

## ASEG 2013 Conference in Melbourne: 'The Eureka Moment'

The conference theme for the ASEG 2013 Conference in Melbourne is 'The Eureka Moment'. What does this mean for you?

According to Wikipedia, 'Eureka' comes from the ancient Greek 'I have found it'. The exclamation is famously attributed to Archimedes when he stepped into the bath and noticed that the water rose, suddenly understanding the relation between the volume of water displaced and the volume of his body that had been submerged. This in turn led to the ability to determine the density of objects by the ratio of their weight and volume.

The word 'Eureka' is also strongly associated with the discovery and exploitation of gold, both in California, where it is still the state motto, and in Ballarat, Victoria, where the Eureka Lead was the site for the Eureka Rebellion, an event with national significance to Australia.

Perhaps, like Archimedes, your 'Eureka Moment' comes in the bath as you relax and the ideas floating around in your head solidify into a theory that can be tested. Alternatively, your exploration program is successful and leads to a discovery. Or maybe you are sitting in a

lecture theatre or perusing the exhibition at the ASEG 2013 conference and suddenly realise the application of someone else's work to your own. We wish you success in your quest for insight, learning and discovery and hope to see you in Melbourne in 2013.

*On behalf of the ASEG 2013 Conference Organising Committee*  
Suzanne Haydon

## Authors show keen interest in resource themes at 34th IGC in Brisbane



Many geoscientists have asked to see the lists of papers to be delivered at the 34th IGC in Brisbane in August 2012, so a status report is appropriate and presented here. The Scientific Program Committee has received over 5000 submissions for oral and poster presentations during the IGC and is currently sorting these abstracts into a coherent structure of symposia using 30 different rooms over 5 days. This is a massive task, which will take some time, so the release of the full scientific program is expected to be available in early June. In the meantime, the revised listing of Symposia and keynote speakers will be available on the website: [www.34igc.org](http://www.34igc.org). Congress registrations passed 4800 in mid-May.

For those who are interested in the content of the resource-related papers, it is hoped that these themes can be finalised more rapidly in order to assist

delegates to make the decision on attending. This will depend on the time available to the volunteer conveners of specific themes and symposia.

This IGC was planned to have a strong focus on commodities that contribute to Australia's favourable economic position and this has been confirmed by the keen interest shown by authors in resource-related themes. This is demonstrated by the statistics provided below for the symposia (these are listed in the 34th IGC Third Circular on [www.34igc.org](http://www.34igc.org)) in selected themes.

**In Theme 7, Mineral Resources and Mining** the first five symposia have received the following numbers of abstracts: 36, 30, 18, 15 and 35. Another two symposia may be combined.

**In Theme 8, Mineral Exploration Geoscience** the five symposia have had the following numbers of abstracts put forward: 39, 35, 25, 43 and 26.

**Theme 9, Mineral Deposits and Ore Forming Processes** received very strong support in all but one of the nine symposia, with abstract numbers of 58, 61, 29, 23, 26, 8, 90, 34 and 39.

**Theme 10, Coal – A Myriad of Resources** has two symposia, which received 16 and 23 abstracts.

**In Theme 11, Petroleum Systems and Exploration** five symposia received 15, 45, 44, 30 and 30 abstract submissions.

**Theme 28, Groundwater/Hydrogeology** was designed with six separate symposia and was strongly supported with abstract numbers for each symposium of 50, 57, 54, 23, 19 and 16.

Several other themes of interest to industry geoscientists such as **Theme 4, Environmental Geoscience**, and **Theme 31, Engineering Geology and Geomechanics**, also received strong support from submitting authors.

It is now apparent that after some re-distribution of abstracts, most of these resource-related themes will have sufficient papers to occupy the full five days of the IGC. Many others will appear as posters. Accordingly, there is an abundance of topics to attract the interest of geoscientists working in the resource sector and we encourage readers to register soon at [www.34igc.org](http://www.34igc.org).

Mike Smith

## 10th International Symposium of SEG Japan

The Society of Exploration Geophysicists of Japan (SEGJ) held its 10th International Conference in Kyoto from 19 to 23 November 2011. The symposium was held in the Centenary Hall of Kyoto University, the same venue used for the 2006 Symposium. At the symposium 118 papers were presented in two parallel sessions; the Organising Committee said these papers were selected from 179 submissions and the rejection rate was 35%. The record 226 delegates came from 16 countries, mainly from Japan, Korea and China, and six were from Australia. Approximately one-third of the delegates were from outside of Japan.

