



Newsletter of the Australian Chapter of the *International Association of Hydrogeologists*

**March to June 2017
Volume 33, No. 2**

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International Association of Hydrogeologists Australian National Chapter

The International Association of Hydrogeologists is a professional association for those within disciplines related to groundwater, its occurrence, utilisation, testing and management. IAH is a scientific and educational organisation that is truly international, and was established to foster closer ties, cooperation and information exchange related to the study of groundwater. IAH is non-government and non-profit and has over 4000 members internationally from around 120 countries. The Association is affiliated with the International Union of Geological Sciences (IUGS), and was founded during the 20th International Geological Congress in 1956. By its statutes the IAH is an association of individuals and corporate members, and not a federation of national committees. National groups do, however, organise local meetings and other activities. A proportion of the national committee membership goes to the local organisation to support these activities, the remainder to the international body. The country of the international secretariat is changed every several years. The IAH publishes Hydrogeology Journal, various workshop and conference proceedings and an international newsletter.

The main objectives of the IAH are to promote international and national cooperation between involved scientists and engineers; sponsor international and national technical/management meetings and symposia on hydrogeology; publish hydrogeological reports, papers and maps; establish investigation commissions and working groups to report on special topics; encourage the international application of relevant approaches and techniques for the benefit of the hydrological and human environment.

Our national chapter was founded in 1983 and is one of the most active. Activities tend to be organised locally within each state and territory, but national activities also occur. Each state body has its own meetings, usually monthly. Conferences are held in Australia around every two to three years, and seminars on a more frequent basis.

Membership Requirements: IAH will accept as individual members anyone directly or indirectly engaged in study or research on, or management of water in its various forms related to hydrogeology, if sponsored by two members in good standing. Companies and research organisations can apply for corporate membership. The current membership categories and annual subscriptions for 2015 (see www.iah.org.au) are:

▪ Member	\$140
▪ Online member	\$120
▪ Student	\$55 (full time students)
▪ Online Student Member	\$35
▪ Corporate member	\$790
▪ Partial sponsor	\$155
▪ Full sponsor	\$190
▪ Retired	\$75

We are pleased to announce that the student membership fees have been reduced by \$20 in 2015 as an added incentive for full-time students to become IAH members. In addition, we have maintained the Member and Online Member fees at their current

level, despite a rise in the IAH International fees for these membership categories for 2015.

Membership of this professional association is tax deductible in Australia, and individual members are entitled to use 'MIAH' (Member of the International Association of Hydrogeologists) after their name.

From the President

Welcome to the second IAH Newsletter of 2017.

The highlight of this news cycle was the convening of the Australasian Groundwater Conference 2017, held at the UNSW campus in Sydney from 11-13 July 2017. This was second conference in the biennial “AGC” conference series that commenced in 2015, which was initiated in response to the need for a recurring national platform for the practice of groundwater science, education, governance and communication. Those with an eye for detail may have noticed that this year’s event was rebranded as the *Australasian* conference, to extend participation to our regional neighbours – a particular emphasis of IAH International.

The conference brought together groundwater professionals from industry, government, consultancy and academia to share the advances in our industry, provide updates on matters of national and international importance, learn from the occasional pitfalls inherent in our practice, and to reconnect with friends and colleagues near and far. The event was a great success, which you can read all about under the “Featured News” section of the newsletter. These biennial events provide an important forum for bringing our groundwater community together – if you have feedback or suggestions for consideration for the next event, please don’t hesitate to get in contact via your State Branch or National Committee. Early planning for the next event kicks off soon – stay tuned!

I would like to acknowledge and extend my deep gratitude to the hard work of the organising committee and myriad volunteers, and financial support of the corporate sponsors, who all contributed to the success of the AGC 2017. Special thanks goes out to the Secretariat services provided by our partners at NCGRT, who know how to organise and run a very professional event, and to the members of the IAH NSW Committee who invested significant time and effort into developing the event. On behalf of IAH Australia, thank you for the efforts of the many hands that delivered this great event.

The IAH National Committee will convene again shortly to discuss a packed agenda of issues and initiatives to keep us busy in the second half of the year (and beyond). There will very likely be an opportunity – and need – for participation from the national membership to deliver some of our goals. Please stay tuned for updates from your State Branches after the meeting, and please consider whether you can spare some time for the benefit of our broader groundwater community. We are a volunteer-run organisation, and many hands make light work.

On behalf of IAH Australia, I wish our members a productive and rewarding second half of 2017.

Lange Jorstad

President - Australian Chapter, IAH

National Corporate Sponsors

We gratefully acknowledge the support of our national corporate sponsors.



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www.rockwater.com.au

Membership

Check your state chapter events page on the IAH Australia website (www.iah.org.au) to keep up to date with events and meetings. Don't forget if you are an IAH member you will receive a significant discount off the 2017 Australasian Groundwater Conference in Sydney (in fact, enough to offset the cost of membership this year!). Early bird registrations for AGC2017 are now open, so now is the perfect time to renew your IAH membership to access the registration discount.

IAH membership spans a calendar year. The call for membership renewals for 2017 remains open. 2016 members should have received a renewal message by email. If you didn't receive a renewal email, the steps to renew your membership are outlined on the following page. If you know anyone who might be interested in signing up as a new member, you can refer them to the following link: <https://www.iah.org.au/membership/online-sign-up/>.

Any inquiries regarding the memberships can be emailed to the IAH membership team membership@iah.org.au.

Current/Lapsed Membership Renewal Process

As a repeat from a previous issue of the newsletter, here's how an inactive member can become active again.

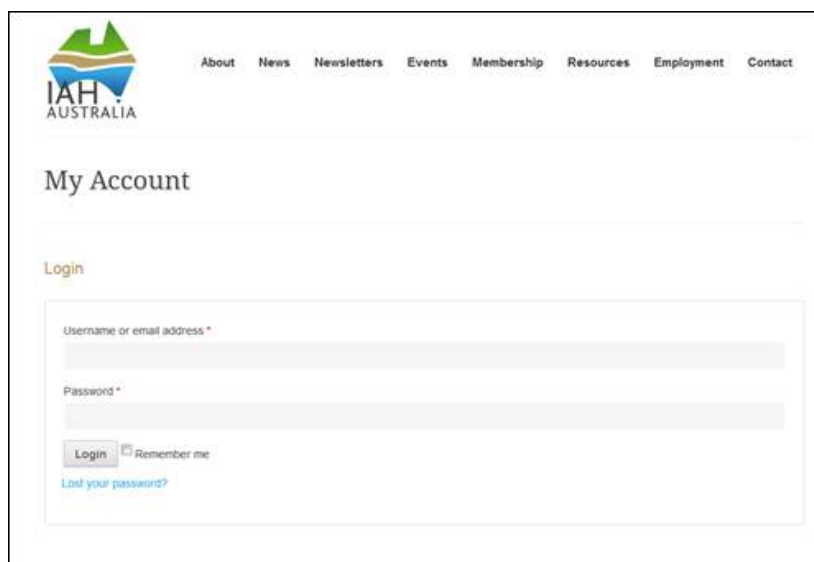
Note that if you were a member in 2016, and **did not receive** a membership renewal email in January 2017, some common issues are listed below:

- The email was intercepted by your **spam filter**. Check your spam folder or quarantine archive for IAH emails, and consider adding the IAH sender details to your safe list.
- Your **email details changed** in the past year (for example, change of employment) and you have not yet updated your email address with IAH. You can update your details at any time through the iah.org.au website, by selecting "My Account" under "Membership", and editing account details.
- **Corporate "firewalls"** at some companies block all suspected incoming spam emails (IAH emails may be classified as "marketing" emails by some systems). Speak with your IT administrator about adding IAH to your corporate safe list, or switch to a personal email account.
- Your membership has **lapsed for more than a year** without renewal, and your details have been removed from our database. You can still use the new membership system to renew your lapsed membership.

