

New data in the Petrel Sub-basin supports CO₂ storage assessment

The Minister for Resources and Energy, the Hon Martin Ferguson AM MP, recently announced the release of new pre-competitive data acquired by Geoscience Australia as part of the Australian Government's multi-year program to assess highly prospective offshore basins for their CO₂ storage potential.

Minister Ferguson said this work will make a major contribution to Australia's efforts to accelerate the development of Carbon Capture and Storage (CCS) technology and help to reduce Australia's greenhouse gas emissions. The recently released Energy White Paper highlights the important role that CCS technology will play in helping Australia, and its prospective coal and gas industries, to find ways to reduce CO₂ emissions.

The new data, collected offshore from the Northern Territory in the Petrel Sub-basin, is a significant first step in the Australian Government's \$40 million investment to assess the geological suitability of highly prospective offshore basins to potentially store

CO₂. This work is being undertaken under the National CO₂ Infrastructure Plan (NCIP) and the National Low Emissions Coal Initiative (NLECI).

The Petrel Sub-basin was targeted following its identification as a prospective site for CO₂ storage by the Carbon Storage Taskforce in 2009, due to its favourable geology and proximity to major emission sources.

The acquisition of 2D seismic reflection and supporting seabed data in the Petrel Sub-basin, funded through the NLECI, fills a significant information gap