ASEG representative James Macnae found that the meeting facilitated interaction with scientists from Asia, where a number of geophysical developments in electrical

and electromagnetic techniques and instrumentation have taken parallel but different paths to those seen in the West. The ASEG–SEGJ initiatives on joint publication and joint meetings is one that in the future will benefit scientists in both hemispheres, helping to overcome the intellectual isolation that may arise from language and the need to balance local and global interests.

We had a 1-day excursion to Hiroshima after the symposium to see the atomic bomb monuments and Miyajima, a typical tourist route. It renewed our thought of the importance of peace on the earth. Jim's final observation, unrelated to geophysics, is that 'the Shinkansen express trains from Kyoto to Hiroshima travel through many more tunnels than expected; the most interesting sightseeing came not from the train windows as



*Koya Suto and James Macnae at the 10th SEGJ Symposium in Kyoto, Japan.*

expected but from puttering along in local trams or on foot'.

*Koya Suto*



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## 21st EM Induction Workshop, Darwin, 25–31 July 2012

I would like to invite all ASEG members to the 21st EM Induction Workshop ([www.21emiw.com](http://www.21emiw.com)) to be held in Darwin from 25 to 31 July 2012. This Workshop is the premier event for researchers around the world to exchange information on the latest developments in the field of geophysical electromagnetism. The Workshop has historically had a research focus to it, but has proven to be important to industry and government groups that use EM methods and need to know where the science is heading. There will be presentations and posters on mineral, petroleum and geothermal energy exploration; groundwater and environmental resource evaluation; geohazard monitoring, and many other applications. This will be the first time the Workshop has been held in Australia, and follows prior Workshops in Cairo in 2010 and Beijing in 2008.

The Workshop, held over 7 days, is run with a single morning stream of talks that focuses on developments in EM induction science. Afternoon sessions are dedicated to presentations and discussions from the more than 200 posters that are an integral part of the workshop. A key part of the Workshop is the invited reviews from 10 acclaimed international scientists who are experts in their fields. These include people like Richard Smith from Laurentian University in Canada who will speak about innovations in mineral exploration, and Kurt Strack from KMS Technologies in the US who will speak about innovations in petroleum exploration. These invited reviews provide a unique opportunity to hear the state-of-the-art EM methods and applications. As with previous Workshops, articles based on these reviews will be published in *Surveys in Geophysics*.

Also important to the workshop is the social side, fostering further discussion and relationship building (not always about EM). Saturday, 28 July, will be a social day where all participants board a bus charter to the Litchfield National Park. Additionally, on one evening we will visit the world-famous Mindil Beach Markets to watch the sunset over the ocean and do a bit of shopping. On another evening, the Darwin Deckchair Cinema will be ours for a movie night. These social events are as much a part of the meeting and learning processes as the more formal presentations and discussion.

We have received over 270 abstracts, with 250 attendees already registered and 28 sponsoring organisations. If you are at all interested in EM induction, Darwin at the end of July should be in your plans.

This event is proudly held under the auspices of the International Union of Geodesy and Geophysics (IUGG),

International Association of Geomagnetism and Aeronomy (IAGA), and is hosted by the Australian Society of Exploration Geophysicists (ASEG).

Graham Heinson  
LOC Chair for the 2012 EM Induction Workshop  
University of Adelaide



## UPCOMING EVENT

The WA Branch of the Australian Society of  
Exploration Geophysicists

presents

## A Practical One-Day Workshop on Airborne Electromagnetics

Targeting geologists and geophysicists, this event will be a one-day seminar series focussed on practical near-surface and mineral exploration applications of airborne electromagnetics. It will include practical theory, case studies and a review of recent and future developments.

### WHO SHOULD ATTEND

- Practising geophysicists
- Exploration geologists
- Students

### WHEN & WHERE

November 2012  
Perth, Western Australia  
*details to follow*

For further information contact Anne Morrell ([anne@sgc.com.au](mailto:anne@sgc.com.au)) or  
Chris Wijns ([Chris.Wijns@fqml.com](mailto:Chris.Wijns@fqml.com))  
Sponsorship available

## Australian Academy of Science: UNCOVER

The UNCOVER Committee has convened under the aegis of the Australian Academy of Science to address the decline in Australian mineral exploration success through implementation of the 2010 Theo Murphy High Flyers Think Tank recommendations (<http://www.science.org.au/events/thinktank/thinktank2010/documents/thinktankproceedings.pdf>). The UNCOVER Committee held its first meeting on 28 April 2011 to identify practical steps towards addressing the Think Tank recommendations. At subsequent meetings (18 July 2011, 23 November 2011 and 2 March 2012) the Committee developed a proposal for a coordinated, cross-sector approach to the implementation of the recommendations.

