

# NEWS

# & information

IAH - THE WORLD-WIDE GROUNDWATER ORGANISATION

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

## DECEMBER 2019

### Also in this issue:

President's message  
Education and resources  
Member news and initiatives  
Competitions and calls  
Survey results  
Chapter updates  
Commissions & Networks  
Events listing

and the regular IAH  
announcements and news



More than 700 presenters and delegates from around 80 countries came together for the 46th IAH Congress in Malaga in September. This photo is just a fraction of them - and one of many taken by the IAH2019 props! *Meeting reports, page 26*



### IAH PARTICIPATES IN WATER STEWARDSHIP REVIEW

IAH provided advice to a consortium of partners undertaking the Water Stewardship Benefits Accounting Methodology. *Page 10*



### IAH COUNCIL ELECTION: NOMINATIONS TIME

The next IAH Council election will take place in 2020. We are seeking a strong, diverse range of candidates to stand. *Election call and info, page 14*

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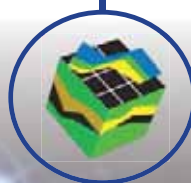
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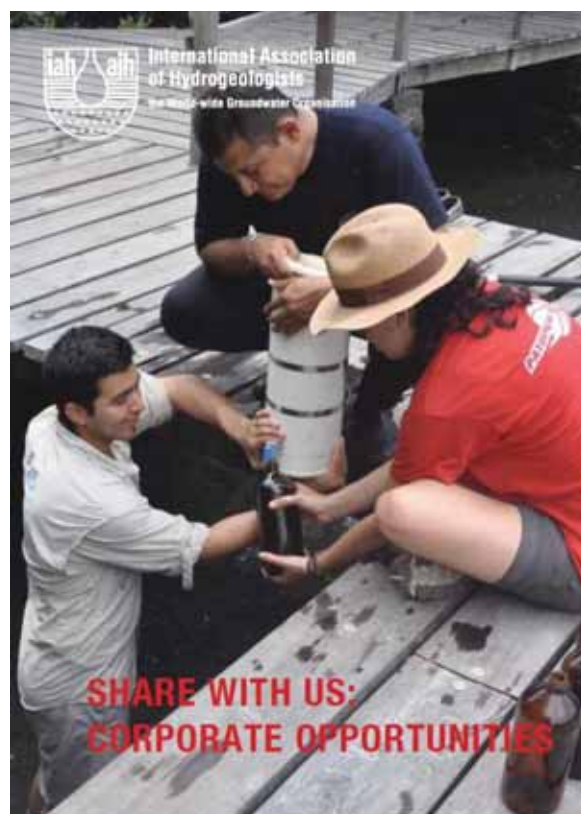
## SHARE WITH US

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.

## Taking stock...

Welcome to the final newsletter of 2019. Firstly, apologies – for the slight delay in delivering this newsletter and your copy of Hydrogeology Journal, which was down to some ‘systems issues’ experienced by our publisher, Springer; and also to those who attended our Annual General Meeting in Malaga, which admittedly did go on a bit... Rest assured that lessons have been learnt.

But it is a time to celebrate our achievements in 2019 and to look forward to 2020. The feedback on the Malaga Congress was overwhelmingly positive. Delegates thought it was well-organised and the scientific programme was of a high standard – congratulations to all concerned, both organisers and delegates, for making it such an enjoyable event.

We now have the next congress to look forward to in Sao Paulo, Brazil, as well as a host of other conferences organised by national chapters and our commissions and networks. As you will see in the President’s Message Sao Paulo promises to be a great opportunity to support our growing membership in Latin America and also for IAH to cooperate with other organisations. Hopefully many of you will be able to make the journey there. And beyond that we have congresses in Belgium and China confirmed for 2021 and 2022, with other national chapters interested in later years.

Our finances have been holding up well under the continued conditions of change in the currency markets. For much of the year we have benefited from the low value of sterling against other currencies in our day to day income and expenditure. Sterling’s more recent recovery, though, may well change this and we’ll have to keep a close eye on finances in the rest of this year and for the 2020 budget.

A cause for celebration is our record level of membership – 4458 at the time of writing. This is a great achievement, with significant increases in many of our regions and particularly in the numbers of students. We will need to continue to work hard to provide the benefits that all members deserve and also to retain our student members as they move into the profession. The discount agreed at this year’s AGM for members transferring from student to full membership will hopefully encourage many to stay with the IAH.

Next year is election year for IAH Council and we welcome nominations from all our members. Details on how to

## IN THIS ISSUE

Media Focus .....	6
From Our President .....	8
News from GRIPP.....	9
Water Stewardship.....	10
IAH News .....	12
Council Election, call.....	14
Ask a Member.....	16
Member competition.....	18
Education and Resources.....	19
New Members and updates.....	20
2019 Survey results.....	24
Congress and Meeting Reports .....	26
Chapter News.....	32
Commissions & Networks.....	34
2020 Congresses, Diary Dates & Events.....	38-40

participate are included in this newsletter. If you think you can contribute to the running of IAH we would be most happy to receive your nomination. IAH is by nature a diverse organisation and it is important that this diversity should be properly represented by your Council members. But if being a member of Council isn’t for you, please do make sure you contribute to the good governance of the IAH by voting!

Finally, we hope that you have chance for a well-earned rest as 2019 draws to a close, in readiness for a busy and successful 2020.

**IAN DAVEY, IAH EXECUTIVE MANAGER AND  
THE SECRETARIAT TEAM**



DECEMBER 2019



# MEDIA FOCUS

A selection of groundwater features from around the world... and Mars

## TAINTED WATER: HOW A CRIPPLING BONE DISEASE IS LINKED TO DROUGHT IN INDIA

Prevalent across rural India, fluorosis is caused by excessive consumption of the mineral fluoride, usually through drinking contaminated groundwater. As fluoride builds up in the body it leads to skeletal deformities.

<https://www.telegraph.co.uk/global-health/climate-and-people/tainted-water-crippling-bone-disease-linked-drought-india>

## SOLAR AND WIND ENERGY PRESERVE GROUNDWATER FOR DROUGHT, AGRICULTURE

Solar and wind farms are popping up to lower carbon emissions, and these renewables also have another important effect: keeping more water in the ground.

<https://www.eurasiareview.com/08112019-solar-and-wind-energy-preserve-groundwater-for-drought-agriculture>

## GROUNDWATER HEATING COULD BE THE ANSWER TO GREENER CITIES

Natural water in the ground below UK streets could be used as a low-carbon heat source in many of the country's towns and cities, according to new research from the British Geological Survey.