Contact membership@iah.org.au with any questions.

Log into [your account page](https://www.iah.org.au/membership/my-account/) on the IAH website (<https://www.iah.org.au/membership/my-account/>).

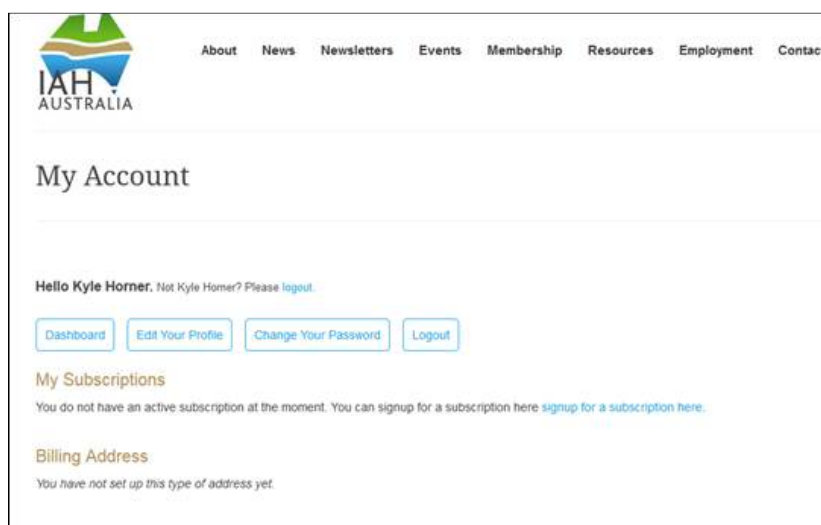
Your username is the email address the email was sent to (which should be the email address you have registered with IAH). If you have forgotten your password, you can reset it using the "**Lost Your Password**" link at the bottom of the page **using the email address the email was sent to.**



The screenshot shows the IAH Australia website's 'My Account' page. At the top, there is a navigation bar with links: About, News, Newsletters, Events, Membership, Resources, Employment, and Contact. The IAH Australia logo is on the left. Below the navigation bar, the page title 'My Account' is displayed. Underneath, there is a 'Login' section with a form containing two input fields: 'Username or email address *' and 'Password *'. Below these fields are a 'Login' button, a 'Remember me' checkbox, and a link for 'Lost your password?'.

Once logged in, you will see your account Dashboard.

Under the **My Memberships** section, click on the link to sign up for a new subscription. This will direct you to a new page where you can select your desired membership category from the options. Details of each membership type can be found at the bottom of the registration page. Once you have chosen your desired category, follow the prompts to finish your membership renewal.



The screenshot shows the IAH Australia website's 'My Account' dashboard after a user has logged in. The navigation bar and logo are the same. Below the 'My Account' title, there is a greeting: 'Hello Kyle Horner. Not Kyle Homer? Please [logout](#).' Below this are four buttons: 'Dashboard', 'Edit Your Profile', 'Change Your Password', and 'Logout'. Underneath these buttons is a section titled 'My Subscriptions' with the text: 'You do not have an active subscription at the moment. You can signup for a subscription here [signup for a subscription here](#).' Below this is a section titled 'Billing Address' with the text: 'You have not set up this type of address yet.'

If you have any questions, please do not hesitate to contact the membership team at membership@iah.org.au.

IAH National Committee

President	Dr Lange Jorstad	ljorstad@geosyntec.com
Vice-President	Position vacant	
Treasurer	Ron Colman	Ron.Colman@royhill.com.au
Secretary	Position vacant	
Membership Secretary and Website	Fiona Adamson	secretariat@iah.org.au
Newsletter Champion	Dr Ben Rotter	Ben.Rotter@mottmac.com

Finance Update

Term Deposits as of 30/06/17	\$101,795.11
Cash Account as of 30/06/17	\$60,621.16
Total Cash Balance as of 30/06/17	\$162,416.27

Outgoings during the quarter included:

- Web hosting \$199.00
- Payment to IAH UK Head Office \$53,052.76

Signature:



Ron Colman, IAH National Treasurer

Date: 02/08/17

National Conferences and Events



Canberra: November 6-9
2017

Canberra Groundwater
School

Perth: Dec 4-7 2017

Perth Groundwater
School



Australian Groundwater Schools 2017 - Canberra & Perth

**Includes networking drinks, text
book, tutorials & case studies.**

**IAH, AWA, WIA, SCPA member
discount 10%. Use code
"Association". 20% discount for
groups of two or more and for
students.**



The Australian Groundwater School is vital for Australian professionals working with groundwater. Our flagship course, and the premier course of its type in Australasia, the Australian Groundwater School provides participants with a broad but rigorous introduction to groundwater. Introducing hydrogeology, assessment methods, modelling, managed aquifer recharge, management, governance and more, the course truly encompasses the fundamentals of groundwater.

Scientific, policy and management personnel who want to gain a solid grounding in groundwater should strongly consider attending this course. Lectures, demonstrations and tutorials are given by leading groundwater professionals. Our presenters are experienced hydrogeologists and specialists in both public and private practice, from industry, universities and research agencies.

Australia Tour Dates:

[Adelaide: October 5](#)

[Canberra: October 10](#)

[Melbourne: October 17](#)

[Darwin: October 26](#)

[Sydney: October 31](#)

[Brisbane: November 1](#)

[Perth: November 9](#)

National Tour Flyer

Proudly sponsored by:



NATIONAL CENTRE FOR
GROUNDWATER
RESEARCH AND TRAINING



Dr Glen Walker is the 2017 NCGRT / IAH Distinguished Lecturer

Climate Change and Australian Groundwater: Current State of Knowledge and Future Responses

The climate shift in south-western Western Australia and the Millennium Drought has highlighted the need to better understand how water resources will be affected by changing climate across Australia. Australia has long experience with managing water resources in a variable climate. This, together with the Water Reform has meant that Australia is well placed, compared to other countries, to meet the challenges to groundwater management.

