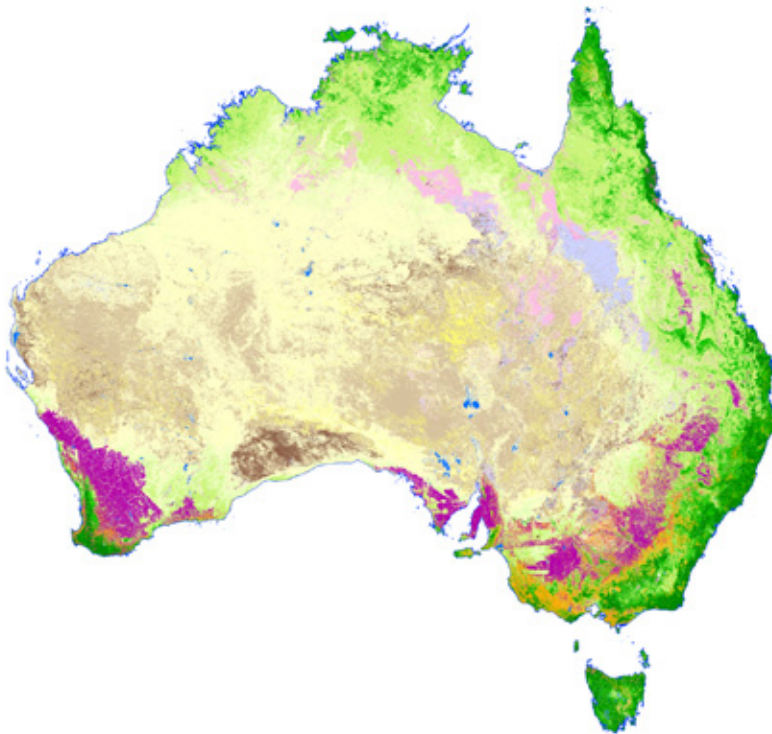


## The National Dynamic Land Cover Dataset

Geoscience Australia, with support from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), has recently completed the first comprehensive national dataset and map of Australia's land cover (figure 1). This will give land and resource managers and researchers the opportunity to analyse changing trends in Australia's vegetation cover.

Land cover is the observed biophysical cover on the Earth's surface including trees, shrubs, grasses, soils, exposed rocks and water bodies, as well as anthropogenic elements such as plantations, crops and built environments.



**Figure 1.** The Dynamic Land Cover Dataset of Australia is the first nationally consistent and thematically comprehensive land cover reference for Australia.

Australia's land cover changes constantly due to weather, seasonal changes and land use, so nationally consistent land cover information is essential to understanding and addressing a range of natural resource challenges. These include sustainable farming practices, management of our water resources, air quality, soil erosion, and our forests.

The Minister for Resources and Energy, Martin Ferguson AM MP, released the new map and dataset on 16 November 2011. The Minister pointed out that '...the land cover map and dataset will allow users to compare vegetation over time, at a national and local level, to monitor trends associated with short term changes brought on by cyclones, long term drought and bushfires, as well as cropping and broadacre agriculture'.

The map and datasets were produced in partnership with ABARES, who have also developed an information hub to assist land managers, planners and others, who need to know more about land use and land management practices, to use in conjunction with the new national land cover data.

Future updated versions of the map will identify actual changes in the land cover which could provide evidence of a need for action in areas such as water management and soil erosion, or that patterns of land use are changing due to economic, climatic or other factors.

Both datasets are now available free online via the Geoscience Australia website, or on CD ROM at cost of transfer from the Geoscience Australia Sales Centre. Hard copies of the land cover map are also available from the Geoscience Australia Sales Centre.

