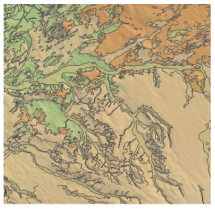

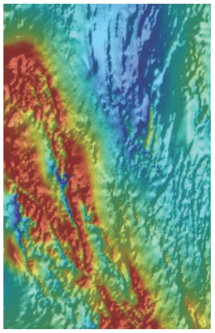

Department of State Development

Metadata: SA TMI 2016

Date Printed: 02/08/2018

Government of South Australia

Department of State Development

Dataset
Title: SA TMI 2016

Custodian: Department for Energy and Mining, South Australia

Jurisdiction: South Australia

Description
Abstract:
SA_TMI is the South Australian total magnetic intensity grid, produced by merging regional government surveys with mineral exploration company surveys, to form a continuous surface which includes offshore acquired TMI data.

Modern magnetic field surveying almost exclusively measures the strength of the magnetic field, known as Total Magnetic Intensity (TMI). TMI is measured primarily because of instrumental advantages, in particular the low directional sensitivity of the sensors. The data are used both in digital database formats (e.g. for modelling and inversion) and in image formats, generally accessing look-up tables to translate values to colours. The magnetic field imagery may also incorporate processes such as histogram equalisation to maximise sensitivity across a large dynamic range, and sun-shading (artificial illumination as of a three-dimensional surface) to emphasise local perturbations from shallow irregularities in the appropriate physical property of density and/or magnetisation.

This is the 2016 update to previous State TMI grids. The collection of images and digital data products here were generated to facilitate geological interpretation. The products are not themselves interpretive, but provide more direct access to interpretation than does the directly measured data itself.

ANZLIC Search Terms:
GEOSCIENCES Geophysics
BOUNDARIES Surveys

Geographic Extent Polygon: -25.9995 128.9995, -25.9995 141.0005, -38.0005 141.0005, -38.0005 128.9995

North bounding latitude: -25.9995

South bounding latitude: -38.0005

East bounding longitude: 141.0005

West bounding longitude: 128.9995

Data Currency
Beginning Date: Not Known

End Date: 2018-07-26

Dataset Status
Progress: Complete

Maintenance: As required

Version Number: 1

Access

Stored format: DIGITAL data are stored as ERMapper grids.

Available format(s): DIGITAL

Access constraint(s): Data is not to be redistributed without approval from Authorisation Officer – Chief Geoscientist, Mapping and Exploration, GSSA.

Data Quality

Lineage: SA_TMI is an unfiltered total magnetic intensity grid of South Australia, with an 80m grid cell size.
SA_TMI_LP800 is a low pass filtered (800m, cut-off rate 1) TMI
SA_TMI_VRTP is a variable reduction to pole (RTP) grid of SA_TMI generated by a Fast Fourier Transform (FFT) with IGRF field data: 01/01/1995; -30; 135, altitude 150m
SA_TMI_LP800_VRTP is a low pass filtered (800m, cut-off rate 1) SA_TMI_VRTP
SA_TMI_LP800_AS is a low pass filtered (800m, cut-off rate 1) Analytic Signal of SA_TMI. Analytic Signal is the square root of the sum of the squares of horizontal and vertical gradients. It is effective in mapping the distribution of shallow magnetisations independent of their magnetisation direction.
SA_TMI_LP800_VRTP_1VDis the 1st Vertical Derivative of low pass filtered (800m, cut-off rate 1) Variable RTP of SA_TMI
SA_TMI_LP800_1VD is the 1st Vertical Derivative of variable RTP of SA_TMI
SA_TMI_VRTP_LP800_2VD is the 2nd Vertical Derivative of Low-pass filtered (800m, cut-off rate 1) Variable RTP of SA_TMI
SA_TMI_VRTP_UC1000_Residual is the Upward Continued 1000m Residual of Variable RTP of SA_TMI
SA_TMI_VRTP_PseudoGravity is the Pseudo Gravity of Variable RTP of SA_TMI. The ideal relationship between gravity and magnetic fields which would exist for an ideal relationship between density and magnetisation allows the prediction of gravity field variations from magnetic field measurements (Garland 1951, Baranov 1957, Bott and Ingles 1972). This is achieved by suitable transform of the magnetic field data, namely a reduction to pole and integration known as the pseudogravity transform.
SA_TMI_VRTP_LP800_TILT is the Low pass filtered (800m cutoff, cut-off rate 1) VRTP TMI TILT Angle. The tilt angle is derived from the ratio of vertical and horizontal gradients transformed to an angle (range -90° to +90°) using the arc-tangent function (Miller and Singh, 1994). This ratio is independent of the magnitude of the gradients and is everywhere defined, which means that it is subject to noise across regions of low gradient.

Positional accuracy: Not Known

Attribute accuracy: Not Known

Logical consistency: Not Known

Completeness: This survey is complete

Contact Information

Contact organisation: Department for Energy and Mining, South Australia

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Contact email: resources.customerservices@sa.gov.au

Metadata Dates
Add date: 2018-07-30

Change date: 2018-08-02

Responsible Party
Responsible party: Chief Geoscientist, Mapping and Exploration, GSSA

Description
Dataset classification: Derived

Spatial representation type: Matrix

Dimension: Other

Usage
Purpose: This set of data is designed as an aid to geological exploration.

Use: Used to supply industry, government and the general public with geophysical information, primarily used for mineral exploration.

Usage limitations: SA_TMI was creating by merging a number of different airborne surveys recorded over a period of decades using various systems and have not been further QC'd by GSSA staff and may contain unexpected errors. Data is gridded at ~80 m cell size and interpretations should not be made at scales less than this.

Dataset Associations

Origin

Projection: Other Lambert Conformal Conic for South Australia

Datum: GDA94

Dataset Management
Authorised date: 2018-07-27

Authorised by: Chief Geoscientist, Mapping and Exploration, GSSA

Attributes