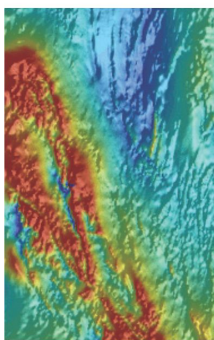


Department of State Development

Metadata: Northern Flinders, part Copley Model

Date Printed: 01/04/2015



Dataset

Title: Northern Flinders, part Copley Model

Custodian: Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE)

Jurisdiction: South Australia

Description

Abstract:

The South Australian Centre for Mineral Exploration Under Cover (CMXUC) is a collaborative research initiative of Primary Industries and Resources, South Australia (PIRSA) and the University of Adelaide. Its aim is to facilitate mineral discovery by defining and implementing the next generation of mineral exploration science.

The northern to central Flinders Ranges area comprise uplifted and eroded remnants of openly folded sedimentary rocks that were deposited in an intra-continental arm of the Neoproterozoic to Early Cambrian Adelaide Geosyncline. Deposition was controlled by rifting, particularly during the early stages, when mafic magmas intruded and extruded into developing evaporitic basins. Cratonic regions to the west (Gawler Craton) and east (central Curnamona Province) were covered with thinner successions equivalent to the upper parts of the Adelaide Geosyncline stratigraphy, when deposition was controlled more by broad sagging than extensional faulting. Adelaide Geosyncline sediments are mostly marine, and attain a thickness up to about 15 km, although the base is never seen in the main depocentres, the basal unconformity being exposed only near basin margins. The lowest unit, the Callanna Group, age (~830-800 Ma) comprises basal quartzite, carbonates, mafic lavas, and evaporite-bearing clastic sediments. The Burra Group (~800-700 Ma) is also rift-controlled, with basal fluvial clastics, paralic carbonates and later deltaic and fully marine sediments. The Umberatana Group (~670-630 Ma) unconformably overlies older rocks and transgresses onto basement beyond the limits of the zone of rifting. Glacial sediments at the base and top are separated by interglacial clastic and carbonate successions. The Wilpena Group (~630-550 Ma) comprises widespread transgressive-regressive cycles, including the uppermost Pound Subgroup with its renowned Ediacara fossil assemblage. Early Cambrian Hawker Group (~530-520 Ma) clastic and carbonate sediments unconformably overlie the Neoproterozoic, and are followed by later Early Cambrian redbeds. Evaporitic Callanna Group sediments became disrupted and mobilised during deposition of younger sediments and episodically intruded them as syn-depositional diapirs. Sedimentation was terminated by the onset of the Delamerian Orogeny (~510-490 Ma). While the cratonic platforms to the east and west remained essentially undeformed, the thick sediments of the Adelaide Geosyncline were folded into large amplitude folds of mostly concentric style. Deformation was least intense in the central Flinders region, with shortening across the open dome-and-basin style folds being generally no more than about 10-15%. Some domes nucleated around pre-existing diapirs, and diapiric intrusion continued during folding. Folds become tighter to the north and south, where they are also more linear to arcuate, with shortening about 30-40%. Growth faults that were active during sedimentation were reactivated as thrusts during Delamerian compression.

GEN Name: Northern Flinders Ranges, South Australia

Geographic Extent Polygon: E184088 N6556505, E184088 N6695279, E402043 N6695279, E402043 N6556505

North bounding latitude: N6695279

South bounding latitude: N6556505

East bounding longitude: E402043

West bounding longitude: E184088

Data Currency

Beginning Date: 2009

End Date: 2010

Dataset Status

Progress: Complete

Maintenance: As required

Version Number: 1

Access

Stored format: DIGITAL, 3D-pdf

Available format(s): DIGITAL, 3D-pdf, Gocad

Access constraint(s): Creative Commons Attribution 2.5 Australia License
<http://creativecommons.org/licenses/by/2.5/au/>



Data Quality

Positional accuracy: Vertical accuracy of the interpolated formation volumes, topographic and basement surfaces are variable due to resampling (topographic surface), interpretation (formation boundaries) and interpolation/unconstrained inversions (formation volumes).

Attribute accuracy: N/A

Contact Information

Contact organisation: Department of State Development, South Australia

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Metadata Dates

Add date: 2012-03-07

Change date: 2015-04-01

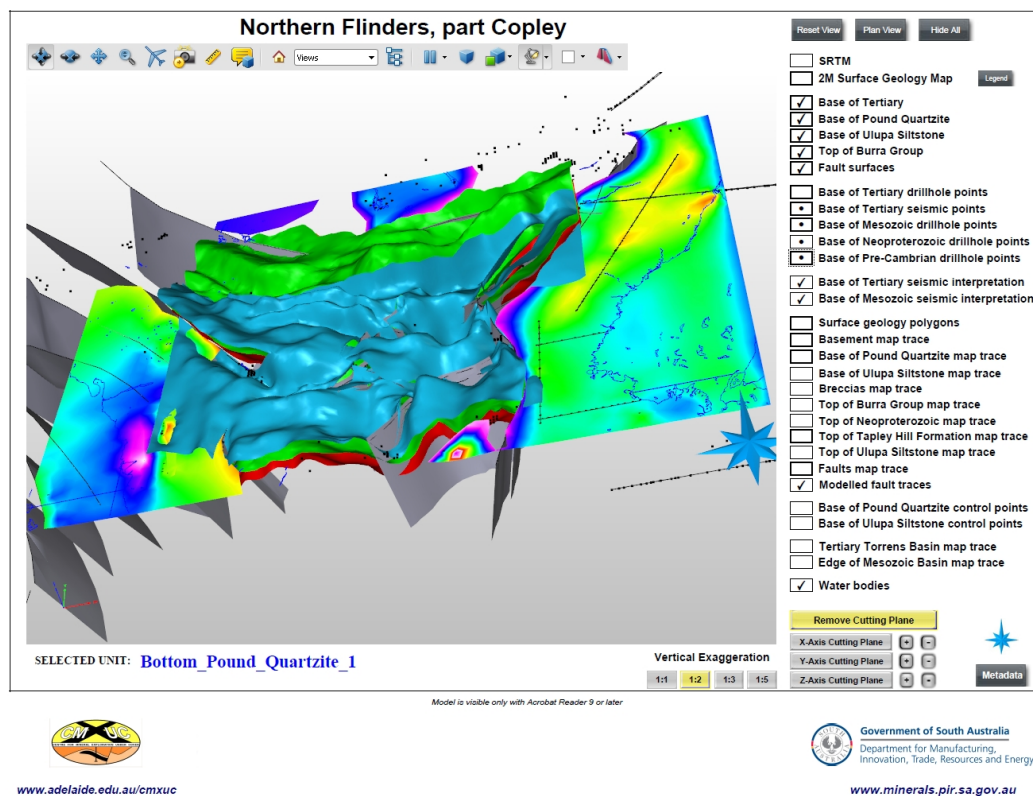
Responsible Party

Responsible party: Chief Geoscientist, Geological Survey of South Australia

Description

Dimension: x,y,h

Sample Graphic(s)



Northern Flinders, part Copley 3D-pdf

Usage

Purpose: Exploration geology, 3D visualisation

Use: Exploration geology, 3D visualisation

Usage limitations: This model is presented as a 'proof of concept' only and the accuracy (spatial or otherwise) should not be relied upon for exploration or other decision making processes.

Dataset Associations

Origin

Dataset size: 33MB

Projection: UTM Zone 54

Datum: GDA94

Dataset Management

Authorised by: Program Manager, Geoscientific Information Management, GSSA

Attributes