UNCOVER's proposal, 'Searching the Deep Earth: A Vision for exploration geosciences in Australia', can be found at <http://science.org.au/documents/SearchingtheDeepEarth.pdf>. It calls for

*Australian earth scientists to cooperate in an innovative, structured and nationally coordinated strategic venture that brings competitive advantage to Australian mineral exploration. The strategy requires research groups, surveys and explorers to participate in a cross-institutional joint research venture on a scale never before attempted.*

Four initiatives have been proposed:

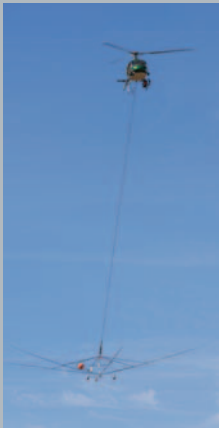


1. The National Cover Map summarising the depth and character of cover. This map will help promote greenfields exploration by highlighting where detection techniques will be most effective; helping to understand the characteristics of the cover and thus the footprint of a buried resource; and showing regions of shallow burial that will enhance a deposit's economic value.
2. The National Map of the Deep Crust and Upper Mantle will be a 3D representation of the modern Australian continental lithosphere with a resolution exceeding 20 km in the crust and 100 km in the mantle. This map will lead to advances in predicting the underlying controls of energetic geological systems and mineral deposits under cover.

3. The National 4D Metallogenic Map will be an interactive continent-scale reconstruction of Australia that provides the geodynamic context for mineral systems through geological time.
4. The National Distal Footprints Map will be a series of interpretive maps identifying the signatures of Australia's mineral systems at a range of scales, to guide exploration into giant new mineral districts under cover.

The goal of these programs is to better understand the genesis and distribution of Australia's mineral wealth and thus lead directly to improved exploration success.

During May 2012, UNCOVER has been holding a series of workshops around

Australia to gain feedback and input to further develop these research proposals. The ASEG has been invited to review and comment on the Exposure Draft of 'Searching the Deep Earth: A Vision for exploration geosciences in Australia'. As this issue of *Preview* goes to press, the ASEG is finalising its written submission. The ASEG response is primarily concerned with highlighting the need for the proposed research to translate into exploration success and economic benefits. In particular, the ASEG will highlight a gap that exists in research that can turn geological models of ore deposits, and more significantly mineral systems, into models of physical parameters that can be used predictively under cover. Full details of the ASEG submission will be published in the next issue of *Preview*.

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## Update on Geophysical Survey Progress from the Geological Surveys of Queensland, Western Australia, Northern Territory and New South Wales (information current at 16 May 2012)

Tables 1 and 2 show the continuing acquisition by the States, the Northern Territory and Geoscience

Australia of new gravity, airborne magnetic and radiometric data over the Australian continent. All surveys

are being managed by Geoscience Australia.