<https://www.powerengineeringint.com/2019/10/22/groundwater-heating-could-be-the-answer-to-greener-cities/?topic=73112>

## GRAVE DANGER – CEMETERIES AS A SOURCE OF GROUNDWATER POLLUTION

Halloween brought with it thoughts of ghosts, skeletons and spooky cemeteries. Graveyards have long been considered scary places thanks to the corpses beneath our feet, but for most people not because of the contamination risk they can pose to groundwater.

<https://www.legalfutures.co.uk/associate-news/grave-danger-cemeteries-as-a-source-of-groundwater-pollution>

## ANCIENT GROUNDWATER IN EGYPTIAN AQUIFERS

Researchers have found evidence that older water from the deep Nubian Aquifer is discharging along faults in the rocks and mixing with shallow, younger groundwater. This potentially valuable resource could ease pressure on water available from the River Nile and could help in future development plans for the area.

<https://phys.org/news/2019-05-age-groundwater-egyptian-aquifers.html>

## DROUGHT-PROOFING SOUTH AFRICA: GROUNDWATER IS THE WAY TO GO

Under-utilised groundwater – married with new technologies such as solar power – could play a major role in combating poverty and improving food and water security. And all to the benefit of those South Africans who battle to feed themselves and their families.

<https://www.dailymaverick.co.za/article/2019-10-23-drought-proofing-south-africa-groundwater-is-the-way-to-go/>

## RESEARCHERS FIND ANTIBIOTIC RESISTANT GENES PREVALENT IN GROUNDWATER

New and emerging contaminants like antibiotic resistant genes (ARGs) pose a potential hazard to public safety and water security. One concern is the spread of ARGs through water systems, including groundwater, and an increase in development of antibiotic-resistant super bugs.

<https://phys.org/news/2019-10-antibiotic-resistant-genes-prevalent-groundwater.html>



#### GROUNDWATER CONTAMINATION BY PLASTIC MICROFIBERS

Few studies of microplastic occurrence in groundwater have been published but recently the presence of microscopic plastic fibers in tap water from underground sources has been reported. Addressing the potential extent of groundwater contamination by plastic microfibers is now a real challenge for the international hydrogeological community to address.  
<https://blogs.egu.eu/network/water-underground/2019/09/06/shedding-light-on-the-invisible-addressing-potential-groundwater-contamination-by-plastic-microfibers/>

#### QATAR'S AGRICULTURE PUSH RISKS FURTHER GROUNDWATER DEPLETION

Qatar was recently ranked as the most water-stressed country in the world. Rainfall is unpredictable and erratic and there are no permanent rivers. With a 400% increase in local agricultural production, Qatar now withdraws nearly four times as much water from its aquifers than is replenished by rainfall each year.  
<https://www.al-monitor.com/pulse/originals/2019/08/qatar-agriculture-water-environmental-concerns.html>

#### GALILEE EARTHQUAKE SWARMS CAUSED BY INCREASED GROUNDWATER EXTRACTION

Two recent earthquake swarms affecting the Galilee were likely caused by the accelerated extraction of groundwater from aquifers around the Sea of Galilee, a new study has revealed.  
<https://www.jpost.com/Israel-News/Galilee-earthquake-swarms-caused-by-increased-groundwater-extraction-599147>

#### LIFE-FORMS FOUND DEEP IN WORLD'S OLDEST GROUNDWATER

Deep in the depths of Canada's Kidd Mine, researchers have stumbled on a strange life-form. These bacteria live 2.4 kilometers below the surface, in perpetual darkness and in the world's oldest groundwater.  
<https://interestingengineering.com/life-forms-found-deep-in-worlds-oldest-groundwater>  
also <https://deepcarbon.net/worlds-oldest-groundwater-supports-life-through-water-rock-chemistry>  
also <https://www.nbcnews.com/mach/science/strange-life-forms-found-deep-mine-point-vast-underground-galapagos-ncna1050906>



Share groundwater news items in your region - all languages - by email [info@iah.org](mailto:info@iah.org) and on social media:





## Dear members, dear colleagues...

Once again we come to the end of a year, which has hopefully been a successful one for you and one in which hopefully we have all managed to raise the profile of groundwater in some way. I would like to thank all of our members for their commitment to IAH – and I am very pleased to say that we finish the year with almost 4500 members, a record. I particularly want to thank all of you who work hard for your national chapters, commissions and networks, my colleagues on IAH Council as we come to their final year in post and also the IAH Secretariat.

I also want to thank everyone involved in our Congress in Malaga – the organising team and all of the delegates. It was outstanding – the organising team and the volunteers were highly involved and helpful, the sessions were on time and all the activities very well planned. Congratulations to you all and for your continuous support to IAH!

Next year will be an important year for IAH in many ways, as we will have the elections for Council and will welcome many new members. I encourage all members to think about standing for election. Being part of Council is a very responsible position. It is also very worthwhile. I believe that this Council will leave a strong legacy for the next one as we have taken forward many of the objectives in our Forward Look plan. It is important too because Forward Look comes to the end of its 2010-2020 plan period so our current Council will try to help our next colleagues in planning the next developments for IAH.

This year we have been successful in working with others. We have supported our colleagues in IGRAC who have achieved great success in having the theme of groundwater for World Water Day in 2022. We are also preparing a proposal for proclamation of an international year of aquifers in the near future. We have agreed to try to have greater cooperation with INBO (International Network of Basin Organisations) and IWRA (International Water Resources Association). We have contributed to many international initiatives, such as the World Water Quality Alliance. All of these will highlight the importance of groundwater not just to our hydrogeology colleagues but to all the other professions and stakeholders that we must work with.

Next year will also be important because we will have our first congress in Latin America for 15 years, in Sao Paulo, Brazil. There has been a big increase in our membership in Latin America with a lot of interest from students and ECHN and many countries want to have their own national chapters. It will be an interesting congress as it will bring together IAH, ALHSUD and ABAS, strengthening the links between these three organizations and the IAH national chapters in Latin America, and of course strengthening hydrogeology of the world. ABAS will have a parallel tradeshow with drilling rigs, GW monitoring, geophysical equipment and this will have many visitors. This is different to our usual congresses and I am looking forward to seeing how it goes.

I wish you all much success in 2020, in your individual roles and also as members of IAH. Please remember to renew your membership subscriptions and I hope to welcome many new members too. Please also take the time to think about standing for election to Council to help continue the development and success of IAH and to defend our profession and maintain our influence as the World-wide Groundwater Organisation.

