AESC
australian earth sciences convention

Uncover Earth's Past to Discover Our Future

26 - 30 June 2016 – Adelaide Convention Centre

aesc2016.gsa.org.au

Groundwater

THEME COORDINATOR:
Ken Lawrie

The AESC brings together 40 presentations that cover many aspects of Groundwater as part of a full program on Uncover Earth's Past to Discover Our Future. Groundwater forms a significant part of the 2016 AESC, and covers topics relating groundwater to the environment, mineral exploration, mining, and unconventional energy.

360 papers and 135 posters will be presented over the four days of the conference from June 26 – June 30. Presentations come from Australasian university students and researchers, Australasian government organisations including Geoscience Australia, and CSIRO, and leading industry explorers, miners and their service companies.

Mineral Endowment: Formation and Exploration of Mineral Deposit; Their Tectonic and Geochemical Environment and Significance

Earth's Environment: Past to Present

Tectonics of the Planet: Craton and Continental Formation and Evolution, Ocean Plate Tectonics, Plate Margin and Plate Interior Tectonism

Deep Earth Geodynamics: Core, Asthenosphere and Lithosphere Dynamics, Coupling the Dynamic Deep Earth with Surface Tectonics

Geoscience and Society Education, Integration and Translation of Earth Sciences for Societal Benefit

Earth Science for Energy: From Hydrocarbons to Renewables

SYMPOSIA

The 40th Anniversary of Olympic Dam Symposium

UNCOVER Symposium: The future of under cover exploration

AuScope 10 Year Anniversary Symposium

Early-Mid Career Geoscientist Symposium

Sprigg Symposium: Earth's Evolving Climate

Australian Government
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GEOLOGICAL SOCIETY OF AUSTRALIA

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PHOTO: Pleistocene sediments of the Hindmarsh Clay (red) and unconformably overlying Bridgewater Formation (white) in cliff exposures at Balgowan, Yorke Peninsula, South Australia. Photo courtesy of Caroline Forbes

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Groundwater and Environment – past and future

This session will explore future climate impacts on groundwater systems, as well as those that advance the understanding of 'fossil' groundwater systems.

The relationship of these investigations to groundwater management will be addressed.

KEYNOTE

Prachi Dixon-Jain:
Groundwater resource vulnerability assessments in SW Pacific Island nations: Identifying communities at risk, and climate change adaptation strategies

Ken Lawrie:
Netotectonic controls on Australia's surface and groundwater systems

Michael Friedel:
Smart aquifer characterization and mapping with machine-learning and evolutionary techniques

Axel Suckow:
Deep systems and old groundwater: new noble gas tools and a shift in paradigms for interpreting established tracers

Michael Short:
Tracing salt cycling in a small endorheic basin using chloride/bromide ratios and stable halogen isotopes

Tim Ransley:
The Great Artesian Basin - mapping the basin architecture and variations in water chemistry

Zhuheng Hu:
Hydroclimate responses to increases in greenhouse gas concentrations and land use and land cover changes

HanCheng Lu:
Influence of bimodel vertical wind shear on typhoon structure and intensity

Groundwater in mineral exploration and mining

This session will highlight the use of novel techniques, including hydrochemical methods, in mineral exploration, and present research into the impact of mining on groundwater systems (groundwater flow, groundwater contamination and remediation, and subsidence).

KEYNOTE

David Gray:
Hydrogeochemistry in Australia: Challenges and Possibilities

Tim Munday:
Working with the minerals industry in facilitating outback water solutions for remote parts of South Australia - The Goyder Long-Term Outback Water Solutions (G-FLOWS) Eyre Peninsula Project.

Nathan Reid:
Can drilling fluids be used as a mineral exploration sampling medium?

Robert Thorne:
Regional hydrogeochemistry of the Capricorn Orogen, Western Australia

Tim Munday:
Uncovering the groundwater resource potential of Murchison Region of Western Australia through targeted application of airborne electromagnetics

Ian Brandes de Roos:
Sedimentary basins for geothermal energy: the Montgomery House example

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Groundwater and Unconventional Energy

This session will explore new insights into the hydrogeology of groundwater systems related to coal seam gas, shale resources, CO_2 geosequestration and geothermal energy. It will encompass the hydrostratigraphy, tectonics, hydrochemistry and hydrodynamics of such systems. 'The session will examine the evidence for groundwater processes including inter-aquifer leakage, the recognition of natural fugitive emission zones, and the potential for near-surface impacts.

KEYNOTE

Steven Lewis:
BA foundations rock! How geoscience underpins the bioregional assessments

Andrew Moster:
CSG in the GAB – changing our understanding of basin hydrodynamics

Ian Brandes de Roos:
Sedimentary basins for geothermal energy: the Montgomery House example

Yohannes Didana:
Magnetotelluric monitoring of hydraulic fracture stimulation at the Habanero Enhanced Geothermal System, Cooper Basin, South Australia

Axel Suckow:
A multi-tracer study reveals the Hutton Sandstone aquifer as a double porosity system

Matthias Raiber:
Integrated geological, hydrogeological and groundwater modelling assessment of potential impacts of coal seam gas activities: an example from the Clarence-Moreton bioregion

Sam Matthews:
Tracking CO_2 geosequestration using downhole gravity gradiometry, Otway Basin, Victoria, Australia

New developments in groundwater and environmental mapping, characterisation, assessment and modelling

New approaches and technologies for the rapid cost-effective, mapping, characterisation, monitoring and visualisation of complex natural hydrological (surface and groundwater) systems are currently being developed. This session will investigate advances in the use of remote sensing technologies and advanced computational capabilities for mapping surface and groundwater systems; advances in the use of geophysical and hydrogeophysical techniques; new hydrochemical and hydrodynamic methods and technologies for the characterisation of groundwater systems, aquitards and aquifers; and advances in the modelling of groundwater systems.

KEYNOTE

Adam Lewis: The Australian Geoscience Data Cube: Transforming our ability to map and monitor the land surface with petabytes of Earth observation data

Ross Brodie: Developing and testing hydrogeological conceptual models – some key learnings from the Broken Hill Managed Aquifer Recharge (BHMAR) project

Mark Keppel:
A hydrochemical characterisation of aquifers and springs near Lake Blanche, Lake Eyre Basin, South Australia

Graham Heinson:
Electrokinetic monitoring of groundwater flow in fractured rock media

Robert Andrew:
Estimation of GRACE water storage components by temporal decomposition

Irina Emelyanova:
Determining porosity-permeability relationships from core plugs for aquitard formations in the Gunnedah Basin, Australia

Lutz Gross:
Large-scale 3D resistivity inversion of subsurface fluid injection monitoring data using adjoint state methods

Tim Evans:
Unravelling the enigmatic Galilee Basin, insights from geological modelling for the Galilee Bioregional Assessment

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SPEAKERS:

KEN McCLAY
(Royal Holloway University of London): Thick and thin-skinned contraction – Inversion in orogenic systems.

RICHARD GOLDFARB
(Colorado School of Mines; China School of Geosciences, Beijing): Gold deposits in metamorphic rocks: Why are we getting more confused?

PAUL HOFFMAN
(Harvard University): Dates and dynamics – Snowball Earth comes of age

SANDY STEACY
(University of Adelaide): Forecasting of tectonic and induced earthquakes

FIELDTRIPS AND WORKSHOPS:

A variety of pre-, mid- and post-conference field trips are also scheduled with the conference

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One Day Only Non-Member	$620.00

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For further details please contact:
Anna Petts: **anna_petts@yahoo.com.au** or
Caroline Forbes: **caroline.forbes@adelaide.edu.au**

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