Table 1. Airborne magnetic and radiometric surveys

Survey name	Client	Contractor	Start flying	Line (km)	Spacing AGL Dir	Area (km <sup>2</sup> )	End flying	Final data to GA	Locality diagram (Preview)	GADDS release
South Officer 1 (Jubilee)	GSWA	Thomson	1 Jun 10	180 000	200 m 50 m N-S	32 380	100% complete @ 22 Jun 11	TBA	148 – Oct 10 p23	Data released via GADDS on 26 April 2012
South Officer 2 (Waigen – Mason)	GSWA	Thomson	28 Jun 10	113 000	400 m 60 m N-S	39 890	100% complete @ 5 Jan 11	TBA	148 – Oct 10 p24	QA/QC of final data in progress
Grafton – Tenterfield	GSNSW	GPX	16 Jun 11	100 000	250 m 60 m E-W	23 000	100% complete @ 6 Nov 11	TBA	151 – Apr 11 p16	QA/QC of final data in progress
West Kimberley	GSWA	Aeroquest	29 Jun 11	134 000	800 m 60 m N-S. Charnley: 200 m 50 m N-S	42 000	100.0% complete @ 11 Dec 11	TBA	150 – Feb 11 p20	TBA
Perth Basin North (Perth Basin 1)	GSWA	Fugro	11 Jun 11	96 000	400 m 60 m E-W	30 000	100% complete @ 18 Dec 11	TBA	150 – Feb 11 p20	QA/QC of final data in progress
Perth Basin South (Perth Basin 2)	GSWA	Fugro	22 Mar 11	88 000	400 m 60 m E-W	27 500	100% complete @ 23 Dec 11	TBA	150 – Feb 11 p20	QA/QC of final data in progress
Murgoo (Murchison 1)	GSWA	Thomson	28 Feb 11	128 000	200 m 50 m E-W	21 250	100% complete @ 16 Nov 11	TBA	150 – Feb 11 p20	QA/QC of raw data in progress
Perenjori (Murchison 2)	GSWA	GPX	21 Oct 11	120 000	200 m 50 m E-W	20 000	100% complete @ 12 Jan 12	TBA	150 – Feb 11 p21	QA/QC of final data in progress
South Pilbara	GSWA	GPX	14 May 12	136 000	400 m 60 m N-S	42 500	TBA	TBA	150 – Feb 11 p21	Commenced 14 May 2012
Carnarvon Basin South (Carnarvon Basin 2)	GSWA	GPX	TBA	128 000	400 m 60 m E-W	40 000	TBA	TBA	150 – Feb 11 p21	Commenced 21 March 2012
Moora (South West 1)	GSWA	Aeroquest	13 Jun 11	128 000	200 m 50 m E-W	21 250	100% complete @ 27 Jan 12	TBA	150 – Feb 11 p22	Data released via GADDS on 26 April 2012
Corrigin (South West 2)	GSWA	GPX	12 Jan 12	120 000	200 m 50 m E-W	20 000	100% complete @ 25 Mar 12	TBA	150 – Feb 11 p22	QA/QC of raw data in progress
Cape Leeuwin – Collie (South West 3)	GSWA	Fugro	25 Mar 11	105 000	200/400 m 50/60 m E-W	25 000	100% complete @ 23 Dec 11	TBA	150 – Feb 11 p22	QA/QC of final data in progress
Mt Barker (South West 4)	GSWA	GPX	24 Apr 11	120 000	200 m 50 m N-S	20 000	52.4% complete @ 6 May 12	TBA	150 – Feb 11 p22	Survey resumed 11 February 2012
Galilee	GSQ	Aeroquest	11 Aug 11	125 959	400 m 80 m E-W	44 530	87.1% complete @ 6 May 12	TBA	151 – Apr 11 p15	Survey resumed 21 April 2012
Thomson West	GSQ	Thomson	14 May 11	146 000	400 m 80 m E-W	52 170	99.2% complete @ 13 May 12	TBA	151 – Apr 11 p15	Survey resumed 13 March 2012

Table 1. *Continued*

Thomson East	GSQ	Thomson	14 May 11	131 100	400 m 80 m E-W	46 730	99.2% complete @ 13 May 12	TBA	151 – Apr 11 p16	Survey resumed 13 March 2012
Thomson Extension	GSQ	Aeroquest	22 Jun 11	47 777	400 m 80 m E-W	16 400	100% complete @ 10 Aug 11	TBA	151 – Apr 11 p16	QA/QC of final data in progress
Thomson North	GSQ	Thomson	11 Mar 12	21 900	400 m 80 m E-W	7543	TBA	TBA	157 – Apr 12 p32	Survey crew mobilised 9 March 2012

TBA, to be advised.

Table 2. Gravity surveys

Survey name	Client	Contractor	Start survey	No. of stations	Station spacing (km)	Area (km <sup>2</sup> )	End survey	Final data to GA	Locality diagram (Preview)	GADDS release
Eucla Basin SW	GSWA	Atlas Geophysics	19 Jan 12	3798	2.5 km regular	23 030	100% complete @ 9 Feb 12	TBA	154 – Oct 11 p23	Data released via GADDS on 12 April 2012
Eucla Central	GSWA	Atlas Geophysics	28 Nov 11	5704	2.5 km regular	36 100	100% complete @ 18 Jan 12	TBA	154 – Oct 11 p23	Data released via GADDS on 12 April 2012
Eucla Basin East	GSWA	Atlas Geophysics	31 Oct 11	5201	2.5 km regular	31 340	100% complete @ 27 Nov 11	TBA	154 – Oct 11 p23	Data released via GADDS on 12 April 2012
East Amadeus	NTGS	Atlas Geophysics	26 May 12	7560	4 km regular with infill at 2 km and 1 km	101 090	TBA	TBA	This issue	TBA
Esperance	GSWA	TBA	TBA	TBA	2.5 km and 1 km along roads/tracks	TBA	TBA	TBA	This issue	TBA
West Murchison	GSWA	TBA	TBA	TBA	2.5 km	TBA	TBA	TBA	This issue	TBA

TBA, to be advised.

