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Fieldnotes

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Successful Co-funded Exploration Drilling applicants

Successful applicants in Round 4 of the Exploration Incentive Scheme's (EIS) Co-funded Exploration Drilling Program have been announced.

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ROYALTIES FOR REGIONS
EXPLORATION INCENTIVE SCHEME

GENERAL

1 Afmeco Mining and Exploration
2 Antipa Minerals Ltd
3 Ashburton Minerals Ltd
4 Australia Minerals & Mining Group Ltd
5 Beadell Resources Ltd
6 Buru Energy Limited
7 Buru Energy Limited
8 Camel Lake Pty Ltd
9 Chrysalis Resources Limited
10 David Broomfield
11 David Reed
12 Dolphin Resources Pty Ltd
13 Echo Resources Limited
14 Emu Nickel NL
15 Encounter Resources Ltd
16 Enterprise Metals Limited
17 Enterprise Metals Limited
18 Gold Road Resources Limited
19 Grosvenor Gold Pty Ltd
20 Grosvenor Gold Pty Ltd
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26 Magnetic Resources NL
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29 New Standard Onshore Pty Ltd
30 New Standard Onshore Pty Ltd
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35 Quadrio Resources (Kingsgate Consolidated)
36 Ramelius Resources Limited
37 Rarus Limited
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40 St Ives Gold Mining Company Pty Ltd
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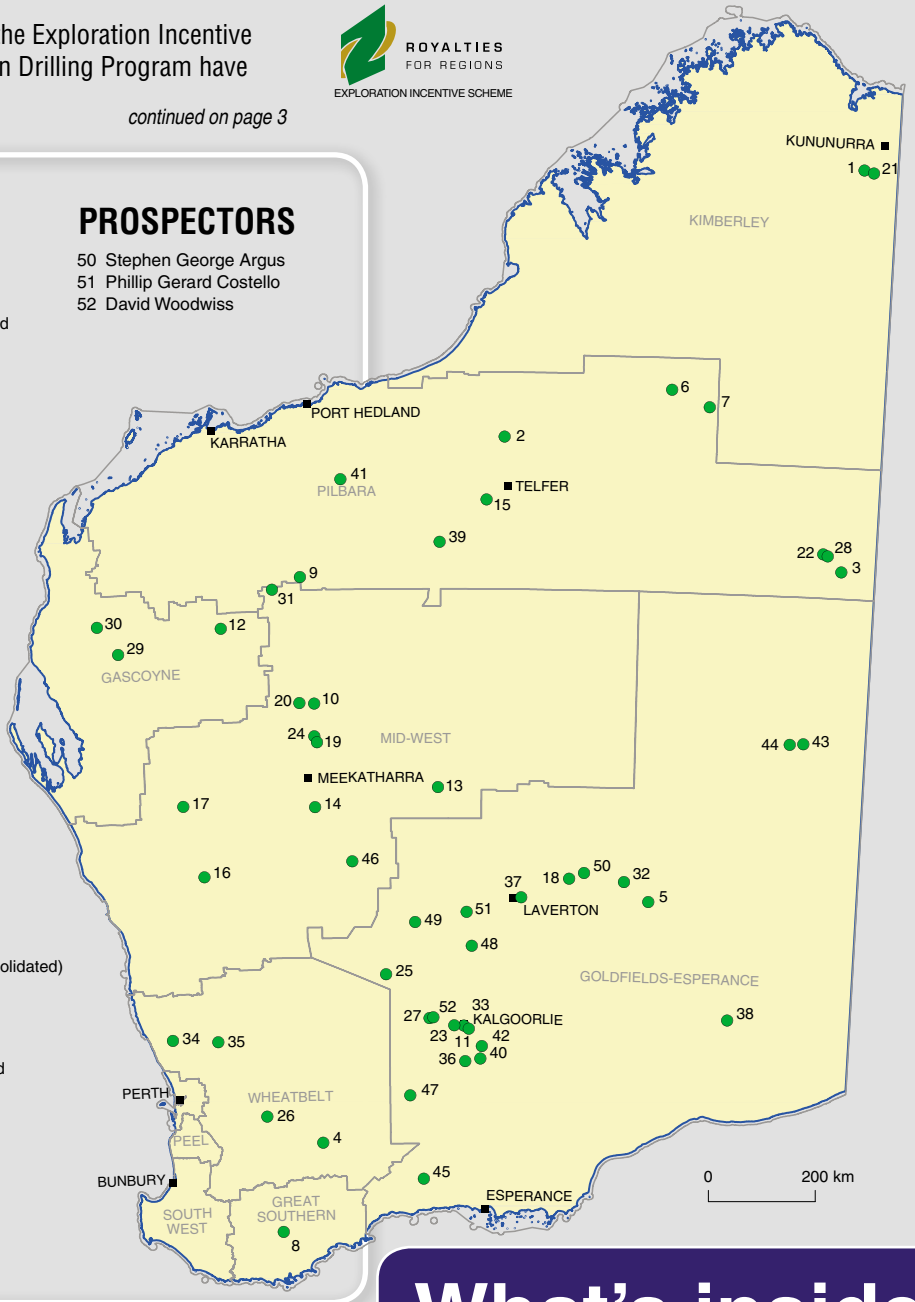
42 Terrain Minerals Ltd
43 Traka Resources Limited
44 Traka Resources Limited
45 United Mining Resources Pty Ltd
46 Western Areas NL
47 White Cliff Nickel Ltd
48 White Cliff Nickel Ltd
49 Wild Acre Metals Limited

PROSPECTORS

50 Stephen George Argus
51 Phillip Gerard Costello
52 David Woodwiss



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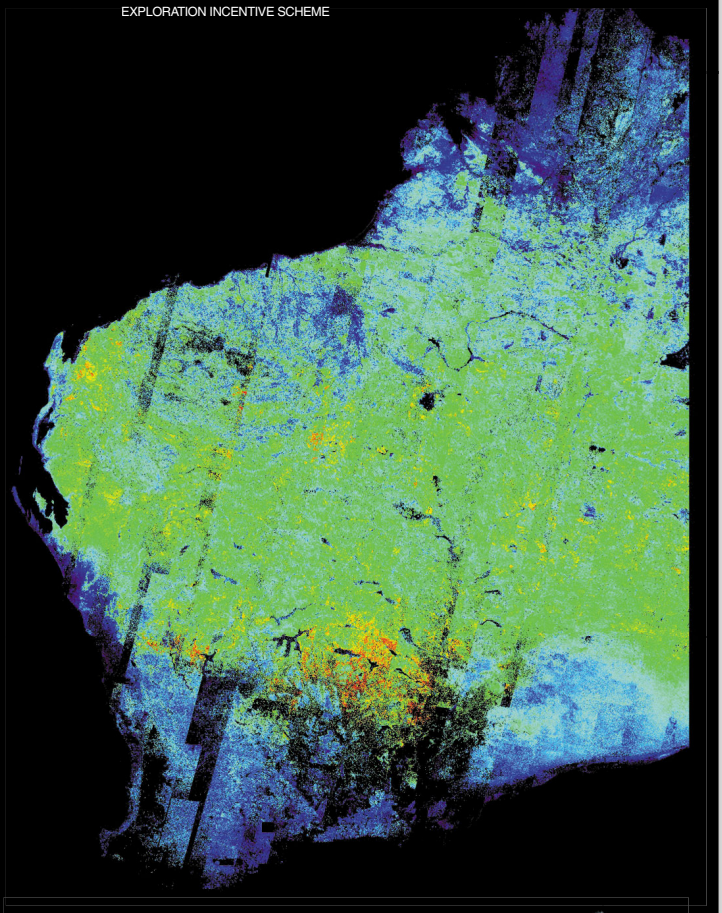
ASTER geoscience map of Western Australia