ANTÓNIO CHAMBEL



## IAH Awards...

President Antonio Chambel presented the IAH awards for 2019 at the AGM in Malaga. The proposal by Council to award honorary Membership to both John Chilton, former IAH Executive Manager, and Shammy Puri, former IAH Secretary General and current Chair of the Transboundary Groundwater Commission was enthusiastically accepted by the members present. John Cherry was awarded the Presidents' Award, Francesca Bernadini the Distinguished Associate Award and Yanxin Wang the Applied Hydrogeologist's Award.

Find out more: <https://iah.org/about/awards>



## GRIPP infographic...

An infographic entitled "Groundwater – Critical for Sustainable Development", which illustrates a timeline of groundwater use throughout history and projected outcomes of continued groundwater abstraction was launched during the 2nd Southern African Development Community – Groundwater Management Institute (SADC-GMI) conference in Johannesburg, South Africa. The graphic can be used as an awareness raising tool for schools and other institutions and stakeholders.

The infographic shows how groundwater extraction and use took off globally in the 1950's and now accounts for 25% of all freshwater use and 40% of the water used for irrigation globally. The timeline highlights how groundwater has brought about many benefits to humankind.

The graphic also shows some of the potential future benefits, for example how groundwater development in some regions, like in parts of Africa, could mitigate impacts from climate change and population growth. It also underlines what could occur if we do not act now to manage this critical freshwater resource, especially in already heavily dependent regions. Some of these impacts are already apparent in parts of the world.

IAH is one of the supporting GRIPP partner organisations for the initiative, with input led by President Antonio Chambel, alongside IWMI, CGIAR-WLE, IGRAC, BGS and Skat. As you can see, IAH is mentioned in the timeline, marking the importance of science – and sharing knowledge globally – in order to better understand the resource and to help identify solutions to groundwater risks now and in the future.

### SECRETARIAT



[https://iah.org/wp-content/uploads/2019/09/Infographic-final\\_IAHweb.pdf](https://iah.org/wp-content/uploads/2019/09/Infographic-final_IAHweb.pdf)  
(small file size)

<https://cgspace.cgiar.org/handle/10568/103496> (high quality/large file size)

<http://gripp.iwmi.org/> (GRIPP website)



# IAH PARTICIPATES IN WATER STEWARDSHIP REVIEW

Major multi-national companies have often been criticised for demonstrating their responsibilities towards natural systems in largely cosmetic ways. In recent years, however, they have realised the need to understand better the threats that their activities can pose to ecosystems and the communities who depend on them. Many companies have now established their own environmental capabilities and expertise. With increasing evidence of actual or potential negative impacts on water quantity and quality, companies are now beginning to embrace a 'Water Stewardship' approach to restoring and protecting resources. Early in 2018 Patrick Lachassagne, secretary of the French chapter of IAH (and at that time working for Danone Waters) asked IAH President António Chambel to support a consortium working on quantifying the benefits of water stewardship projects. IAH's role would be to take part in the review process and advise the consortium. The invitation was accepted and John Chilton, the retired IAH Executive Manager, available for immediate involvement, was asked to represent the Association.

Water Stewardship is defined as using water in ways that are socially equitable, environmentally sustainable and economically beneficial. This should be developed through a stakeholder-inclusive process and usually involves the restoration of degraded water and land resources or provision of water elsewhere in a catchment to balance that being extracted. Alongside this there is an emerging need for a science-based, transparent and credible methodology for measuring the benefits of investments in water stewardship.

The Water Stewardship Benefits Accounting Methodology (WSBAM) aims at quantifying in volumetric terms (m<sup>3</sup>/a) the benefits of water stewardship projects undertaken by an organisation. Both quantity and quality related projects may be undertaken, with the benefits in each case being expressed in terms of volume.

Funding for the work was provided by Danone Waters, Nike, Nestlé Waters, L'Oréal, Intel, Véolia, Coca Cola, Ecolab, Facebook, Mars, MillerCoors, Novartis, Procter & Gamble and Spadel. The work was undertaken by an international project group comprising World Resources Institute, Quantis, Valuing Nature and LimnoTech.

A first draft of the methodology was circulated in February 2018, with meetings of the consultant team, funders and advisors in Washington DC and Paris in April 2018. A considerably revised version was circulated for review at the beginning of 2019. In

addition to IAH, the advisory group included WWF, UNEP, The Nature Conservancy, IUCN, WaterAid and Ramsar. I provided extensive comments and attended the Paris meeting.

The resulting methodology is aimed primarily at corporate water stewardship practitioners involved in implementing and/or valuing water stewardship activities. It is called a "working paper", and is clearly intended to be improved from the experience of applying the methodology. From a corporate viewpoint, the rationale for wanting to estimate the benefits (Volumetric Water Benefit Accounting – VWBA) of water stewardship activities focuses mainly on the financial risks of not dealing adequately with water challenges in a catchment.