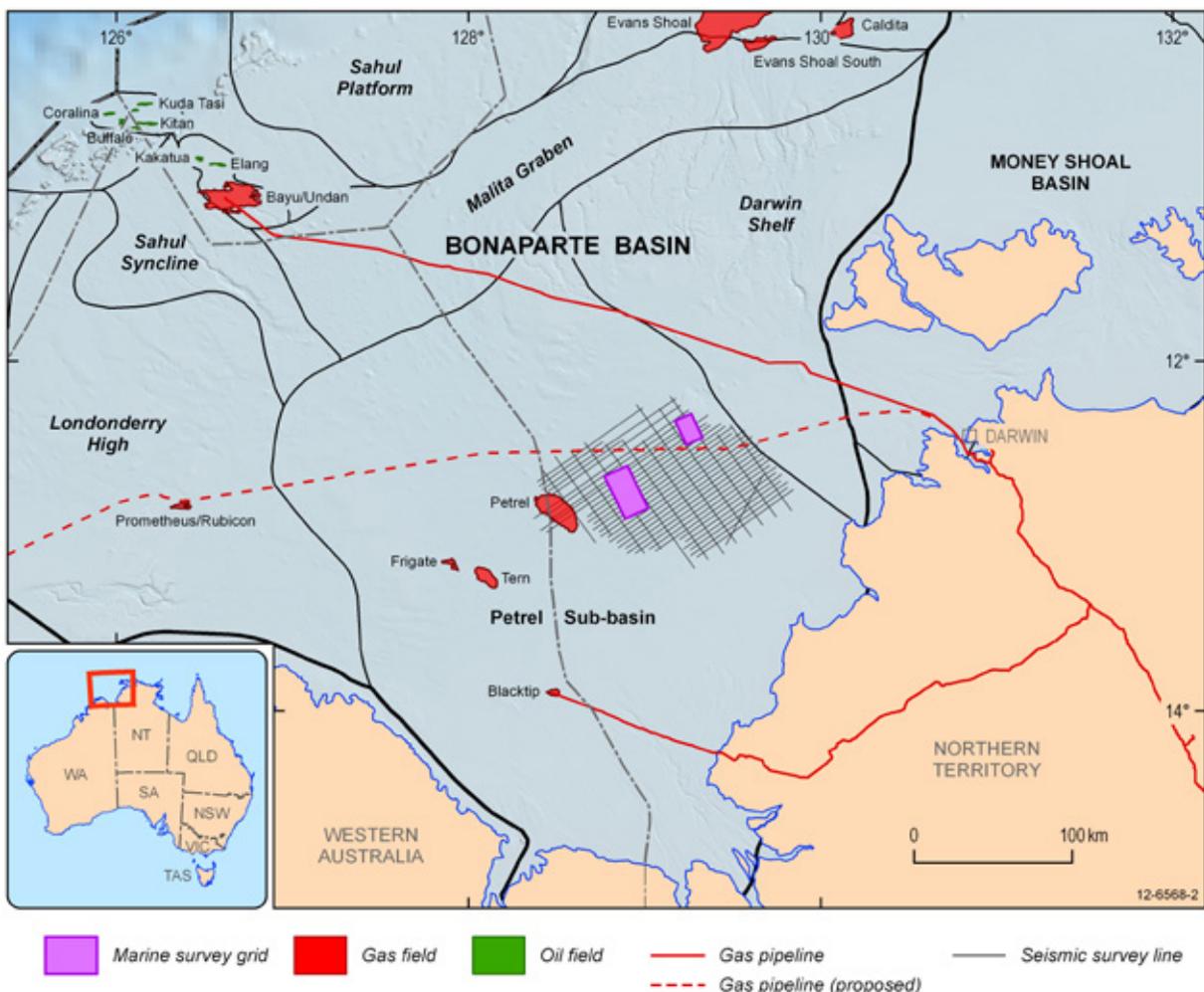


Figure 1. Showing the location of the acquisition of seismic data and supporting seabed data in the Petrel Sub-basin, beneath the Joseph Bonaparte Gulf offshore from the Northern Territory.



about the sub-basin and associated seabed environments. Importantly, these data will enable industry to make more informed decisions regarding the suitability of sites for CO₂ storage, and encourage industry to potentially uptake this site.

Minister Ferguson said the data will underpin a comprehensive assessment of the CO₂ storage potential of the Petrel Sub-basin. The results of this assessment, including the associated geological reports, will be available mid-2013.

In addition to the Petrel Sub-basin, CO₂ storage assessments are also currently being undertaken for the Vlaming Sub-basin (offshore Western Australia), the Browse Basin (offshore Western Australia) and the Gippsland Basin (offshore Victoria).

Petrel Sub-basin CO₂ Storage Seismic Survey (GA336)

Between 3 May and 24 June 2012 the *MV Duke* acquired high resolution multichannel seismic data in the Petrel Sub-basin. The seismic data have been processed to focus on enhancing the stratigraphy in the shallower formations that are less than 1000 metres below the seabed.

Data acquired:

- 4091 line kilometres of seismic reflection
 - 4 second record length
 - 2 millisecond sample rate, 408 traces
 - 5100 metres solid streamer
 - 12.5 metre shotpoint and 12.5 metre group interval
 - Source depth: 4 metres; streamer depth: 5 metres
 - 2080 cubic inch gun array at 2000 psi
- 8000 line kilometres of multibeam swath bathymetry

Petrel Sub-basin Marine Survey (GA335)

The Petrel Sub-basin Marine Survey (GA335) was conducted in collaboration with the Australian Institute of Marine Science in May 2012 using the *RV Solander*. The survey targeted two study areas to investigate possible links between geological formations suitable for CO₂ storage and the shallow geology and seabed.

Data acquired included 5300 line kilometres of multibeam swath bathymetry, 655 line kilometres of sub-bottom profiles, underwater video and still images from 11 sites. Seabed sediment and biological samples were collected from 15 sites. These sampling sites were

identified from a preliminary analysis of the multibeam bathymetry and sub-bottom profiles, and were selected to cover a range of seabed features.

Petrel Sub-basin CO₂ Data package

The data package includes high resolution 2D seismic, sub-bottom profiles, and multibeam sonar bathymetry data, as well as geological and ecological seabed data. The data package, including initial data analysis and post-survey reports, is now available through the Bonaparte CO₂ Storage Project webpage on the Geoscience Australia website.

Related articles/websites

Minister Ferguson's Media Release
<http://minister.ret.gov.au/MediaCentre/MediaReleases/Pages/NewDatatoAccelerateDevelopmentofCarbonCaptureandStorageTechnology.aspx>

Energy White Paper
www.ret.gov.au/energy/facts/white_paper/Pages/energy_white_paper.aspx

Bonaparte CO₂ Storage Project
www.ga.gov.au/ghg/projects/bonaparte-co2-storage.html

Carbon Storage Taskforce
www.ret.gov.au/energy/clean/ccs/nleci/cst/Pages/index.aspx

National CO₂ Infrastructure Plan
www.ret.gov.au/energy/clean/ccs/geological/nco2infplan/Pages/default.aspx

National Low Emissions Coal Initiative
www.ret.gov.au/energy/clean/ccs/nleci/Pages/index.aspx

Marine environmental data to shed light on CO₂ storage in Petrel Sub-basin

www.ga.gov.au/ausgeonews/ausgeonews201209/inbrief.jsp#inbrief2

For more information

email ausgeomail@ga.gov.au

New earthquake hazard map for Australia

A newly updated map depicting the level of ground shaking which regions of Australia may experience from earthquakes has been released. It provides an insight into which areas of the continent are most likely to experience hazardous levels of ground shaking during an earthquake event.

