



# PRODUCT *News*

## Reprocessing shows AVO potential for petroleum exploration

*product news*

Geoscience Australia has been conducting preliminary Amplitude Versus Offset (AVO) compliant processing on long cable seismic data to identify anomalies that may potentially indicate gas and sometimes oil accumulations under some geological conditions. Geoscience Australia has reprocessed parts of four lines from the 2006 Offshore Acreage Release (areas W06-7 and W06-11) to determine if the AVO method could be useful in investigating petroleum prospectivity in those areas.

Digital seismic field data and the reprocessed seismic data containing near, middle and far angle PreSTM stacks and PreSTM CMP gathers across the AVO anomalies are available from Geoscience Australia at the cost of transfer.

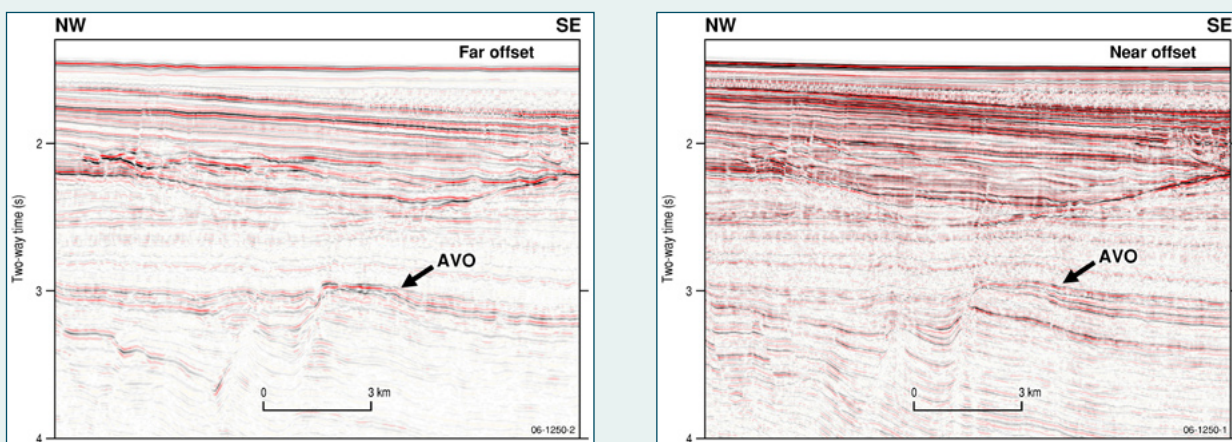


Figure 1. Near offset processing and far-offset processing for seismic line B97-27M showing a high amplitude AVO anomaly on the far-offset processed seismic data.

Data from Block W06-11 (2D Zeus Seismic Survey line B97-27M) over the Exmouth Plateau (shot in 1997), shows AVO anomalies including one that appears to be at the Jurassic level of the reservoir in the Jansz/Jo supergiant gas field in the adjacent acreage to the north. There is also an AVO anomaly in Block W06-7 in the Caswell Sub-basin (seismic line P98-035) at or near the stratigraphic zone of the Brecknock South 1 gas discovery 20 kilometres to the north. All the AVO anomalies are kilometres in length along the lines. The preliminary results from this reprocessing have been published and were presented at the Australian Earth Sciences Convention in Melbourne in July 2006.

The success in these preliminary investigations of AVO anomalies in two proven gas areas in the 2006 Offshore Acreage Release suggests that the AVO technique may also have value in further evaluating the exploration potential of the North West Shelf.

However further processing, more detailed AVO evaluation, structural and stratigraphic evaluations, and AVO modelling will be required to establish greater confidence in the validity of our published AVO anomalies as indicating exploration targets. Initially, Geoscience Australia intends to extend its program of AVO investigation to areas in the 2007 Acreage Release.

