

# NEWS

# & information

IAH - THE WORLD-WIDE GROUNDWATER ORGANISATION

Furthering the understanding, wise use and protection of groundwater resources throughout the world

MAY 2019

## Also in this issue:

President's message  
World Water Day  
Education and Resources  
Strategic Overview Series  
Member news and initiatives  
Competitions and calls  
Chapter updates  
Commissions & Networks  
Events listing

and the regular IAH  
announcements and news



## GROUNDWATER GUARDIANS?



We enjoyed reading the news of research that the famous Easter island's statues are usually located near sources of drinkable water, at points where springs emerge...

*Media Focus, page 6*



### MENTORING SCHEME OPEN

Registration to IAH's mentoring scheme is now open! We are accepting new applications from mentees (receivers of advice) and mentors (givers of advice).

*Page 12*




### YOUR OPINION COUNTS!

We are currently undertaking a survey to seek opinions about how we're doing and ideas for new benefits and services IAH might provide to its members and supporters. *Page 7*

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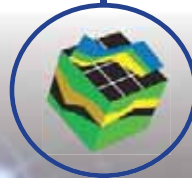
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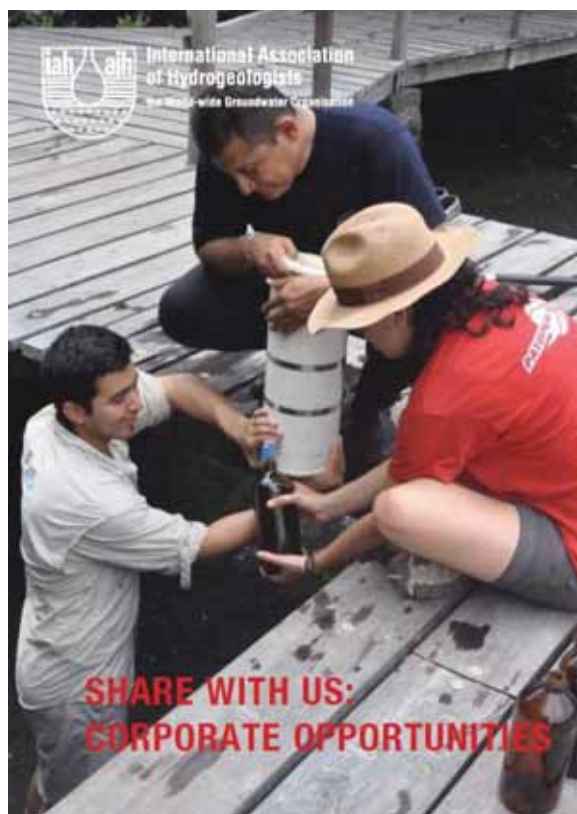
## SHARE WITH US

IAH would like to help more companies and organisations – and their staff – participate in global groundwater affairs and publicise their products and services.

We understand that corporate relationships should cater to different needs. Some companies and organisations may be seeking membership for their staff and perhaps a few additional benefits, whereas others may be more interested in publicising products or services to IAH members and those who receive information from us, including through our email communications and News & Information magazine, at meetings and events.

Information about the options and opportunities now features on our website. We have also produced a brochure, which can be downloaded and passed on to colleagues. Find out more by following the link below.

 <https://iah.org/join-us/corporate-membership-and-opportunities>



## ADVERTISING INFORMATION

IAH News and Information is published 3 times a year. It is distributed as an insert in Hydrogeology Journal and is also published via IAH's website and email alerts. It reaches all members and supporters of the International Association of Hydrogeologists – around 8000 people – and can also be freely downloaded by individuals worldwide for personal/not for profit use.

We accept commercial advertisements. Advertising rates are €300 per full-page advert and €200 per half page. These rates apply for one issue. If you take an advert in two successive issues then the third is offered free of charge.

Corporate members, supporters and sponsors are offered special rates. Contact us for more details.

Copy dates are 1 March, 1 June and 1 October.

Email [knicholson@iah.org](mailto:knicholson@iah.org) for further details.

## Changing times

We are already one third of the way through the year: time moves on rapidly and brings changes – though in some cases we might see that “plus ça change, plus c’est la même chose”. Some might say this about the ongoing political and economic uncertainty in the UK: the weekly ups and downs have now become the status quo. We remain confident, though, that the IAH, as a company and charity registered in the UK, will ride out the current difficulties.

The latest statistics for the UK show the pay gap between men and women has widened this year, after a period of gradually becoming more equal. Such disparities are so often the norm in many countries. Although we can’t do much directly about pay gaps in the UK and elsewhere, we can continue to push for all our members to be treated equally in terms of respect, opportunities and rewards.

The challenges faced by many highlighted by this year’s World Water Day theme, ‘Leaving no-one behind’, sadly remain but most assuredly change is needed here. Thank you to all who drew upon the issues and the work that is going on to address these, including our Early Careers Hydrogeologists Network in their excellent video.

For me personally, I have my own change ahead as I look to sign-off from the Environment Agency, England. After many years of ‘life-enhancing opportunities’ (a colleague’s rather corporate soundbite of the benefits for working at the EA!) I shall leave others to mull over the rights and wrongs of developing unconventional sources of oil and gas as I leave regulation of this sector behind – but I encourage them of course to keep in touch with our Groundwater and Energy Commission. I hope to have the time to remind myself of other groundwater matters and participate in other commissions and networks, including some that are currently in development - more on this in the future.

Don’t forget to take advantage of the discounts for early bird registration for our 46th Congress in Malaga, which are available until 30 June. Now is also the time for sponsors and exhibitors to contact the organising committee and let them know that you want to be there in September. If you’re not already convinced, take a look at the video previews. I look forward to seeing you there!

**IAN DAVEY, IAH EXECUTIVE MANAGER**

## IN THIS ISSUE

Media Focus .....	6
IAH Survey.....	7
From Our President .....	8
World Water Day.....	9
Education and Resources.....	10
Mining Enterprises and Groundwater .....	11
Ask a Member .....	12
Mentoring Scheme.....	14
Applied Hydrogeology Award - call.....	15
Member competitions.....	16
New Members .....	18
Chapter News.....	22
Commissions & Networks.....	24
IAH News .....	28
2019 Congress, Diary Dates and Events.....	30-32



A snapshot from Ian Davey’s student days - *“Hydrogeology was far too difficult – too many complex equations – so I opted to study engineering geology, where at least I had a chance of being able to see the medium I was dealing with. But I fell into groundwater accidentally and found it impossible to reach solid ground again...”*



# MEDIA FOCUS

A selection of groundwater features from around the world

## CHINA TO IMPROVE ITS GROUNDWATER (CHINA DAILY)

China aims to improve its overall groundwater quality and restore ecosystem functions at a basic level by 2035, according to an official plan issued on Monday. The plan was unveiled by the Ministry of Ecology and Environment and four other ministries, including the Natural Resources, Water Resources, Agriculture and Rural Affairs and Housing and Urban-Rural Development ministries. The goal will be achieved step by step. By 2020, the proportion of groundwater of extremely poor quality nationwide should be reduced under the plan to about 15 percent, and by 2025 the tendency toward worsening pollution in groundwater will be effectively controlled.

<https://www.chinadailyhk.com/articles/214/205/128/1554264505400.html>

## USA: WESTERN DROUGHTS CAUSED PERMANENT LOSS TO MAJOR CALIFORNIA GROUNDWATER SOURCE (AGU BLOG)

California's Central Valley aquifer, the major source of groundwater in the region, suffered permanent loss of capacity during the drought experienced in the area from 2012 to 2015. California has been afflicted by a number of droughts in recent decades, including one between 2007 and 2009, and the millennium drought that plagued the state from 2012 to 2015. Due to lack of water resources, the state drew heavily on its underground aquifer reserves during these periods. According to new research, the San Joaquin Valley aquifer in the Central Valley shrank permanently by up to 3 percent due to excess pumping during the sustained dry spell. Combined with the loss from the 2007 to 2009 drought, the aquifer may have lost up to 5 percent of its storage capacity during the first two decades of the 21st Century, according to Manoochehr Shirzaei, an assistant professor of earth sciences at Arizona State University in Tempe and one of the co-authors of a new study published in AGU's Journal of Geophysical Research: Solid Earth.

<https://blogs.agu.org/geospace/2019/03/19/western-droughts-caused-permanent-loss-to-major-california-groundwater-source/>

## USA: MOST US COAL PLANTS ARE CONTAMINATING GROUNDWATER WITH TOXINS, ANALYSIS FINDS (GUARDIAN)

Almost every coal-fired power plant in the US is contaminating groundwater with unsafe levels of toxic pollution, according to the first comprehensive analysis of the consequences of coal ash waste disposal.

<https://www.theguardian.com/environment/2019/mar/04/us-coal-plants-contaminating-groundwater-toxins-analysis>

See also: Power companies refute groundwater contamination findings.

<https://www.wwdmag.com/power-generation/power-companies-refute-groundwater-contamination-findings>

## EASTER ISLAND STATUES MAY HAVE BEEN ERECTED AS 'GUARDIANS' OF GROUNDWATER SOURCES (FORBES)

Easter island's famous statues, large human figures as high as 33 feet carved from the local quarried volcanic rocks, have long puzzled visitors and scientists. Research shows that the statues are usually located near sources of drinkable water, at points where springs emerge.

