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ontheoutcrop is a Geological Survey of New South Wales (GSNSW) e-newsletter. For more information about newsletter items go to: <http://www.dpi.nsw.gov.au/minerals/geological>

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UPCOMING EVENTS

APPEA 2011 Conference & Exhibition, 10–13 April, Perth

I&I NSW, Mineral Resources will promote its petroleum exploration programs at the conference.

Resources & Energy Symposium, 22–25 May 2011, Broken Hill, NSW

I&I NSW, Mineral Resources will have a presence at [this event](#) in the Exhibition area to showcase its recently published Broken Hill region and Thomson Orogen geoscience publications to international investors.

Exploration in the House, 8 June 2011, Parliament House Theatre, Sydney

The GSNSW seminar, 'Exploration in the House', will be held on Wednesday, 8 June at Parliament House Theatre, Sydney. Watch the [GSNSW events website](#) for program details.

NEW PRODUCTS AND SERVICES

GIS data downloads advance the delivery of Mineral Resources products to industry

Significant upgrades to the [Geoscience Products Catalogue](#) web pages mean that visitors to the [Minerals & Petroleum website](#) can now download most of the published maps linked from this site. The downloads include images and GIS data for most of the maps, with improved descriptive information and cross referencing to information or related products such as map explanatory notes and mine data.

Advanced Mineral Projects and Exploration Highlights Map 2011 update

Go to [Advanced Minerals Projects and Exploration Highlights](#) for the latest update and download.

Angledool 1:250 000 geological map 2010 update

The Angledool 1:250 000 geological map has been updated and is available as a print-on-demand provisional hardcopy or as a [web download](#).

Contact: geoscience.products@industry.nsw.gov.au

2010 DIGS® Open File Report List

The 2010 Open File Report List is available on-line. It contains 568 mineral and 8 coal reports.

Contact: Wenlong Qian, Senior Geoscientist, wenlong.qian@industry.nsw.gov.au, 02 4931 6556



Industry &
Investment

Complimentary NSW Explorers Directory 2011 update

The NSW Explorers Directory DVD highlights details of 96 exploration companies which are active in NSW, and includes current hot prospects, prospective ground (particularly the Thomson Orogen) and current mines.

The Directory is a complete catalogue of the GSNSW map-related geoscience material and web links to hard copy publications and on-line services. It includes mineral occurrences data, boreholes, titles, 1:250 000 geology (rectified raster images), 1:100 000 geology (vector), base data and geophysical images in free customised projects for ArcMap™, ArcReader and MapInfo®. The geology, geophysics and mineral occurrences can also be viewed in Google Earth™, from this DVD.

Contact: geoscience.products@industry.nsw.gov.au for your complimentary copy

New England region geological compilations circa 1964–68 & 1986–88 available in DIGS

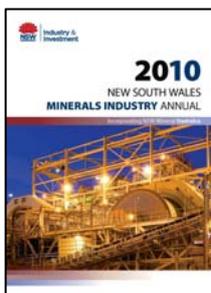
A set of 10 published 1:100 000 geological compilations of the New England region carried out by UNE 1964–68, and various 1:25 000 to 1:100 000 field maps and geological compilations by GSNSW 1986–88 of north eastern NSW are available through [DIGS®](#).

For the UNE maps, search using 'New England' in the Title field and 'UNE' in the Author field.

For the GSNSW maps, search using 'Armidale cartographic collection' (or 'Armidale carto') in the Title field. Both searches can be further refined by placing the map name in the document filter.

Contact: digs.info@industry.nsw.gov.au for information

Minerals Industry Annual NSW 2010



The [publication](#) is a comprehensive guide to the NSW mineral industry and covers metallic and industrial minerals, construction materials, mine dossiers and mineral statistics for financial years 2007–08 and 2008–09. It also contains an updated synopsis of information from the 2009 Coal Industry Profile and production developments for petroleum NSW.

Contact: mineralpublication.orders@industry.nsw.gov.au

Geophysical–geological interpretation maps

Cobham Lake, Milparinka, Bourke and Hay 1:250 000 work-in-progress geophysical–geological interpretation maps are available. These maps integrate information from regional geophysical data sets with satellite imagery, outcrop geology and drillhole data. They present an interpretation of basement geology and structures.