### *For more information visit*

**web** [www.ga.gov.au/earth-observation/landcover.html](http://www.ga.gov.au/earth-observation/landcover.html)

### *Related websites/articles*

The National Dynamic Land Cover Dataset

[https://www.ga.gov.au/products/servlet/controller?event=GEOCAT\\_DETAILS&catno=71071](https://www.ga.gov.au/products/servlet/controller?event=GEOCAT_DETAILS&catno=71071)

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) website  
[www.daff.gov.au/abares](http://www.daff.gov.au/abares)

Land Use and Management Information for Australia  
<http://adl.brs.gov.au/landuse/index.cfm?fa=main.welcome>

## New geomagnetic observatory in Western Australia

Geoscience Australia has established a new geomagnetic observatory near the country town of Gingin in southwestern Western Australia. The observatory, located about 90 kilometres north of Perth, will replace the Gngangara observatory. The Gngangara site has been increasingly disturbed, and occasionally vandalised, as the outer Perth suburbs have expanded in its direction over the last 10 years. It is also located on a large sand mining lease and mining operations are moving closer to the observatory site. Neither of these developments is compatible with the quiet conditions necessary for the operation of a geomagnetic observatory.

The new Gingin observatory will operate in parallel with the Gngangara observatory for a period of 12 months so that good station differences can be established between the two sites. After this period has elapsed the Gngangara observatory will cease operation.

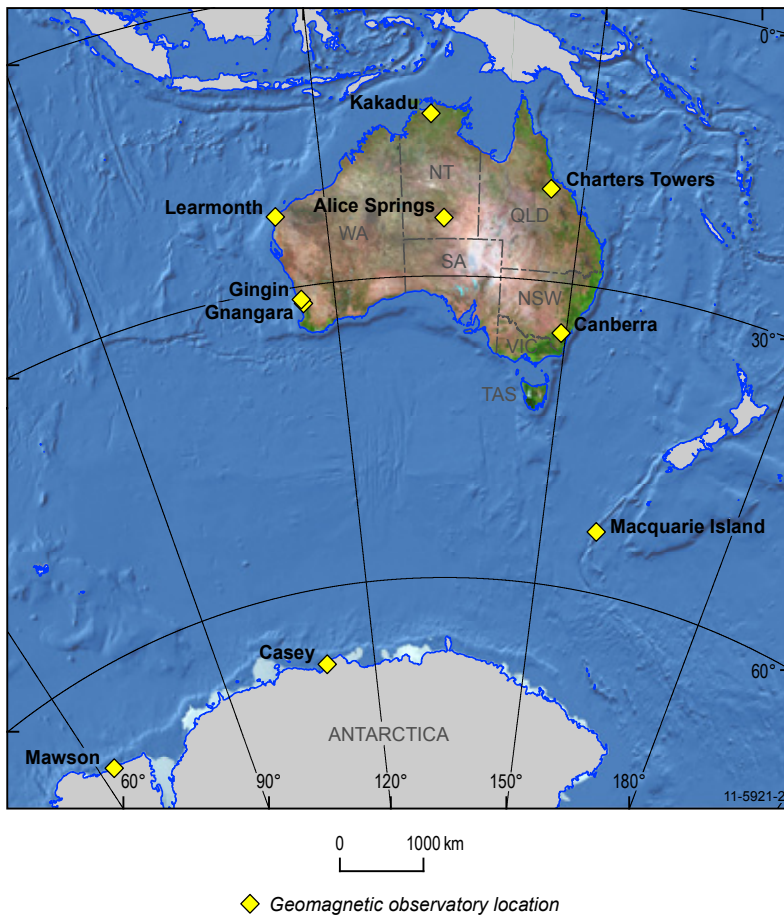
Gingin is the third geomagnetic observatory to operate in the southwestern corner of Western Australia. The first was established

near the small country centre of Watheroo in 1919 by the Carnegie Institution of Washington. In those days, and partly because of Watheroo's remoteness from Perth, the observatory was a relatively self-contained

**“Gingin is part of Geoscience Australia's network of geomagnetic observatories...”**

community consisting of tradespeople, domestics, and the families of the scientists and engineers who operated the observatory. The logistical challenges associated with this remote area eventually led to the relocation of observatory operations to Gngangara, closer to Perth, in 1957 and the closure of Watheroo in 1958, following a year of parallel operation.