The Earthquake Hazard map of Australia 2012 is a national scale map of earthquake hazard which has been developed by scientists at Geoscience Australia following an assessment of historic and ancient, pre-historic earthquakes in Australia. The results of the assessment are presented as a map showing the bedrock peak ground motion with a 10 per cent probability of being exceeded every 50 years.

The map was released in November by the Minister for Resources and Energy, Martin Ferguson, AM MP.

Although Australia is commonly considered to be a stable continent with few earthquakes, a total of 168 above magnitude 5.0 have been experienced since 1950, with 82 events recorded at magnitude 3.0 or above in 2011.

The *Earthquake Hazard map of Australia 2012* does not enable scientists to predict earthquakes, but provides insights into where earthquakes are most likely to cause hazardous levels of ground shaking. As well as the information on the relative hazard, the map offers a nationally consistent mechanism for selecting locations for more detailed earthquake impact and risk assessments in the future.

The information produced by this study can be used to inform the earthquake loading section of the Australian building code which allows engineers to

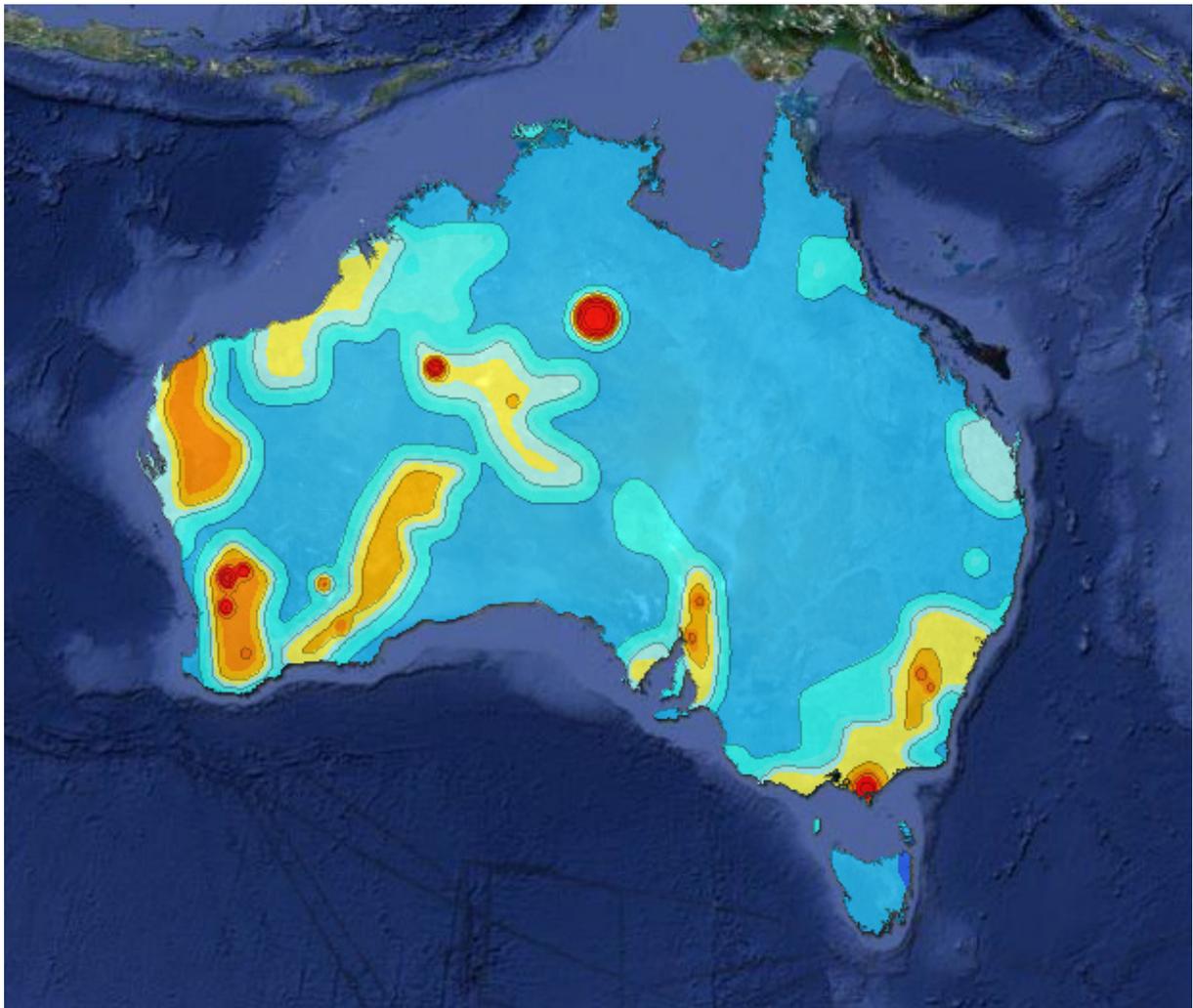


Figure 1. Screenshot of the Earthquake Hazard map of Australia 2012.

design structures to mitigate the effects of ground shaking and better protect communities. It is the strong ground shaking produced by earthquakes rather than only the magnitude of an earthquake which endangers people, buildings and infrastructure.

The underlying models and datasets used to derive the earthquake hazard map can be used by emergency managers, regional and urban planners, the insurance industry, researchers and individuals to undertake further analysis and to develop detailed impact models.

The maps can be displayed with various layers including topography, geology, gravity and magnetics, as well as land cover and

Google map satellite imagery. The map and a detailed record of the processes involved in generating it can be downloaded also from the page on the Geoscience Australia website.

Related articles/websites

Earthquake hazard map for Australia
www.ga.gov.au/darwin-view/hazards.xhtml

For more information

email ausgeomail@ga.gov.au

New geophysical datasets released

Datasets from seven new geophysical surveys have been released since September 2012. These data can be downloaded from the Australian Government Geoscience Portal

