

## Product News

# NEW YILGARN SYNTHESIS



A recently released Geoscience Australia Record uncovers one of Australia's key mineral provinces, the eastern Yilgarn Craton in Western Australia. The Yilgarn produces two-thirds of the gold and more than half the nickel mined in Australia.

The Record reports on research conducted at Geoscience Australia as part of the predictive mineral discovery Cooperative Research Centre's Y2 Project. The principal goal of the project was to determine the 3D architecture of the eastern Yilgarn Craton (EYC) and its evolution through time "to enable prediction of where within the terrane the location of major gold deposits is likely to occur". It is envisaged that the new datasets and new understanding developed by the Y2 project not only benefit explorers in the Yilgarn, but those in other terranes as well.

The main achievement of the Y2 project was the building of comprehensive 3D maps of Kalgoorlie-Kambalda and the Norseman-Wiluna region. The maps were built on a foundation of 2D solid geology maps from government agencies, universities and industry. These data were integrated with various geophysical data sets (seismic reflection, refraction, broadband recording, receiver function, gravity and magnetic data, plus various derivatives such as "worms"), geochemical data sets (e.g., from AMIRA P624), and geochronological data sets (from AMIRA P624 and earlier projects as well as published data). The result of this integration is a more holistic understanding of the Eastern Yilgarn Craton.

Record 2006/05 is structured around the six key outputs delivered by the project:

- An integrated geological and geophysical 3D map (model) for three specific regions within the EYC. These regions were the Kalgoorlie-Ora Banda region, the Leonora-Laverton region, and the Norseman-Wiluna region, the first two being nested within the later model
- Interpreted seismic sections for the 2001 seismic data recorded in the Leonora-Laverton region
- Tomographic model of the Kalgoorlie-Ora Banda region which links the region's velocity structure from the surface, through the base of the crust to the base of lithosphere with the integrated geological and geophysical 3D geological models
- Map of chalcophile elements across selected portions of the EYC
- Assessment of the utility of the new 3D data versus the 2D data at a regional scale

- Prospectivity analysis of the derived 3D models.

Extensive appendices follow each chapter, including all pertinent publications and deliverables. Acknowledgements as well as an outline of all data sources and intellectual property, and references complete the report.

The Y2 project was a predictive mineral discovery Cooperative Research Centre (*pmd*\*CRC) collaborative project between Geoscience Australia, the Geological Survey of Western Australia and the University of Western Australia. It also involved significant collaboration with the Australian National University's Research School of Earth Sciences, AngloGold Ashanti, Goldfields St Ives, and the former companies WMC Resources, and Placer Dome Asia Pacific.

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### Related articles

*AusGeo News 82*  
The Eastern Yilgarn in 3D

## Improved access to petroleum exploration well data

Originally launched in 2003 the National Petroleum Wells Database has become an extremely useful tool, giving petroleum explorers access to scientific and well header data for Australian petroleum exploration wells.

The web page provides users with access to a number of comprehensive databases, representing about 100 person-years of data entry completed by geologists, geochemists, biostratigraphers and technical staff.

Database information includes well header data, biostratigraphic picks, reservoir and facies data (porosities, permeabilities, hydrocarbon shows and depositional environments), organic geochemistry data (Rock-Eval pyrolysis, molecular and isotopic analyses), and organic petrological data (vitrinite reflectance, maceral analyses).

A major revision of the web page was released at the Australian Petroleum Production & Exploration Association (APPEA) conference in May. The updated web page includes many new and improved features to meet current government and industry needs including:

- easy retrieval of Acreage Release data
- an improved map for spatial searching and display of data
- ability to retrieve age restricted and isopach data for many data types in the database

- query and produce multiple summary reports (including graphs) for wells
- generation of multiple oil and gas reports for wells
- links to scanned documentation
- improved graphical displays of data.

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