ROYALTIES FOR REGIONS
EXPLORATION INCENTIVE SCHEME



In a world first, November 2011 saw the ground-breaking release of the largest publically available remote sensing geoscience dataset produced anywhere. This ASTER (Advanced Spaceborne Thermal Emission and Reflection) map covers the entire state of Western Australia. It provides a new generation of digital geoscience-mapping information that delivers on an important component of the Exploration Incentive Scheme (EIS) and provides an opportunity for rapidly updating existing geological maps, and enhancing the compilation of new ones.

A significant step is the processing of satellite ASTER imagery data into GIS-compatible mapping products by the Centre for 3D Mineral Mapping (C3DMM) based at CSIRO in Bentley. CSIRO has developed the software and computing capabilities required to achieve this and has, with the aid of $300 000 funding from the EIS, produced the ASTER geoscience map of Western Australia.

The suite of satellite-derived ASTER products that make up the map will supply basic information about the dominant rock and soil-forming mineral components. The data consist of fourteen different surface-composition maps of various mineral suites resulting from the surface weathering of rocks.

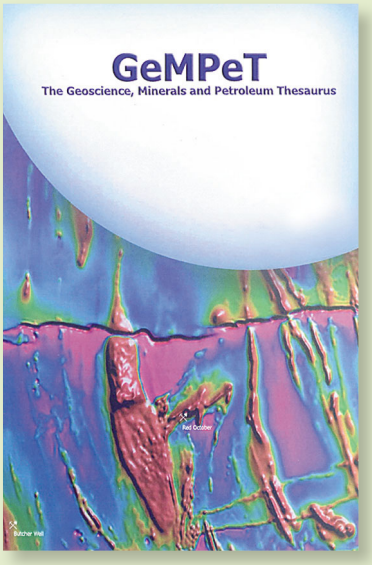
Mineral explorers will greatly benefit from public access to mineral maps of WA because of their value in better characterization and understanding of the geology and regolith.

A practical application of this technology is its contribution to the building of a public 3D case history, in conjunction with Murchison Metals Ltd, of the Rocklea channel iron ore deposit in the Hamersley Basin. The results of a 2010 scoping study showed that an economically robust project is possible at Rocklea, with resources sufficient to support potential production rates of up to 10 Mtpa. This project also received a co-funded exploration drilling grant from the EIS, and made use of the innovative HyLogger technology, also developed by CSIRO, based at GSWA's Perth Core Library in Carlisle.

The new ASTER WA map complements other types of pre-competitive geoscience information currently available from GSWA, such as digital geological maps, and airborne magnetic and radiometric data. The ASTER WA suite of maps is available for purchase from GSWA by going to <www.dmp.wa.gov.au/gswa>, clicking on 'Geoscience information, maps and reports' and putting 'ASTER' into the title field. The product is also available from the First Floor counter, Mineral House, 100 Plain Street, East Perth WA 6004 at a cost of $132 (inc. GST).

For more information, contact Stephen Bandy (stephen.bandy@dmp.wa.gov.au).

The Geoscience, Minerals and Petroleum Thesaurus online in 2012



In 2010, GSWA bought the rights for the management and distribution of the Geoscience, Minerals and Petroleum Thesaurus (GeMPet) formerly the AMF Thesaurus. We have been working on getting the product into an online version which will be live early in 2012.

The GeMPet thesaurus provides geoscience professionals with a standardized terminology with which to index information assets such as reports, maps, and digital datasets. The need for standardized geoscience taxonomy is more important now than ever as the expansion of online information delivery has highlighted the necessity to use controlled indexing to identify and organize information effectively. GeMPeT is designed to provide geoscience organizations with a ready-made taxonomy for this purpose.

GeMPeT has three types of relationships applied to each term:

- Hierarchical relationships, linking terms to other terms expressing more general (broader) and more specific (narrower) concepts
- Associative relationships, which link terms to similar terms (related terms) where the relationship between the terms is non-hierarchical
- Equivalence relationships, which link 'non-preferred' terms to synonyms or quasi-synonyms which act as 'preferred' terms. Non-preferred terms are in italics.

GeMPeT does not include geographic, species, product or registered trade names. A selection of mineral names is included; however, the list is in no way exhaustive. Organizations using GeMPeT should include additional names of this type as necessary.

A link to GeMPet online will be provided on our website as soon as work has completed.

For more information, contact Robin Bower (robin.bower@dmp.wa.gov.au).

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In 2012, the program will be offering co-funding of up to a total of $6 million to 52 applicants including three prospectors.

Programs such as this give companies an extra incentive to drill in under-explored areas, which is the key to the continuity of Western Australia's robust mining industry.

This application round, which closed on 30 September 2011, is the first time that support is being offered for drilling projects over a calendar year, with successful applicants undertaking drilling projects between January and the end of December 2012.

The Co-funded Industry Drilling Program provides co-funding of up to 50% of direct drilling costs with caps of $150 000 for a multi-hole project, $200 000 for a single deep hole and $30 000 for a prospector's project. Payment is made to successful applicants after the completion of their drilling programs. The process is scrutinized by an independent probity auditor and applications are evaluated by experienced exploration geologists who are members of professional organizations with strong codes of ethics.

Information acquired by the companies through the drilling programs is publicly released on the Department of Mines and Petroleum's website via the WAMEX or WAPIMS databases after a short confidentiality period. The information adds to the geological knowledge of the State and helps reduce risks for subsequent explorers.

Another round of co-funded drilling (Round 5) is being advertised from December 2011 calling for applications between 23 February and 30 March 2012 for projects to be undertaken between July 2012 and the end of June 2013.

Information on the successful projects for Round 4, as well as information for prospective applicants for Round 5 can be found at <www.dmp.wa.gov.au/eisdrilling>.

For more information, contact Margaret Ellis, Co-ordinator EIS (margaret.ellis@dmp.wa.gov.au).

The Capricorn Orogen deep seismic survey

In April and May 2010, 581 kilometres of vibroseis-source, deep seismic reflection and gravity data were acquired along three traverses (10GA–CP1, 10GA–CP2 and 10GA–CP3) through the Capricorn Orogen. Data collection and interpretation was a collaborative project between the Geological Survey of Western Australia (GSWA), AuScope (a component of NCRIS, the National Collaborative Research Infrastructure Strategy) and Geoscience Australia (GA). Reflection seismic data were processed by the Seismic Acquisition and Processing team of the Onshore Energy and Minerals Division at GA. The three lines were then interpreted by geologists from GSWA, GA, the University of Adelaide, The University of Western Australia, the Australian National University, and the University of Tasmania. Preliminary results were released at a public workshop held at Mineral House on 23 November 2011.