Progress Towards AGCC 2018

By Bill Shaw, President Australian Geoscience Council

Introduction

This note updates previous advice on how the Australian Geoscience Council's Convention (AGCC 2018) is shaping up, with more information about the program, the next steps by each of the Subcommittees and plenty of suggestions about how you can start to get involved.

Scientific and Technical Program

Chris Yeats has now developed the Program Committee with *convenors* for each of the five scientific themes as follows:

Theme 1: Understanding the Earth - *Professor Dietmar Muller. (University of Sydney)*

Theme 2: Life on Earth – origins and diversity - *Professor Simon George (Macquarie University)*

Theme 3: Resources – discovery, development and sustainability - *Dr Jon Hronsky (Consultant, Western Mining Services)*

Theme 4: Applied Geosciences in the 21st Century – innovation, technology and the future - *Chris Woodfull (Consultant, SRK Consulting)*

Theme 5: Beyond the rocks – geoscience in our society: current application and future trends – *Dr Anna Littleboy (CSIRO)*

Each of the Themes has between 4 and 7 nominated Symposia. There are already constraints on the total number of oral presentations that can be accommodated during the four days of the Convention. In addition to the technical sessions, five one-hour plenary sessions are planned, to cover the following topics:

Earth Climate – Past and Future

Life Origins and Evolution

Resource Security into the Future

The Future of Geoscience in Our Society

Applied Geoscience – Geohazards, Risks and Society

There will also be an entire day during the Convention set aside for discussion of the following **Big Issues and Ideas**:

Our Energy Security Options – Dirty Words in a Clean World (Coal, Nuclear, Fracking and Alternatives)

Resource-Driven Development of Northern Australia

Geoscience Education and New Modes of Communication and

Smoothing the Impact of Boom and Bust Commodity Cycles.

The current plan for the technical sessions is to run 10 concurrent sessions (nominally 2 at a time per Theme) with 15 minute talks. This equates to 560 speaking slots, or nominally 56 per Theme. Theme Convenors will also have the flexibility to assign longer timeslots for session keynotes should they wish.

We expect that there will be an extensive poster presentation component of this Convention, given the expected number of high-quality abstracts that will be submitted and consequent competition to present at this prestigious event.

Sponsorship

The partnership prospectus is being finalised by Mike Smith's team and discussions are already underway with a number of parties that have expressed interest in supporting our big event. The preliminary program has already generated excitement and interest as a way of blending the important traditional role of broad-themed geoscience conferences with a new approach to focusing on issues that are important to all geoscientists and to the general public.

If your company or organisation is interested in being aligned with the Convention, please consider getting in early while the choice packages and exhibition sites are still available. The new look of the \$400 million Adelaide Convention Centre East Building redevelopment is being celebrated with a gala opening at the end of August. AGCC 2018 will be one of the first events to take full advantage of the flexibility this provides.

Field Trips and Workshops

Dale Sims is developing a list of the potential field trips and workshops that we are currently considering. If you are interested in running field trips additional to those already on the following list please let us know:

- Gawler Craton
- Great Ocean Road – volcanics of eastern Victoria
- Flinders Ranges – Fossil Ediacaran Flora
- McLaren Vale – terroir for wine making
- Self-guided Geotourism –the Brachina Gorge trail.

There will be opportunities for our Member Organisations (MOs) to host workshops in their specialist disciplines. A package is being put together to seek expressions of interest so that these can all be fairly evaluated.

Early Career Geoscientists and Volunteers

Genna McDonagh is developing contacts across our eight MOs to provide volunteer coordination and opportunities for innovative ways to connect with the Convention. She is looking for support and engagement, especially in ensuring that we address broad social themes that are important now to all professionals in academia, industry, consulting and government. If you are passionate about diversity, representation, networking, STEM or just making a difference, please get in touch with her through our website.

Education

The AGC Education Subcommittee has been very successful in building support and connections across the full spectrum of geoscience education from Primary School to

Professional Development programs. At the recent Australian University Geoscience Educators Network (AUGEN) meeting in Sydney there was strong interest in using our Convention during Earth Science week next year to host their AGM and to champion one or more sessions. This will be an opportunity to see some of the amazing resources that are being developed, such as the work of Michael Roach (University of Tasmania) on precision outcrop photography and 360° imaging for “virtual field trips”. No doubt there will be lots of other interesting technologies and applications being presented.

Advocacy and Media

We are making progress in developing the media strategy and have been recently advised that there will soon be significant further support forthcoming. As we move towards being only a year out, Angela Riganti's team has preparations underway for a media launch and mail-out of our First Circular by all the Member Organisations during September. We are looking to maximise the impact of our event through innovative use of social media, forums, poster sessions and other approaches that Angela's and Genna's teams will develop.

Engagement with Stakeholders

Steve Mackie has developed a fortnightly dot-point summary of progress that goes out to all our stakeholders. You can get on the list by contacting him to see how the Convention is developing at a very granular level. Of course that level of interest means you are so motivated that you are probably already on one of our Subcommittees ...

Venue and other practicalities

Our Professional Conference Organiser, Carillon is on top of all our contractual requirements and we now have the Adelaide Convention and Exhibition Centre, and appropriate accommodation, booked up sufficiently to enable us to develop all the various scenarios that we can envisage. A visit to the venue is planned for the end of August. Work on the social program that underpins the networking aspects of the Convention is also getting going.

Conclusion

I am still seeking your thoughts on how you would like to get involved. Many years of volunteer work in the AIG, AusIMM, JORC and now the AGC has taught me the huge personal value of commitment and engagement with like-minded professionals.

To let us know your views, what you want out of this Convention, and how you can help make it a success, please get in touch with any member of the Organising Committee at our website: <https://www.agcc.org.au/committee>

Bill Shaw, on behalf of the Organising Committee.



AGCC Australian Geoscience
Council **Convention**

BIG ISSUES AND IDEAS IN GEOSCIENCE

14–18 OCTOBER 2018 | Earth Science Week

Adelaide Convention Centre www.agcc.org.au

Feature News



Australasian Groundwater Conference 2017 Highlights

With over 340 people in attendance from across the globe, the 2017 Australasian Groundwater Conference was a great success!

Held at UNSW's John Niland Scientia Building, NCGRT and IAH delivered a conference complete with over 260 oral presentations, including plenary and keynote presentations, panel sessions, posters and exhibitions showcasing the latest research and innovation in groundwater in the region.

There was an array of interdisciplinary and specialist talks which spanned across the conference themes. The 6 panels including an interactive panel discussion provided a robust platform to address critical groundwater issues.

Delegates experienced great opportunities to network including a sumptuous dinner at the Coogee Rooftop Pavilion, networking drinks and for some, a Trivia Night and field trip experiences to the Blue Mountains and Orica Botany Groundwater Cleanup Project.

We would like to thank our sponsors for their generous support. Without their involvement and generosity, we would not be able to achieve such a successful result.

Thank you to all who attended and contributed to the conference success. We hope you enjoyed your time and we look forward to seeing you at the next AGC.