<https://www.forbes.com/sites/davidbressan/2019/02/06/easter-island-statues-may-erected-as-guardians-of-water-sources/#72968c344628>

#### THE FIRST CASE OF A PORTUGUESE BEETLE LIVING EXCLUSIVELY IN GROUNDWATER (SCIENCE DAILY)

A diving beetle demonstrating various adaptations to life underground, including depigmentation and evolutionary loss of eyes, was discovered in Portugal. This new to science species is the first known representative of the whole order of beetles to exclusively inhabit the underground waters of Portugal.

<https://www.sciencedaily.com/releases/2019/01/190108084435.htm>

#### COALITION APPROVES ADANI GROUNDWATER PLAN DESPITE QUESTIONS OVER MODELLING (GUARDIAN)

The Morrison government has approved the groundwater management plan for the controversial Adani project, a decision that follows internal pressure from Queensland MPs to achieve sign-off before the prime minister calls the federal election. The environment minister, Melissa Price, confirmed on Tuesday she had made a positive decision after advice from the CSIRO and Geoscience Australia “confirmed the revised plans meet strict scientific requirements”.

But the advice CSIRO and Geoscience Australia gave to the government could raise questions about the minister’s decision to approve the groundwater management plan. In a 63-page document dated February, CSIRO and Geoscience Australia said they had identified “a number of limitations” in the model used by Adani in its supplementary environmental impact statement (SEIS). They said these limitations “mean that the SEIS model is not suitable to ensure the outcomes sought by the conditions of approval are met”. They said, in particular, Adani’s model “under-predicts groundwater drawdown arising from mine development”.

[https://www.theguardian.com/business/2019/apr/09/coalition-approves-adani-groundwater-plan-despite-questions-over-modelling?CMP=share\\_btn\\_fb&fbclid=IwAR3Jcavr70\\_AHxpOp\\_EgQ-bKboq-2wf0hZ1\\_2rzZGqApZC8\\_Cbqhp661SBI](https://www.theguardian.com/business/2019/apr/09/coalition-approves-adani-groundwater-plan-despite-questions-over-modelling?CMP=share_btn_fb&fbclid=IwAR3Jcavr70_AHxpOp_EgQ-bKboq-2wf0hZ1_2rzZGqApZC8_Cbqhp661SBI)

## YOUR OPINION COUNTS! 2019 IAH SURVEY

We are currently undertaking a survey to seek opinions about how we’re doing and ideas for new benefits and services IAH might provide to its members and supporters. Can you spare a few minutes to give your feedback and suggestions?

The survey will be open until the end of August 2019. We are seeking as much representation as possible, from all around the world, so please do pass the message on.

Summary results will be published later in the year and will be considered carefully by IAH’s Executive and Council. Look out for reports and next steps later in the year and beyond.

SECRETARIAT

 <https://www.surveymonkey.co.uk/r/IAHsurvey2019>





## World Water Day...

On 22 March IAH members, other hydrogeologists and all hydrologists commemorated World Water Day, an event that reminds all the Earth's inhabitants about the importance of water for life on the planet and especially for the welfare of mankind.

The theme of the 2019 World Water Day was "Leaving no one behind", an adaptation of the central promise of the 2030 Agenda for Sustainable Development: as sustainable development progresses, everyone must benefit, as championed by UN Water. This is highly relevant to water, too, as Sustainable Development Goal 6 (SDG 6) aims to ensure availability and sustainable management of water for all by 2030, which, by definition, means leaving no one behind. And the problem, as UN-Water states, is that, "in our World, currently billions of people are still living without safe water and there are marginalized groups – women, children, refugees, indigenous peoples, disabled people and many others – who are often overlooked, and sometimes face discrimination, as they try to access and manage the safe water they need".

World Water Day is therefore a day to remember and raise awareness of the water problems across the world, and for us to remind everyone about the importance of groundwater in the water cycle and in the welfare of the humankind too. In many areas of the world, groundwater is the closest source of water for the population, but often a lack of technology means it is inaccessible for use. Instead, often people have to walk for kilometres to the nearest river for water, which is generally of poorer quality than the resource that lies beneath their feet.

These inequalities related to water access, water sanitation and to good quality water are reflected in practically all of the other SDGs. Special attention must be paid to gender inequalities: in Africa it is women, especially the younger women and girls, who take care of water supply at home, and who cannot therefore have the same access for example to school as boys have.

Agriculture and irrigation is another big issue. Without technology to access groundwater locally, many farmers need to have their lands far away from their homes, near rivers. Often life can be dangerous near rivers, not only because of floods, but also because in tropical Africa malaria is much more prevalent – so people prefer to live at higher altitude, far away from the available water.

These factors contribute to poverty, and difficulty in producing enough food for all the family. Hydrogeologists must be more and more proactive in attracting attention to these issues. Many NGOs working in Africa are constructing wells for the population, but just a few have the right technical support. Some do, but they need help from all of us, be it at the level of identifying the points to drill boreholes, well construction techniques, definition of water quantity and quality and wellhead protection areas to avoid more problems related with water linked diseases in the future. And clearly water sanitation must be always in our thoughts, since groundwater conditions may easily deteriorate where sanitation is poor.

Between 25 and 26 March I was invited as a representative of IAH to commemorate World Water Day at the conference "Water is a collective responsibility for sustainable development" in Santo Domingo, Dominican Republic, a tropical island, but one that hadn't received rain for several months. The landscape was strangely yellow in colour, which was not normal for the island. People were worried during the first day of the





conference about climate change and the implications it seems to bring to the island. That night it rained a lot: influence of the World Water Day? Let's believe we have the capacity to change the things in terms of water. On the second day of the conference confidence seemed to be renewed and all Dominicans were happy: it's the miracle of water coming.

Other important news is the initiative of IGRAC, immediately supported by IAH, for World Water Day 2022 to be dedicated to "Groundwater: Making the Invisible Visible", recently approved by UN. This is an opportunity for all of us to promote groundwater, to influence politics and legislation, and to make all aware of the importance of groundwater in the water cycle and for people across the world, in all aspects of our lives - health, food production, water security, energy, etc. - and for so many of the Earth's ecosystems.

Finally I want to draw your attention to our congress in Malaga, Spain, this year. It will be organised in a karstic zone of the Spanish coast and will be dedicated to the topic "Groundwater Management and Governance: coping with water scarcity". As the yearly meeting point for IAH members, I expect to see all of you there. My thanks go to colleagues of the National Chapter in Spain for organising this. See you in Spain in September 2019!!

ANTÓNIO CHAMBEL

## More on World Water Day...

Our Early Career Hydrogeologists' Network produced a poignant video as their mark for World Water Day . We are grateful to them for taking the time and effort to make it, and strongly encourage you to take a moment to watch and share it... we are incredibly proud that such wonderful people from ECHN are the future of responsible hydrogeology.

Also to coincide with World Water Day 2019, the United Nations World Water Development Report, 'Leaving no one behind' was launched on 19 March. Improvements in water resources management and access to water supply and sanitation services are essential to addressing various social and economic inequities, such that 'no one is left behind'. Safe drinking water and sanitation are recognized as basic human rights, as they are indispensable to sustaining healthy livelihoods and fundamental in maintaining the dignity of all human beings.

Groundwater plays a critical part in ensuring no-one is left behind. As our Strategic Overview Series paper on 'Human Health and Groundwater' says, '... the high quality of most groundwaters, consequent upon the self-purification capacity of subsurface strata, has long been a key factor in human health and wellbeing.' Protecting good quality groundwater resources is vital for lives.

Links to the ECHN video and resources are below. Thank you for supporting IAH – and be assured that for us, today and every day is World Water Day.

### SECRETARIAT

 <http://www.unwater.org/publications/world-water-development-report-2019/>

[https://iah.org/wp-content/uploads/2016/04/IAH\\_HumanHealthGdwtr.pdf](https://iah.org/wp-content/uploads/2016/04/IAH_HumanHealthGdwtr.pdf)

<https://www.youtube.com/watch?v=9IsjaWaD0Qg&feature=youtu.be>



MAY 2019

# EDUCATION AND RESOURCES

As announced at the end of 2018, a new Education website area has been launched on the IAH website. This area aims to cater to the needs of IAH's different audiences - the general public, including young people and teachers; and students, professionals etc.

We encourage you to explore the information and resources available. We envisage that the area will continue to grow over time, and welcome your suggestions and comments. We would particularly like to receive links to good quality, relevant videos and material in languages other than English.

Email [education@iah.org](mailto:education@iah.org).

As well as the Education area on our website, we now also regularly post up links and resources via our social media. Do follow us if you are not already doing so, and if you have something that you think others might value, remember to tag us: @iahgroundwater.