Airborne Magnetic – Radiometric - Elevation Surveys

Survey	Date	1:250 000 Map Sheets	Line Spacing (m), terrain clearance (m), orientation	Line Km	Contractor
Murgoo	March 2011 – July 2012	Murgoo (pt), Yalgoo (pt)	200 m 50 m east – west	128 000	Thomson Aviation Pty Ltd
Carnarvon Basin South	April 2012 – September 2012	Shark Bay (pt), Wooramel (pt), Edel (pt), Yaringa (pt)	400 m 60 m east – west	123 300	GPX Surveys Pty Ltd
West Kimberley (Prince Regent – Montague Sound)	July 2011 – June 2012	Prince Regent, Montague Sound (pt), Camden Sound (pt), Charnley	P Regent, Montague: 400m 60 m north – south. Charnley: 200m 50 m north – south	134 000	UTS Geophysics Pty Ltd

Table continued over page



Kauring Infill (Combination of data acquired on the Moora (UTS) and Corrigin (GPX) surveys to create coverage at 100m spacing)	June 2011, March 2012	Perth (pt), Kellerberrin (pt), Pinjarra (pt), Corrigin (pt)	100 m 50 m east – west	5100	June 2011 – UTS Geophysics Pty Ltd. March 2012 – GPX Surveys Pty Ltd
Galilee	August 2011 – Aug 2012	Manuka (pt), Tangorin (pt), Buchanan (pt), Winton (pt), Muttaborra (pt), Galilee (pt), Longreach (pt), Jericho (pt)	400 m 80 m east – west	125 959	UTS Geophysics Pty Ltd
Thomson East/ West/North	May 2011 – September 2012	Quilpie (pt), Charleville (pt), Toompine (pt), Wyandra (pt), Eulo (pt), Cunnamulla (pt), Adavale (pt), Augathella (pt)	400 m 80 m east – west	299 000	Thomson Aviation Pty Ltd.
Thomson Extension	June – November 2011	Augathella (pt), Eddystone (pt), Charleville (pt), Mitchell (pt).	400 m 80 m east – west	47 777	UTS Geophysics Pty Ltd

For more information

email ausgeomail@ga.gov.au

Related articles/websites

Australian Government Geoscience Portal
www.geoscience.gov.au

New 1:1 million scale Surface Geology of Australia

A new 2012 edition of the national 1:1 million scale Surface Geology of Australia dataset is now available. The data is available in ESRI geodatabase, shapefile and Mapinfo formats, and will be available as a web service in early 2013.

The 2012 edition data updates the previous 2010 data with new or revised mapping in the Northern Territory, north-west Queensland, and Western Australia (Figure 1). The new dataset also updates the stratigraphic and descriptive geological information from the previous 2010 edition, and has been restructured to now be fully compliant

with international geoscience data standards.