Contact: geoscience.products@industry.nsw.gov.au

PROJECT HIGHLIGHTS

Metals in Time Project

The MinSys team is determining and refining the ages of mineralisation and associated suites of rocks in mineral rich provinces of NSW. The various dating sub-projects grouped under the umbrella of 'Metals in Time' cover the Macquarie Arc, New England, Broken Hill region and the Lachlan Orogen. The investigations are revealing mineralisation potential in under-explored rock suites such as the Wandsworth Volcanic Group in the New England region, which may have potential for epithermal style deposits and rhyolite hosted tin mineralisation (GS2010/0778 in [DIGS](#)).

Under development is the isotopic dating of cassiterite using the [LA-ICP-MS](#) technique which has demonstrated that cassiterite is a reliable mineral for age dating purposes. The dates, in conjunction with trace element analysis, aid provenance identification, age dating mineral systems, and measuring and quantifying the role of wall rock interaction in wallrock-hosted tin deposits. An ARC linkage project involving the Australian National University, Geological Survey of Queensland, Mineral Resources Tasmania and the Geological Survey of NSW is currently under review for funding.

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Grafton–Tenterfield airborne geophysical survey

An airborne geophysical survey planned for the far northeast corner of NSW will acquire approximately 100 000 line kilometres of data over a four month period. It will cover the energy-prospective Clarence–Moreton Basin (CMB) and part of the mineral-prospective New England Orogen including the Glen Innes, Grafton, Tenterfield, Lismore and Yetman regions. The survey will collect both magnetic and gamma-ray data from east-west flight lines with a 250m line spacing.

The survey area includes diverse metalliferous mineral deposit styles. Gold mineralisation is widespread and includes numerous orogenic vein systems, intrusion-related disseminated gold, granite-related hydrothermal veins and extensive alluvial deposits. Granite-derived, silver-rich polymetallic vein-style mineralisation occurs throughout the region, and significant granite-related tin-tungsten mineralisation is present in the Torrington and Wilsons Downfall–Amosfield areas.

The survey will cover the western part of the CMB which is lightly explored in spite of the presence of hydrocarbon shows indicating petroleum systems equivalent to those found in the Queensland part of the basin. Exploration for coal seam methane and conventional petroleum in the CMB is still at its early stage.

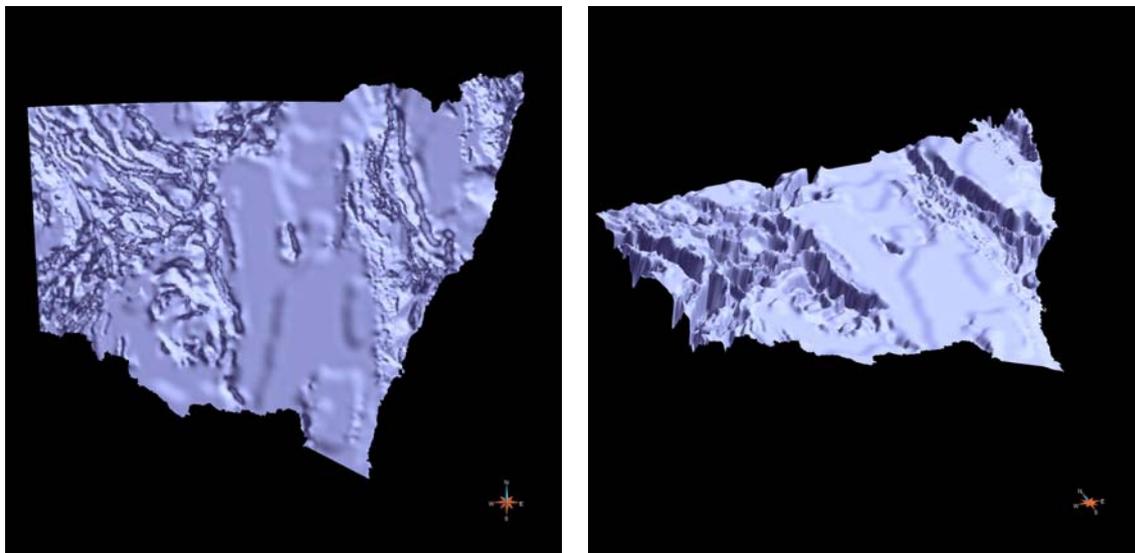
The project will provide strategic pre-competitive geological information that will boost mineral and petroleum exploration in the region. It will also provide an excellent data base for land use and natural resource management and increase the high resolution geophysical coverage of NSW from 84% to 88%.