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 <https://iah.org/education>



## Watch congress keynotes

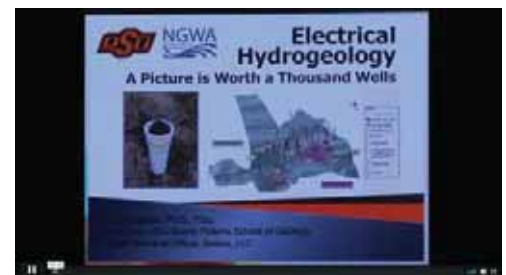
IAH now has a Vimeo channel, and this is already hosting a number of keynote lectures from last year's congress. These include:

- Prof. Dr. Nico Goldscheider - Global challenges and local solutions in karst hydrogeology
- Todd Halihan - Electrical Hydrogeology, A Picture is Worth a Thousand Wells
- Bjørn Kløve - Groundwater dependent ecosystems of the boreal landscape
- David Boutt - Do you know where your catchment ends? The role of inter-basin groundwater flow and hydrogeologic transience in hydrologic processes
- Shemin Ge - Fluid Injection Induced Seismicity: a hydrogeologic perspective
- Kang-Kun Lee, PhD - Exploring better and new utilizations of groundwater in Korea

The link is below for the channel. As with all our educational resources, we hope that this collection will grow over time. If you are planning an IAH seminar or similar, do get in touch... email [education@iah.org](mailto:education@iah.org).

SECRETARIAT

 <https://vimeo.com/iahgroundwater>



## In what ways do mining activities interact with groundwater systems ?

The eighth title in our series of Strategic Overview Papers (IAH-SOS) has been completed and is available to download. This covers “Mining Enterprises and Groundwater”. Production of the papers has been led by Past President Stephen Foster and Gill Tyson. Contributors included Wendy Timms, Andrzej Witkowski, Stephen Foot, Peiyue Li and Andrew Johnstone.

IAH’s Strategic Overview series is designed both to inform professionals in other sectors of key interactions with groundwater resources and hydrogeological sciences and to guide IAH members in their efforts to promote improved understanding, wise use and protection of groundwater resources to related sectors. The papers are an authoritative summary for each topic drawing on the collective international experience of IAH.

Discussions during the work of this title have pointed towards ideas for a further paper in this field. Additional titles concerning other groundwater related topics are also under consideration.

SECRETARIAT



[http://bit.ly/iah\\_mininggroundwater](http://bit.ly/iah_mininggroundwater) (Mining Enterprises and Groundwater)

<https://iah.org/education/professionals/strategic-overview-series> (Strategic Overview Series)



International Association of Hydrogeologists  
**Strategic Overview Series**  
**MINING ENTERPRISES & GROUNDWATER**

**KEY MESSAGES**

- mining enterprises are a major economic activity that is intimately linked with groundwater
- groundwater often exerts a negative influence on mining operations and mine safety, and mitigating such problems requires sound hydrogeological understanding
- mine water supply is highly location specific, but in more arid regions often depends heavily on groundwater resources
- mine drainage can become a major influence on groundwater flow regimes, with the scale of impact varying widely with type of drainage operation
- following mine closure and drainage cessation groundwater level recovery occurs accompanied by radical changes in groundwater quality
- historically some mining practices had a limited impact in relation to water resources, and this legacy is still having to be addressed
- but today most mining operations are much improved with the introduction of systematic environmental risk assessment and management

**In what ways do mining activities interact with groundwater systems ?**

Mineral resource extraction leads to an influx of groundwater to the mine or quarry and potentially major modifications of groundwater flow and quality regimes, and thus to various issues requiring consideration during mine evaluation, development, operation and closure. Groundwater can exert negative influences on mining economics by creating risks for operational continuity and miners' safety, as well as having adverse environmental impacts.

Mine closure implies ceasing groundwater drainage operations and allowing subsurface flooding to occur. This is best managed on a gradual, controlled and flexible basis with close monitoring of water table rebound, groundwater chemistry and environmental impacts. The key to mitigating such problems is hydrogeological understanding.

This brief considers all types of mining (open-cast and subsurface) and quarrying in relation to their interaction with groundwater (see following table). It is necessary to distinguish between coal/gas mining, heavy metal mining (including uranium), gemstone mining, salt mining, sand



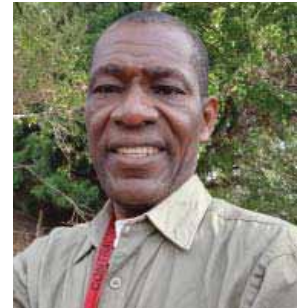
**BOWEN BASIN COAL MINE – AUSTRALIAN PUMP GREEN FOR MINE WATER PUMP**

*This Series is designed both to inform professionals in other sectors of key interactions with groundwater resources and hydrogeological science, and to guide IAH members in their outreach to related sectors.*

# Ask a Member...

A feature for IAH members to share thoughts, experiences and suggestions...

This issue's contributor is Segun Michael Adelana (Australia). Well-known among the IAH family and beyond, he currently works for a Victorian Government Department. Segun is a former member of IAH's Council and continues to give time to our Association, being a mentor and ongoing supporter of our mentoring scheme.



## Tell us a little about yourself...

For nearly 32 years now, after studying for a BSc in Geology, my work life and career has been around groundwater (from exploration and borehole siting in semi-arid to arid environments in Africa to teaching and research). I'm not sure if I would have enjoyed my work life better elsewhere.

Most of my work and project involvements have been in relation to water quality and water resource management. In the last 10 years (since moving to Australia to join my family) I have been involved in groundwater projects related to agriculture, water quality, and land use change impacts with a Government Department in my role as Research Scientist (Hydrogeology). The projects include 3D Groundwater Visualisation, SW Victoria Land Use impacts, Agriculture and Water Impacts in the Victorian MDB, Modelling Northern River Catchments Register B entries, CRC eWater - connecting landscapes to water resource impacts. Some of these appeared in published work like journals and conference papers, while others as technical reports. All have given me a strong drive towards integrated water resources management and kept my research interest on hydrology/processes of recharge and groundwater flow using isotopes & geochemical tools.

I am currently involved in a State Government Funded Project which had strong groundwater component (i.e. Nitrate transport and transformation in productive landscapes). We had two conference papers on this project and have just submitted an article to a journal for publication.

## And your experiences of IAH?

It's quite interesting how I came to IAH, although became a member of the Nigerian Association of Hydrogeologists long before coming to IAH. It all started with a research visit (with my German professor, Prof. Dr. Ebhart) to Heidelberg University, where a renowned professor of isotope hydrology headed a Department of Isotope Geochemistry/Geology. Then I was a DAAD stipendium at Technische Universitat Darmstadt (Germany) and my professor was seeking who could best help me with ideas to tackle my research questions in isotope hydrology. This led to my invitation to present at the local conference of the association, German Hydrogeologists Association (FIDG) held at Heidelberg University, which then gave me a chance to interact with highly experienced intellectuals. Earlier I was motivated by Dr Petr Vrbka (my very first hydrogeology lecturer) to present at a Geologists Conference in Paderborn (Germany) where I had first contact with many German professors and researchers working in the various fields of geology in Africa. These two meetings were spot-on and gave me the flavour of hydrogeology as a specialised field of geology, more than I had ever learnt in class. My continued interest led to Dr Vrbka paying for my IAH membership for 3 years (through the sponsored membership program).

A further milestone came in January 2004 when at my home university (where I lectured then in Geophysics and Hydrogeology) I got a phone call from Christine Colvin from South Africa. The conversation was on my nomination to run for



*“Above all, get involved, attend conferences as an early career scientist and be available to talk to experienced people in the profession.”*

the VP of IAH (sub-Saharan Africa) as she was the outgoing VP at that time. Sounding confused and inexperienced about such role and responsibilities that comes with it, she encouraged me to send my CV. I did and was later nominated and voted in to serve as VP (SSA) and member of IAH Council (I was re-elected in 2008 at the IAH conference in Japan). It was an interesting journey for me and I enjoyed working with the IAH executives and other regional VPs.

**What would you say have been your career highlights, successes...?**

Honestly, my career so far has been successful. I count myself lucky to have the kind of exposure the profession brought me and I am proud to be associated with IAH. I will do anything to promote its course because I remembered that at the start of my University education I had a choice between B.Sc in Mathematics and BSc in Geology (two offers at the same time). While my interest was in Mathematics and because I did not know what Geology entails, I signed the offer document for BSc Mathematics program but just before submitting the acceptance offer I had strong conviction to go back and pick up the Geology program offer. I have no regrets today for obeying my heart's conviction.

**Any career experiences you have learned from, that you are willing to share with others?**

My experience in the IAH Council taught me a lot, especially



in administrative and management skills. It was a big adjustment for me because I was not born an administrator or politician; I was not even a student executive member in my Uni days. But I came to know more people in the profession and I'm loving it!

**What piece of equipment/software/item have you found the most useful/you could have managed without throughout your career?**

GIS is one, I cannot write any journal paper or technical report (as required by my role) without generating geology maps or spatial maps in ArcGIS. It is a complete switch from cartographic and hand-generated maps in my student days. Also indispensable for me is AquaChem (a geochemistry software).

**What are your concerns now or for the future, relating to groundwater/hydrogeology?**

Pollution of the groundwater resource due to growing urbanisation and agricultural intensification.

**What tips might you give to someone just starting out on their study or career?**

Be motivated and passionate about your career.

**As someone who might employ others, what skills or "special something" might you be looking for?**

Passionate and highly motivated individuals, it is not necessarily all about the qualifications; those motivated and looking to see what they can do, or bring.

**What do you think those starting out should do to gain good experience?**

Above all, get involved, attend conferences as an early career scientist and be available to talk to experienced people in the profession.

**Your future plans? Aspirations?**

I still love to write and read hydrogeology; I would probably go back to the classroom to help impact young lives about the profession.