Welcome to
Country by Uncle
Peter McKenzie
from the La
Perouse Local
Aboriginal Land
Council



Prof Craig Simmons: *Grand
Challenges for Groundwater*

Mark Cuthbert: *Groundwater
and Climate Change in
Drylands*



Saul Holt: *Groundwater & the Law*



Chris McCombe: *Groundwater and Mining*

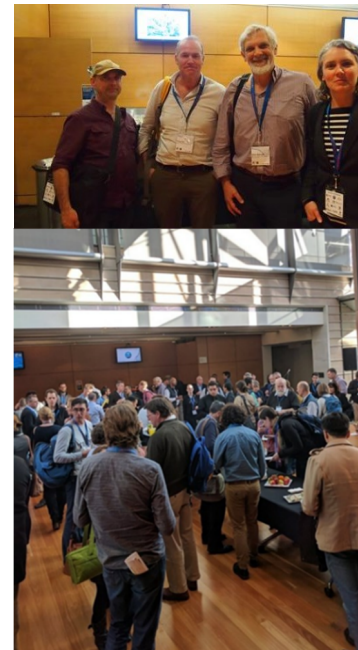
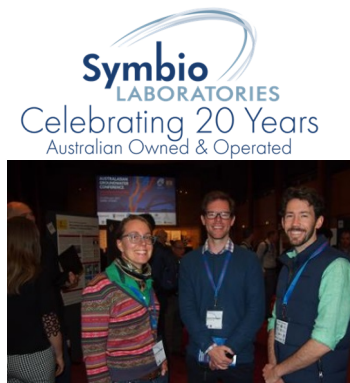


Dedicated Poster Session



Social Events

**Networking
Drinks at the
Scientia foyer,
kindly sponsored
by Symbiolabs.**



**Great night at the
Coogee Rooftop
Pavilion for the
Conference
Dinner**



The Early Career Hydrogeology Network Trivia Night proved to be highly competitive among colleagues. A lot of fun was had by all! Thanks to Anna Greve for coordinating this event.



Panel Presentations



The **Australasian Groundwater Stocktake Panel** explored current and future issues facing state governments and at a national level. This was followed by perspectives from New Zealand and the Pacific Islands. Finally a presentation on current and future technology was provided by Narelle Neumann.



The **Climate Change Panel** attracted robust discussion about difficulties to separate out effects of historic land use change from current climate change effects. Delegates asked questions only via online web tool Slido.



For the **Energy Futures Panel**, each panel member presented a few thought provoking facts related to coal and uranium mining, coal seam gas, carbon sequestration and using shallow geothermal energy. The most popular questions for discussion included: How should mining companies allocate responsibility for cumulative impacts between each other and with other historical water users in mining and other sectors? What are our viable options for carbon capture & storage and implications for groundwater?



The **Future Innovations in Groundwater Panel** found the audience brain storming ideas about groundwater future scenarios. Audience feedback about opportunities or challenges for groundwater over the next 30 years include geopolitical conflict, groundwater scarcity, population growth and climate change. [Click here](#) to read the summary report.

The **Social License to Operate Panel** tackled ideas about the lessons from court cases such as Adani and Carmichael, issues such as community trust, policy amendments and political motivations and scepticism.

The **Modelling Outlook Panel** chaired by High Middlemis, examined awareness of uncertainty-driven modelling workflows; methods of understanding and communicating uncertainty and dealing with its implications. There were great audience questions at the end to wrap up the last session of the AGC2017.

Award Winners

Congratulations to the winners in our four award categories:

Career Oral Presentation: Matthew Currell, RMIT University

Career Poster: Paul Cai, UNSW

Early Career Oral Presentation: Charlotte Iverach, UNSW

Early Career Poster: Moji Karbasi, DEWNR SA

Awards were presented and sponsored by The Department of Environment, Water and Natural Resources, SA and CSIRO.



Exhibitors and Displays



Photo exhibition finalists



Darcy T-Shirts on display



Field Trips



Mountains field trip by Katarina David

The Blue Mountain field trip was a great day out to see a small part of the Greater Blue Mountains World Heritage Area. On the way we stopped at the historical Lapstone zig-zag railway cuttings to look at the Lapstone monocline. We discussed the water supply bores installed as part of the Sydney Water supply project in the early 2000s. At Glenbrook swamp we had the bush picnic and then left for the upper Blue Mountains. The weather was beautiful which allowed the extensive views from Katoomba and Wentworth Falls over the Jamison Valley and Mt Solitary. We finished our tour at the historically important swamp and discussed the importance of groundwater in supporting the ecosystems and life of Gundungurra and Darug people.



Orica Groundwater Cleanup Project trip by Graham Hawkes

The Orica field excursion was a huge success. A big thank from the AGC committee to Ben, Andrei and James from Orica for facilitating our visit and taking time to address us.

The team took their time to explain the origin of the CHC contamination at Orica, site history, field investigation programs, hydrogeological conceptualisation, hydraulic containment, remediation program and the water treatment plant was much appreciated. Orica were very forthcoming and answered the many difficult questions posed, some not necessarily technical. The bus ride around the site was very informative and as we found out there is nowhere else in the world that treats dissolved CHC contamination on this scale.

Thank you again to those who attended AGC2017 and helped make this event a great success! We look forward to the next conference.

MODFLOW and More Conference, Colorado

The MODFLOW and More 2017 conference was held in Golden, Colorado in May, and saw 252 delegates in attendance, including a respectable Australian contingent. A big highlight of the conference was a swathe of information about the upcoming MODFLOW 6 – with a public beta version now available from the USGS web site – incorporating object-oriented coding, human-readable file formats, unstructured grid support, fully three-dimensional anisotropy, and a handful of new capabilities. There were several papers on new techniques for uncertainty analysis, and the release of new tools for facilitating it in the cloud, including AlgoCompute, PEST_HP and PEST.cloud. The new version 7 of Groundwater Vistas was announced at the conference – including PEST_HP support, MT3D-USGS support and improved USG capabilities with the inclusion of AlgoMesh – and was released on 7 August. New major versions of the SSP&A tools Groundwater Desktop and mod-PATH3DU were also presented

From the Branches

Australian Capital Territory

IAH ACT BRANCH

2017 Committee:

Chair	Lucy Lytton	Geoscience Australia
Vice Chair/Secretary	Scott Lawson	Office of Water Science
Treasurer	Tim Evans	Geoscience Australia
Student Coordinator	Sharon Gray	Research School of Earth Sciences, ANU
Communications Champion	Stephen Hostetler	Hostetler Hydrogeology
Membership Champion	Laura Gow	Geoscience Australia
Events Coordinating Committee	Tim Evans	Geoscience Australia
	Chris Harris-Pascal	Geoscience Australia
	Peter Hyde	Murray-Darling Basin Authority

Recent Events

25 May 2017 – Irrigation and groundwater projects in developing countries funded by the Australian Centre for International Agricultural Research (ACIAR): Dr Evan Christen

Dr Evan Christen provided a highly engaging presentation on irrigation and groundwater projects, in developing countries, funded by the Australian Centre for International Agricultural Research (ACIAR).