Gingin is part of Geoscience Australia's network of 10 geomagnetic observatories in Australia and Antarctica (figure 1). They provide a wealth of information for a variety of purposes, ranging from natural resource exploration to navigation and space weather forecasting. The new observatory is expected to operate for at least 50 years considerably extending the 93 years of magnetic field monitoring that has taken place in southwestern Western Australia to date.



**Figure 1.** The new Gingin observatory is part of Geoscience Australia's network of 10 observatories on the Australian mainland and external territories.

### For more information

email [ausgeomail@ga.gov.au](mailto:ausgeomail@ga.gov.au)

## Update on 34th International Geological Congress—AUSTRALIA 2012

Australia will be hosting the 34th International Geological Congress (IGC) at the Brisbane Convention and Exhibition Centre between 5 and 10 August 2012, on behalf of the Oceania region. The Congress will encompass the interests of geoscientists from industry, academia and governments and promises to be the largest geoscience meeting ever held in Australia.

The Congress will also be the venue for the 2012 meetings of the International Union of Geological Sciences' Commissions, Task Groups and Joint Programs and incorporate the second Young Earth Scientists (YES) Roundtable and has the benefit of UNESCO patronage. The scientific sponsor is the International Union of Geological Sciences, and Vale, the world's second largest mining company, is the major commercial sponsor. The Australian Agency for International Development (AusAID) will also be providing support for the GeoHost program.

The 34th IGC will feature a wide-ranging scientific program as well as field trips, a large GeoExpo featuring commercial, government and academic exhibitors, training workshops and an education and outreach program.



Figure 1. The Brisbane Exhibition and Convention Centre is the venue for the 34th International Geological Congress.

### **Fourth Circular now available**

The Fourth Circular includes details of the:

- fee structure for the Congress and accommodation details
- fee structure and the logistics of the IGC Field Trips across Australia and Oceania
- Plenary 'hot topics' and speakers
- Symposia and Keynote Speakers
- Professional Development Workshops and Short Courses



### **Field trips**

The 34th IGC is planning 50 pre- and post-Congress field trips which will offer diverse opportunities to experience the fascinating geology of the region. These field visits will include all Australian states and the Northern Territory. In addition, there will be field trips to New Zealand, Malaysia, New Caledonia and Papua New Guinea. There will also be a range of one-day tours available during the conference.

### **Plenary sessions**

The Plenary sessions are:

- The Earth and Man: Living with a Restless Earth
- What does the geological record tell us about past climates in relation to projected climate change?
- Energy in a carbon-constrained world
- Resourcing Tomorrow: meeting the needs of a growing population
- Digital Earth—The information explosion

Plenary Speakers confirmed to date include: Professor Iain Stewart (the BBC's *How Earth Made Us* series), former Shell





*in brief*

chairman Lord Ron Oxburgh and Vale’s Executive Director for Exploration, Energy and Projects Management, Eduardo Ledsham.

**Symposia and Keynote Speakers**

The overall theme for the Congress is ‘Unearthing our Past and Future—Resourcing Tomorrow’ which recognises the crucial contributions of the geosciences in meeting societal needs and sustaining planet Earth. There will be more than 220 Symposia under 37 Themes covering all facets of the geosciences.

The program, which emphasises future mineral and energy supplies, is underpinned by Australia’s experience in developing a strong and sustainable mineral and energy resources sector. Other

“The most advanced element of the program will cover a range of topics from the online worldwide geological map to data information/standards.”

major themes include climate change and its impacts on natural resource management and communities, and understanding and mitigating geohazards.

The most advanced element of the program will cover a range of topics from the online worldwide geological map to data information/standards.

A highlight of the Congress will be the release of information from major geological and geophysical surveys conducted over a vast region of central and eastern Asia with high mineral and energy resources potential. The maps and datasets are the result of collaboration between China, Russia, Kazakhstan, Mongolia and South Korea which was undertaken to provide new insights into the resource potential of this large under-explored region.