*[continued over...]*

**MAY 2019**

## MEMBER MATTERS

[...continued from previous]

### What has being a member of IAH brought to you?

Contacts, experience, increased passion...

### Is there anything IAH should be doing? Could do better?

I think the Forward Look has been one the greatest IAH achievements in terms of the future of the IAH. How to drive the energy of the young (probably through the Early Career program) should continue to be a priority.

### Additional comments – matters you would like to raise?

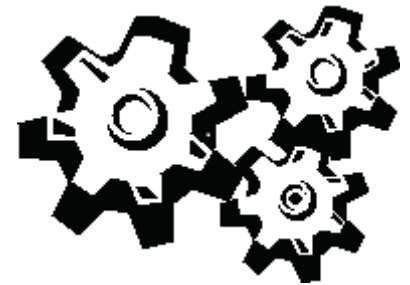
The IAH Executives should encourage and motivate more young people into IAH leadership, it is a good way to sustain the achievements of the “foreparents of hydrogeology” in the right spirit.

SEGUN MICHAEL ADELANA

# MENTORING SCHEME NOW OPEN

Registration to IAH’s mentoring scheme is now open! Our aim is the scheme should bring support to its members in three important areas:

- the scientific – providing advice and technical knowledge on various topics within the many strands of hydrogeological science;
- career options and pathways – providing guidance on job types and locations, CVs, interviews, networking, courses and training openings;
- practical experience – case studies, local hydrogeological knowledge of specific regions or aquifer types, volunteering to undertake short assignments.



We are accepting new applications from mentees (receivers of advice) and mentors (givers of advice).

If you are an IAH member and the scheme is of interest to you, please complete the relevant form from the links below. It is important that you provide as much detail as possible on the form – we are unable to consider applications that contain scant information and/or vague requests. In 2018, around a third of the applications received provided insufficient information. Detailed applications help us in our responses. They also help inform IAH more generally about members’ interests and needs from IAH and beyond.

Demand for mentors continues to outstrip supply. Please, if you could give a little time to help support mentees, we know it would be appreciated. Volunteering as a mentor does not take up as much time as you might think.

The scheme is only open to IAH members – but if you are not yet a member you are welcome to join us now!

## SECRETARIAT



<https://www.surveymonkey.co.uk/r/IAHmentor18> (giver of advice)

<https://www.surveymonkey.co.uk/r/IAHmentee2019> (receiver of advice)

<https://iah.org/education/professionals/mentoring> (general information about the scheme)





## APPLIED HYDROGEOLOGY AWARD: CALL FOR NOMINATIONS

Who's made an outstanding contribution to the application of hydrogeology, supporting international development efforts?

We are pleased to call for nominations for the 2019 'Applied Hydrogeology Award'. A panel appointed by IAH Council will be particularly interested to receive nominations for practising hydrogeologists who have made an outstanding contribution to the application of hydrogeology and an increase in living standards ideally in developing countries or in support of international development. The award will be presented in September at the 46th IAH Congress in Malaga, Spain.

Any IAH member may nominate a candidate, but self-nominations will not be accepted. Candidates do not need to be members of IAH. Nominations should include:

- An explanatory statement by the person submitting the proposal;
- A letter of recommendation by any other supporter;
- A brief career history of the candidate;
- A list of projects the candidate has carried out, including aims, region and period of time;
- A list of projects (planned or accepted), patents, publications or equivalent information.

Your proposal must be no longer than 5 pages of text in a single pdf-file. This should preferably be in English, though the panel are also happy to review nominations in other languages such as Spanish, French and German. It should reach the IAH Secretariat by e-mail ([info@iah.org](mailto:info@iah.org)) before July 1st 2019.

We look forward to receiving nominations from all our IAH Regions, to reflect the work of applied hydrogeologists across the world.

### SECRETARIAT



Submissions and queries to [info@iah.org](mailto:info@iah.org)

<https://iah.org/about/awards>

## MEMBER MATTERS

# Over to You...

A challenge and another book draw...

## Receive 100€\* with our feature writing competition

If you were an IAH Council Member for a day, what groundwater/hydrogeology related issues would you most like to raise with colleagues, either within IAH or beyond?

We are inviting IAH members around the world to send an article of up to 500 words, the best of which will be featured in IAH's newsletter, website and beyond.

To help inspire, you might want to take a look at the profiles and personal statements of each of our current Council members, which can be found here: <https://iah.org/about/council>. As you will read, each have groundwater issues and professional interests that are important to them. What is important to you? This might be concerning your region of work, your profession (or studies), matters overlooked, challenges or positive outcomes.

If there are challenges, we especially would like to know if you have ideas for possible solutions. We would be also interested to know individuals' thoughts on how to improve aspects of groundwater awareness in their region and, perhaps, what might encourage more local students and professions to join IAH and participate in its activities.

What is important is that you write succinctly and in a way that can reach out to others, as IAH's Council members are expected to do as part of their role for our organisation. You may find it helpful to include one or two images.

Entries will be judged by a panel of IAH representatives. They will also be checked for originality and clarity.

Neither a fine writing style nor perfect English is needed. What is important is your messages.

### IAH SECRETARIAT



### Entry information

This competition is open to all IAH subscribed members (2019 dues paid), with the exception of the current IAH Council and the IAH Secretariat. Entrants may submit an article of no more than 500 words plus up to 2 images.

Entries should be in PDF or MSWord format and emailed to [info@iah.org](mailto:info@iah.org). Please give your full contact details and membership number and provide a brief explanation about your photo(s) if submitted alongside your article.

The winning articles will be featured in IAH's News and Information magazine and its website – and of course, they will help inform IAH and beyond. IAH will therefore take it in good faith that entrants have considered copyright and privacy issues prior to submitting articles and photographs.

The competition will close on Sunday 1 September, 2019, 12.00 noon GMT. Winners will be contacted by email in November 2019 and will be announced on the Members' Only area of the IAH website thereafter.

\* Winners will receive 100€ (or sterling/dollar equivalent).





## Prize draw: win a copy of “Hydrogeology” by Bernward Hölting, Wilhelm G. Coldewey

Thanks to the author Wilhelm G. Coldewey and also to Willi Struckmeier, we have a copy of “Hydrogeology” (English edition) to give away to IAH members in a prize draw.

This textbook is a large size edition in English of the German textbook “Hydrogeologie” by Hölting and Coldewey, first published in 1980 and now in its eighth edition. It provides a complete introduction to hydrogeology comprising three main sections “General Hydrogeology”, “Groundwater Properties”, and “Applied Hydrogeology”.

The authors have created a comprehensive reference for earth science professionals involved in groundwater investigations and exploitation as well as for geotechnical engineers. The book presents insights into the sources and reservoirs of groundwater, the dynamics of fluid flow, the physical and chemical composition of groundwater and an overview of the economic value of groundwater, including its exploitation and use. It also contains a collection and explanation of acronyms, formula, units and equations, considering various national systems, e.g. German, French, American and Russian units. Original literature citations have been updated. Tables and figures facilitate the understanding of the often complex concepts of general and applied hydrogeology.

Information about the book can be found on the Springer website: <https://www.springer.com/gb/book/9783662563731> (IAH members are entitled to a 20% society discount).

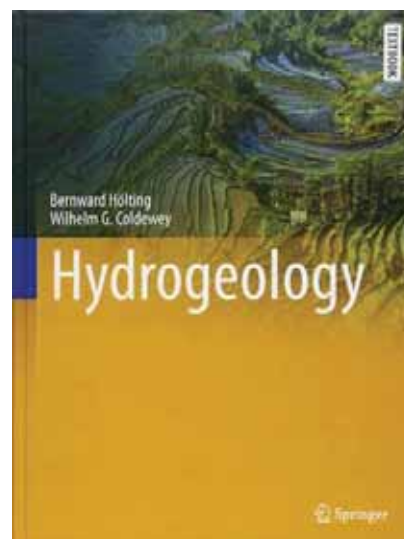
To enter to win, complete your details including membership number here: [https://www.surveymonkey.co.uk/r/Hydrogeology\\_H\\_C](https://www.surveymonkey.co.uk/r/Hydrogeology_H_C)

### Terms and conditions:

Prize draw closes 12.00 GMT on Thursday 1 August 2019. Entries are open to current IAH members only (2019 dues paid). One entry per individual (additional entries will be discarded). One copy of the book is on offer for this draw. The winner will be picked by random draw and will be contacted by email soon after the closing date. The winner will be also be announced in the December 2019 edition of “News and Information”.

### SECRETARIAT

 [https://www.surveymonkey.co.uk/r/Hydrogeology\\_H\\_C](https://www.surveymonkey.co.uk/r/Hydrogeology_H_C)



## Results from prize draw: “Field Hydrogeology” by Rick Brassington

Our previous prize draw was for three IAH members to win a copy of “Field Hydrogeology” by Rick Brassington. The draw closed at 12.00 GMT on Friday 1 February 2019, after which the following individuals were picked at random: Cameron Hall; Leif Nelson; Dave Winterbotham. The books were safely dispatched in March 2019.