21 June 2017 – Murray-Darling Basin Salinity Management 2030 Strategy: Asitha Katupitiya - Director Water Quality and Salinity MDBA

Salinity remains a significant management challenge and poses ongoing environmental, social and economic risks in the Murray–Darling Basin. Salinity is forecast to continue to increase over time and requires careful ongoing management to prevent a return to the highly saline conditions of previous decades. The MDBA and Basin governments have a long and successful history of working together to manage salinity in the Basin with a new strategy now developed for the next 15 years. This strategy, the Basin Salinity Management 2030 (BSM2030), builds on the successes of the Basin Salinity Management Strategy 2001–2015 to deliver a strategic, cost-efficient and streamlined program of coordinated salinity management until 2030.

The talk was held at the Murray Darling Basin Authority in Canberra with 26 attendees from IAHACTION and the MDBA.

New South Wales

IAH NEW SOUTH WALES BRANCH

2017 Committee:

Chair	Katarina David	(UNSW)
Presentations Secretary and External Communications	Graham Hawkes	(AECOM)
Treasurer	Tingting Liu	(HydroSimulations)
Secretary	Sean Cassidy	(EMM)
Student and Young Professional Coordinator	Dr Anna Greve	(Glencore)
Meeting Facilitator	Pepijn van Ravensteyn	(WSP Parsons Brinkerhoff)
Internal Communications	Angus McFarlane	(AECOM)
Newsletter Champion	Cassie Turvey	(HydroSimulations)
NSW Sponsorship Champion	Jason Carr	(Arup)
Web Champion	Dr Doug Anderson	(Water Research Laboratory, UNSW)
International Sponsorship Champion	Dr Jay Punthakey	(Ecoseal)
University Liason	Dr Bill Milne-Home	(UTS)
Membership Champion	Ellen Kwantes	(WSP Parsons Brinkerhoff)
National President	Dr Lange Jorstad	(Geosyntec)
National Newsletter Champion	Dr Ben Rotter	(Mott MacDonald)
International Vice President - Australasia	Dr Wendy Timms	(UNSW)
Committee Support	Dr Mark Peterson	(ANSTO)

Local News

Our regular branch meetings continue to be held at the office of WSP Parsons Brinckerhoff (WSP) located in the Sydney CBD on the second Tuesday of each month. Thank you to WSP for supplying the convenient central venue, first class facilities, and food and drinks. IAH NSW branch provides events that span all stages of a career in hydrogeology. Our Student Night event provides a platform for students, and our Young Professional Award that recognises young professionals. For mid to late career hydrogeologists, a forum is provided for technical presentations. This year we also held a Women in Hydrogeology night, where a panel of esteemed female hydrogeologists shared their career stories and experiences.

NSW Sponsors

IAH NSW gratefully acknowledges the contributions of its 2016/17 sponsors. Details of sponsors can be found on the website at <http://www.iah.org.au/about/new-south-wales/nsw/-branch-sponsors>.

Our Gold Sponsors are AECOM, Coffey, Earth Science Information Systems, Eco Logical Australia, EMM Consulting Pty Limited, Geosyntec, Jacobs, NSW Department of

Primary Industries Water, NSW Environment Protection Authority, University of NSW Water Research Laboratory and WSP Parsons Brinckerhoff.

Our Silver Sponsors are C. M. Jewell & Associates, Douglas Partners, Ecoseal, HydroSimulations and Kalf & Associates.

Recent Events

9th May 2017 - Women in Hydrogeology

Prominent female hydrogeologists Dr. Wendy Timms (UNSW), Sue Hamilton (NSW Department of Primary Industry – Water) and Sarah Bish (formerly DPI – Water and international aid agencies) formed a guest panel for our inaugural Women in Hydrogeology evening. They were grilled about their influences, experiences and insights into the hydrogeological profession by Anna Greve and Graham Hawkes. There were many pieces of advice and interesting stories. Although our panel members are very senior members in their field there was a general reluctance by them to acknowledge their considerable achievements. Wendy reminded us about the importance of education and to keep learning throughout your career. Sue reminded us of the importance to maintain a good work/life balance and if possible to work when it suits you. Sarah spoke of her experiences across government, consulting and aid agencies while using the United Nations as an example of how to quickly burn yourself out. It was generally acknowledged that there are now many successful women working in hydrogeology compared to a couple of decades ago and the gender balance is now quite even. All in all it was a very informative evening.

13 June 2017 - Australian Water Resources Assessment Model – Dr Andrew Frost, BoM Water Information Services

and

Groundwater Information Suite Products – Brendan Dimech, BoM Groundwater Unit

Dr Andrew Frost provided an overview of the Bureau's Landscape Water Balance website (<http://www.bom.gov.au/water/landscape>) and underlying AWRA-L Model. The AWRA-L model produces publicly available national gridded estimates of soil moisture, runoff, evapotranspiration and deep drainage from 1911 until yesterday.

Brendan Dimech demonstrated the Bureau's suite of national groundwater products including the National Groundwater Information System, the Australian Groundwater Explorer and the Australian Groundwater Insight (<http://www.bom.gov.au/water/groundwater>).

These extremely valuable products are freely available from the Bureau website and support a range of uses, such as environmental impact assessments, water planning & management and research.

19 July 2017 - Water Resource Stewardship in the U.S. National Park Service – Dr Ed Harvey

Dr Ed Harvey is the Chief for the US. National Park Water Resource division. Ed explained that management of the water resources within the national parks often faced many challenges due to the surface water and aquifer boundaries typically extending beyond park boundaries. This is further complicated by each state having their own legal authority, cultural implications and different levels of water expertise within each park. The challenge for the National Park Service is to consider resource issues at a larger scale, and work collaboratively to protect, manage and restore water resources. This lecture explored the process of how parks identify water resource needs, issues and concerns, and how they develop and apply scientific information needed to make water resource management decisions. Specific challenges to decision making and park water resource management were presented including trans-boundary issues, partnership building, scientific uncertainty, funding and personnel/expertise, and making science-based decisions that also appropriately consider legal, political, socioeconomic, and cultural impacts.

10 August 2017 Darcy Lecture. – A Tale of Two Porosities: Exploring Why Contaminant Transport Doesn't Always Behave the Way it Should – Prof Kamini Singha

This years' Darcy Lecture was presented by Kamini Singa, PhD, Professor at the Colorado Schools of Mines and Associate Director of the Hydrologic Science and Engineering Program. Kamini's lecture provided the background to contaminant transport theory for dual porosity systems, and identified that anomalies in concentration rebound, long breakthrough tailing, and poor pump-and-treat efficiency are often a result of the presence of two distinct populations of pores — one where solutes are highly mobile and another where they are not. Several analytical and conceptual models have been proposed for this dual porosity flow, however verification and inference of controlling parameters in these models in situ remains problematic, and often estimated based on data fitting alone. Kamini's research is focused around using simple electrical geophysical methods to directly measure the process of mobile-immobile mass transfer and allow estimation of parameters controlling anomalous transport. Her lecture presented a rock-physics framework, an experimental methodology, and analytical expressions that can be used to determine parameters controlling anomalous solute transport behaviour from co-located hydrologic and electrical geophysical measurements in a series of settings, including groundwater and surface water/groundwater systems.