### **For more information**

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- or [paul.williamson@ga.gov.au](mailto:paul.williamson@ga.gov.au)

### **Related websites**

[www.ga.gov.au/image\\_cache/GA8481.pdf](http://www.ga.gov.au/image_cache/GA8481.pdf)



[www.ga.gov.au/image\\_cache/GA8480.pdf](http://www.ga.gov.au/image_cache/GA8480.pdf)



## New Map for nickel explorers

A new 1:3 500 000 scale colour map *A Synthesis of Australian Proterozoic Mafic-Ultramafic Magmatic Events. Part 1: Western Australia*, was released by Geoscience Australia at the recent Australian Nickel Conference in Perth. The map for the first time summarises the major known Proterozoic mafic and ultramafic magmatic events and associated mineral deposits in Western Australia.

The map includes details of fifteen major magmatic events with tholeiitic mafic systems dominating most Proterozoic provinces. Diagrams show the distribution of large igneous provinces (LIPS: large volumes of coeval mafic magmatism), different generations of dolerite dyke and sill complexes, gravity and magnetic anomalies. The geochronological data which underpins the main event map are summarised in Time–Space–Event charts. These charts also identify the major mineralised magmatic events throughout Western Australia.

The spatial and temporal correlations of mafic±ultramafic magmatic systems at province and continental scales are clearly indicated on the map. It also highlights the potential for nickel and platinum-group element mineralisation in relatively unexplored environments, such as the LIPS, which collectively covered more than 60% of Western Australia during five major regional magmatic events throughout the Proterozoic.

The new map should be of interest to nickel exploration companies, and those interested in the metallogeny of mafic-ultramafic rocks or the geological evolution of Proterozoic provinces. It can be downloaded online free in pdf and jpeg formats from Geoscience Australia's website (see *Related websites/articles*).



### Related websites/articles

A Synthesis of Australian Proterozoic Mafic-Ultramafic Magmatic Events. Part 1: Western Australia  
[www.ga.gov.au/map/images.jsp#mum](http://www.ga.gov.au/map/images.jsp#mum)



#### AusGeo News 83

Catching the nickel boom: New synthesis will aid nickel explorers  
[www.ga.gov.au/ausgeonews/ausgeonews200609/nickel.jsp](http://www.ga.gov.au/ausgeonews/ausgeonews200609/nickel.jsp)



#### AusGeo News 79

Nickel sulphide metallogenic provinces: resources & potential  
[www.ga.gov.au/ausgeonews/ausgeonews200509/nickel.jsp](http://www.ga.gov.au/ausgeonews/ausgeonews200509/nickel.jsp)



#### Ore Geology Reviews 29

Nickel sulfide deposits in Australia: characteristics, resources and potential  
Ore Geology Reviews 29, Nos 3-4, 177–241  
[www.sciencedirect.com](http://www.sciencedirect.com)



Figure 1. (left) Panton layered mafic-ultramafic intrusion, East Kimberleys (photograph by Ian Oswald-Jacobs).

## Explore Australia's vast marine environment

For the first time users can access an interactive online mapping program to explore and map Australia's marine environment. The program incorporates environmental, resource, boundary and legal information sourced from a diverse array of Australian government agencies and private organisations.

The individual user can create personalised marine maps by determining the scale, region and information to be displayed whether a small area of specific interest or the extent of Australia's marine jurisdiction.

The Australian Marine Spatial Information System (AM SIS) is an easy-to-use management and information tool bringing together over 120 layers of Australian marine information. It contains a wealth of marine data including state and federal jurisdictional boundaries, the underlying bathymetry, shipping routes, protected world heritage area, petroleum leases, known offshore minerals, submarine cables, Commonwealth fisheries and offshore infrastructure.

It has been designed for a wide audience including offshore industry organisations, marine planners and researchers, environmental managers, policy development officers, as well as members of the public.

Since being launched in June this year by the Hon Bob Baldwin MP, Parliamentary Secretary to the Minister of Industry, Tourism & Resources, the program has received wide acclaim and is currently used by more than 400 users from over 35 countries per month.