### SECRETARIAT



## MEMBER MATTERS



# New Members

A warm welcome to the following new members, who joined our Association in the period 14 October 2018 - 14 March 2019:

### ALGERIA

Ibtissem DJAAFRI  
Karima SEGHIR

### AUSTRALIA

Abdinasir ALI  
Tanya ALI  
Shovon BARUA  
Nishal BHIKHA  
Quan BUI  
Pascal CASTELLAZZI  
Pankti DALAL  
Jack EARNSHAW  
Jamie GRIMSHAW  
James HOPKINSON  
Rohan LAST  
Karen MACKENZIE  
Andrew MESTHOS  
Sam MINAHAN  
Peter REEVE  
Alice TYSON  
Charl VAN DER MERWE  
Matthew VAUGHAN  
Mr Thomas WALTERS  
Joshua YU  
Dr Saskia NOORDUIJN  
Mr Stephen LEE  
Mrs Carolina AHUMADA CALDERON  
Mr Dilip PRANKUMAR  
Mr James MCDIARMID  
Mr James YAXLEY  
Carthigesu GNANENDRAN  
Jean-Philippe TEXIER  
Temitope ADEBOWALE  
Daniel ASHTON  
Louise BOUCHET  
Adrian CERVANTES  
Linda COURT  
Frederico DA FRAGA LEMOS  
Harry GARDNER

Aaron HAGENBACH  
Sizah NAWZAD  
Melissa SARTORI  
Mandana SHAYGAN  
Philippa HIGGINS  
Kat HUTTON  
Ritsuko MAEDA  
Ashish MISHRA  
Nicholas MORAN  
Jess THOMPSON  
Peter THORPE  
Michael VEEN  
Emma WILLIAMS  
MR Babbar SULEMAN  
Ms Caroline MATHER  
Sarah BLAKE

### BANGLADESH

Ferozur RAHAMAN

### BELGIUM

Mrs Marieke PAEPEN  
Mr Arnaud COLLIGNON  
Mrs Agathe DEFOURNY  
Ir. Olivier VOPAT

### BOTSWANA

Mr David M FARR

### BRAZIL

Mr Cristian BITTENCOURT  
Juliana GFREITAS  
Dr Jose PG MARTINS NETTO

### BURUNDI

Robert NIJIMBERE

### CANADA

Ms Danielle LOISELLE  
Mr Vishal SINGH  
Jennifer HANSEN

Peter FLEMING  
Eric ROSA  
Reema ZUBERI  
Ms Jessica PITMAN  
Mrs Simon HUARD  
Mr Gebeyehu AYELE  
Dylan STAFFORD  
Tyler DUNCAN  
Ms Madiha KHADHRAOUI  
Dr Danyang SU  
Mr JustinBUIS  
Dr Andarge Y BAYE  
Mr Sean O'CONNELL  
Mr Christian E GARDOIS REDFORD  
Kevin BENTLEY  
Trevor BUTTERFIELD  
Ray CRADDOCK  
Jeff GUTSELL  
Dr Louis KABWE  
Jeanette KLASSEN  
Ying LEI  
Cynthia MCCLAIN  
Ashley MCKENZIE  
Patrick MURRAY  
Amro NEGM  
Thomas PROKS  
Sarah RASCHELLA  
Murray SARAFINCHIN  
Nikola STEARS  
Larry SURKAN  
Matt THIBEAULT

### CHINA, PEOPLE'S REPUBLIC

Prof Jianmei CHENG  
Prof Ching-Sheng HUANG  
Teng MA  
Xiaoqing SHI  
Xiankui ZENG  
Mrs Yongli GUO  
Dr Qiong XIAO

## COLOMBIA

Mr Luis M ESCALONA MOLINA  
Carlos E ACEVEDO  
Ms Laura S BECERRA  
Daniel F MORALES  
Melissa PRECIADO  
Juan D RIVERA  
John J SANDOVAL  
Julian C SOLANO  
Sergio A TRUJILLO

## COSTA RICA

Jerry MURILLO

## CZECH REPUBLIC

Ing. Rolf FONSECA RODRÍGUEZ

## ETHIOPIA

Bakasho ETICHA

## FRANCE

Sarah TWEED  
Dr Charles DANQUIGNY  
Dr Pierre GRIZARD  
Mohamadoul M BA  
Tofon SV BAMBARA  
Cécile BAUDEMONT  
Andre BENAMOUR  
Nicolas BLANCHOIN  
Aurélien BLONDEAU  
Dominique CHIGOT  
Dorian CORBEAU  
Dave DETCHENOU  
Elia DROHNU  
Nicolas DUIN  
Antoine DURAND  
Roxane DURAND  
Pauline FABREGOULE  
Julien FERRAND  
Pierre HEDON  
Rémi HOOGSTOEL  
Sandra JENNI  
Emilie KROURI  
Guillaume LORETTE  
Chloé MAILLARD

Clément MASSE  
Florian MATHIEUX  
Kossa T MONTOUO  
Amer MOUHRI  
Présillia PAIMBOU-OUEONNE  
Loic SAVIGNAT  
Lalla Aicha SOW  
Paco THOUVENIN

## GERMANY

Mr Christoph MALIK  
Henning WIENKENJOHANN  
Florian HEINE

## GHANA

Dr Franklin OBIRI-NYARKO  
Mr Nana A ANDERSON  
Mr Patrick BRUCE

## HUNGARY

Petra BAJAK  
Ms Zsóka SZABÓ  
Ms Valerie A J A WENDO

## INDIA

Mr Ajaykumar KADAM  
Yogita DASHORA  
Mr Prakash Chandra CHHANGANI  
Dr Swathi BODDULA  
Mr Rajendra PRASAD  
Saheb DAS  
GEOVALE SERVICES PRIVATE LIMITED (c)  
Dr Sarah QASI  
Loknath RATH  
Hiranmoy SARKAR  
Dr Ifthikhar AHMED  
Manish KUMAR  
Dr Thangaraj PERIYASAMY  
J SIVARAMAKRISHNAN  
Heddu N G RAMESH  
Mr Indrajit BATABYAL

## INDONESIA

Dua KLAAS  
Prof Suny SUNJOTO

## IRELAND

Ms Emer KNOWLES  
Mr Colin FITZGERALD  
Prof Mary BOURKE  
Mr Eoghan CONCANNON  
Dr Jon HUNT  
Mr David O'CONNOR  
Dr David O'CONNELL

## ITALY

Dr Gian PDROLI  
Ms Gloria MOZZI  
Melinda RAIMONDO  
Dr Gianfranco GARDENGHI  
Dr Alberto PREVIATI  
Mr Massimiliano GAMBA  
Emilio CUOCO  
Paola GATTINONI  
Pietro RIZZO  
Laura SCESI  
Mr Edoardo SEVERINI

## JAPAN

Dr Cristobal PADILLA  
Mr TAKUYA NAMBU

## MALAYSIA

Dr Su Yean TEH

## NAMIBIA

Ms Fredrika N SHAGAMA

## NEPAL

Ms Sanita DHAUBANJAR

## NETHERLANDS

Dr Pieter PAUW

*NB: Those marked (c) are new IAH corporate members.*

*[continued over...]*

## MEMBER MATTERS

[...continued from previous]



# More New Members

Continuing our warm welcome to the following new members, who joined our Association in the period 14 October 2018 - 14 March 2019:

### NEW ZEALAND

Mr Leon PEMBERTON  
Mr Kevin LEDWITH  
Mrs Frederika MOUROT  
Mrs Amandine BOSSERELLE  
Mr Chris SHANKS

### NIGERIA

Dr Nuhu D UMAR  
Mrs Fati ABBA GAMBO

### NORWAY

Ioannis PAPANIMITRAKIS  
Svein R LYSEN  
MULTICONSULT NORGE AS (c)

### PAKISTAN

Aftab H KHAN  
Umair SAJJAD

### PANAMA

Ms Bella ALMILLATEGUI

### PERU

Mr Luis BARBA

### POLAND

Dr Maria GRODZKA-ŁUKASZEWSKA  
Dr Grzegorz SINICYN  
Dr Adam SZYMKIEWICZ  
Anastasiia ROMANOVA

### RUSSIA

Mr Roman FILIN  
Anna RYBAS  
SAINT-PETERSBURG UNIVERSITY  
CENTRE FOR GEOLOGY LLC (c)  
Mr Alexey TUDVACHEV

### SAUDI ARABIA

Professor Ali SUBYANI

### SERBIA

Mr Zarko VELJKOVIC

### SOUTH AFRICA

Mr Paul LOURENS  
Mr Gert NEL  
Dr Roger DIAMOND  
Mrs Johanna VAN ROOYEN  
Dr Girma Y EBRAHIM

### SPAIN

Luis CALVO BUELGA  
Lucía DONOSO ALMENARA  
Santiago GARCÍA LÓPEZ  
Ana María REBOLLO BAÑOS  
Rogelio ACOSTA RODRÍGUEZ

### SWITZERLAND

Debora JANOS  
Ms Robin WEATHERL

### TANZANIA

Mr Salehe R MAYANGE

### THAILAND

Dr Rungruang LERTSIRIVORAKUL  
Dr Karthikeyan MATHESWARAN

### TUNISIA

Dr Fethi BOUKSILA  
Dr Emna GARGOURI  
Najiba CHKIR  
Dr Younes HAMED  
Dr Haykel SELLAMI  
Belgacem AGOUBI  
Soumaya AOUITI  
Dr Oussama DHAOUI  
Mr Boulbaba HADDAJI  
Nizar TROUDI

### TURKEY

Mr Huseyin E YUKSEL

### UKRAINE

Prof Viacheslav LEGUPOV

### UNITED KINGDOM

Ms Rhiannon MARCHI-SMITH  
Miss Ellen LYNCH  
Dr Bentje BRAUNS  
Dr Leon KAPETAS  
Miss Kate THURLEY  
Miss Eloise SEAR  
Miss Lisa HO  
Mr Mario BIANCO  
Mr Joseph O'DELL  
Jamie MCCARTNEY  
Greg MCCLEARY  
Mrs Masoumeh PARHIZKAR

### UNITED STATES OF AMERICA

Mr Edward HARRIS  
Dr Melissa LENCZEWSKI  
Gregg DAVIDSON  
Miss Leah JACKSON  
Dr Lawrence LEMKE  
Mr James ADAMSON  
Dr Donald ROSENBERY  
Mr Javan MINER  
Dr William TURNER  
Mr Edward GAZZETTI  
Wilfried CLAEYS  
Jim KREBS  
Mike SCARINGELLA  
Mark WAYNE  
Sarah ARPIN  
Dr Roland HOAG

*NB: Those marked (c) are new IAH corporate members.*



## REMINDER: CHECK YOUR RECORDS



Are you receiving your regular IAH messages and alerts with HJ link and latest news digests and initiatives?