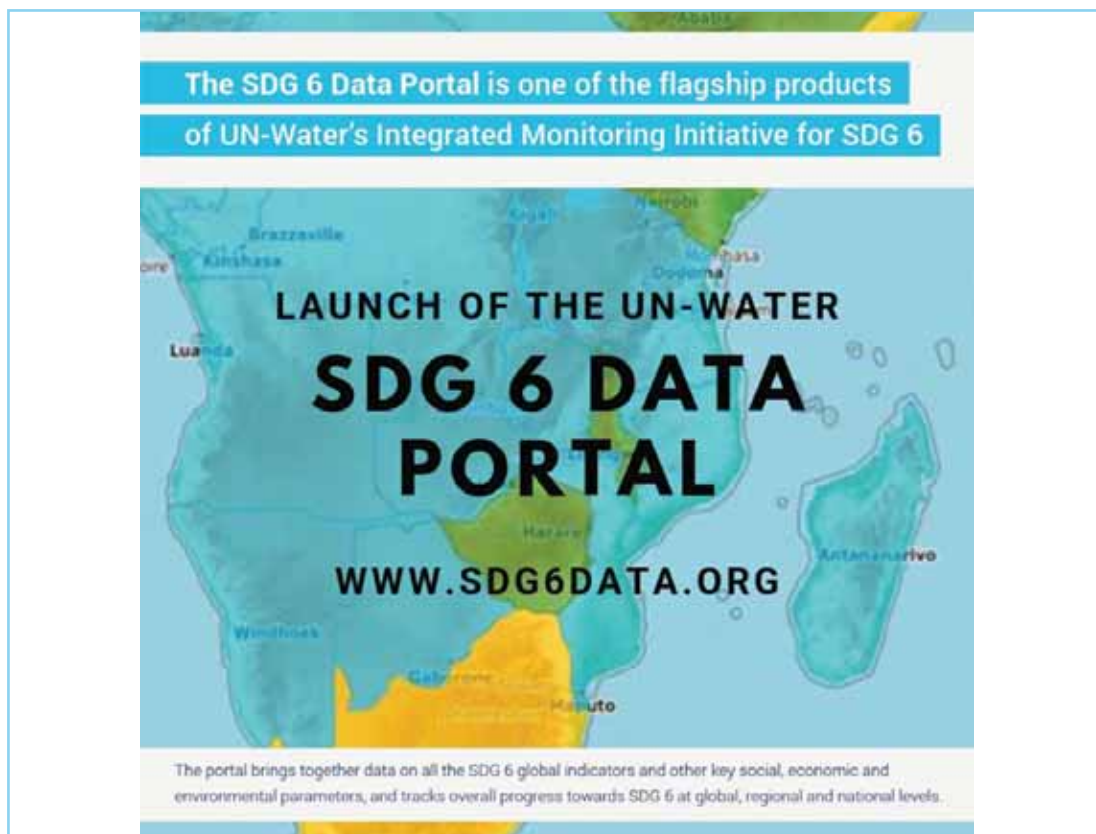
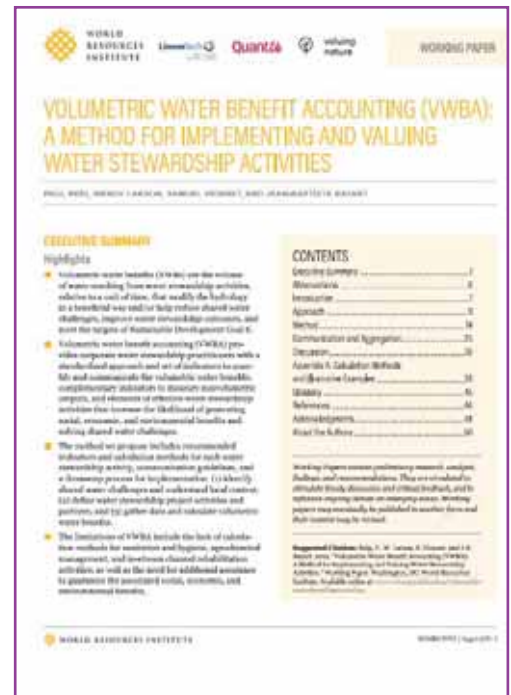
The paper sets each step in the methodology, with guidance, drawing extensively on existing water stewardship documents. Overall, it is simple and straightforward. Appendices set out methods for estimating volumetric benefits from a wide range of stewardship activities, illustrated by case studies where these could be found. Some of these are straightforward and involve the simple observation of additional volumes of water provided, for example through removal of pollutants by water treatment. Others require estimates to be made of the change in runoff and/or recharge from land management and restoration activities and aquatic habitat restoration. Some activities aim to reduce agricultural, industrial or domestic water demand; others seek to provide additional water for irrigation or domestic use.



The document is stronger on water quantity than quality, perhaps reflecting the business sectors of the multi-national companies involved. Moreover, for stewardship activities that restore quality, it is more difficult to determine the volume that has been 'safeguarded'. Some significant activities are not included at all, for example mining, solid waste disposal (landfill) and liquid waste pollution (e.g. DNAPL and LNAPL pollution of groundwater), which would be the main concerns of some companies. Appropriate methods should be developed in future updates of the document. However, overall, I think the approach developed is worthwhile and it was good for IAHH to be involved. I believe that we have significantly contributed to the improvement of the working paper, which can be viewed at <https://www.wri.org/publication/volumetric-water-benefit-accounting>.

JOHN CHILTON

 <https://www.wri.org/publication/volumetric-water-benefit-accounting>



DECEMBER 2019



## AGM: NOTES AND ANNOUNCEMENTS

To the 147 IAH members and 29 non-members who attended the AGM at Malaga, thank you for your patience... it did last rather longer than had been intended. The IAH Executive has already thought about how to make this meeting more streamlined in the future, without cutting back on what has to be presented and agreed by members.

Antonio Chambel, IAH President, began the meeting by reminding everyone of the moving video recorded by the Early Careers Hydrogeology Network for World Water Day on 22 March 2019. This certainly shows IAH at its best.

IAH Secretary General, Bruce Misstear, thanked the ECHN for making videos of this year's keynote presentations. He noted with sadness the passing of our colleagues, Brian Morris, Ben Engelen and Jan Dowgiallo.

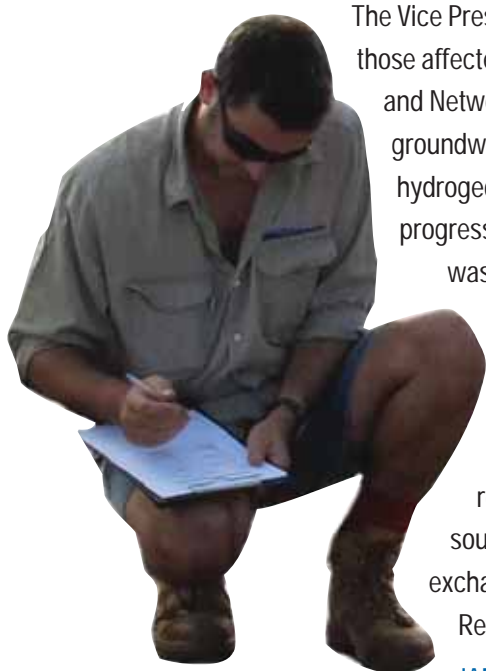
He went on to describe how membership had increased to more than 4400, a new record. Overall membership benefits had improved, most recently with the new education pages on the IAH website and the mentoring scheme had progressed. The latest impact factor for Hydrogeology Journal had reached 2.4 and was the subject of 10s of thousands of citations. There was a new paper in our Strategic Overview Series, on groundwater and climate change, and translations of the Sustainable Development Goals (SDG) paper into Spanish and Chinese were being finalised. Publication of Ian Acworth's book, 'Investigating Groundwater', had added to the IAH's series, 'International Contributions to Hydrogeology'. He noted too that there had also been continuing efforts to raise the profile of groundwater through, for example, international engagement with UNESCO-IHP, GRIPP, and UN Water and the World Water Quality Alliance (WWQA). BM thanked UNESCO and IGRAC for their financial support for his attendance at the WWQA meeting. He congratulated Neno Kukuric of IGRAC for the success in groundwater being selected as the theme for World Water Day 2022, which IAH had supported.