Upcoming Events

11 October 2017 - Student Night

This event is an opportunity for Honours, Masters or PhD students to present their hydrogeological work to the IAH community and meet potential employers. We are currently contacting Universities for potential candidates.

IAH NSW on LinkedIn

IAH NSW has gained a presence on professional social media site, LinkedIn. The page provides events newsletters and advertisements for hydrogeology positions in the industry.

Northern Territory

IAH NORTHERN TERRITORY BRANCH

2017 Committee:

Chair	Peter Jolly	Jolly Consulting
Vice Chair	Jo Ellis	Power and Water Corp
Treasurer	Quinton Bruwer	DENR
Secretary	Steven Tickell	DENR

Local News

Independent Scientific Inquiry into Hydraulic Fracturing of Onshore Unconventional Reservoirs in the Northern Territory

On 3 December 2016 the Northern Territory Government announced an independent Scientific Inquiry into Hydraulic Fracturing of Onshore Unconventional Reservoirs in the Northern Territory. The Inquiry is investigating the environmental, social and economic risks and impacts of hydraulic fracturing (commonly known as fracking) of onshore unconventional gas reservoirs and associated activities in the Northern Territory.

On 14 July 2017 the Inquiry released an Interim Report, which details the activities undertaken by the Inquiry Panel to date and its preliminary analysis of some of the risks and benefits of hydraulic fracturing for shale gas in the Northern Territory. This report can be downloaded at <https://frackinginquiry.nt.gov.au/interim-report>

Water Licensing Portal

The Minister of the Department of Environment and Natural Resources (DENR) announced on the 13 June that a Water Licensing Portal has been developed to provide easy access to water licencing decisions for all current water allocation licences in the Northern Territory.

The Water Licensing Portal is a tool to provide easy access to all relevant legislative and administrative information, assessment investigations, planning information, current licence details and documentation in relation to each current and pending water extraction licences.

Information you will find within the Portal:

- Maps of the Water Control Districts and Water Allocation Plans in the NT
- Water Advisory Committees
- Current and Pending Licence information
- Details of factors considered when assessing a licence application

- Water usage and extraction information
- Spatial and dashboard analytics
- Supporting science documents

Information on the NT's water licencing portal can be found at <https://denr.nt.gov.au/land-resource-management/water-resources/water-licensing-portal>

Announced Allocations

On the 1st of May each year, the Controller of Water Resources announces the allocations applicable to Top End licences for the forthcoming water year. This announcement (the Announced Allocations or AAs) are part of the Northern Territory's approach towards sustainable water resource management. It is one of the regulatory mechanisms to ensure that water use activities do not cause environmental harm to our water ecosystems. The announcement is made in terms of the proportion of the licenced allocation that may be used, based upon an assessment of the affected water resources as at 1 November of that year.

The rainfall from the wet season is used to predict the aquifer and receiving rivers response for the dry season ahead. Should the assessment reveal that the river flows are likely to be impacted by more than 20%, then all existing licence holders may be subject to a proportional cut in their allocated volume, in order to ensure that the environmental limit of 20% is met. Should the assessment reveal that the flows are unlikely to be impacted by more than 20%, then full entitlements will apply.

The announced allocations for 2017/2018 can be found at <https://denr.nt.gov.au/land-resource-management/water-resources/announced-allocations>

Upcoming Events

23 August 2017 December 2016 – Darcy Lecture –Professor Kamini Singha

The USA National Groundwater Association's (NGWA) Darcy lecturer Professor Kamini Singha will be presenting her talk The Critical Role of Trees in Critical Zone Science: An Exploration of Water Fluxes in the Earth's Permeable Skin at 5:30pm on Wednesday 23/8/2017 at Charles Darwin University, Building/Room: Blue 1.1.01.

More information on Professor Singha and her presentation can be found at <http://www.ngwa.org/Foundation/darcy/Pages/default.aspx>

Members and non-members of IAH are welcome to attend.

26 October 2017 – NCGRT / IAH Distinguished Lecture – Dr Glenn Walker

Dr Glenn Walker will be presenting his talk Climate Change and Australian Groundwater: Current State of Knowledge and Future Responses at 5:30pm Thursday 26/10/2017 at Charles Darwin University, Building/Room: Yellow 1.1.39.

More information on Dr Glenn Walker and his presentation can be found at <http://www.groundwater.com.au/events/1114>

Members and non-members of IAH are welcome to attend.

Queensland

IAH QUEENSLAND BRANCH

2017 Committee:

President	Lucy Reading (QUT)
Vice President	Paul Smith (Pacific Environment Ltd)
Treasurer	Zach Van Haaften (QUT)
Secretary	Thomas Neame (Eco Logical Australia)
Communications Manager	Jim Stanley (QUT)
Technical Consultant	Jim Undershultz (UQ)
North Qld Representative	Angela Bush (AGE Consultants)
Other Committee Member	Lindsay Furness (Freelance)
Other Committee Member	Freternity Rusinga (Aurecon)
Other Committee Member	Kelly Jane Wallis (WSP)

Local News

This year has seen the election of a new Qld Branch executive committee and a series of interesting presentations hosted at Queensland University of Technology (QUT), Brisbane. Other plans include starting an annual “student member” award, hydrogeology field trips and events hosted at sponsors’ venues. A new IAH Qld Branch LinkedIn profile has been created to promote IAH events (<https://www.linkedin.com/company/iahqld>).

Qld Branch Sponsors

Pacific Environment Limited

Douglas Partners

AGE Pty Ltd

ESDat

Eco Logical Australia

Recent Events

15th February 2017 - “3D CSG Water Atlas Portal”- Dr Sue Vink (University of Queensland).

The 3D CSG Water Atlas Portal is a Web-based application for visualising spatial and temporal groundwater chemistry trends on regional and local scales in conjunction with the Surat geological model.

The 3D CSG Water Atlas Features Include:

- Virtual globe navigation - including map imagery and terrain
- "Ground push" to expose the sub-surface features
- Visualisation and search of wells (provided by Groundwater Database)
- Visualisation of geological surface models
- Browsing the metadata of well registration, stratigraphy, casing, aquifer and water analysis
- Application runs in WebGL compliant Web browsers without additional plugins or software

19th May 2017 – “An Integrated Hydrochemistry and Biology Investigation of Acid Rock Drainage at the Stockholm Coal Mine, near Westport, New Zealand” – Shaun Davidge (Theiss Global Mining).

The paper reviews a large water sampling and ecotoxicology program, and hydrology and water chemistry modelling to commence understanding of the causes and risk associated with acid rock drainage at this 100-year-old mine, together with some anecdotes on what went right and wrong in the field and analysis program. Lessons for young and old!