Ensuring that our members receive their IAH entitlements such as the Hydrogeology Journal is important to us. Do you work for a large government/commercial/educational organisation? Many such employers have firewalls in place. You may have to provide an alternative email address to receive your member mailings, or speak to your IT department. IAH emails are always sent from an @iah.org address. Please check your details and IAH settings regularly - we'd hate you to miss out.

SECRETARIAT

## IAH: THE GLOBAL GROUNDWATER FAMILY...

**46:** The number of countries represented by new members registering between October 2018-March 2019. Welcome back Panama!

**132:** The total number of countries represented by IAH members as at the end of March 2019.

## Australia honours Michael J. Knight

We are delighted to announce that former IAH President Professor Michael J. Knight was awarded Member of the Order of Australia (AM), "For significant service to scientific education, particularly hydrogeology and groundwater management".

Michael notes that it is the first time our profession has been recognised in the Australian Honours System and we share the hope that the Award acts as encouragement to others globally in their endeavours. Michael has also expressed his thanks to IAH "for the part it has played and provided opportunities for service and contribution towards the award. It has been an interesting journey."

We are sure that many IAH colleagues past and present have shared the journey with Michael, and certainly the part our Association plays to enable groundwater professionals to network and pass on knowledge and opportunities is a hugely rewarding part of our work. Michael received his Award on Australia day (26th January). Many congratulations!



SECRETARIAT



Notices, announcements, achievements: email [info@iah.org](mailto:info@iah.org), or tag us on social media...

# CHAPTER NEWS

## Serving regions, locally...

We continue to have more than 40 national chapters (NCs), which represent around 85% of our members – and there is interest in establishing more. It's certainly the case that our national chapters perform a valuable service in bringing scientific, professional and social benefits to members and the wider hydrogeological community. They also enable the Association to promote sound and sustainable groundwater use at a country and regional level.

IAH national chapters can form the focus of the groundwater community in a country and provide great opportunities for meetings and networking. But it doesn't just have to be single countries that form chapters. Cross-border regional groupings can also be established to promote groundwater activities in your part of the world. If you would like to know more about how to set up a chapter, contact us at [info@iah.org](mailto:info@iah.org).

### SECRETARIAT



<https://iah.org/groups/national-chapters>



## Australia

Events, resources...

Did you know that our Australian NC is IAH's largest, and for reasons of practicality has regional subdivisions? The chapter is involved in organising many national and regional events, which includes training sessions, seminars and conferences.

They invite you to join them at The Australasian Groundwater Conference (AGC), which will be held in Brisbane Queensland on 24-27 November 2019. This conference promises to be an epic event filled with informative presentations, entertaining networking events and stunning field trips.

Information about future and past events, including resources and outcomes, can be found on the chapter's website. The website also includes updates and calls, and topical news items of relevance and interest. Do have a look - and if you are one of IAH's many "champions" you might also find inspiration for something you could organise too...

### SECRETARIAT



<https://www.iah.org.au/>



## Netherlands

New website..

Our Netherlands chapter is proud to announce their new website, <https://netherlands.iah.org>.

The website has news, resources and information about the committee, which includes Ane Wiersma (secretary and treasurer) and Niels Hartog (President). Both are fairly new to their roles, working together with Michael van der Valk.

The chapter has also set up an IAH Netherlands LinkedIn group: <https://www.linkedin.com/groups/12209323/>. This will act as a platform for IAH members in the Netherlands to interact online and also for hydrogeologists elsewhere interested in the region.

The committee would also like to draw your attention to a forthcoming meeting held in honor of the retirement of Prof. Dr. Pieter Stuyfzand on the 29 November 2019. Details will follow.

### SECRETARIAT



<https://netherlands.iah.org/>





## Tunisia

### 2nd Atlas Georesources International Congress



The Atlas Georesources International Congress was first launched in 2017 by the Laboratory of Georesources (LGR) at the Centre for Water Research and Technologies. This year the congress took place once again, this time organised by LGR, our Tunisian national chapter and the Tunisian Committee of Hydrogeology at the Association Eau et Développement.

The congress was held in Hammamet in late March and focused on novel advances and case studies concerning Applied Geosciences for Groundwater. As sustainable management of groundwater resources should not rely on the hydrogeological knowledge only, the congress discussed multidisciplinary approaches where applied geosciences combined with modelling tools could bring new information and a significant knowledge to the groundwater system functioning, and also identify priority issues and adaptive measures for global change. IAH's Regional Groundwater Flow Commission (RGFC) organised a special session that analysed issues connected to groundwater management and related environmental protection defining physical and chemical degradation in the context of groundwater flow system functioning.

With more than 100 participants from 15 countries, the congress successfully addressed current and future challenges in groundwater, with four keynote and more than 80 oral and poster presentations and four exhibitors.

Oral and poster presentations awards were attributed to Janja Vrzel (LMU, Germany) and to Yassin Kadri (LGR-CERTE, Tunisia) respectively. Each received books donated by IAH.

Congress abstracts will be made available to view on the website. See the links below for further details.

**FATEN HORRICHE**



 <https://aed.org.tn>

<https://www.facebook.com/AGIC2019/>

# COMMISSIONS & NETWORKS

Activities of IAH's commissions and networks include contributing to the science of groundwater and undertaking outreach, education and training. Many participate in IAH and other events worldwide. We encourage you to find out more and to make direct contact with them (you do not have to be an IAH member to participate). We also welcome suggestions for new topics or activities.

We are pleased to report that there has been interest in re-energising Groundwater and Ecosystems Network, so if this is something that you would like to be involved in, let us know at [info@iah.org](mailto:info@iah.org). In addition, several IAH members have pointed out that although various commissions and networks consider groundwater quality, we don't have one that focuses on the key groundwater quality issues. The Executive considered this at their meeting in February, when they were joined by Dan Lapworth of the British Geological Survey. Dan thought that the 'traditional issues' for groundwater quality were still of concern and needed to be addressed. He felt that it wasn't the case that only novel issues should be considered.

Likewise, the interface between science and society is a matter that is of interest and importance, and some are considering whether this should also be represented by a network.

So, do keep checking back for updates. And for news and views from some of our existing commissions and networks, please read on! For the full listing and contact/website information, go to <https://iah.org/groups/commissions-networks>.

## SECRETARIAT



<https://iah.org/groups/commissions-networks>

Questions, ideas or comments? email [info@iah.org](mailto:info@iah.org)

## REGIONAL GROUNDWATER FLOW COMMISSION (RGFC)

As we are compiling this newsletter, RGFC is heading off to co-organise sessions at the EGU General Assembly 2019 in Vienna, having just participated in a special session at AGIC2019 in Tunisia.

Looking ahead, the commission will also be organising a session at this year's congress in Malaga entitled "Innovative approaches for understanding groundwater flow systems" under Topic 5 "Tools, methods and models to study groundwater." This session will welcome contributions on advanced and new techniques developed for characterising groundwater flow systems, heat transport, water quality and pollutant fate. Of interest for the session are approaches using hydraulic, temperature, isotope or natural environmental tracer data and numerical modelling for a better understanding of local

to regional groundwater flow systems, geochemical patterns, groundwater mixing and ages, or the contamination processes of organic and inorganic pollutants.

The session is co-supported by RGFC and the EU H2020 ENeRAG (Excellency Network Building for Comprehensive Research and Assessment of Geofluids) project.

This is just a snapshot of news - to find out more about RGFC's activities and resources, including events in which participation is planned, view the website. And do get in touch!

## RGFC COMMITTEE



<https://regionalgwflow.iah.org/>





# INTERESTED IN GROUNDWATER AND CLIMATE CHANGE?

We are happy to announce the launch of the new website of the IAH Commission on Groundwater and Climate Change (CGCC) at <https://gwclimate.iah.org/>. Here you will be able to find updated information on the commission chairs, members, publications and activities.

