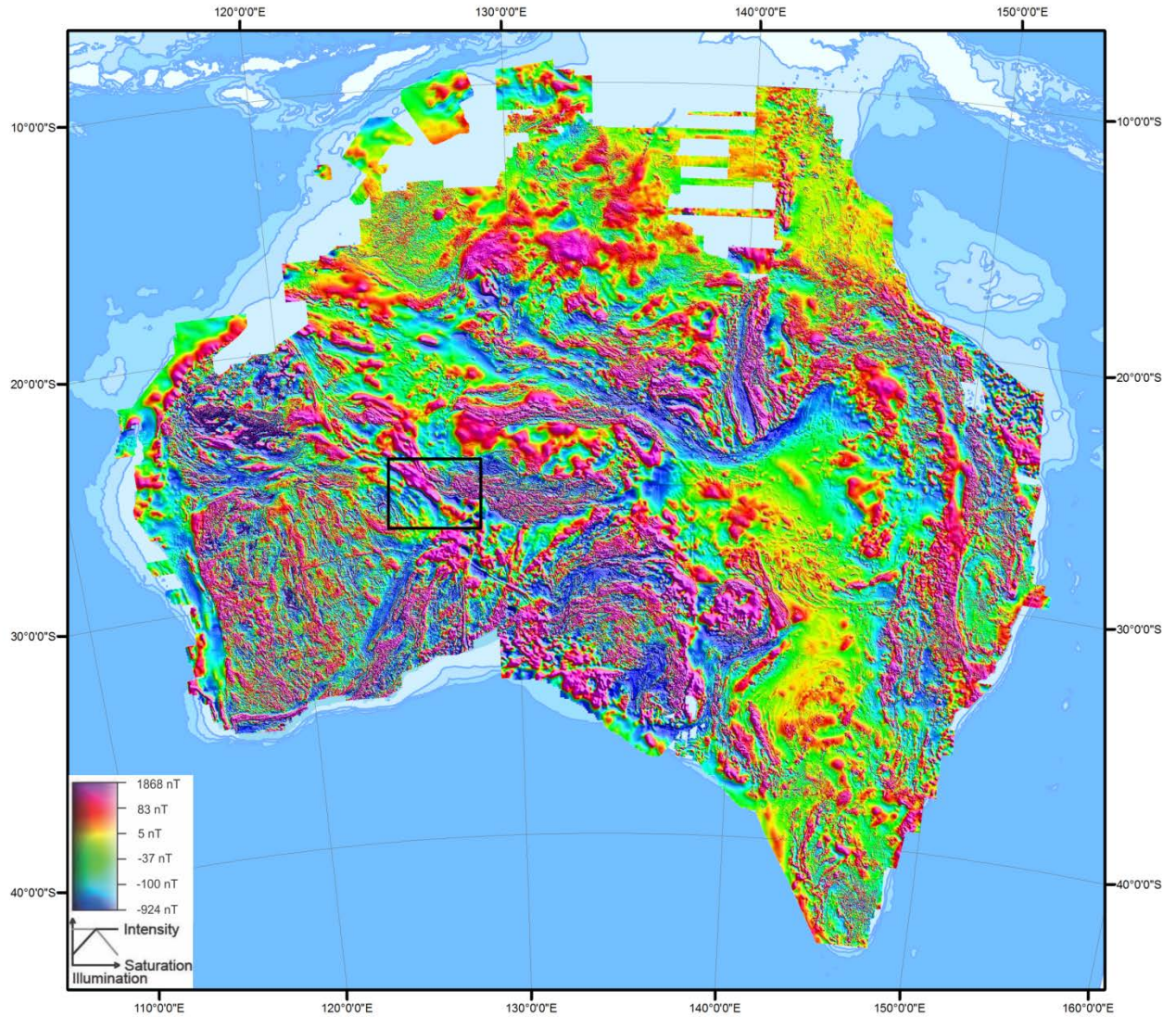
Jones, T., Brennan, T., Goodwin, J., Nicoll, M.G., 2013. *3D Geological Model of the Yilgarn-Officer-Musgrave Region, WA*. Electronic resource, Geoscience Australia. GeoCat # 77699  
<http://www.ga.gov.au/minerals/projects/current-projects/regional-geodynamics.html>

Note that specialist software is required to view and manipulate these files.

#### Access Constraint

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**Figure 1** Magnetic anomaly map of Australia showing the location of the study area (black rectangle).