The Vice President for Science and Programme, Dave Kreamer, expressed sympathy for those affected by the flooding in Valencia. He thanked all those involved in the Commissions and Networks for their hard work and commitment and announced a new commission on groundwater quality, organised by Dan Lapworth, and confirmed that the network on socio-hydrogeology, led by Viviana Re and Shrikant Limaye, was now established. He also described progress with the initiative, Future Frontiers of Hydrogeology, for which a working group was now in place that would be considering 'What's next for hydrogeology' and possible publications.

The Vice-President for Finance and Membership, Teodora Szocs, reported that there was a surplus of £13255 at the end of 2018, which was mainly for 2 reasons: a meeting of the Hydrogeology Journal Editors, budgeted for 2018, had been rescheduled for 2019; and Council members had been able to obtain support from sources other than IAH funding for attendance at IAH meetings. The effects of currency exchange variation had, unusually, been minimal, reducing the surplus by just £47.

Reserves in the bank stood at £112114 on 31 December 2018.

IAN DAVEY

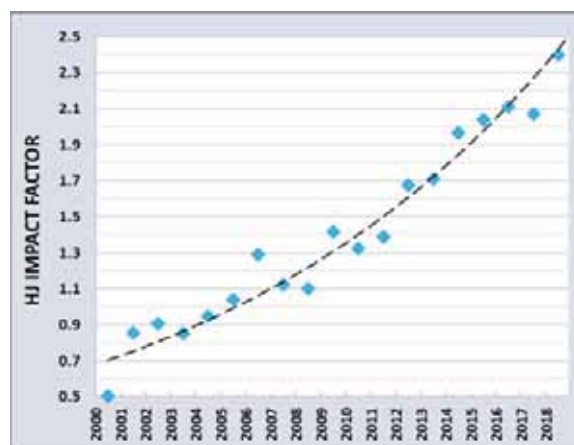


## MEMBERSHIP FEE RATES HELD - AND A 25% DISCOUNT FOR “EARLY PROFESSIONALS”

Council proposed to those at the AGM that there should be no increase to membership fees for 2020. It was further proposed that a discount of 25% off the full fee should be offered for a period of 2 years to those when first transferring from student to full membership. Both proposals were agreed enthusiastically and without objection. The discount would also be made available to those who had already been full members for one year and so still qualified for the second year's discount. We are happy to confirm that as this newsletter was being compiled, Sharon Warden and Kellie Nicholson from the Secretariat were working with IAH's systems developers to implement the discount ahead of the forthcoming renewals. As far as practicably possible, we will also try to identify the existing early professionals who might qualify to receive the discount. If you have any questions or comments regarding the membership rates or new discount email [info@iah.org](mailto:info@iah.org).

## HYDROGEOLOGY JOURNAL

Council noted that Hydrogeology Journal (HJ) has experienced a significant and continuing increase in its scientific Impact Factor (IF) in past years. The current (2018) IF is 2.4, and the 5-year IF is currently 2.6. This number is a measure of the number of times that people who publish articles in scientific journals have cited articles in HJ – so the IF indicates the scientific usefulness and value of HJ content. HJ also has a very high Usage Factor – a measure of how often readers are downloading HJ articles.



## FUTURE CONGRESSES

Presentations were made by delegations from the IAH Brazilian and Belgian National Chapters, to publicise the next congresses in Sao Paulo (2020) and Brussels (2021). We hope you will all be there!



MEMBER MATTERS Updates and initiatives for IAH members,  
plus opportunities to contribute to IAH's efforts worldwide

# IAH Council Election

Nominations open on 1 January 2020...

The next IAH Council election will take place in 2020 and all members who have paid their IAH membership fees can stand for election and of course are entitled to vote. At their meeting in September, IAH Council appointed the Executive Manager, Ian Davey, as the Returning Officer, who will supervise the election. Nominations for those who wish to stand for Council are requested from 1 January 2020.

Council is the IAH's governing body and its members play a critical role in overseeing the running of the Association. IAH is a registered charity and a limited company and Council members are both trustees of the charity and directors of the company. They have the legal responsibilities that go with these roles, particularly in terms of ensuring the Association's financial probity.

Council members also have a vital role in developing IAH's policies and plans, and in overseeing their implementation on behalf of all our members. Much has been achieved under our current Forward Look strategic plan, which was introduced in 2010 and runs till 2020. It will then be for the next Council members to lead on a new plan that builds on the previous achievements and ensures IAH's success during the next decade. Being a Council member can also help develop further skills, and forge professional relationships and friendships. If you think you could contribute please do consider stepping forward for this role.

IAH members may be proposed as candidates for Council in two ways: nomination by another member or by recommendation of Council. In each case a proposal must be accompanied by a brief curriculum vitae and a note confirming the candidate is willing to stand for election.

## There are 12 positions available for election:

- President, who represents IAH with other organisations and chairs the Board of Directors of the Charity, the General Meeting of the Association and the Executive Committee
- Secretary General, who has responsibilities particularly for external relationships and also for some internal groups
- Vice President, Finance and Membership, with responsibility for corporate finances (income stream, planned budget and actual expenditure) and developing membership
- Vice President, Programme and Science Coordination, with responsibilities for commissions, networks and promotion of science, internally and externally
- Regional Vice Presidents, who provide stewardship of IAH interests and coordination of national chapters in a particular region:

Asia;

Europe (West and Central);

North America;

Australasia and the Pacific;

Latin America and the Caribbean;

Sub Saharan Africa

Eastern Europe and Central Asia;

Middle East and North Africa;

The President of IAH Council serves for one term of four years and then remains as a member of Council for the subsequent 4 years to support incoming members. All other members may serve for two terms, except the Secretary-General and the Vice President, Finance and Membership (de facto Treasurer) who may serve for an indefinite number of terms.





Council meets once each year, at the IAH Congress. Between these meetings Council members fulfil their other duties, but with some of the more routine activities delegated to an Executive Committee consisting of the President, the Secretary General, and the Vice Presidents for Finance and Membership, and for Programme and Science. The Executive has additional meetings in spring and summer. Costs for attendance at Council and Executive meetings are covered by the IAH budget, although members are encouraged to make use of other sources of funding that may be available to them, to help conserve funds for other IAH activities.

Regional Vice Presidents may wish to identify Regional Advisors, approved by Council, to look after more local interests of IAH in situations where the region is large and diverse.

## Nominations

The nominations period will open from 1 January 2020 and close on 31 March. Nominations will be scrutinised and confirmed, and then published on 31 May. Details of the voting procedure will be published in the spring 2020 edition of the 'News and Information Magazine'.