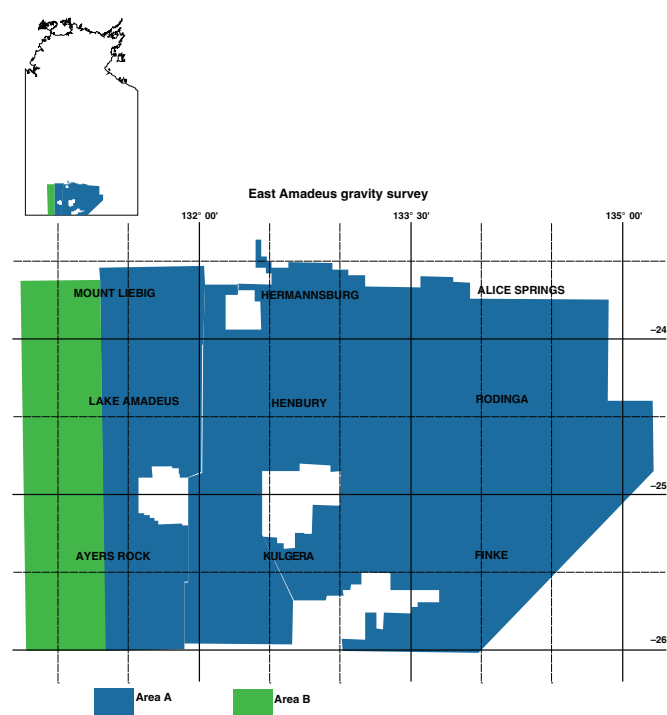


Fig. 1. Locality diagram for the East Amadeus gravity survey in the Northern Territory.

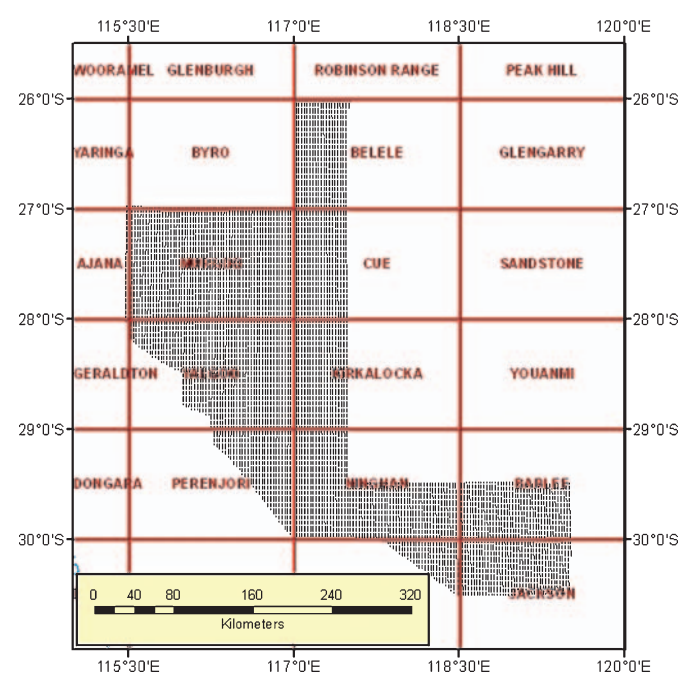


Fig. 2. Locality diagram for the West Murchison gravity survey in Western Australia.