Interpretation in action. Geologists and geophysicists from GSWA, GA and various Australian universities took part in the two interpretation sessions held at Mineral House during 2011.

The seismic lines extended from the southern part of the Pilbara Craton, crossed the Ashburton, Edmund, and Collier Basins and Gascoyne Province, and ended in the Narryer Terrane of the Yilgarn Craton. Crustal-scale magnetotelluric data were also collected along, or adjacent to, the seismic traverses. The major objectives of the transect were to:

1. image the crust and upper mantle structure along the survey lines including the Fortescue, Hamersley, Turee Creek, and Ashburton Basins on the Pilbara Craton, the Gascoyne Province, and the northern margin of the Yilgarn Craton

2. establish the subsurface extent of Archean crust beneath the Capricorn Orogen and ascertain whether the Pilbara and Yilgarn Cratons are in direct contact or separated by one or more elements of Proterozoic crust

3. determine the nature and character of basement to the Proterozoic basins flanking the Yilgarn and Pilbara Cratons (e.g. Ashburton, Yerrida, Earaheedy Basins)

4. link surface units and structures (e.g. the Errabiddy Shear Zone), with their deep crustal counterparts, to better understand the geological evolution of the orogen

5. better understand the processes driving the Proterozoic assembly of the West Australian Craton and the subsequent extended history of repeated crustal reworking

6. identify major mantle-tapping structures that acted as pathways for fluid flow to important mineral systems within the Capricorn Orogen. These systems include the world-class hematite iron ore deposits of the Hamersley Basin, Cu–Pb mineralization at Abra, and orogenic lode-Au mineralization at Mount Olympus in the northern Ashburton Basin.

Preliminary interpretation

The three seismic lines have produced uninterrupted images down to 20 seconds two-way travel time, equivalent to ~ 60 km depth. The Mohorovičić discontinuity (the 'Moho') is generally poorly imaged but is interpreted to be relatively deep under the Gascoyne Province (~ 36–46 km) and shallower under the adjoining Pilbara and Yilgarn Cratons (~ 33–39 km), while the transition from crust to mantle appears to be gradational for much of the imaged profile. At the southern end of the transect, the Moho has been substantially offset during the collision of the Glenburgh Terrane with the Narryer Terrane of the Yilgarn Craton. The upper mantle along all three lines is mostly non-reflective.

The upper crust can be subdivided into several provinces and basins, principally based on surface geological mapping and potential field data. By comparison, the lower crust appears to consist of at least three discrete, newly identified seismic provinces. The Carlathunda Seismic Province forms the lower crust to the granite–greenstone terranes of the Pilbara Craton; the Bandee Seismic Province forms the mid and lower crust of the southern Pilbara Craton and northern Gascoyne Province; and the MacAdam Seismic Province forms the lower crust of the Glenburgh Terrane. Each of these provinces are bounded by crustal scale faults or shear zones that transect the entire crustal profile, representing ancient suture zones that amalgamated the West Australian Craton. The Bandee Seismic Province – Carlathunda Seismic Province suture is located along the Baring Downs Fault, and is interpreted to be a pre-Fortescue Group structure (> 2775 Ma) related to the Archean assembly of the Pilbara Craton. Suturing of the Glenburgh Terrane – MacAdam Seismic Province with the Bandee Seismic Province (southern margin of the Pilbara Craton) is interpreted to have occurred during the 2215–2145 Ma Ophthalmian Orogeny, the suture located at the Lyons River Fault. Final assembly of the West Australian Craton took place during the 2005–1950 Ma Glenburgh Orogeny, when the combined Pilbara Craton – Glenburgh Terrane collided with the Narryer Terrane of the Yilgarn Craton along the Errabiddy Shear Zone. Obduction of the Narryer Terrane on top of the Glenburgh Terrane, or underthrusting of the Glenburgh Terrane beneath the Narryer Terrane, produced a substantial offset and duplication of the Moho along the Cardilya Fault.

In the upper ~15 km of crust, various granite plutons and batholiths, and sedimentary basins, have been imaged. These units are cut by major faults and shear zones, many of which display evidence for punctuated reactivation. A number of

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Australian Government
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AuScope

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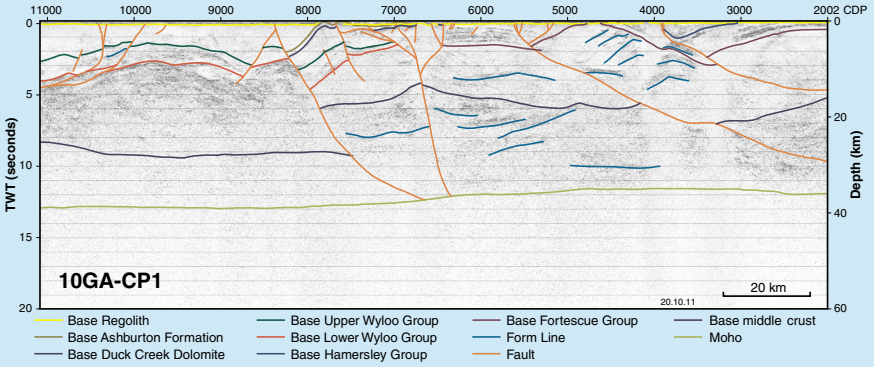
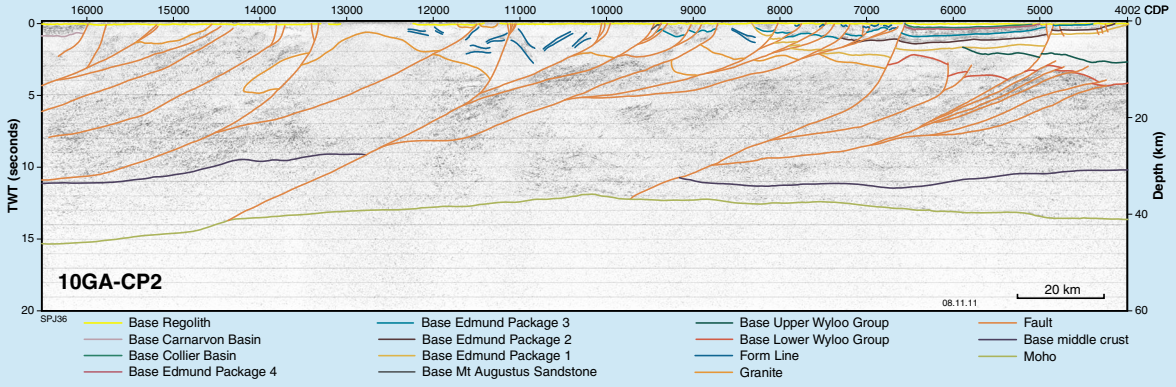
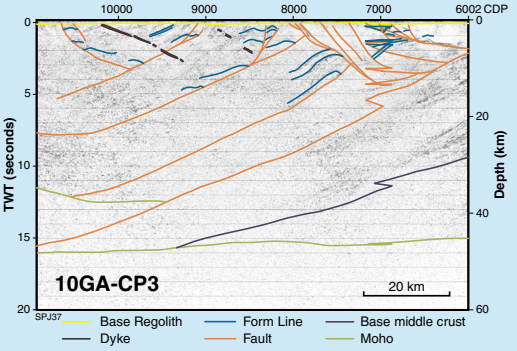
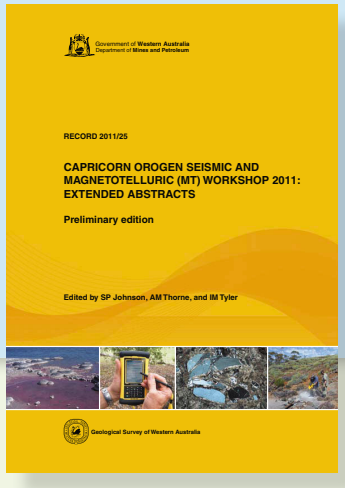