Nominations should be sent to the returning officer, [idavey@iah.org](mailto:idavey@iah.org). A nomination should contain a brief curriculum vitae of the candidate and a letter from the candidate confirming his or her willingness to stand for election. Candidates will be required to formally acknowledge the guidelines of conduct before being accepted on to the voting list.

Information about the current Council members, their biographies and personal statements can be found at <https://iah.org/about/council>. You can also request information about the general responsibilities of Council members and election procedures at [info@iah.org](mailto:info@iah.org).



# Ask a Member...

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

We are pleased to feature Sean Furey for this issue, his insights giving a mix of encouragement and useful links. Sean works for Skat Consulting Ltd. and Skat Foundation based in St. Gallen in Eastern Switzerland, and is Director of the Rural Water Supply Network (RWSN).



Sean Furey pictured recently in Botswana

## Tell us about yourself....

I grew up in rural southern England, in the shadow of the North Downs in Kent and then on the Marlborough Downs, in Wiltshire – so I'm a Chalk person. In front of my home in Wiltshire was a near-pristine Chalk stream that was a minor tributary of the River Kennet (which is itself a tributary of the Thames). I used to sit on a bridge nearby and watch water voles and kingfishers on the bank or look for the rainbow trout that often lurked just underneath, calmly swimming still in the current.

Later, after a BSc in Environment Sciences from the University of East Anglia (UEA) and an MSc in Community Water Supply and Sanitation from Silsoe (Cranfield), I began my career as Water Resources Officer in Kent Area of the Environment Agency. My first project was the River Darent Low Flow Scheme – doing hydrological and hydrogeological analysis to inform the (sometimes tense) discussions with the three main water companies in the catchment, local residents and the angling and conservation groups. From this, I quickly learned that groundwater and politics are often bound uncomfortably together. This was reinforced a few years later when I had the opportunity to be project manager of an Integrated Water Management Study for Ashford, Kent. It was in response to the government's decision to make the town a growth hub, to double in size by 2030, in one of the most water-stressed areas of the UK. I think we came up with good solutions and trade-offs.

Since 2011, I have been working for Skat Consulting Ltd. and Skat Foundation based in St. Gallen in Eastern Switzerland.

It is great to be working in international development cooperation and to have opportunities to work with amazing people all over the world from small community initiatives to global UN agencies. Since 2017, I have been Director of the Rural Water Supply Network (RWSN), a worldwide professional network with over 11,000 members worldwide focused on universal access to safe, affordable drinking water. For many rural people, groundwater is the safest, most accessible and reliable source of water. I took over from my colleague and friend, Dr Kerstin Danert, who won the IAH Distinguished Associate Award in 2017 (see <https://iah.org/about/awards/distinguished-associate-award-2017>).

## Why did you join IAH?

I found about IAH when I took on the Knowledge Broker team leader role for UPGro: Unlocking the Potential of Groundwater for the Poor, an interdisciplinary 7-year research programme on groundwater and poverty across Sub-Saharan Africa. One of my early jobs was to raise awareness of the programme, and the researchers active in it, among the global hydrogeological community – so the IAH Congress in Marrakech was the natural place to start. It was a great event, with really great content and a really warm, welcoming atmosphere.

I didn't join immediately, but as I found out more about IAH and interacted more with members I realised that it provides both useful resources and is an association with good values, which I want to support.



*“Being a charismatic public speaker helps, but what is more important on a day-to-day level is being a good listener and taking an interest in the motivations and perspectives of colleagues and clients”*

### What have been the biggest changes you've seen over your career?

Because my Dad worked in computers and communications, I have been lucky enough to have had access to the internet since about 1989 when he bought an Apple Macintosh and a modem. It was unbelievably slow and limited, but I remember in my first year at UEA in 1994, being given an assignment to write about the El Niño Southern Oscillation (ENSO) and being able to download raw sea-surface temperature data from an American sensor array in the Pacific Ocean.

Today we have an information overload. There is just too much to take in. And yet, for many parts of the world, groundwater monitoring and data is still really sparse. Too sparse in many cases. So, we need to invest in smart monitoring and intelligent, clear synthesis so the difficult, complex problems like climate resilience, groundwater pollution and universal access to safe water can be addressed.

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

1. Sound technical skills and analytical, critical thinking are a critical foundation of being a (water) professional, and teaching institutions are generally good at providing that. Even if you don't end up in role that involves technical or scientific hydrogeology, particularly later in your career, it is so important to have the basic skill sets.
2. Social and communication skills are equally important. There is no point in having great ideas and developing strong solutions, if you can't communicate or work in a team. Being a charismatic public speaker helps, but what is more important on a day-to-day level is being a good listener and taking an interest in the motivations and perspectives of colleagues and clients. Being a bad

listener is one of the most annoying traits a person can have (closely followed by flicking snot) and I'm sure makes everything ten times harder than it needs to be.

3. Don't give up and go into banking.

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

For IAH members who are interested in practical groundwater issues around pumps, drilling and water supply management – particularly in Africa – I strongly recommend joining our RWSN Sustainable Groundwater Development community ([https://dgroups.org/rwsn/groundwater\\_rwsn](https://dgroups.org/rwsn/groundwater_rwsn)), and visit our website: <https://www.rural-water-supply.net/>

For those interested in some of the latest African groundwater research, visit <https://upgro.org/> other good resources that I use regularly are:

The African Groundwater Atlas - <https://www.bgs.ac.uk/research/groundwater/international/africaGwAtlas.html>

The Water Point Data Exchange (WPDx) - <https://www.waterpointdata.org/>

- The Groundwater Assessment Platform (GAP) - <https://www.gapmaps.org/>

- The Groundwater Solutions Initiative for Policy and Practice (GRIPP) - <http://gripp.iwmi.org/>

- The UNICEF Guidance Note on Professional Water Well Drilling - <https://www.rural-water-supply.net/en/resources/details/775>

SEAN FUREY

Sean in 1997, in Ladakh, Northern India



DECEMBER 2019



## MEMBER MATTERS

# Over to You...

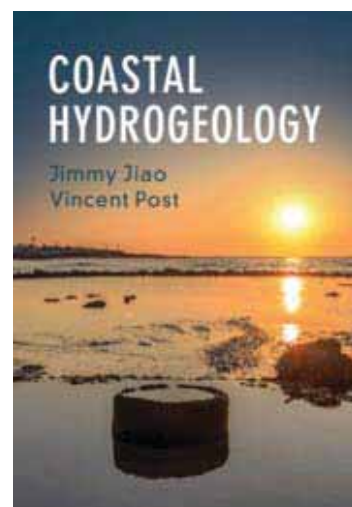
Another book draw

### Prize draw: win a copy of "Coastal Hydrogeology" by Jimmy Jiao and Vincent Post

Thanks to the authors and Cambridge University Press, we've a copy of "Coastal Hydrogeology" by Jimmy Jiao and Vincent Post to give away to a lucky IAH member in a prize draw.