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3d state-wide basement surface project to help exploration for hydrocarbons

The GSNSW has commenced a project to generate a 3d state-wide baseline surface which can be used in conjunction with data from various sources. The project aims to allow better definition of the age, geometry and relationships of tectonic structures. In areas where cover is sufficient, the baseline model will represent an oil-gas-coal centric basement surface. The project will also focus on better defining the edges of basins using seismic profiles, interpretations, cross-sections and mapped geological boundaries.

Contact: Stephen Dick, Senior Geoscientist, stephen.dick@industry.nsw.gov.au 02 4931 6721



A work-in-progress state-wide baseline surface in a 3d framework (plan and rotated view). The surface was generated from public domain data sources.

RECENT EVENTS

Information arising from project work is published in eminent research journal

GSNSW geoscientists Michael Bruce, Peter Downes, David Forster, Phil Gilmore, Dick Glen, John Greenfield, Kingsley Mills, Robert Musgrave and Cameron Quinn published papers on the geoscience information arising from their regional mapping and minerals systems work in a special edition of *Gondwana Research* titled [*Island Arcs: Their role in growth of accretionary orogens and mineral endowment*](#). The volume was guest edited by Dick Glen, Cameron Quinn and Wenjiao Xiao (Chinese Academy of Sciences, Beijing) and comprised 20 papers by international and Australian researchers.

The papers authored by GSNSW geoscientists are listed below:

D.B. Forster, G.R. Carr and P.M. Downes, Lead Isotope systematics of Ordovician to early Silurian deposits of the Macquarie arc—implications for arc substrate, *Gondwana Research* (2011) ([Forster et al., 2011](#)).

R.A. Glen, A. Saeed, C.D. Quinn and W. Griffin, U-Pb and Hf isotope data from zircons in the Macquarie Arc, Lachlan Orogen: implications for arc evolution and Ordovician palaeogeography along part of the east Gondwana margin, *Gondwana Research* (2011) ([Glen et al., 2011](#)).

J.E. Greenfield, R.G. Musgrave, M. Bruce, P.J. Gilmore and K.J. Mills, The Mount Wright Arc: a Cambrian rift-related volcanic arc developed on the margin of East Gondwanaland, Koonenberry Belt, eastern Australia, *Gondwana Research* (2011) ([Greenfield et al., 2011](#)).

N. Rawlinson, B. Kennett, E. Vanacore, R.A. Glen and S. Fishwick, The structure of the upper mantle beneath the Delamerian and Lachlan orogens from simultaneous inversion of multiple teleseismic datasets, *Gondwana Research* (2011) ([Rawlinson et al., 2011](#)).

STAFF MOVEMENTS

Marianne Bonnay has transferred from Geoscience Knowledge Management to the Environmental Sustainability Unit

Spencer Hopcraft has taken up a graduate officer position and will be on 6 months rotation between different sections of GSNSW

Bill Reid has left his position as geologist with the Broken Hill Interpretive Mapping Project, in Minerals Geoscience.

PRODUCTS AND ENQUIRIES

Internet product catalogue

The online [Geoscience Products Catalogue](#) includes over 240 hard copy maps and over 70 geoscience data packages (including geophysical data) on CD or DVD ROM.

Enquiries about purchasing products

Maps and data packages: geoscience.products@industry.nsw.gov.au: Tel: 02 4931 6503

Geophysical images and data: geophysics.products@industry.nsw.gov.au: Tel: 02 4931 6717

Counter sales: mineralpublication.orders@industry.nsw.gov.au Free call: 1300 736 122 Tel: 02 4931 6666

Online sales: <http://www.shop.nsw.gov.au/index.jsp>

General enquiries about products and services

Contact: Michael Hallett, michael.hallett@industry.nsw.gov.au: Tel: 02 4931 6724

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