15th June 2017 – “Managing Uncertainty in Groundwater Modelling: Where To Start?” – Luke Peeters (CSIRO).

Carrying out an uncertainty analysis on the predictions of a surface water or groundwater model can be a challenging task. This presentation is not about mastering the wealth of methods and software for uncertainty analysis, it rather focusses on navigating questions such as

- Which parameters should I include in an uncertainty analysis?
- How do I deal with sources of uncertainty not included in the model?
- What do I need to change to my model to do an uncertainty analysis?
- How do I bring in observations and observation uncertainty?

21st July 2017 – “Water Resource Stewardship in the U.S. National Park Service” – Ed Harvey (Chief of the United States National Park Service Water Resources Division).

Ed is serving as the Geological Society of America-Hydrogeology Division's 2017 Distinguished Birdsall-Driess Lecturer. To learn more about Ed and the lectureship, visit: <http://community.geosociety.org/hydrodivision/birdsall/about2017>

Upcoming Events

25th August 2017 – The Darcy Lecture 2017 (Townsville) “The Critical Role of Water in Critical Zone Science: An Exploration of Water Fluxes in the Earth’s Permeable Skin” - Professor Kamini Singha (Colorado School of Mines).

Earth’s “critical zone” — the zone of the planet from treetops to base of groundwater — is critical because it is a sensitive region, open to impacts from human activities, while providing water necessary for human consumption and food production. Quantifying water movement in the subsurface is critical to predicting how water-driven critical zone processes respond to changes in climate and human perturbation of the natural system. While shallow soils and aboveground parts of the critical zone can be easy to instrument and explore, the deeper parts of the critical zone — through the soils and into rock — are harder to access, leaving many open questions about the role of water in this environment.

This presentation opens the black box in the subsurface and sheds light on a few key subsurface processes that control water movement and availability: linkages between changes in evapotranspiration and subsurface water stores, water movement in three dimensions over large areas, and potential control of slope aspect on subsurface permeability. Geophysical tools are central to the quantitative study of these problems in the deeper subsurface where we don’t have easy access for observation.

28th August 2017 – The Darcy Lecture 2017 (Brisbane) “A Tale of Two Porosities: Exploring Why Contaminant Transport Doesn’t Always Behave the Way It Should”- Professor Kamini Singha (Colorado School of Mines).

Transport through preferential flowpaths is important in a broad range of scientific disciplines.

In hydrology, the ability to quantify subsurface transport is an issue of paramount importance due to problems associated with groundwater contamination. Observational challenges and complexity of hydrogeological systems lead to severe prediction challenges with standard measurement techniques.

This lecture presents a rock-physics framework, an experimental methodology, and analytical expressions that can be used to determine parameters controlling anomalous solute transport behaviour from colocated hydrologic and electrical geophysical measurements in a series of settings, including groundwater and surface water/groundwater systems. The long-term goals of this work are to contribute toward improving the predictive capabilities of numerical models and enhancing the fidelity of long-term groundwater monitoring frameworks.

15th September 2017 – “A review of hydrogeological evidence within the Queensland Land Court decision to approve the Carmichael Mine” – Adrian Werner (Professor of Hydrogeology at Flinders University, and a member of the National Centre for Groundwater Research and Training).

The proposed Carmichael coal mine is a controversial project in Queensland's Galilee Basin. It is one of the world's largest coal mines, and is proposed for construction in close proximity to a set of springs that supports endemic ecosystems and that holds great importance to Indigenous Australians. The decision to approve the mine is underpinned by misconceptions and considerable uncertainty on the back of a few field measurements.

Adrian Werner was an expert witness to the case, and reveals the process that ultimately led to approval on the mine despite critical and fundamental problems with the investigation into potential impacts caused by the mine void.

Plans are being finalised for October and November 2017 presentations.

South Australia

IAH SOUTH AUSTRALIA BRANCH

2017 Committee:

President	Steve Barnett
Vice President	Neil Power
Membership champion	Tavis Kleinig
Committee member	Russel Martin
Web master/mistress	Fiona Adamson
Modelling Forum	Juliet Wood

Recent Events

28 July 2017 – Carmichael Mine court case

Adrian Werner, Professor of Hydrogeology at Flinders University, was an expert witness to the case and his presentation revealed the process that ultimately led to approval on the mine despite critical and fundamental problems with the investigation into potential impacts caused by the mine void. The proposed Carmichael coal mine is a controversial project in Queensland's Galilee Basin and is one of the world's largest coal mines. It is proposed for construction in close proximity to a set of springs that supports endemic ecosystems and that holds great importance to Indigenous Australians.

Prof Werner's opinion was the decision to approve the mine was underpinned by misconceptions and considerable uncertainty resulting from few field measurements. Whilst rigorous discussion ensued at this meeting about competing conceptualisations about the source of water for the springs, there was universal condemnation at the disturbing lack of data available for decision makers on such a large and expensive project.

Vale Mike Cobb

It is with regret that the SA IAH reports the passing of longstanding member Mike Cobb. Throughout his life, Mike displayed a spirit for life and fierce determination that far outweighed his physical presence, and also far exceeded his expected life span by about 40 years ! Mike started work in the Groundwater Section of the Mines Department in 1970 where he and his colleagues carried out pioneering investigations in the Great Artesian Basin, South East, Angas Bremer and the Barossa Valley which established a firm foundation for our current understanding of these groundwater systems. He established a small regional office in the Barossa Valley to facilitate extensive work in the area.

After concluding the investigations with a landmark publication, rather than return to Adelaide, he decided to stay in his beloved Barossa and left the Mines Department in 1986 to form his own Watersearch consultancy. His numerous clients include Flinders

Mines, Government agencies, Golden Grove extractive industries and many landowners who wanted advice on siting water wells and pumping tests carried out.

Despite his health issues, he was an active member of the Angaston community who greatly appreciated his positive outlook on life which was epitomised by the playing of the Monty Python "Always look on the bright side" at his request as mourners filed past his grave.

The IAH extends condolences to Mike's family and long time partner Dulcie for the passing of one of the foundation members of the hydrogeology profession in South Australia.

Tasmania

No update available in this edition.

Victoria

IAH VICTORIA BRANCH

2017 Committee:

Chair	Alan Wade	(Aquade)
Vice-Chair	Ben Hall	(Eartheon)
Secretary	Tara Smith	(Jacobs)
Treasurer	Anne Northway	EPA
Events Committee	Katy Kijek	(Senversa)
Communications Champion	Heath Pawley	(Golder Associates)
Membership Champion	Alexis Valenza	(Valenza Engineering)
General Committee	Matt Currell	RMIT
	Ben Petrides	Coffey
	Rikito Gresswell	GHD
	Ben Moore	CFA
	Chris Smitt	EHS
	Matthew Hudson	City West Water

Local News

Our regular branch meetings continue to be held alternatively at the Melbourne RMIT City Campus, Senversa and Jacobs Melbourne Branches. Thank you to RMIT, Senversa and Jacobs for supplying the convenient central venues and first class facilities.