We would also like to invite you to join the CGCC as a member and/or share with us relevant activities in the field of groundwater and climate change in which you are involved. You can do this simply by sending an email to [iah.cgcc@gmail.com](mailto:iah.cgcc@gmail.com). We will also be holding our annual meeting at the 46th IAH congress in Malaga in September this year (<http://www.iah2019.org/>) and look forward to meeting you there to share with you the latest activities of the Commission.

Together we will continue to raise awareness worldwide on the need for protecting and supporting groundwater in its crucial role in adaptation to climate change.

**TIBOR STIGTER, COMMISSION CHAIR**

 <https://gwclimate.iah.org/>



# COMMISSION ON KARST HYDROGEOLOGY (KC)

KC has established a program for funding young scientists to attend official KC meetings. The program applies to young (up to 35 years old) scientists from low income and transition countries (check the classification at <https://iah.org/join-us/country-fee-bands>). Interested candidates must have an accepted abstract and submit to the KC a short CV together with a motivation letter. The decision will be made based on scientific merit, level of income and age. One candidate will be awarded per year. This year the official KC meeting will be the IAH Congress in Malaga. We invite KC members to spread the news to their young students and collaborators so we can choose among suitable candidates.

A video featuring former KC Chair Nico Goldscheider's research was aired in March on a popular science program on German TV. The video (in German) has in its first part research performed in Blue Cave and Blue Spring, showing some water tracing experiments. In the second part the video deals with the World Karst Aquifer Map (WOKAM), a KC project coordinated by Nico and Zhao Chen. Watch it here: <https://www1.wdr.de/mediathek/video/sendungen/quarks-und-co/video-hoehlen-als-trinkwasserquelle-der-zukunft-100.html>



<https://www1.wdr.de/mediathek/video/sendungen/quarks-und-co/video-hoehlen-als-trinkwasserquelle-der-zukunft-100.html>

There are several interesting events related to karst hydrogeology in 2019/2020, which includes courses and field trips. Information can be found on the KC website and newsletter. As mentioned above, KC will be at this year's congress in Malaga. There will be sessions and field trips related to karst and the event will also host the annual meeting of our commission. Details can be found on the congress and KC websites, and we hope to see you there.

**KARST COMMISSION COMMITTEE**

 <https://karst.iah.org/>

[continued over...]

**MAY 2019**

## Commissions & Networks

[...continued from previous]

# COMMISSION ON TRANSBOUNDARY AQUIFERS

IAH's Commission on Transboundary Aquifers will be organising a workshop on 22nd Sept 2019 in Malaga, Spain, as a pre-conference event, ahead of the IAH 46th Congress.

This workshop will take stock of the whole question of "transboundary aquifers" that has evolved in the past twenty years, since the launch of the IAH Commission. The aim of the workshop is to take a good and a clear eyed look at the future – setting out "the way forward" on the required research, policy directions and effective management. This will guide the next phase of the work of the IAH Commission, as well as offer a framework for other partners (such as UNESCO, UN ECE, and others) to engage in the sustainability of these resources.

It is planned as an open event, and all IAH members, as well as non members are welcome to attend. Information is available on the IAH congress website. No participation fees, additional to

the IAH Congress fees, are required. However, for this workshop a registration form (available via the Commission's LinkedIn group) should be completed and submitted.

In addition, a new Award has been set up by the IAH Commission. Calls will shortly be sent out to the transboundary aquifer community soliciting applications for the award. The first award will be made in the Malaga Transboundary Aquifers workshop, during the IAH Malaga Congress.

**SHAMMY PURI AND COMMISSION COLLEAGUES**



<https://www.linkedin.com/groups/8553068/>  
<http://www.iah2019.org/>

# COMMISSION ON MANAGING AQUIFER RECHARGE

As we draft this newsletter, preparations for ISMAR10 – 10th International Symposium on Managed Aquifer Recharge, Madrid 20-24 May 2019 are in their final stages. We hope to bring you news and resources to those who have been unable to attend the symposium.



Also, to remind you that an IAH-MAR Working Group on 60 years history of MAR has published a paper in Hydrogeology Journal (Open Access thanks to UNESCO) showing global coverage (now at 1% of global groundwater extraction), outlining advances, and in supplementary materials giving national histories for 16 countries and some photos of unique sites. This was web published in Sept 2018 and is now in print as Vol 27 (1) 1-30, Feb 2017 <https://link.springer.com/article/10.1007%2Fs10040-018-1841-z>

**PETER DILLON, WEIPING WANG AND ENRIQUE FERNANDEZ  
(COMMISSION CO-CHAIRS)**

 <https://recharge.iah.org/>



<https://link.springer.com/article/10.1007%2Fs10040-018-1841-z>



NEW, IN THE IAH BOOK SERIES...



## International Contributions to Hydrogeology (IAH-ICH)

Series editor Nick Robins, formerly of British Geological Survey, Wallingford, UK

# INVESTIGATING GROUNDWATER

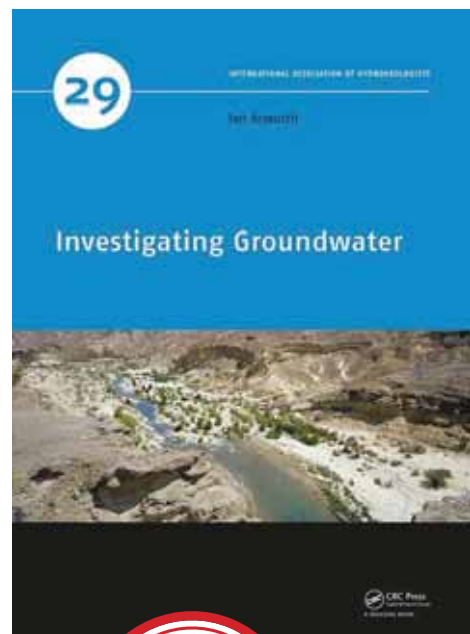
Ian Acworth, Emeritus Professor at University of New South Wales

Investigating Groundwater provides an integrated approach to the challenges associated with locating groundwater. It provides a review of the wide range of techniques that can be deployed to investigate this important resource. Many of the practical examples given are based upon Australian experience but the methods have worldwide applicability. The book is published in colour and includes many original diagrams and photographs. Particular effort has been made to provide consistent terminology and SI units are used throughout the text.

Written for a worldwide audience of degree level geology/engineering practitioners, academics and students involved in groundwater resource investigation methods, Investigating Groundwater is essential reading for those working in groundwater research.

April 2019: 586 pp; ISBN 9781138542495

Published price £148.99 (30% discount for IAH members)



 <https://www.crcpress.com/Investigating-Groundwater/Acworth/p/book/9781138542495>  
[https://iah.org/members/discount\\_perks](https://iah.org/members/discount_perks) (access member discount information)

## FROM OUR EXECUTIVE

The IAH Executive Committee (IAH President, Secretary General, two Vice Presidents, and the Executive Manager) meets three times a year, including at our annual congress (which this year is in Malaga, Spain, in September). The first Executive meeting of 2019 was held in February in Reading, England, close to where several members of the Secretariat live (and hence who were able to participate in the meeting).



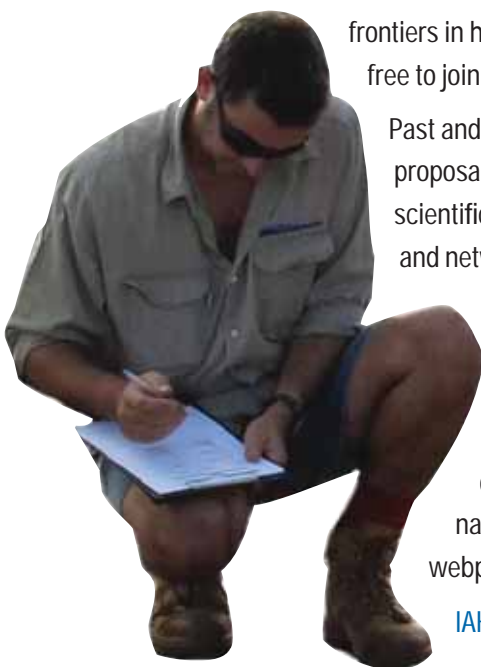
Financial matters were gone over in detail, and a draft budget set for 2019. IT matters, particularly securing and ensuring the privacy of data on IAH members were talked about, along with our efforts to increase corporate support for IAH, and continue current and future engagement with national and international groups. The latter includes support for the World Water Day in 2022 which will have a groundwater focus: “Making the invisible visible”, along with co-sponsorship of groundwater meetings and sessions in international meetings. Another international activity is IAH’s involvement in the World Water Quality Assessment being led by UN Environment. This project will run in parallel to - and feed into - projects concerned with SDG targets and indicators. A kick-off meeting was held in Geneva in November 2018, attended by the IAH Secretary General.

As we hope many are aware, IAH has a Strategic Overview Series (which are short papers describing the links between groundwater and other disciplines – human health, ecosystems, global change, etc - and can be found on the IAH website); discussions in Reading focused on arrangements for translating existing papers into other languages, and on identifying possible topics for new papers. These papers are being produced in response to an item in our Forward Look Action Plan 2011-2020. Another ongoing action item from the Forward Look plan is a review of frontiers in hydrogeology, perhaps resulting in some visionary publications in that area. Please feel free to join in on any of these efforts that interest you – participation is open to all!

