



## Just some of the topics being covered at the Australian Earth Sciences Convention 20-24 July 2008, Perth

With over 450 papers being presented by Australian and international speakers at the 2008 Australian Earth Sciences Convention, and over 1000 delegates expected to attend, this mega-conference is not to be missed!

Here is just a selection of the huge range of topics being featured over the four days of the Convention. Go to [www.iceaustralia.com/aesc2008](http://www.iceaustralia.com/aesc2008) to view the full Convention program and see links below to the individual programs for each of the Convention's five major streams.

### Media contact

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Media are welcome to contact Patrick Daley, the Convention Media Manager, on tel: 0408 004 890 for further information on the Convention and its program.

### The five major streams (and links to the full programs for each stream)

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- Geoscience in the service of society  
[www.iceaustralia.com/aesc2008/pdf/Program\\_Geoscience.pdf](http://www.iceaustralia.com/aesc2008/pdf/Program_Geoscience.pdf)
- Resources – foundation for our future  
[www.iceaustralia.com/aesc2008/pdf/Program\\_Resources.pdf](http://www.iceaustralia.com/aesc2008/pdf/Program_Resources.pdf)
- The evolution of life and the solar system  
[www.iceaustralia.com/aesc2008/pdf/Program\\_Evolution.pdf](http://www.iceaustralia.com/aesc2008/pdf/Program_Evolution.pdf)
- Earth's environments – past, present and future  
[www.iceaustralia.com/aesc2008/pdf/Program\\_Earths\\_Environment.pdf](http://www.iceaustralia.com/aesc2008/pdf/Program_Earths_Environment.pdf)
- The dynamic Earth – from crust to core  
[www.iceaustralia.com/aesc2008/pdf/Program\\_Dynamic\\_Earth.pdf](http://www.iceaustralia.com/aesc2008/pdf/Program_Dynamic_Earth.pdf)

## Plenary speakers

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- **Mawson Lecture 2008**  
**Making mountains: geological drivers and environmental consequences**  
Professor Peter Cawood, School of Earth and Geographical Sciences,  
University of Western Australia
- **Australia's energy future**  
Dr Peter McCabe, CSIRO Petroleum Resources Division
- **What does the geological record tell us about climate change?**  
Professor Malcolm Walter, Australian Centre for Astrobiology
- **The Yarragadee Aquifer**  
Phil Commander, WA Geological Survey and Department of Water
- **The Tsunami risk to Australia and what is being done to mitigate it**  
Dr Barry Drummond, Geoscience Australia
- **The dynamic Earth – the new perspective from deep seismic imaging**  
Professor Michael Gurnis, California Institute of Technology, USA
- **New views of the chemistry and geology of the crust of Mars**  
Dr Jeffrey Taylor, Hawaii Institute of Geophysics and Planetology, USA

## Mining and exploration

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### *Exploration and resources*

- breakthroughs in resource exploration: how effectively new technologies and research concepts are driving exploration outcomes
- Australia and the integrated ocean-drilling program
- Australia's onshore mineral systems and exploration potential
- Australia's mineral endowment
- Australia's uranium deposits, resources and production in a global context
- international hydrocarbon prospects
- stimulating greenfields mineral exploration: the role of geochemistry databases
- being smarter with our data
- greenfields prospectivity analysis
- reinterpretation of old mining camps leading to amazing new discoveries

- exploration strategies by mining companies
- pre-competitive geoscience by government agencies
- gold and diamond exploration: an image-analysis approach
- gold deposits – case studies of various regions in Australia
- in-situ gold resources – what are they worth?
- the gold mineral system: do we know what we don't know?
- drilling technology advances – neutron activation borehole logging
- mineral exploration-related research in the Minerals Down Under National Research Flagship
- how the Co-operative Research Centre for Landscape Environments and Mineral Exploration has provided breakthroughs in exploration – 14 years of innovative regolith geoscience
- new concepts in resource assessment
- the AuScope National Virtual Core Library
- do bull elephants roam in herds? Metallogenic endowment of cratons, belts and districts
- Cobar-Bourke region, NSW – mineral prospectivity study
- geology and resources of New Guinea
- mineral exploration in New Zealand
- NSW – new frontiers, new opportunities
- quantitative resource assessment – a precursor to prospectivity analysis
- undiscovered gold endowment in central Victoria
- predictive modelling of gold deposits in Eastern Victoria
- geochemical survey in the highlands of PNG
- technology and integration: improving exploration success
- carbonate spots in central Victoria: indicator for gold?
- what does the regional setting of the Voisey's Bay (Canada) nickel deposit tell us about where to find similar deposits?
- the National Geochemical Survey of Australia

- the platinum hosting Merensky Reef of the Bushveld Complex, South Africa – new research on its genesis
- program initiatives to attract exploration investment in Queensland