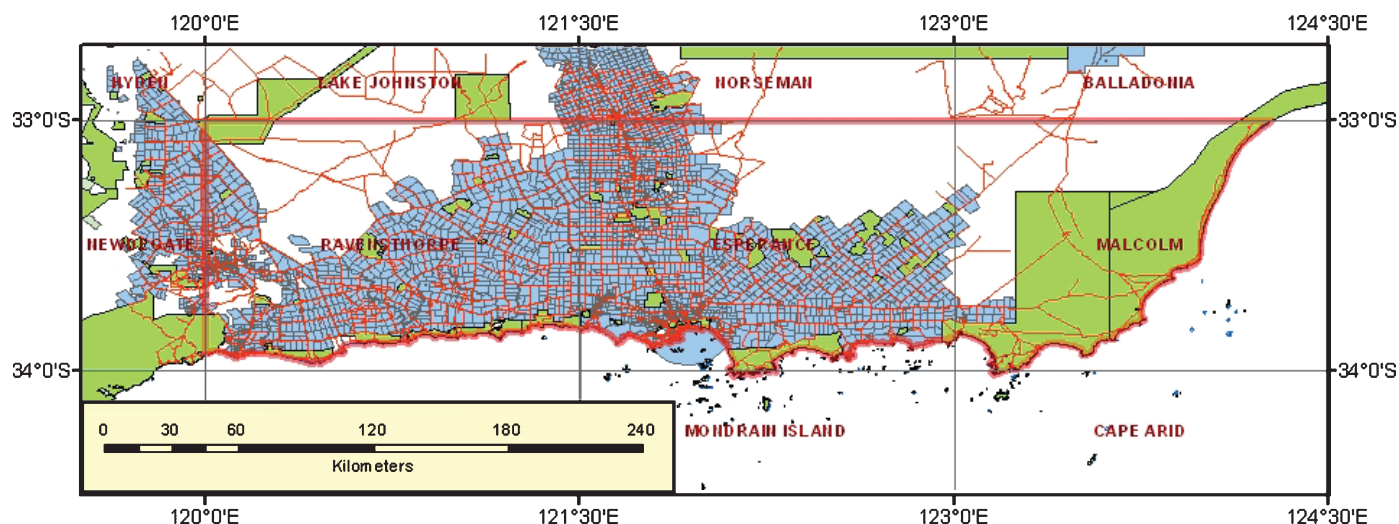


Fig. 3. Locality diagram for the Esperance gravity survey in Western Australia.

Three new gravity surveys are reported in this issue. Figure 1 shows the location and survey boundary for the East Amadeus survey in the Northern Territory. The survey will cover over 100 000 km<sup>2</sup> with a 4 km regular grid and infill at 1 km and 2 km spacing. Figures 2 and 3 respectively show the West Murchison and Esperance survey

boundaries in Western Australia. The Esperance survey will be on a regular 2.5 km grid with 1 km infill along roads and tracks and the West Murchison survey will be on a regular 2.5 km grid.

The Geological Survey of Queensland reports that after 2 months of rain delays, the Galilee survey recommenced

on 21 April 2012. Data collection for the Thomson survey is expected to be completed by 21 May 2012. There will be approximately 6–8 weeks of processing and QA/QC. The data will then be assessed for potential restricted areas before being released to the public. Data release for the Thomson survey is expected in August.

MEANWHILE, BACK AT THE GEOSCIENTIST'S WORKSTATION...

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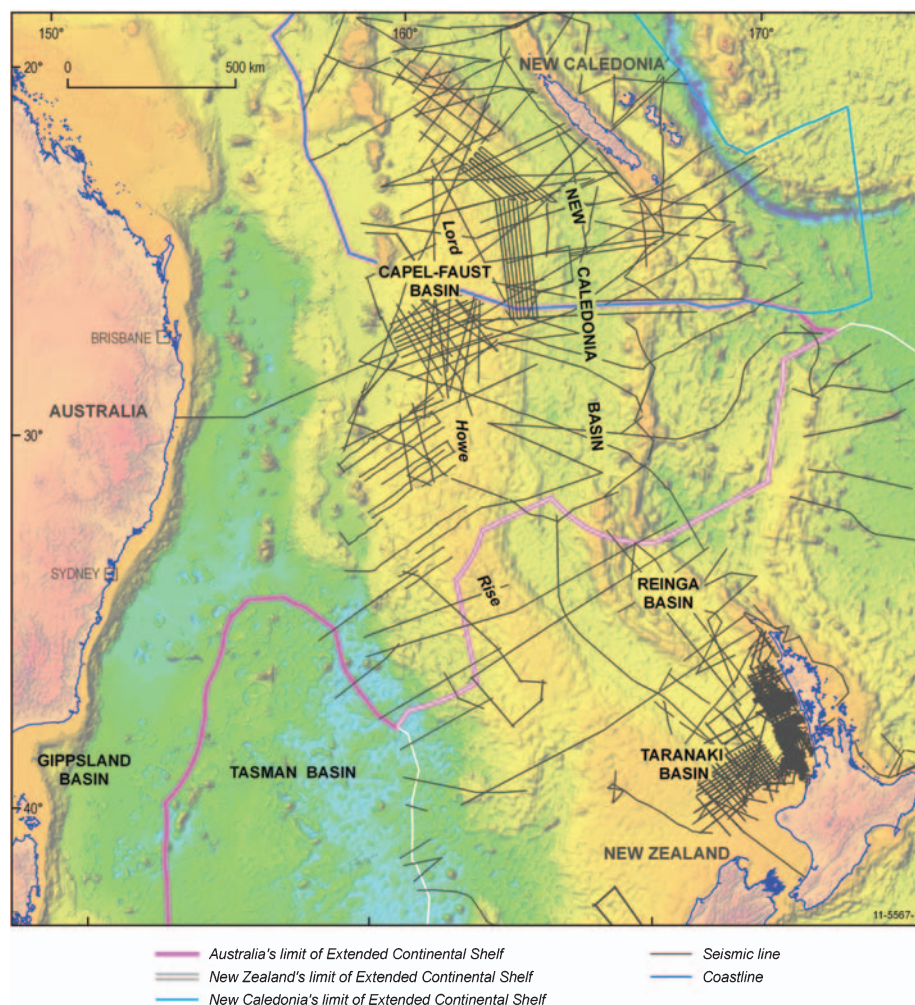