Past and future IAH Congresses were discussed by the Executive Committee, along with new proposals for future Congress venues. Not only are congresses important for disseminating scientific knowledge through presentations, posters and meetings of our commissions and networks, they also provide an opportunity for hosting our Annual General Meeting, a requirement of our status as a charitable company. In addition to our upcoming congress in September 2019 in Malaga, Spain, we plan to have Congresses in Brazil (Sao Paolo) in 2020, and Belgium (Brussels) in 2021.

Our publications, including the Hydrogeology Journal and book series, were discussed in Reading, as well as the progress of IAH commissions, networks, and national chapters. Educational initiatives include the launch of our new education webpages and a review of our mentoring programme. See separate items in this newsletter.

IAH EXECUTIVE



## JOURNAL EDITORS MEET IN SPAIN

Hydrogeology Journal's editorial team met for several days in April to discuss the journal's current status and to plan its development. The meeting was held in Barcelona at the Institute of Environmental Assessment and Water Research (IDAEA-CSIC), to which we extend our thanks. The Institute also hosted a workshop that enabled the HJ editors and students/staff to exchange information about their latest research.

SUE DUNCAN



Left to right: Jean-Christophe Comie, Martin Appold, Sue Duncan, Jean-Michel Lemieux, Rui Ma, Susanne Schemann, Cliff Voss and Maria-Theresia Schafmeister.

### "WE LIVE IN UNCERTAIN TIMES..."

The author W. Somerset Maugham is often quoted (in the UK, at least...) when times get difficult. The quote from which the title of this piece is taken is actually "*We live in uncertain times and our all may yet be taken from us*".



We're certainly not in that situation, but for the IAH, being a UK based charity, with its income mainly being in euro and its expenditure mainly pounds sterling, the ongoing confusion over Brexit has great potential to affect our finances, as exchange rates react to each stage of this drama.

For those of you far from the Europe, you may consider this to be a little local difficulty, though to quote another (António Guterres, UN Secretary-General):

*"While global economic indicators remain largely favourable, they do not tell the whole story. The 'World Economic Situation and Prospects 2019' underscores that behind these numbers, one can discern a build-up in short-term risks that are threatening global growth prospects. More fundamentally, the report raises concerns over the sustainability of global economic growth in the face of rising financial, social and environmental challenges."*

Despite these concerns, we consider that the IAH's finances remain sound. With continued careful financial management and hopefully ongoing growth in our membership and corporate support, we believe this will continue to be the case. With this in mind we will continue to promote and support all fields of hydrogeology as our members and supporters expect.

TEODORA SZOCS, VICE PRESIDENT, FINANCE AND MEMBERSHIP AND IAN DAVEY, EXECUTIVE MANAGER



# 46th IAH Congress, Malaga

The IAH Spanish Chapter (IAH-GE) and the Centre of Hydrogeology of the University of Malaga (CEHIUMA) are honoured to host and invite you to the 46th IAH Congress in Malaga, Spain in 2019. The congress will take place at the Malaga Congress Centre from Sunday, 22 September to Friday 27 September 2019.

Malaga is picturesquely situated in a bay surrounded by mountains and bounded by the rivers Guadalmedina and Guadalhorce. It is one of the oldest cities in Europe, with 2800 years of history, and has experienced civilizations from the Phoenicians and Greeks to the Romans. As a result, Malaga is rich in culture, from historical monuments such as the Alcazaba and Gibralfaro castles, and the incomplete cathedral locally called 'La Manquita', to the bustle of modernity. It is also the birthplace of Pablo Picasso and his childhood house is now a museum with 100s of his artworks.

## Programme: Groundwater Management and Governance: Coping with Water Scarcity

The themes highlight the water resources stresses forecast as a result of global change:

- Groundwater assessment and management
- Groundwater and climate change
- Groundwater sustainability and governance
- Groundwater footprint and virtual water
- Tools, methods and models to study groundwater
- Groundwater, wetlands and natural heritage
- Karst Hydrogeology
- Groundwater quality and pollution processes
- Groundwater and socio-economic development in Latin-America
- Urban groundwater

## Pre-congress Short Courses

Several courses are proposed ahead of the congress (NB At least 20 people need to register for a course to run). Current proposals are:

- How to write a successful research paper: the 10 mistakes to avoid
- Open-source tools for pumping test interpretation: hytool for R
- Groundwater spreadsheets for solving flow, pollution and environmental problems
- KARSYS: applied and innovative methods for the management of karst environment
- Geochemical modeling for hydrogeologists
- Karst hydrogeology
- Introduction to geostatistics and applications in hydrogeology

For more information see <http://www.iah2019.org/pre-congress-short-courses/>



## Field trips

There are several field trips to choose from, which will provide a flavour of both the regional hydrogeology and the local culture:

- There are wetlands to see in the north of Malaga Province, with a visit also to the UNESCO World Heritage Antequera dolmens site, an ensemble of megalithic buildings with 5,500 years of history.
- The Sierra Gorda Mountains of the Axarquía region, in the SW of the Granada province, consist of a 1000 metres of thickness of Jurassic limestones and dolostones that constitute one of the most important karst system (300 km<sup>2</sup>) of the south of Spain.
- A visit to the eastern coast will reveal the local sources of water and contaminants, using hydrochemical and isotopic techniques, and aquifer-river interactions.
- The nearby Costa del Sol is an internationally-known tourist destination which has very high water-demand for drinking water, golf courses and irrigation. This trip will examine the fragile equilibrium between scarce rainfall and demands on available water resources.
- Don't miss the opportunity to choose the karst hydrogeology and visit the Alta Cadena Mountain Range and the Torcal of Antequera nature reserve, which offer some of the most exciting karst landscape of Spain.
- Malaga, and its 575,000 inhabitants, sits within the Guadalhorce river basin, which covers nearly half of the Province of Malaga. You will visit several of the basin's aquifers (carbonate, detrital and gypsum aquifers), rivers (Guadalhorce and Grande rivers, among others) and the main reservoirs.
- Groundwater from the Bajo Guadalhorce in the Sierra de Mijas has been used historically for irrigation and for supply to Málaga. A wetlands complex fed by the aquifer, the Mediterranean Sea and the river is now being restored with the aid treated waste water, creating new habitats.
- Finally, you could take a trip to the western part of Malaga Province, to Serranía de Ronda. Here you can enjoy the rich geo-hydro-diversity of large valleys (Guadiaro and Genal rivers) sculpted in hard rock, smooth landscapes of the Ronda sedimentary basin and impressive karst massifs.

## Accompanying persons

If you're not coming to IAH 2019 for the hydrogeology then there is still plenty to keep you occupied with the accompanying persons' programme. For more information, see: [http://www.iah2019.org/wp-content/uploads/Accompanying\\_Persons\\_Programme.pdf](http://www.iah2019.org/wp-content/uploads/Accompanying_Persons_Programme.pdf))



# DIARY DATES & EVENTS 2019 - SELECTION

3-6 June – Aarhus, Denmark

LuWQ2019 – International Conference on LAND USE and WATER QUALITY: Agriculture and the Environment  
Organised by Aarhus University, Denmark (principle organiser); RIVM National Institute for Public Health and the Environment, the Netherlands; Geological Survey of Denmark and Greenland (GEUS), Denmark; and Umweltbundesamt (UBA), German Environment Agency, Germany. IAH is Scientific Sponsor of the conference.

Website: <http://www.luwq2019.dk>



12-14 June – Milano, Italy

FLOWPATH 2019

Groundwater flow and resource management. The Italian Chapter of the International Association of Hydrogeologists (IAH) is pleased to invite you to the 4th Edition of FLOWPATH, the National Meeting on Hydrogeology. FLOWPATH Conference is a key biennial event for Italian hydrogeologists to exchange ideas and knowledge on different groundwater topics.

<http://www.flowpath2019.polimi.it/>



15-18 June – Serbia & Romania

Geo Trip to the Carpathian karst

The IAH Karst Commission (KC) is organising a Geo Trip to the Carpathian karst, prior the 4th Conference of the Central European Group (CEG) of IAH. The Geo Trip is open not only to the KC members but for all interested. The tour includes visit of attractive karst surface features, springs, caves along the southern margin of Carpathian Mountains in the two countries, between Danube and Olt rivers (Donji Milanovac – Baia de Arama – Trgu Jiu – Horezu).

<http://www.karst.edu.rs/en>



18-20 June, Donji Milanovac, Serbia

4th IAH CEG Group Conference

Towards Sustainable Management of Groundwater Resources". The IAH National Chapter of Serbia is organising the 4th Conference of CEG IAH (Central European Group of IAH). Oral and poster presentations are welcome.

<http://www.karst.edu.rs/en>



21-26 July – Tomsk, Russia

16th International Symposium on Water-Rock Interaction and 13th International Symposium on Applied Isotope Geochemistry

Water-Rock Interaction is the International Symposium attracting many students and the leading scientists in the field of geochemistry, geology, hydrogeology, hydrogeochemistry, hydrology and other Earth and Environmental sciences from many developed and developing countries to exchange ideas and share an experience on a broad field of science. Every three years, the Water-Rock Interaction Working Group of the International Association of GeoChemistry meets for a week of science and collegiality in a different region of the world.

<http://wri16.com/>



<http://iah.org/events>

For a fuller list of conferences, events and meetings and to submit an event

