GRAVITY ANOMALY MAP OF WESTERN AUSTRALIA

BOUGUER ONSHORE / FREE-AIR OFFSHORE

SCALE 1:2 500 000

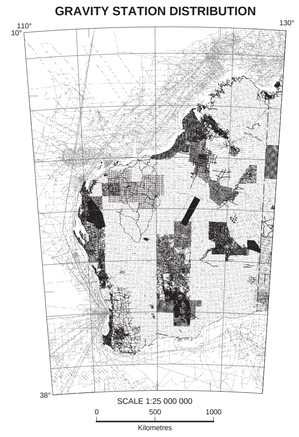
0 25 125 250

Kilometres

ALBERS EQUAL AREA PROJECTION
GEOCENTRIC DATUM OF AUSTRALIA 1994
LATITUDE OF ORIGIN: 0° 00', LONGITUDE OF ORIGIN: 121° 00' E
STANDARD PARALLELS AT 17°30' S AND 31°30' S

This image was compiled from observations from approximately 230 000 onshore gravity stations, 1.9 million offshore and 200 000 satellite observations to complete offshore data coverage. Surface data were collected by the Australian Geological Survey Organisation (AGSO), the Geological Survey of Western Australian (GSWA), mineral and petroleum exploration companies, and universities. Satellite data were derived from altimetry by Sandwell and Smith (1997). Gravity station distribution is shown below. Onshore data coverage is an 11 kilometre spaced grid, with smaller areas covered by 4 kilometre and 2 kilometre in-fill grids and some company surveys and detailed traverses at closer spacing. The data were collected between 1956 and 2000 with the 11 kilometre spaced grid regional data collected between 1960 and 1971.

GRAVITY STATION DISTRIBUTION



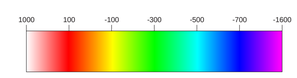
SCALE 1:25 000 000

0 500 1000

Kilometres

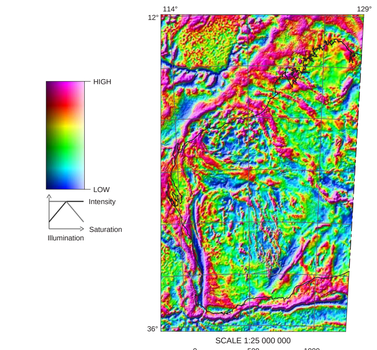
Anomalies onshore are simple non terrain-corrected Bouguer anomalies calculated for a density of 2.67 tonne.m^{-3}. Offshore and satellite anomalies are free-air anomalies. All anomalies are based on the IGSN71 International Gravity Datum (Morelli, *et al.*1974) and 1967 Geodetic Reference System (IAG, 1971). The land, marine and satellite data points were combined and gridded as a homogeneous data set using the minimum curvature technique (Briggs 1974). Gridding was by a two pass method (Murray, 1998) using an initial grid mesh of 1.5 minutes of arc and final mesh of 0.5 minutes of arc. The grid was then transformed to Albers Equal Area projection with a mesh size of 800 metres.

The main image shows the unfiltered Bouguer gravity anomalies. The range of values on this image is from -1820 μms^{-2} to 1710 μms^{-2}. Colour code of values shown below.



FILTERED GRAVITY ANOMALIES

The image below was generated by applying a histogram equalisation routine to a fractional vertical derivative grid of the projected Bouguer anomaly grid. The derivative grid effectively high-pass filters the Bouguer anomaly grid, reducing the very long wavelength amplitudes in the data, which mask the shorter wavelength information. The pseudocolour applied uses a magenta high, blue low colour palette. To emphasize the expression of subtle anomalies, an artificial sun-angle "illumination" filter was applied from the north west. The output of this filter was used to modulate the intensity and saturation of the initial colour image (Milligan, *et al.*1992).



SCALE 1:25 000 000

0 500 1000

Kilometres

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Data processing by A.S. Murray, AGSO
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Further information can be found on the Internet at: http://www.agso.gov.au/geophysics/

MAP LOCALITY

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Inquiries regarding the availability of digital data should be made to AGSO or GSWA. It is possible to display some of the data at scales that reveal significantly more detail than shown in this image.

Copies of this map may be obtained from:

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Phone: (02) 6249 9519, Facsimile: (02) 6249 9982
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AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION

GEOLOGICAL SURVEY WESTERN AUSTRALIA

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