The geology data can be viewed, queried, and downloaded along with Geoscience Australia's topographic map data through the MapConnect online mapping tool. The dataset can also be ordered on DVD from the Geoscience Australia Sales Centre.

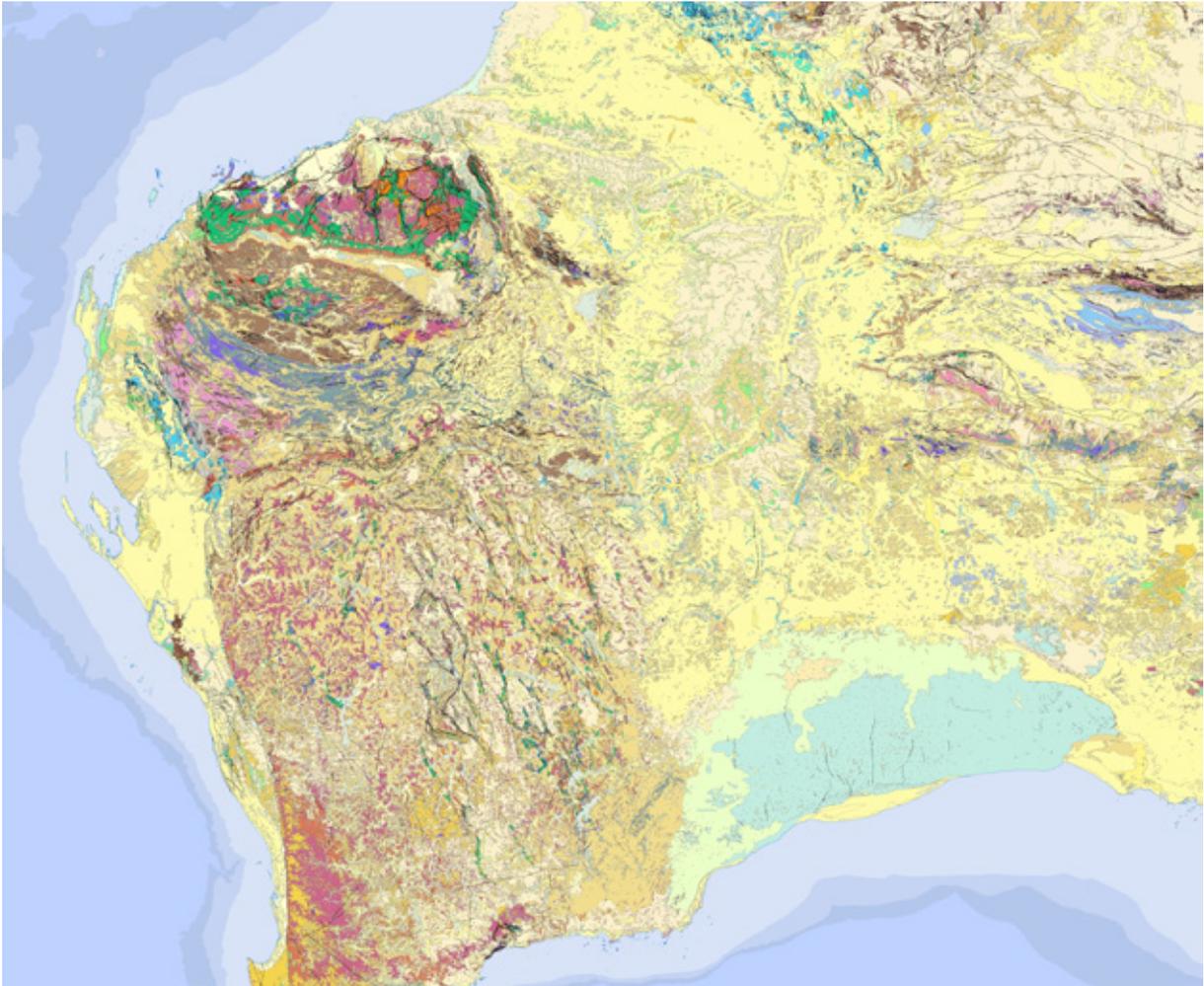


Figure 1. Detail from the Surface Geology Map of Australia over the western part of the continent showing outcropping rocks from the Yilgarn, Pilbara and Musgrave Provinces.

Related articles/websites

MapConnect

www.ga.gov.au/mapconnect

Geoscience Australia Sales Centre

www.ga.gov.au/products-services/how-to-order-products/sales-centre.html

For more information

email ausgeomail@ga.gov.au



© Commonwealth of Australia 2012.