**Professional Development Workshops**

Twenty nine Professional Development Workshops are scheduled and include topics such as: sustainable mining, carbon sequestration, geohazards and groundwater. The Workshops, held in conjunction with the IGC, will be of two types: Professional fee-based workshops and training which will reflect Australian and New Zealand international assistance objectives and training workshops designed for participants from developing countries. Geoscience Australia is playing a key role in securing funding for and organising these workshops as well as contributing to them.

The 34th IGC is being organised by the Australian Geoscience Council (AGC) the peak body for Australia’s major professional and learned societies. These societies are all investing in the IGC which will take the place of a number of their regular meetings in 2012.

**For more information or to register or receive regular updates please visit**

email [info@34igc.org](mailto:info@34igc.org)  
web [www.34igc.org](http://www.34igc.org)



## New appointments

### ***Dr James Johnson—Energy Division***

Dr James Johnson has been appointed as Chief of Geoscience Australia's new Energy Division which has responsibility for all of the agency's energy-related activities, including offshore and onshore petroleum work as well as geothermal energy. The work of the Division overlaps with the government's priority on Australia's Clean Energy Future through a major program on Carbon Capture and Storage. Dr Johnson will also be responsible for the new International Group which is coordinating and developing our growing relationship with AusAID (Australia's Agency for International Development).

Dr Johnson was appointed Deputy CEO of Geoscience Australia following the promotion of Dr Chris Pigram to CEO in June 2010. As Chief of the former Onshore Energy and Minerals Division, his main focus was ensuring the Division's programs were relevant and applicable to exploration in Australia, particularly undercover exploration, and the promotion of Australia as an investment destination. He was responsible for implementation of the Onshore Energy Security Program (2006–11) which focussed on stimulating exploration for energy resources, including non renewable resources such as hydrocarbons, uranium and thorium as well as renewable geothermal energy resources.

When Dr Johnson joined Geoscience Australia in March 2006 he brought a wealth of experience in mineral exploration, mine geology, research management and leadership to the agency. He had also been a member of the Executive Research Committee of the Predictive Mineral Discovery Cooperative Research Centre (pmd\*crc).

After graduating with First Class Honours from Sydney University in the mid-1980s, Dr Johnson joined Western Mining Corporation



**Figure 1.** Dr James Johnson, Deputy CEO and the new Chief of Energy Division.

(WMC) at their nickel mines in Kambalda before moving to Olympic Dam as a Mine Geologist. He then undertook a PhD at the Australian National University on Olympic Dam focussed on identifying metal sources followed by two years of post-doctoral studies at the University of Ottawa in Canada studying Australian and Canadian deposits similar to Olympic Dam (iron oxide, copper-gold).

### ***Dr Andrew Barnicoat—Minerals and Natural Hazards Division***

Dr Barnicoat was appointed as Chief of Geoscience Australia's Minerals and Natural Hazards Division in late November 2011. Prior to Geoscience Australia's recent restructure he was Acting Chief of the former Geospatial and Earth Monitoring Division.

Dr Barnicoat graduated with a Bachelor of Science with Honours from the University of Leeds in 1977. He completed his PhD at the University of Edinburgh on the 'Thermal History of Parts of the Lewisian Gneiss Complex, NW Scotland'.

Between 1979 and 2003, Dr Barnicoat was Reader in Petrology and Lecturer at the University of Leeds and also a Lecturer at the University of Wales. In 1992 he founded the Minerals Group of



**Figure 2.** Dr Andrew Barnicoat, the new Chief of the Minerals and Natural Hazards Division.

Rock Deformation Research (a university-owned consultancy company). The company worked with the minerals industry applying leading-edge research to practical problems. This work involved the synthesis and application of ideas and techniques from a wide range of geological disciplines for a range of large and small companies. These included developing new models for the formation of the world's largest gold deposits in South Africa, and developing new methodologies for use in exploration as well as the mining environment.

Dr Barnicoat joined Geoscience Australia in 2003 as a Principal Research Scientist, Research Integration for the Predictive Mineral Discovery Cooperative Research Centre (pmd\*CR). This role involved scientific leadership and management of the research program. He was promoted to Group Leader, Energy Mineral Systems in 2006 and was responsible for leading the regional and commodity-based work which drew on the new data acquired

as part of the Onshore Energy Security Program.