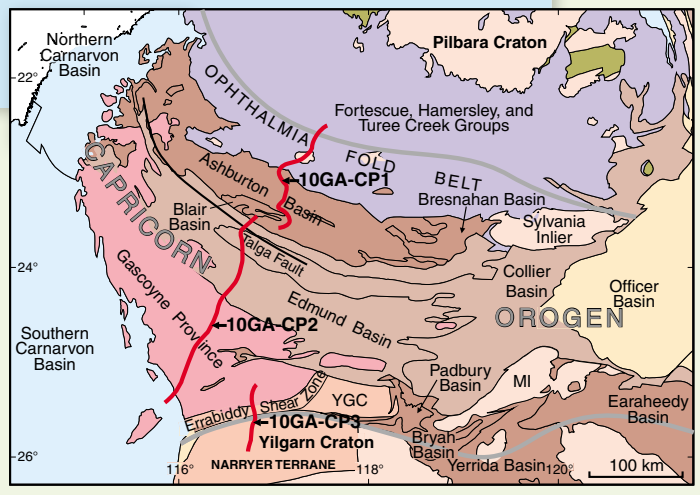






these faults, e.g. the Nanjilgardy, Baring Downs, and Lyons River Faults, can be traced from the surface to the base of the crust, and are likely to be critical for exploration models as they provide pathways for fluids from the mantle to mineralizing systems in the upper crust.

For more information, contact Simon Johnson (simonpaul.johnson@dmp.wa.gov.au).



Geological map of the Capricorn Orogen, showing the location of the three deep seismic lines (10GA–CP1, 10GA–CP2 and 10GA–CP3).

East Albany–Fraser Orogen field excursions a hit

Last September GSWA led two, back-to-back, four-day field excursions through the more remote, eastern part of the Albany–Fraser Orogen. The field trips were designed to showcase the results of four years work including interpretation of new geophysical datasets coupled with fieldwork, major- and trace-element geochemistry, and extensive geochronology and isotopic (U–Pb, Lu–Hf and Sm–Nd) analysis. Participants were mostly exploration industry geologists, but also included academics and students from Curtin University, CSIRO, CET/UWA, and JCU. The first excursion (Esperance to the Transline) provided an overview with highlights of the geology, demonstrating how our understanding of the evolution of the orogen has changed significantly. Our results show that the Albany–Fraser Orogen is dominated by Paleoproterozoic and Mesoproterozoic rocks that formed along or some distance from the southern and southeastern margin of the Yilgarn Craton. The processes included rifting of the margin, widespread magmatism, and successive episodes of reworking. Previous models had inferred a passive margin setting during Paleoproterozoic times, followed by collision and accretion during the Mesoproterozoic.

Fragments of Archean crust, such as that visited in the Mount Andrew area, are interpreted to be remnants of the Yilgarn Craton, preserved within Paleoproterozoic migmatitic gneisses of the Biranup Zone. These fragments, which are likely to be present at a variety of scales, may have contained sources of economic minerals or elements, such as gold. In addition, known Paleoproterozoic and Mesoproterozoic events would have provided opportunities for either focusing or concentrating Yilgarn-sourced components into economic deposits, and may also have enabled access to new sources during orogenic processes.

Excursion 1 included examination of the Fraser Zone, which we interpret as a lower crustal hot zone, possibly formed in a rift-like setting. Petrological and phase equilibria modelling of pelitic rocks from the Fraser Range Metamorphics constrain peak metamorphic conditions to 800–850°C and 8–9 kbar, during Stage I of the Albany–Fraser Orogeny (results of collaborative work with the Department of Applied Geology, Curtin University, on understanding metamorphic P–T conditions and the timing of metamorphism using monazite geochronology; see GSWA Record 2011/18). The Fraser Zone is in fault contact with both the Biranup and Nornalup Zones — both are large, complex shear zones that were visited during the excursion to look at timing and kinematic relationships. Excursion 1 concluded with a visit to spectacular rapakivi metagranitic rocks mingled and mixed with metagabbronorite of the Paleoproterozoic Eddy Suite.

Excursion 2 focused on the far northeast, Tropicana region, co-led by staff from AngloGold Ashanti. Participants were treated to a viewing of mineralized drill core from the Tropicana Deposit, rare outcrop of strongly deformed schist southeast of the Havana South Deposit, and the geology of the Hat Trick Hill area — a complexly folded and sheared succession of meta iron-formation, metagabbro and metagranite. We then ventured further afield to look at Paleoproterozoic, mingled and mixed metasyenogranitic and metagabbroic rocks to the north, including an unscheduled viewing of EIS core freshly drilled by Beadell Resources at their Hercules prospect. It is clear that although Archean rocks are present in the Tropicana region, Paleoproterozoic magmatism and events must have played a role in focusing gold mineralization. The excursion concluded with a visit to Plumridge Lakes Nature Reserve to examine the Mesoproterozoic Gwynne Creek Gneiss, a metasedimentary succession that straddles the Fraser and Biranup Zones. The field guide for both excursions (Record 2011/23), which includes a detailed overview of the geology of the orogen, and two map plates, will be available for free download on our website in February.

For more information, contact Catherine Spaggiari (catherine.spaggiari@dmp.wa.gov.au).

Catherine Spaggiari discussing the geology of the Mount Andrew area with participants on Excursion 1.

Participants viewing the geology of the Fraser Range Metamorphics, Mt Wyranilu, Excursion 1.