Our last VIC Chapter IAH 2016 committee meeting was held on 27th July 2017 at Senversa. Our next committee meeting will be held on 5th October 2017, at Senversa.

Certification

The Victorian Certification Sub-committee is looking into certification processes around the world. The Sub-committee has made contact with the NGWA and the UK chapter to look into professional certification schemes overseas for hydrogeologists.

Recent Events

Tuesday 9th May – " Planning for Mine Closure" – Presented by Geoff Byrne, Principal Consultant Niboi Consulting.

Geoff Byrne is the Principal Consultant at Niboi Consulting. Geoff has over 40 years' professional experience. He works in the fields of mine closure planning, risk assessment, environmental management, corporate reporting, and strategic advice.

Monday 17th July– Birdsall-Dreiss Lecture Tour 2017. Water Resource Stewardship in the U.S. National Park Service– Forest (Ed) Harvey, U.S National Park Service.

Unlike most park resources, that are located largely within park boundaries, or are completely under the management control of the National Park Service, park water resource issues and management often involve greater challenges. These challenges arise from the fact that surface water and aquifer boundaries often extend beyond park boundaries and because the legal authority to allocate and manage water resources typically resides with the states. Thus, parks often need to consider resource issues at a larger landscape, or seascape scale, and manage collaboratively with neighbours and partners.

The lecture, using examples from various parks across the US, explored the process of how parks identify water resource needs, issues and concerns, and how they develop and apply the necessary scientific information needed to make water resource management decisions.

Ed is supervisory hydrologist and chief of the U.S National Park Service Water Resources Division, Fort Collins, Colorado.

The Water Resources Division provides leadership for the preservation, protection, and management of water and aquatic resources, offers technical assistance to all national park units, leads and supports development of water resource initiatives, guidelines, and policies and provides disciplinary and policy support.

Prior to working for the National Park Service, Ed conducted research focussing on groundwater dependent ecosystems, groundwater-surface water interaction, and using geochemical and isotope applications methods to characterize regional groundwater flow systems. More about Ed can be found at <https://www.nps.gov/orgs/1439/forrest-ed-harvey.htm>.

Monday 14th August – Darcy Lecture 2017. A Tale of Two Porosities: Exploring why contaminant transport doesn't always behave the way it should – Presented by Kamini Singha, Colorado School of Mines.

"A Tale of Two Porosities: Exploring Why Contaminant Transport Doesn't Always Behave the Way It Should" explores the long-term goals of work being conducted that aims to contribute toward improving the predictive capabilities of numerical models and enhancing the fidelity of long-term groundwater monitoring frameworks.

Kamini Singha, Ph.D., is a professor in the Department of Geology and Geological Engineering and the associate director of the Hydrologic Science and Engineering Program at the Colorado School of Mines. She worked at the U.S. Geological Survey Branch of Geophysics from 1997 to 2000, and was a member of the faculty at The Pennsylvania State University from 2005 to 2012. She earned her B.S. in geophysics from the University of Connecticut in 1999 and her Ph.D. in hydrogeology from Stanford University in 2005.

Upcoming Event

September 2017 - PFAS and emerging contaminants in groundwater - Bill DiGuseppi, Principal Hydrogeologist (Global Emerging Contaminants Leader) at CH2M.

Bill DiGuseppi is a principal hydrogeologist and program technology manager with 30 years of experience on hundreds of soil and groundwater investigation and remediation sites. A licensed Professional Geologist and leader of CH2M's Emerging Contaminants Community of Practice, Bill directs a team of professionals in the identification, prioritization and management of chemicals such as 1,4-dioxane, perfluorinated compounds, 1,2,3-trichloropropane, hexavalent chromium and other critical emerging pollutants. Bill has led large and complex environmental investigation and remediation projects, published technical articles, provided keynote addresses and chaired sessions at international conferences and co-authored a definitive book on 1,4-dioxane with Tom Mohr. Bill is Vice-Chair for Emerging Issues within the National Environmental Committee of the Society of American Military Engineers (SAME), is Co-Lead for the Remediation Writing Sub-Group for the Interstate Technology Regulatory Council (ITRC) PFAS Project Team, and was invited by the US EPA to provide a 3 hour technical workshop for their 2017 Annual Groundwater Summit in Denver Colorado. Bill has a BS in Geology from George Mason University in Fairfax Virginia and a MS in Geology from the University of Utah in Salt Lake City Utah.

Western Australia

IAH WA BRANCH

2017 Committee:

Chairperson	Ian Brandes de Roos
Vice Chairperson	Mal McGivern
Secretary	Sarah Bourke
Treasurer	Sandie McHugh
Events team	Rachel Hamilton Adriaan Haasbroek
Communications team	John Enkelmann Giovanni Firmani

Local News

Members survey

IAH WA is preparing a survey seeking your feedback as to the presentations you most value. Your contribution will be awarded with a free IAH membership for a year granted to one of the lucky respondents that will have been drawn from the hat. The survey will be rolled out the day after the Darcy Lecture.

WA Sponsors

IAH WA is proud to be supported by Tech-Source Solutions, Gold sponsors for the 2017 series of technical presentations.



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Recent Events

26 July 2017 – Municipal ASR for the Swan Coastal Plain – Karen Johnston

Thank you all for the great night spent together and thank to Karen Johnston for the excellent presentation.



28 June 2017 – Hydrogeology on the Stock Market – reporting groundwater-hosted minerals within the JORC code – Duncan Storey

IAH Western Australia was pleased to host Duncan Storey for the June Tech Talk. Duncan has almost 30 years' experience as a consulting hydrogeologist. He has worked at all levels from field investigations to due diligence and CP reporting.





24 May 2017 – Exmouth groundwater optimisation – Mal McGivern

Mal provided an interesting case study of the scientific and engineering aspects of coastal aquifers.



26 April 2017 – The Carmichael coal mine – Dr Adrian Werner

The proposed Carmichael coal mine is a controversial project in Queensland's Galilee Basin. The approvals process has been contentious and ultimately ended up in the QLD Land Court. Prof. Adrian Werner outlined his role as a peer reviewer and expert witness. In his role he witnessed the challenges facing scientific assessments of this highly politicised project.

Upcoming Events

Monday 21 August	Darcy Lecture
Friday 13 October	Social night
Thursday 9 Nov	Distinguished lecture (Glen Walker)
Wednesday 22 Nov	Student night & AGM



National Centre for
Groundwater
Research and Training

For upcoming courses, see <http://www.groundwater.com.au/events/training>

IAH Publications

Discounted IAH publications in the 'International Contributions to Hydrogeology' and the 'Selected Papers' series can be ordered by Australian IAH members directly from Macmillan Publishers Australia in Victoria.

customer.service@macmillan.com.au or orders@macmillan.com.au

Remember to quote your IAH Membership Number, which entitles you to a substantial discount. If you don't know your IAH membership number contact the Secretariat at: joel-p@groundwater.com.au