## Cross-jurisdictional seismic data compilation for the Tasman Frontier

The Tasman Frontier region is a vast submerged continental fragment of over 3 000 000 sq km between Australia, New Zealand and New Caledonia (Figure 1). It hosts unexplored sedimentary basins, some of which may share a common geological origin with the Taranaki and Gippsland basins, where petroleum production is established.

In order to showcase recent scientific work in this region, Geoscience Australia hosted a Tasman Frontier Petroleum Industry Workshop in Canberra on 8–9 March 2012. The workshop was the first cross-boundary petroleum industry event held collaboratively by the three trans-Tasman jurisdictions, represented by Geoscience Australia, New Zealand's GNS Science and the New Caledonian Department of Industry Mines and Energy (DIMENC). The aim of the workshop was to deliver up-to-date pre-competitive geoscientific information to the petroleum exploration industry as well as to stimulate discussion on the future of exploration in the region.

A highlight of the workshop was the release of the Tasman Frontier Geophysical Database. This database is a first-ever, comprehensive, cross-boundary compilation of all publicly available digital reflection seismic data (~100 000 line km) from the offshore eastern Australian, New Zealand and New Caledonian jurisdictions. It improves data access considerably by offering a single point of access for seismic data from the three countries. The standardised seg-y data format also enables the quick loading of data to interpretation software platforms. Future updates to the product



**Fig. 1.** Bathymetric map of the Tasman Frontier region showing maritime boundaries and the location of seismic reflection lines included in the Tasman Frontier Geophysical Database (black lines).

are planned, and it may be expanded to include other data types.

Further information is available at <http://www.gns.cri.nz/Home/Our-Science/>

Energy-Resources/Oceans/Oceans-Research/Tasman-Frontier or by emailing [tasman.frontier@gns.cri.nz](mailto:tasman.frontier@gns.cri.nz).



## Prospectivity and geophysics: new products to facilitate exploration success

Laz Katona, Tania Dhu, Gary Reed, Philip Heath, Tim Keeping, George Gouthas and Andrew Cheesman

Department of Manufacturing, Trade, Innovation, Resources and Energy, South Australian Government  
Email: Laz.Katona@sa.gov.au