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Hf isotopes reveal crust–mantle interaction: implications for the evolution of the Albany–Fraser Orogen

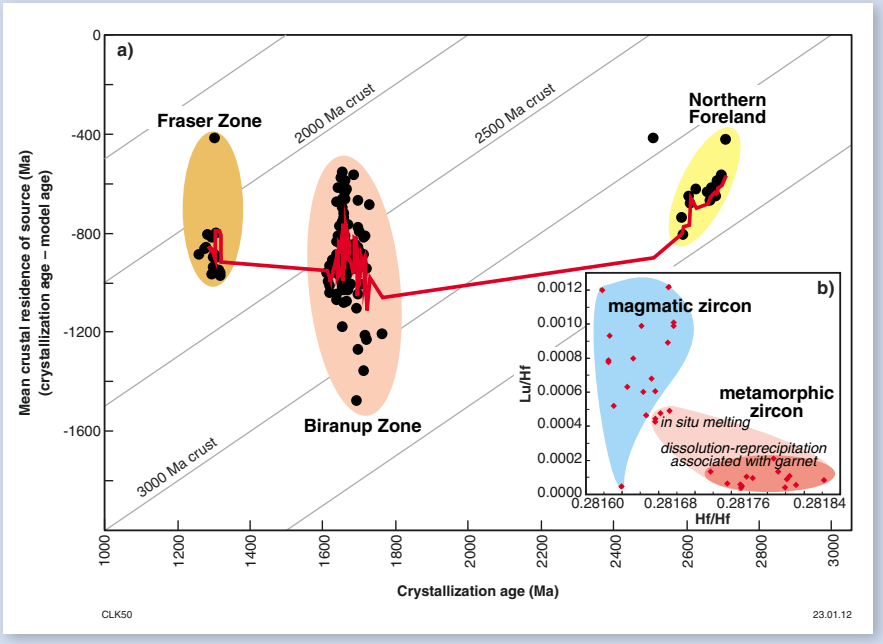
Lutetium–hafnium (Lu–Hf) isotope measurements, when coupled with U–Pb geochronology on the same crystals, provide time-integrated information about the relative roles of juvenile mantle input or reworking of older continental crust within magma. The strength of this approach lies with the ability to target specific mineral growth domains identified by imaging, and thus to unravel polyphase crystallization histories and follow the source composition through magma evolution. GSWA has developed a program of Lu–Hf analyses of zircon crystals previously dated by U–Pb analysis. This program is funded through the Exploration Incentive Scheme (EIS) and targets all current mapping areas. Lu–Hf isotope datasets have proved to be extremely useful in developing and testing models of crustal evolution for the Albany–Fraser Orogen.

GSWA Record 2011/12 documents the use of Hf isotopes in the case study area of the Albany–Fraser Orogen, an arcuate orogenic belt along the southern and southeastern margins of the Archean Yilgarn Craton in Western Australia. Previous studies have ascribed the main tectonic and metamorphic features of the belt to the Mesoproterozoic Albany–Fraser Orogeny. However, a significant tectonomagmatic event is now known to have taken place during the Paleoproterozoic within the Biranup Zone of the orogen. Earlier work had also suggested an allochthonous setting for much of the orogen. Magmatism in the Biranup Zone commenced at c. 1710 Ma, with an Hf isotopic signature compatible with predominant melting of an Archean Yilgarn source. Younger intrusions, with crystallization ages between 1680–1665 Ma, sourced a progressively higher proportion of juvenile mantle-derived material. Lu–Hf and U–Pb data from individual zircon crystals, as well as data from entire intrusive bodies, indicate additional juvenile additions through time. Based on the rapidly evolving tectonomagmatic history, and the original Yilgarn-like Hf isotope signature modified by juvenile material, an extensional setting, possibly a back-arc, on the Yilgarn Craton margin provides a feasible tectonic scenario for the Biranup Zone of the Albany–Fraser Orogen. Thus, Hf isotope data imply an autochthonous origin for much of the orogen.

Lu–Hf isotopes also provide information on the growth mechanism of zircon, which is important to link datable mineral growth into the development of other mineral phases within rocks. Metamorphic zircon rims produced during Stage II of the Albany–Fraser Orogeny consistently show more radiogenic Hf signatures, with lower Lu/Hf ratios, than those of igneous zircons. This relationship is best explained by coeval breakdown of igneous zircon with garnet recrystallization, depleting the associated metamorphic medium in heavy rare earth elements (HREE). The corresponding metamorphic reservoir, with high $^{176}Hf/^{177}Hf$ but low Lu/Hf ratios, served as the source from which metamorphic zircon grew. This indicates that Stage II metamorphic zircon growth occurred during amphibolite facies (or higher-grade) conditions.

To download the publication, go to <www.dmp.wa.gov.au/gswapublications>, enter '2011/12' in the 'Series number' box.

For more information, contact Chris Kirkland (chris.kirkland@dmp.wa.gov.au).



Lu–Hf data used to determine tectonic affiliations of Albany–Fraser Orogen rocks. (a) Event signature diagram showing the general trend of reworking (downwards), mixing (horizontal), or juvenile input (upwards). The data are from three lithostratigraphic domains: the Biranup and Fraser Zones and the Northern Foreland. The Northern Foreland shows Hf values that are consistent with an Eastern Goldfields Superterrane (Yilgarn Craton) heritage. The Biranup Zone displays a range of Hf values, from evolved (lower time-integrated Lu–Hf ratios) signatures similar to the Eastern Goldfields Superterrane to values considerably more depleted, suggesting juvenile addition to the crust. The Fraser Zone Hf is situated mainly between the 2.0 and 2.2 Ga crustal evolution lines and is compatible with the Fraser Zone having reworked Biranup Zone material. (b) Compositional differences in isotopic Hf of metamorphic and magmatic zircon linked to garnet growth.

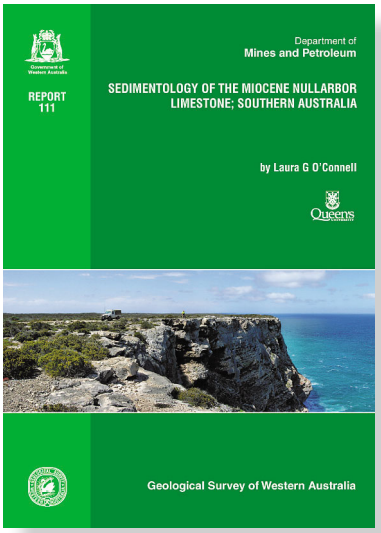
Limestones of the Eucla Basin — research now released

GSWA has recently supported research by students from Queen's University, Ontario, Canada, as part of an ongoing program of applied collaborative research and support with universities and industry. Laura O'Connell and Cody Miller have been working on the limestones of the Eucla Basin, in the southeast of Western Australia between Balladonia and Eucla, with field research supported by the use of a GSWA vehicle and equipment. Cody's research towards a PhD continues, but Laura's MSc thesis is now complete, and has been released as GSWA Report 111, Sedimentology of the Miocene Nullarbor Limestone; Southern Australia.