Water resources are of enormous societal and ecological importance. In coastal areas, they are under ever greater pressure due to population growth, more affluent lifestyles, food production and the growing tourism industry. Changes to the coastal landscape, through urbanisation and land reclamation, and by natural processes such as climate change and sea level rise, modify the interaction between seawater and groundwater and put water resources at risk. This comprehensive volume covers both theory and practice of coastal hydrogeology. It discusses hydrochemistry; submarine groundwater discharge; groundwater management; palaeo-hydrology; land reclamation; climate change and sea level rise; and mathematical models of variable-density flow. With its up-to-date coverage and numerous case studies that illustrate practical implications, it is perfect for students, practitioners, managers and researchers who wish to develop an in-depth understanding of topics relevant to sustainably managing coastal groundwater resources.

May 2019: ISBN 9781107030596 Published price £49.99



Information about the book can be found on the Cambridge University Press website: <https://www.cambridge.org/de/academic/subjects/earth-and-environmental-science/hydrology-hydrogeology-and-water-resources/coastal-hydrogeology?format=HB>.

To enter to win, complete your details including membership number here:

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

#### Terms and conditions:

Prize draw closes 11.45am GMT on Tuesday 31 March 2020. Entries are open to current IAH members only (2020 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 August 2020 edition of "News and Information".

#### SECRETARIAT


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



# Education and Resources

## ¿Cómo apuntalan los recursos de agua subterránea la Agenda para el Desarrollo Sostenible de las Naciones Unidas para el 2030?

La serie estratégica de AIH está diseñada para informar a los profesionales de otros sectores sobre las interacciones clave con los recursos hídricos subterráneos y la ciencia hidrogeológica, y para guiar a los miembros de AIH en su relación con los sectores relacionados. La serie tiene varios títulos y nuestra intención es traducir los relevantes al español. Este título es nuestra primera traducción.

 [https://iah.org/wp-content/uploads/2019/10/IAH\\_SDGs\\_espanol.pdf](https://iah.org/wp-content/uploads/2019/10/IAH_SDGs_espanol.pdf)  
<https://iah.org/education/professionals/strategic-overview-series>  
(full series, English)



## Mentoring Scheme - latest news

Registration for this year's mentoring scheme closed at the end of July. Since then the Secretariat team has carefully reviewed and prioritised all the applications received and is in the process of contacting respondents in order to address queries, establish suitable next steps and assign mentors where appropriate. We would like to thank everyone involved in the scheme for their support and patience. Once again it is clear from this year's process that the scheme is of value to some in our membership - and not just those early in their careers. The process has also helped inform us more generally of members' interests and needs - and where IAH might consider developing additional resources in the future. We anticipate the scheme will reopen for applicants in May 2020.



During congress we spotted an existing "mentoring partnership" catching up and they kindly agreed to allow their photo/details to be passed on to encourage further participation. We'd be happy to receive photos/feedback from other "partnerships". Email [info@iah.org](mailto:info@iah.org) or post on our social media.

### SECRETARIAT

 <https://iah.org/education/professionals/mentoring>

Viviana Re and John Lindle find time to meet up and chat during congress week (mentoring partnership established 2018)

## MEMBER MATTERS



# New Members

A warm welcome to the following new members, who joined our Association in the period 13 June - 23 October 2019:

### AUSTRALIA

Imogene BRAITHWAITE  
Ture CARLSON  
Adrian COSTAR  
Nequita MACDONALD  
Paul MAGAREY  
Joshua NEUMANN  
Rebecca NORMAN  
Carlin PACHOLKO  
Natalie PETHICK  
Matthew PETHYBRIDGE  
Anastasia RASTORGUEVA  
Luke RETTKE  
Anthony WARREN  
Christopher LIEN  
Tevfik KAAAN DUZ  
Peter SEROV  
Nafisa AKHTER  
*SLR CONSULTING AUSTRALIA PTY LTD*  
Braiya WHITE  
Johannes DE BEER  
Daniel MURRAY  
Neetish KHAJURIA  
Kate MEAD  
Damian MERRICK  
Robert BRUCE  
Allen June BUENAVISTA  
Haile AREFAYNE SHISHAYE  
Bridy BANEY  
Anthony BOWLING  
Somphasith DOUANGSAVANH  
Peter DUNDON  
Behzad GITIJAMAI  
Penny GOODWIN  
Achyut MISHRA  
Cassandra MURPHY  
Christopher NICHOLS  
Keith PHILLIPSON  
Meghalim PHUKAN  
Amirhosein RAMAZANPOUR ESFAHANI

Marianna RAMIREZ LAGUNAS  
Benjamin SLATTER  
Cristina SOLORIZANO-RIVAS  
Katherine TAYLOR  
Yuxiang ZENG  
Chenming ZHANG  
Karina GUTIERREZ-JURADO  
Suzanne HURTER  
David COLLECOTT  
Duncan STOREY  
Eddie BANKS  
Tony CAUCHI  
Shawan DOGRAMACI  
Xinyang FAN  
Simone GELSINARI  
Pauline GRIERSON  
Amir JAZAYERI  
Phillip JOLLY  
Matthew ONES  
Robin KEEGAN-TRELOAR  
Reuben PARIG  
Cuan PETHERAM  
Jodie PRITCHARD  
Mark ROBERTSON  
Chris RUMPF  
Sheryl RYAN  
Matt SAUNDERS  
Jason THOMANN  
Steven FLOOK  
Craig LOOBY  
Anna CAMPBELL  
Jack DYMALLA  
Wijnand GEMSON  
Matthew LEMCKE  
Andrew LEWIS  
Mike SANDIFORD  
Carmel SULLIVAN  
Yongping WEI  
Andy WILKINS  
John WILLIAMS

### BELGIUM

Buruk Kitachew WOSSENYELEH  
Annabel VAESSENS  
Cas NEYENS  
Goedele VERREYDT  
Alberto CASILLAS

### BRAZIL

Ana DE CARVALHO  
Isabella NOGUEIRA BITTAR DE CASTILHO BARBOSA  
Bruno ENGELBRECHT  
Marcia Regina STRADIOTO  
Marcela BARCELOS BARBOSA  
Roger GONÇALVES