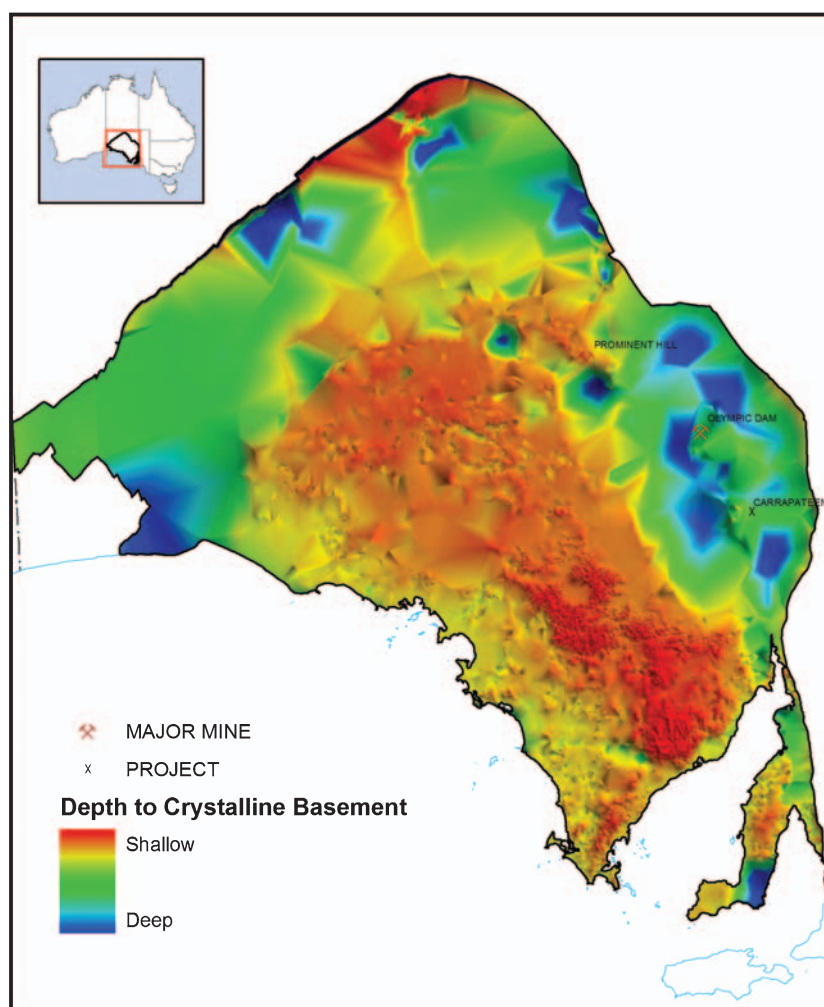
The Geological Survey of South Australia's (GSSA) Geophysics and Prospectivity Team have been involved in the development of a range of new and updated products, delivered to the public via the South Australian Resources Information Geoserver (SARIG) ([www.sarig.dmitre.sa.gov.au](http://www.sarig.dmitre.sa.gov.au)) and GSSA section of the Minerals website ([http://www.minerals.dmitre.sa.gov.au/geological\\_survey\\_of\\_sa/gssa\\_projects/mapping\\_aan\\_exploration\\_prospectivity\\_and\\_geophysics](http://www.minerals.dmitre.sa.gov.au/geological_survey_of_sa/gssa_projects/mapping_aan_exploration_prospectivity_and_geophysics)).

The new and updated information products include new petrophysics and electrical techniques databases; a depth to crystalline basement data package for the onshore Gawler Craton; the full suite of statewide geophysical images in both ers grid and geotiff formats; statewide ASTER mineral maps in ecw format; hyperspectral mineral maps of the Mount Woodroffe region; and a review of the Australian Fundamental Gravity Network within South Australia.

Petrophysical data is available for download as down-hole interval data. Approximately 1500 records populate a database made up mainly of magnetic susceptibility and density measurements, although the system is capable of storing and delivering any petrophysical data type. More data is continually being added to this database.

Magnetotelluric (MT) and Geomagnetic Depth Sounding (GDS) data collected in South Australia since the 1970s by academia, government and industry are now available online. The Electrical Techniques database currently contains over 900 MT and GDS stations in EDI file format. The database is designed to hold any ground electrical or electromagnetic geophysical survey with new surveys being added continually.

Drillholes and surface geology explaining depth to crystalline basement of the Gawler Province have been compiled and



**Fig. 1.** Preliminary interpolated depth to crystalline basement surface – Gawler Craton, utilising drillhole and surface geology data.

are available for download. Figure 1 displays a preliminary interpolated depth to crystalline basement surface, utilising drillhole and surface geology data. Further work will incorporate seismic interpretations and potential field geophysical modelling.

The suite of statewide geophysical images is now available for download in both geotiff and ers grid formats. These images include Bouguer gravity, 1st vertical derivative of Bouguer gravity, TMI, TMI reduced to pole, 1st vertical derivative of TMI reduced to pole, uranium, thorium, potassium, ternary radiometric image (tif format only), total count, total dose, and U2/Th ratio. User-defined subsets of gravity, TMI and radiometric data are also available in grid and ASCII formats.

Statewide ASTER mineral maps are available for download in ecw format and 12 hyperspectral data projects are currently being re-processed. The Mt Woodroffe HyMap Survey set of hyperspectral mineral maps are now available for download via the GSSA section of the Minerals website.

Field work has been undertaken during 2011–2012 to assess, photograph and map the South Australian portion of the Australian Fundamental Gravity Network. The result of this work is a new spatial layer available via SARIG and a Report Book (2012/00005) entitled 'The 2012 review of the Australian Fundamental Gravity Network of South Australia', by Philip Heath.