Abstract

The early to middle Miocene Nullarbor Limestone is the youngest formation in the mid-Cenozoic Eucla Group. The carbonate unit forms the vast karst surface of the Nullarbor Plain and much of the spectacular 900 km long cliff along the Great Australian Bight. Most Cenozoic limestones along Australia's southern margin are dominated by bryozoans, echinoids, and small benthic foraminifera and thus represent deposition in cool marine waters. The Nullarbor Limestone, however, is composed of coralline algae (rhodoliths and articulated types), large and small benthic foraminifera, molluscs, and reef-building corals indicating that it accumulated in shallow subtropical environments. The wide areal extent of this shallow marine deposit indicates that an epeiric platform extended 450 km inboard from the shelf edge. Depositional environments ranged from an open sea-floor at the base of the photic zone, through wave-swept intermediate depths where rhodolith gravels accumulated, to shallow nearshore seagrass banks. The presence of micrite envelopes and diversity of warm-water fossils indicate water temperatures of at least 20˚C despite deposition at mid-latitudes. These proxies decrease eastward, implying a west-to-east, warm-to-cool seawater temperature gradient across the paleoplatform. The warm temperatures and interpreted temperature gradient are attributed to internal heating on the platform and flow of a warm proto-Leeuwin Current along the shelf edge, rather than simply the global climate warming of the Miocene Climatic Optimum.

For more information, contact Roger Hocking (roger.hocking@dmp.wa.gov.au).



AusGeo News

AusGeo News is Geoscience Australia's (GA's) quarterly news magazine. Each issue comprises geoscience-related features, brief articles about GA's research and initiatives, news about geoscience products and spatial data, and a calendar of coming seminars and conferences.

Issue December 2011 No 104 is now available at <http://www.ga.gov.au/ausgeonews/>.

In this issue…

Cape Denison, the birthplace of Australian Antarctic expeditions
New map and poster commemorates the Australasian Antarctic Expedition

Marine ecosystems in the Mertz Glacier region, Antarctica
Survey investigates impact of break up of ice shelf

Presenting geoscience using virtual globes
Communicating geoscience data in a variety of contexts

Precise dating of an Australasian tektite

Tektites are natural glass objects produced by the melting and ejection of crustal material during a large impact event. About 800 000 years ago, a c. 3-km diameter asteroid or comet impacted in southeast Asia, probably in Indochina or on the adjacent continental shelf. Although the crater has yet to be found, the impact event is indicated by a tektite and microtektite strewnfield that extends for thousands of kilometres, from southern China to the Southern Ocean and from the western Pacific to the southwestern Indian Ocean. Microtektites (by definition <1 mm in size) from the event have recently been reported in Antarctica. The more distal ejected material, including that found in Australia, actually left the atmosphere before falling back to Earth. The tektites found in Australia are known as australites, and were shaped in a plastic state during their ejection and also acquired a wide range of aerodynamic forms as they were remelted during re-entry of Earth's atmosphere.

Australites are not evenly distributed across Australia, but appear to be found in local concentrations, mainly across the southern half of the continent. To some extent this patchiness can be explained by local deposition or erosion of Quaternary sediments, but it also reflects original local concentrations of ejecta. One of the greatest concentrations occurs in an elongate strip in the Goldfields region of Western Australia.

Determining the precise age of the australites is important for linking the impact event to its environmental effects, and therefore for understanding the potential hazards associated with future impacts. It is also important for giving a maximum age to sediments in which australites are found.

Many australites were collected in 2009 from the surface of a salt lake about 140 km southeast of Kalgoorlie. One was selected for dating using the ^{40}Ar–^{39}Ar step-heating method at the Western Australian Argon Isotope Facility in the John de Laeter Centre of Isotope Research at Curtin University. The mean age for two fractions of 796 ± 10 ka (ka = thousand years) is the most precise date yet obtained for australites. This result agrees well with a date of c. 793 ka estimated for the impact, based on the c. 778 ka Brunhes–Matuyama magnetic reversal recorded in deep sea sediment layers slightly above those in which the microtektites were deposited.

For more information,
contact Michael Wingate (michael.wingate@dmp.wa.gov.au) or Peter Haines (peter.haines@dmp.wa.gov.au).

For information about argon isotope dating and the John de Laeter Centre, contact Fred Jourdan (f.jourdan@curtin.edu.au), or visit the Centre's website (http://jdlc.curtin.edu.au).

Map showing the distribution of tektites and microtektites within the Australasian strewnfield

Australites from southeast of Kalgoorlie

John de Laeter Centre
Isotope Research for the Earth and Environment

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Want to stay informed about new products, services and other news from the Geological Survey of Western Australia (GSWA)?

Then subscribe to the GSWA eNewsletter. The newsletter has had an overhaul and is now in webmail interactive form. You can subscribe, unsubscribe and update your own details without contacting GSWA. Just go to this link (http://www.dmp.wa.gov.au/gswaenewsletter), and click on 'subscribe to our newsletter'. You can then sign yourself up. You'll also find archives of previous newsletters in the same location.

The newsletter is sent out regularly (normally once a month) and contains information on topics such as geophysics releases, workshops and field trips, geological events, and GSWA's latest releases of maps, books and digital data.

For more information, contact Robin Bower (robin.bower@dmp.wa.gov.au).

GSWA Open Day 2012

The GSWA Open Day event is held every year and is a great opportunity to hear presentations on the latest results from GSWA's geoscience programs and see demonstrations of the Department of Mines and Petroleum online database developments and upgrades.

Activities and results of the $80 million Exploration Incentive Scheme (EIS) will be outlined including the launch of Round 5 of the Government Co-funded Exploration Drilling program.

Throughout the day there will be geological presentations and an extensive poster display.

To register go to: <www.dmp.wa.gov.au/gswa2012>.

This seminar will follow the RIU Explorers Conference held on 21–22 February 2012 at the same venue.

Event

Date: **Thursday, 23 February 2012**
Venue: Esplanade Hotel, Fremantle
Cost: $110 (includes GST)

Contact

Contact: Nell Stoyanoff
Phone: 08 9222 3168
Email: geological.survey@dmp.wa.gov.au

GSWA 2012 — Geological Survey Open Day — 23 FEBRUARY 2012
ESPLANADE HOTEL, FREMANTLE Cnr Marine Tce & Essex St, Fremantle

8.15 – 8.45	**REGISTRATION**	
8.45 – 9.00	**Welcome and opening remarks**	*Hon. Norman Moore MLC, Minister for Mines and Petroleum*
SESSION 1 Chair – Rick Rogerson		
9.00 – 9.15	Exploration Incentive Scheme (EIS) progress	*Rick Rogerson*
9.15 – 9.40	Structure, stratigraphy, magmatic evolution and timing of gold mineralization in the Southern Cross greenstone belt	*Michael Doublier*
	Morning Tea 9.40 – 10.50 In the display area	
SESSION 2 Chair – Don Flint		
10.50 – 11.15	2815 – 2800 Ma gabbros of the Murchison: A variety of mantle sources, magmatic processes and mineralization	*Tim Ivanic*
11.15 – 11.40	Metamorphic evolution of the west Yilgarn Craton	*Ben Goscombe (ITAR)*
11.40 – 12.05	Regional targeting criteria for gold in the Yilgarn Craton: which ones work and how well?	*Wally Witt (CET)*
	Lunch 12.05 – 1.35	**WORKSHOPS IN DISPLAY AREA** 1.00 GeoMap.WA with Explanatory Notes extension 1.15 GeoVIEW.WA
SESSION 3 Chair – Stephen Bandy		
1.35 – 2.00	WA ASTER map	*Tom Cudahy (C3DMM)*
2.00 – 2.25	Structural development and mineralization of the Edmund and Collier Basins, Capricorn Orogen	*Huntly Cutten*
2.25 – 2.50	What lies beneath – interpreting the Eucla Basement	*Catherine Spaggiari*
	Afternoon Tea 2.50 – 3.15 In the display area	
SESSION 4 Chair – Ian Tyler		
3.15 – 3.40	The west Musgrave Province mapping project – what's changed in seven years?	*Hugh Smithies*
3.40 – 4.05	Isotopic and geochemical data reveals both intracratonic and subduction-related phases in the early tectonic evolution of the Musgrave Province	*Chris Kirkland*
4.05 – 4.30	Multiscale dynamics of ore body formation	*Bruce Hobbs (CET)*
	Sundowner 4.30 – 5.30	