### ***Exploration – Western Australia (a selection only of numerous papers)***

- Western Australia's pre-competitive geoscience program – underpinning exploration
- evaluating the geology and petroleum prospectivity of frontier exploration areas within the offshore north Perth Basin
- the Flying Fox Nickel Deposit, Forrestania Greenstone Belt, WA
- the Pilbara drilling project: results and perspectives
- Canning Basin oil and gas potential
- Tropicana Deposit: a new gold province in Western Australia
- using numerical modelling to target undiscovered gold in a brownfields environment (an example from Tarmoola in Western Australia)

### ***Mineral mapping and modelling***

- next generation mineral mapping in Queensland
- the move from 2D to 3D imaging and its impact on resource exploration
- taking 2D regional-scale mineral potential analysis to the next level
- the TasExplore initiative – updating the 3D geological model of Tasmania
- rediscovering Victoria in 3D

### ***Hydrogeology and groundwater in mining***

- the role of hydrogeology in mining, and impacts on groundwater
- looking for mine water supply in areas of limited water allocation

### **Mining and exploration business approaches, investment and psychology**

- from takeover to takeoff: issues in managing data transfers and migration in the current frenetic M&A environment

- the psychology of decision-making in mineral exploration – a key to improving return on investment
- Australian junior exploration floats and their implications for IPOs
- Fortescue Metals Group Ltd – creating shareholder value from exploration
- Integra Mining’s exploration strategy and discoveries: does one size fit all?
- initiatives to attract exploration investment
- long-term mineral exploration and development planning – the key to reducing risks

### **Energy and sustainability**

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- carbon sequestration technology
- carbon-dioxide storage sites: from prospects to pilots
- clean coal technology
- Australia’s geothermal energy resources and their exploration
- Hot Dry Rocks as energy resources
- Geoscience Australia’s onshore energy security program – an update of planned marine surveys and initial results
- Geoscience Australia’s offshore energy security program – the geothermal energy project
- Sydney Basin geo-sequestration evaluation project, Sydney NSW

### **Geohazards**

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- volcano and earthquake risk in the Asia-Pacific region
- the role of geoscience in developing the Indian Ocean Tsunami Warning System
- toward an understanding of Tsunami risk in Tasmania
- Tsunami hazards in south-eastern Australia
- rupture characteristics of recent Tsunamigenic earthquakes in Australasia
- 3D modelling of natural hazards using Geographic Information Systems
- towards a better assessment of the seismic hazard in southwest WA

- a regional landslide susceptibility program in Tasmania
- the ‘Lusi’ Mud Eruption, Sidoarjo, East Java – a unique geological disaster
- EF Pigot SJ: the priest who knew about earthquakes
- seismicity in the Carnarvon Basin
- earthquake magnitude in the context of rupture harvesting efficiency in different geodynamic environments

### **Meteorites, asteroids and impacts**

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- the impact of impacts: impact as a geological process and significance in economic geology
- the geophysical signatures of Australia’s meteorite impact structures
- a newly discovered meteorite impact crater, Ophthalmia Range, WA
- sedimentary and petrologic evidence of a Tookoonooka impact event ejecta layer, Australia
- direct field evidence for Archaean and early Proterozoic Eros-scale asteroid impacts and major geodynamic consequences, Kaapvaal and Pilbara Cratons
- hydrothermal systems associated with meteorite impacts
- new perspective on the lunar cataclysm from crater density populations

### **Earth’s formation and geological history**

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- early evolution of the Earth and Moon
- what drives major episodic reorganisations of the plate-mantle system?
- analysis of microfossils and indicators of cell division
- underwater and land-based fossil discoveries
- supercontinents, supermountains and the rise of atmospheric oxygen
- the formation of the Andes
- integrating deep Earth dynamics in paleogeographic reconstructions of Australia
- the dynamics of active continental margins and shifting continents
- formation of a supercontinent, framework of the super-resource: the East African Orogen and the Amalgamation of Arabia

- evolution of the Gawler-Adelie Craton: links with Antarctica, northern Australia and basement of the Trans-Hudson Orogen
- were there two or three Proterozoic supercontinents?
- tectonics, plumes and supercontinents: the energy link
- position of the end-Permian mass extinction level and Permian-Triassic boundary in Australia
- the Cambro-Ordovician, the Centralian Superbasin and trans-Gondwanan Seaways
- mantle melting
- Orogen-scale tectonic shuffle zones
- geodynamics and basin evolution
- presence and recycling of early crust in the Yilgarn Craton, Western Australia
- the tilting continent and other geomorphic signals of mantle flow beneath Australia
- new insights into landscape evolution
- mass wasting along the East Australian Continental Slope
- a volcanic caldera habitat for Earth's oldest stromatolites from the North Pole Dome, WA
- modern deep biosphere in 2,724 Million year old stromatolites of the Tumbiana Formation, Pilbara Craton, Australia
- subsurface alteration associated with actively forming seafloor massive sulfide mineralisation in New Zealand
- continental growth
- characteristics of the Australian Crust from seismic reflection profiling
- geomorphology, crocodiles and mineralisation in Morobe Province, PNG