### **For more information**

[www.ga.gov.au/amsis/index.jsp](http://www.ga.gov.au/amsis/index.jsp)

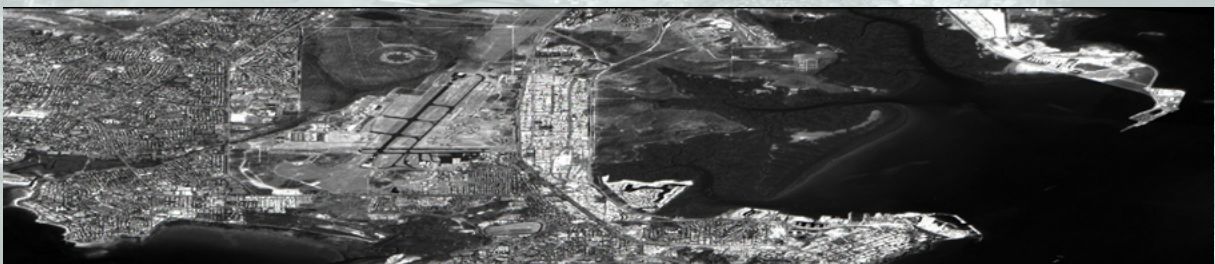
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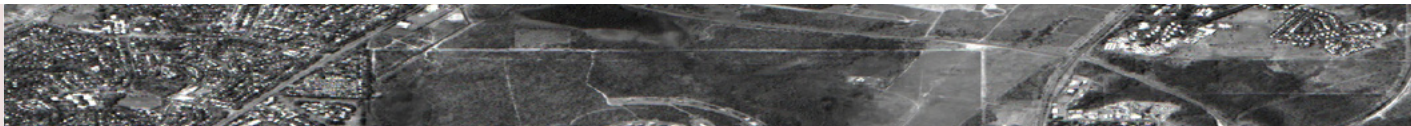


## New satellite imagery for Australia

A new type of satellite imagery from Geoscience Australia will provide high quality Earth observation data for topographic mapping, disaster and environmental monitoring and climate change studies.

The images are being acquired by the Japanese Advanced Land Observing Satellite (ALOS) which was launched in January 2006. Since launch the satellite has undergone extensive calibration and validation to ensure its images are of the highest quality.





The ALOS satellite carries three imaging sensors:

- PRISM (Panchromatic Instrument for Stereo Mapping) simultaneously views the earth in a single spectral band with 2.5 metre spatial resolution at three different viewing angles over a 35 kilometre wide swath. This 'stereo imaging' capability enables generation of high resolution digital elevation models.
- AVNIR-2 (Advanced Visible and Near Infrared Radiometer Type 2) is a multi-spectral sensor with 10 metre spatial resolution, 4 spectral bands and a 70 kilometre wide swath.
- PALSAR (Phased Array type L-band Synthetic Aperture Radar) is a sensor which allows day and night observation using a variety of imaging modes regardless of cloud cover.

Under an arrangement with the Japan Aerospace Exploration Agency (JAXA), Geoscience Australia's Australian Centre for Remote Sensing (ACRES) is one of only four worldwide nodes to download, process and distribute ALOS satellite data products. The others are JAXA in Japan, the National Oceanic and Atmospheric Administration (NOAA) in the United States and the European Space Agency (ESA).

Geoscience Australia is licensed to distribute ALOS data for non-commercial purposes within Australia, New Zealand, Papua New Guinea and many Pacific islands. Customers must register their proposed usage with Geoscience Australia prior to placing any orders. Customers requiring ALOS data for commercial purposes will be able to access ALOS data through local commercial distributors appointed by the Remote Sensing Technology Centre of Japan (RESTEC).

The availability of ALOS products from Geoscience Australia comes after extensive preparation and represents a significant achievement in the supply of quality public-good satellite imagery for Australia.

#### **For more information**

[www.ga.gov.au/acres/prod\\_ser/ALOS/](http://www.ga.gov.au/acres/prod_ser/ALOS/)

[link](#) 

#### **Related websites**

Japan Aerospace Exploration Agency (JAXA)

[www.jaxa.jp/index\\_e.html](http://www.jaxa.jp/index_e.html)

[link](#) 

National Oceanic and Atmospheric Administration, United States (NOAA)

[www.noaa.gov/](http://www.noaa.gov/)

[link](#) 

European Space Agency (ESA)

[www.esa.int/esaCP/index.html](http://www.esa.int/esaCP/index.html)

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