Government of Western Australia Department of Mines and Petroleum — ROYALTIES FOR REGIONS EXPLORATION INCENTIVE SCHEME

Western Australia regional geophysical surveys 2012: February update

ROYALTIES FOR REGIONS
EXPLORATION INCENTIVE SCHEME

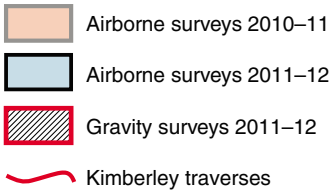
Data access

Download final data releases from the Geoscience Australia Data Delivery System at <www.ga.gov.au/gadds>.

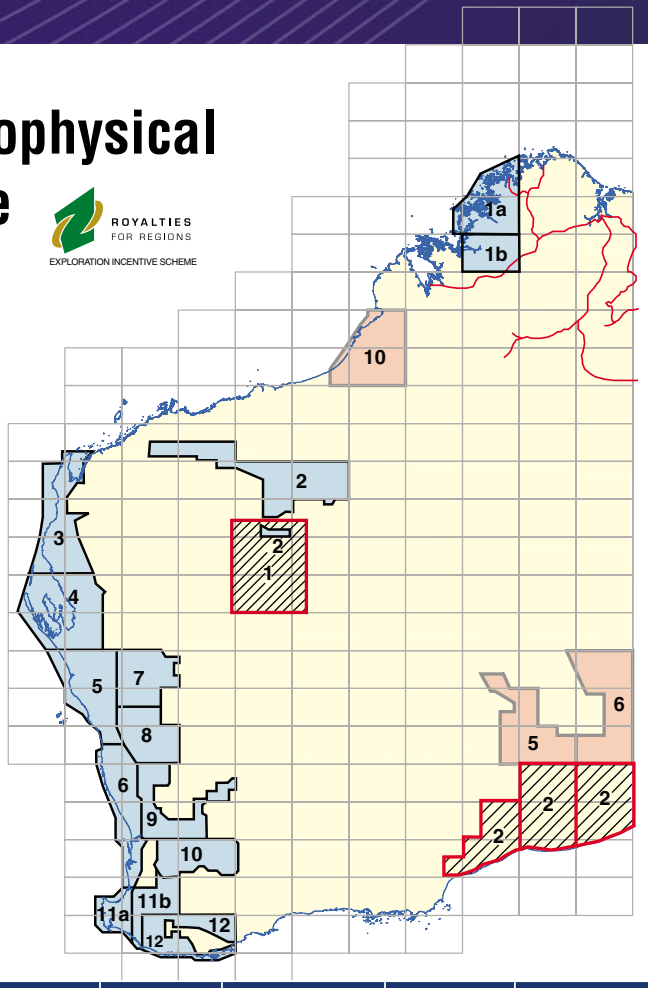
Download preliminary and final grids and images from the GSWA website at <www.dmp.wa.gov.au/geophysics>.

Survey outline shapefiles available online at <www.dmp.wa.gov.au/datacentre>.

Subscribe to the GSWA mailing list to keep informed of preliminary and final data release dates.



For more information, contact David Howard (david.howard@dmp.wa.gov.au).



Airborne magnetic and radiometric surveys

ID	Area/Name	Line spacing and direction	Line-km	Acquisition Start	Acquisition End	Current Status	Preliminary Release	Final Release
	2010–11 Program							
5	Jubilee 2010	200 m; N/S	180 000	Jun-10	Jun-11	Processing	22 Dec 2011	Mar-12*
6	Waigen–Mason 2010	400 m; N/S	113 000	Jun-10	Jan-11	Processing	22 Dec 2011	Feb -12[1]
10	Lagrange–Munro 2010	400 m; N/S	103 000	Sep-10	Jun-11	Release	—	15-Dec -11
	2011–12 Program							
1a	Prince Regent - Montague Sound 2011[2]	800 m; N/S	42 000	Jun-11	Dec-11	Processing	—	Mar-12*
1b	Charnley 2011	200 m; N/S	102 000	Jun-11	Dec-11	Processing	9-Feb-12*	Mar-12*
2	South Pilbara 2012	400 m; N/S	134 000	Apr-12*	May-12*	Contract	—	Jul-12*
3	Carnarvon Basin North 2011	400 m; E/W	106 000	Jul-11	Oct-11	Pre-release	—	16 Feb-12
4	Carnarvon Basin South 2012	400 m; E/W	123 000	Mar-12*	May-12*	Contract	—	Jul-12*
5	Perth Basin North 2011	400 m; E/W	96 000	Jun-11	Jan-12*	Processing	22-Feb-12*	Apr-12*
6	Perth Basin South 2011	400 m; E/W	84 000	Mar-11	Jan-12	Processing	22-Feb-12*	Mar-12*
7	Murgoo 2011	200 m; E/W	134 000	Mar-11	Nov-11	Processing	9-Feb-12*	Mar-12*
8	Perenjori 2011	200 m; E/W	121 000	Oct-11	Jan-12*	Processing	9-Feb-12*	Mar-12*
9	Moora 2011	200 m; E/W	136 000	Jun-11	Jan-12*	Survey 95%	22-Feb-12*	Apr-12*
10	Corrigin 2011	200 m; E/W	114 000	Jan-12*	May-12*	Survey 15%	—	Jul-12*
11a	Cape Leeuwin 2011	400 m; E/W	52 000	Mar-11	Jan-12	Processing	22-Feb-12*	Apr-12*
11b	Collie 2011	200 m; E/W	53 000	Mar-11	Jan-12	Processing	22-Feb-12*	Apr-12*
12	Mt Barker	200 m; N/S	123 000	Apr-11	Apr-12*	On Hold[3]	—	Jun-12*

Ground gravity surveys

ID	Area/Name	Lines spacing and direction	Stations	Acquisition Start	Acquisition End	Current Status	Preliminary Release	Final Release
1	Peak Hill – Collier 2011	2.5 km grid	9 100	Aug-11	Dec-11	Pre-release	—	22-Feb-12*
2	Eucla Blocks 2011	2.5 km grid	14 700	Oct-11	Jan-12*	Survey 58%	22-Feb-12*	Mar-12*
	Kimberley road traverses	400 m	7 600	Aug-11	Sep-11	Pre-release	—	22-Feb-12*

Information current at: 1 Feb 2012

* Estimated date

Notes:

1. Preliminary releases, made on a case-by-case basis, consist of ecw images and ERMapper grids of partially processed and unchecked data.
2. Prince Regent – Montague Sound 2011 flown at 800 m offset by 400 m from existing 800 m survey (P614). Data from both surveys will be integrated to produce a single 400 m dataset.
3. Mt Barker survey was suspended in May 2011 and is scheduled to restart in Jan 2012.