Dr Barnicoat has undertaken research on a wide variety of topics across the geosciences, including mineral systems and mineral deposits, petrology, structural geology and geochronology. His research has covered the UK, Sweden, France, Spain, Switzerland, Italy, Austria, Canada, USA, Saudi Arabia, South Africa, Malawi, India (Himalayas), Pakistan (Karakorum Mountains), Papua New Guinea and Australia.

### ***Dr Stuart Minchin—Environmental Geoscience Division***

Dr Stuart Minchin joined Geoscience Australia in January as the Chief of the new Environmental Geoscience Division. Dr Minchin has broad experience in water and environmental information sciences, particularly in the area of Earth observation and water resource management.

Dr Minchin has a Bachelor of Science with First Class Honours from the Water Studies Centre and Cooperative Research Centre for Freshwater Ecology at Monash University in Melbourne. He also successfully completed a PhD at the same university on 'The role of extracellular enzymes in the bio-availability of nutrients in natural and waste waters'.

His career has been focused on the development and delivery of improved natural resource information and knowledge to stakeholders and the public. Dr Minchin has previously held executive positions such as Research Director (Environmental Observation and Landscape Science) with CSIRO Land and Water and Principal Scientist (Water Assessment and Research) with the Victorian Department of Sustainability and Environment. These positions involved the direction of research priorities and the specification and management of large-scale natural resource observation and information management programs conducted by both the private and public sector.

Dr Minchin has a strong background in the management and computer modelling of water and environmental data and the online management, interoperability, and delivery of data, modelling and reporting tools for improved natural resource management. He



**Figure 3.** Dr Stuart Minchin, the new Chief of Environmental Geoscience Division.

conceived of and developed the Victorian Water Resources Data Warehouse, the first online database of water information in Australia, and later oversaw its expansion to include groundwater and community monitoring information. While at CSIRO, he led the development of a shared vision for a comprehensive Great Barrier Reef Information System

(eReefs), which will incorporate in-situ and space-based monitoring and cutting-edge modelling to provide accounting and forecasting of water quality across the Great Barrier Reef region. He also led the

delivery of a successful pilot project to showcase technology possibilities around the eReefs concept.

### **Tony Marks—Corporate Services**

Tony Marks has recently joined Geoscience Australia as the new General Manager Corporate Services, delivering financial and human capital leadership, information and communication management and delivery of Geoscience Australia's extensive data and products and its major business transformation change program.

Tony is an experienced corporate executive with sophisticated financial, corporate strategy and leadership skills. He has initiated and led major organisation-wide strategic reforms, combining financial, human capital and technology reforms across diverse workforces, delivering a wide range of successful business outcomes. His strength lies in identifying business improvement opportunities and tailoring communication to staff, executive or stakeholder audiences to achieve support. He has a passion for building customer-focussed, technically competent and efficient teams and supporting resources which are clearly aligned and identifiable as serving the key objectives of the organisation.

Prior to joining Geoscience Australia Mr Marks had been Deputy CEO (Corporate) at the Australian Institute of Criminology. In this role and an extended period acting as CEO he delivered two years of record revenue and research output during a period which included two external reviews of the organisation and setting a new strategic agenda for the agency in response to new government and portfolio policy agendas.

Earlier he held senior financial roles with Defence Housing Authority and ActewAGL where he was responsible for financial management of multi-billion dollar asset bases, commercial contract management and business transformation through multiple integrated



**Figure 4.** Mr Tony Marks, the new General Manager Corporate Services.

financial and operational systems and processes.

Tony holds a Bachelor of Commerce (Accounting) and a Graduate Diploma in Applied Finance. He is a fellow of CPA Australia, the Financial Services Institute of Australia and Taxation Institute of Australia. He is currently the Deputy President of CPA Australia's ACT Division and Chair of its Management Accounting Committee.

### **For more information**

email [ausgeomail@ga.gov.au](mailto:ausgeomail@ga.gov.au)



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