### **Solar system's formation and geological history**

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- the formation and early evolution of the solar system
- formation of the inner solar system: new insights revealed by spacecraft data
- dust to planets: what have we learned from Genesis and Stardust Samples?
- chronology of the early solar system through short-lived and long-lived chronometers

- Martian landforms and processes

### **Food, water and environmental security**

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- natural and anthropogenic sources of groundwater contamination in the Himalayan mountain belt
- geoscience and food traceability
- volatile organic compounds in groundwater and drinking-water supply wells of the United States
- acidic groundwater: its distribution, causes, risks and treatment
- dryland salinity and woodland biota in a 'warming' south eastern Australia: endemic flora and fauna to the rescue
- infrastructure planning and contamination management
- using airborne electro-magnetic and hydrogeological data to assist in land use management along the Murray River in NSW and Victoria

### **Groundwater exploration**

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- joining forces for geoscience knowledge: groundwater and mineral exploration, same approach, different targets
- application of mineral exploration mapping tools and concepts to groundwater resource evaluation

### **Climate, climate change and weather**

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- the Top Down paradigm: do plants control groundwater and weathering in semi-arid Australia?
- global warming and sea-level change
- coal seams: multi-scale resolution records of climate change
- milestones in the evolution of the atmosphere with reference to climate change
- predicting hydrological threshold events in response to climate
- age and stratigraphic constraints on the evolution of mega-lake Bungunnia: insights into Plio-Pleistocene climate change in southern Australia



## **Marine eco-systems, oceans and sea-level research**

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- long-term sea level fluctuations and paleogeography driven by ocean basin dynamics
- sea level reconstructions from fossil coral reefs along the Cape Range coast, WA
- geological evidence for past sea-level change
- restoration of marine ecosystems following the Permian-Triassic mass extinction in Gondwanan Interior sea
- drowned reefs in the Great Barrier Reef and Hawaii: a new era in IODP coral reef drilling
- submarine ecosystems

## **Geotourism**

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- taking geology to the public: geotourism and geoparks
- discovery trails to early Earth: a traveller's guide to the East Pilbara
- rock tourism and the Black-footed Rock Wallaby
- the difference between a rock and a hard place: using geology to add value to the nature-based tourism experience
- geotourism and geoparks: promoting education for sustainable development

## **Education and learning**

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- The University of the Sea and the benefits to learning of active participation in a research cruise
- tertiary geoscience education in Australia: what future?
- making public education and outreach about Earth Sciences work
- the Teacher Earth Science Education Programme and Geoscience Pathways: a national scheme to assist teachers and help students discover Earth Science and associated career paths

## **Other topics**

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- geochemistry of termite mounds in Western Australia
- genesis of 3.43 billion year old stromatolites

- morphological complexity and diversity in the Pilbara Craton
- environments of life at 3.5 – 3.3 Ga: evidence from the East Pilbara Terrane, WA
- the art and science of data analysis
- challenges in fault modelling of coal seams
- international geoscientific drilling projects
- AuScope: Australian Earth Science Research Information Infrastructure
- the role of land use geoscience in urban planning and development in the Goldfields of WA
- mineral resource mapping and its role in public policy development
- a perfect sulphide storm at Mt Isa
- comparison of ancient and modern sand

**Case studies and research from countries and regions including:**

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- Australia – WA, NSW, Victoria, SA, Tasmania, Queensland and the NT
- New Zealand
- The Himalayas
- The Andes
- Italy
- Papua New Guinea
- China
- Thailand
- USA
- Laos
- Tanzania
- Fiji
- Borneo
- Russia
- Sweden
- Niger
- Antarctica
- South Africa
- Jordan
- Brazil
- Canada
- The Moon and the Solar System!

**Speakers from many organisations including:**

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- CSIRO

- State Government geological survey departments
- Australian and international universities
- Centre for Exploration Targeting, University of Western Australia
- Co-operative research centres
- consulting firms
- Geoscience Australia
- Jet Propulsion Laboratory
- Institut De Physique Du Globe De Paris
- State Government departments of water
- From Oil to Groundwater (FrOGTech)
- Western Australian Museum
- Natural History Museum
- Anglo Coal
- Hot Dry Rocks Pty Ltd
- BHP Billiton
- Rio Tinto
- ConocoPhillips
- Fortesque Metals
- AngloGold
- numerous resource exploration and mining companies
- US Geological Survey
- Intergovernmental Oceanographic Commission of UNESCO
- Mt Stromlo Observatory
- Mars Society of Australia
- The National Trust of Australia
- Geological Society of Australia
- Australian Institute of Geoscientists
- Geological Society of America
- Australian Geoscience Council

*Overview accurate as at 8 May 2008*