Product releases

Any prices include GST

ISSN 1325-9377 ISBN (PRINT) 978-1-74168-425-4
ISSN 1834-2272 ISBN (PDF) 978-1-74168-424-7

REPORT

Report 111 Sedimentology of the Miocene Nullarbor Limestone; Southern Australia
by O'Connell, LG

RECORDS

Record 2011/4 The geology of the west Musgrave Province and the Bentley Supergroup – a field guide
by Howard, HM, Werner, M, Smithies, RH, Evins, P, Kirkland, CL, Kelsey, DE, Hand, M, Collins, AS, Pirajno, F, Wingate, MTD, Maier, WD, and Raimondo, T

Record 2011/13 Petroleum geochemistry of the Canning Basin: basic analytical data 2005–10
by Ghori, KAR

Record 2011/25 Capricorn Orogen seismic and magnetotelluric workshop 2011 extended abstracts (preliminary edition)
by Johnson, SP, Thorne, AM, and Tyler, IM

ROYALTIES FOR REGIONS EXPLORATION INCENTIVE SCHEME

1:100 000 GEOLOGICAL SERIES MAPS

Austin WA Sheet 2442 1:100 000 Geological Series map
by Zibra, I

Coolamaninu WA Sheet 2540 Geological Series map
by Ivanic, T

Yinnetharra version 2 Geological Series map
by Johnson, SP

NON-SERIES BOOKS

Geoscience, Mineral and Petroleum Thesaurus (GeMPeT)

GEOLOGICAL INFORMATION PACKAGES 1:100 000

Murchison Geological Information Series, 2011 update

West Musgrave 1:100 000 Geological Information Series, 2011 update

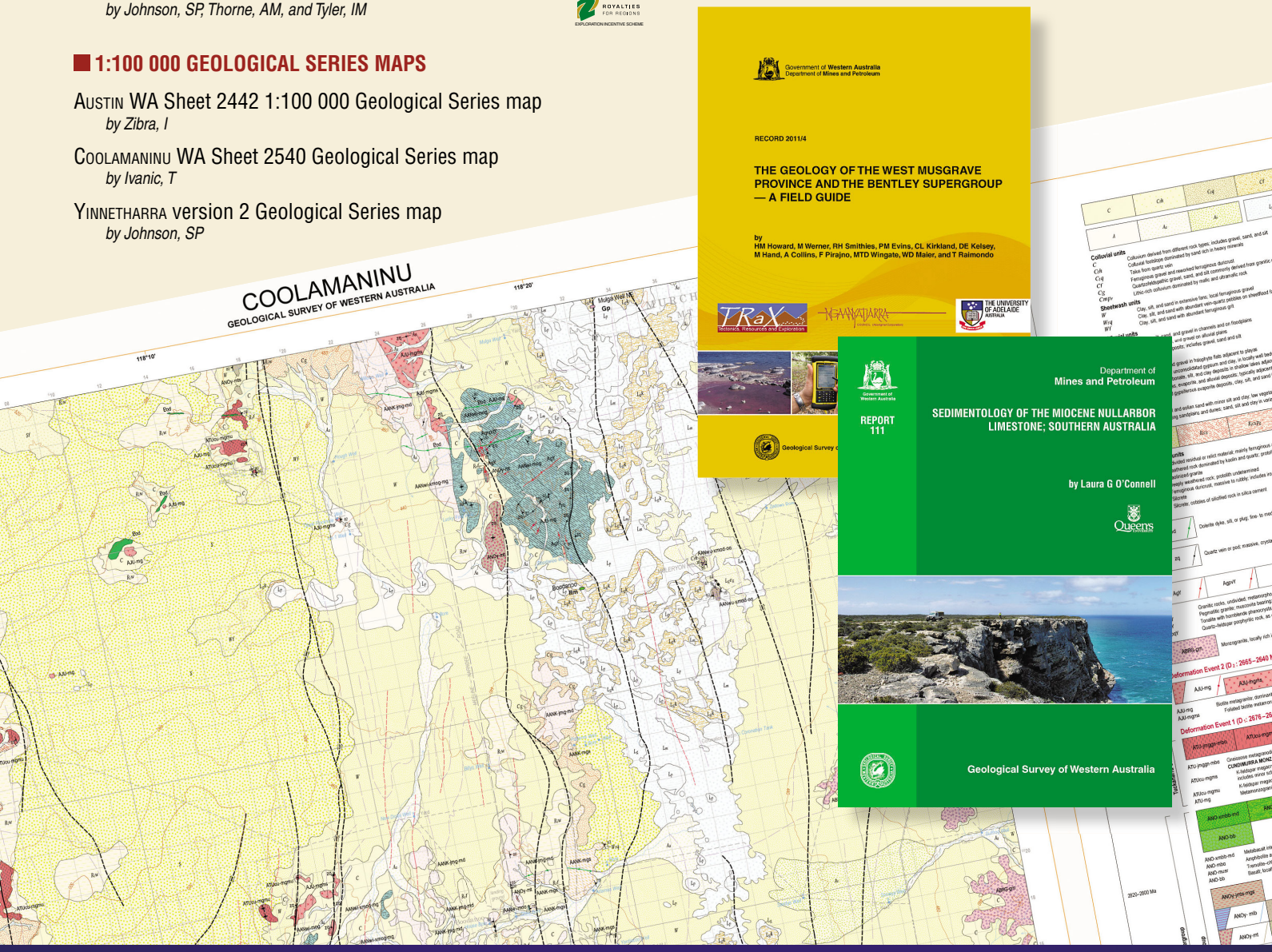
West Capricorn Geological Information Series 2011

ROYALTIES FOR REGIONS EXPLORATION INCENTIVE SCHEME

NON-SERIES DIGITAL PRODUCTS

ASTER geoscience map of Western Australia 2011
by CSIRO

ROYALTIES FOR REGIONS EXPLORATION INCENTIVE SCHEME



Almost all printed publications are now also available free as PDF files on our website at <http://www.dmp.wa.gov.au/GSWApublications>. Further details of geological publications and maps produced by the Geological Survey of Western Australia can be obtained at <http://www.dmp.wa.gov.au/GSWA>.

Hardcopy publications including products on CD, DVD, and USB are available from the Information Centre, First Floor, Mineral House, 100 Plain St, East Perth, WA 6004, AUSTRALIA Phone: +61 8 9222 3459; Fax: +61 8 9222 3444 or can be purchased online from the bookshop at <http://www.dmp.wa.gov.au/ebookshop>.