### CANADA

Joel GOPAUL  
Arturo VELASCO ALVAREZ  
Guillaume MEYZONNAT  
Colin FYFE  
Rachel MCLEAN  
Diego OVIEDO  
Britney LATURNUS  
Hugh SIMPSON  
Ian CAMPBELL  
Melanie HAGGART  
Paul MARTIN

### CHINA, PEOPLE'S REPUBLIC

Juanjaun WU  
Zhaoyang LI  
Jie TANG  
Han ZHANG  
Xiang XU  
Zhu ZHEN  
Yunfeng DAI  
Jiangbo HAN  
Jixiang HUO  
Yiwei WANG  
Jiang HU  
Hui ZHANG





## CHILE

Edwin GUZMAN  
Cristobal MENDEZ  
Lukas RADMANN  
Jorge Ignacio GARCIA NIELSEN  
Jose ESPINOZA  
German IBARRA  
Claudia RODRIGUEZ AUSENCO  
Jose Luis FUENZALIDA  
*MINERA ESCONDIDA*

## COLOMBIA

Jhon Jairo VALENZUELA VALENCIA  
Paola PASTOR  
HERNAN DARIO PABON BLANDON  
Angelica MORENO  
Fabio IWASHITA  
Oscar Fabian SANCHEZ ORTIZ  
Laura Melissa ARGUELLO REY  
Dailyn Sarai BADILLO REINA  
Ivan David PLAZAS TAMAYO  
Cesar Arturo VERA FLOREZ

## FINLAND

Ryan GEE

## FRANCE

Yasin DALI  
Arthur DEGEILH-MARIE  
Léopold FONTANT  
Julien GOUJON  
Lola HAVERLAN  
Loic LALAGUE  
Loic LAURENT  
Laurie LEMAITRE  
Elisa MICHEL  
Franck MICHELIER  
Thomas NAVARRO  
Thibault POINAS  
Juliette REBRASSE  
Annabelle SALMON-LEGAGNEUR  
Solange THEODORE  
Christelle VU  
Tom BERTHOMIEU

## GERMANY

Muhammad MUQEET IQBAL  
Karlis KUKEMILKS  
Lysander Tobias BRESINSKY  
Michael ALLEN  
Jannes KORDILLA  
Daniel BITTNER  
Ryan WIGG  
Weishi WANG

## HONG KONG (HKSAR)

Xin LUO

## INDIA

Utsab GHOSAL  
Shadananan Nair KRISHNAPILLAI  
Tuhin BHADRA  
SUKANTA MONDAL  
Vishwanath SRIKANTIAH  
Manivannan VENGADESAN  
Ashwin SINGH  
Jayantilal GORSIYA

## IRELAND

James HEGARTY  
Laurence GILL  
David TYNAN  
Marcelo ALLENDE  
Viorel Marian ANITEI  
Terry O' LEARY  
Gearoid GALVIN

## ISRAEL

Roi RAM  
Avshalom BABAD

## ITALY

Michele REMONTI  
Giovanni MARTINELLI  
Giovanni ORTE  
Claudia CHERUBINI

## JAMAICA

Peta-Gay HARRIS

## KOREA, REPUBLIC OF

Raghwendra Narayan SHANDILYA

## MALAYSIA

Vynotdni RATHINASAMY

## MALTA

Michael SCHEMBRI

## MAURITANIA, ISLAMIC REPUBLIC

Mr Yelly CAMARA

## MEXICO

Juan Antonio TORRES-MARTINEZ  
Hector DE LEON-GOMEZ  
Jesús Alberto MÉZQUITA GONZÁLEZ

## MOROCCO

Youssef HATTAFI  
Houssne BOUIMOUASS  
Khalid BENJMEI

## NETHERLANDS

Ainur KOKIMOVA  
Rezwana Binte DELWAR

## NEW ZEALAND

Mark GYOPARI  
Douglas MZILA  
Ahmed ELWAN  
Aldrin RIVAS  
Ali SHOKRI  
Irene SETIAWAN

## NIGERIA

Franklin O IJGADE  
Olokoba S OLUWAKEMI  
Unwana J SOLOMON  
Kolawole Abdulwahid AWEDA

*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 13 June - 23 October 2019:

### NORWAY

Rannveig SKOGLUND  
Sunniva Margrethe MORRIS  
Manon VAN GOETHEM

### PAKISTAN

Ahmad AMEEN  
Waqas AHMED  
Ghulam ZAKIR HASSAN  
Syed Muhammad KHAIR  
Zeeshan AHMED

### PERU

Angela R CASTAÑEDA ALZAMORA  
Willy SALDAÑA CORTEZ  
Jonathan QUIROZ  
Mckevin CANICOBIA CARDENAS  
Roberto QUIROZ QUINTE

### PORTUGAL

Nuno BARREIRAS  
Juan Francisco LOW CALLE  
Davide FERNANDES  
Eduardo GONÇALVES

### QATAR

Ilayaraja KUMBA KRISHNAMURTHI

### RUSSIA

Ekaterina KAZAK

### SAUDI ARABIA

Faisal Kamal ZAIDI

### SLOVENIA

Matej BLATNIK  
Franci GABROVSEK

### SPAIN

Nuria FERRER RAMOS  
Daniela CID  
Michela TRABUCCHI  
Laura DEL VAL ALONSO  
Huw WILLIAMS

### SWEDEN

Emil VIKBERG SAMUELSSON  
Johanna WALLSTRÖM

### SWITZERLAND

Landon HALLORAN  
Marie ARNOUX

### TUNISIA

Fatma TRABELSI

### TURKEY

Cidem ARGUNHAN ATALAY  
Merve ISLEK  
Boubacar SIDIKI TONDE

### UKRAINE

Kateryna BOIKO

### UNITED KINGDOM

Jack HEMINGWAY  
Gianfranco PINCETTI ZUNIGA  
Nathan BURT  
Chloe PEARSON  
Thomas BOTHWELL  
Michael ROSE  
Nicolaas HUYG  
Emily RILEY  
Pauline SMEDLEY  
Hamish JOHNSON  
Sarah COLEMAN  
Ioannis MICHALOPOULOS

### UNITED STATES OF AMERICA

Stephen MAPLES  
Kelly POWSER  
Mary HINGST  
Paula PRYOR  
Thomas BOVING  
John SOLDER  
Jeffrey SCHINDELL  
Michael MATHIOUDAKIS

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

Thank you, to all those who've joined us during 2019 and to the many who've encouraged others to join...

## IN NUMBERS:

**4,455:** The total number of IAH members as at the end of October 2019. The highest ever!

**70:** The total number of countries represented by new members registering between January-October 2019. (=2018)

**129:** The total number of countries represented by IAH members as at the end of 2019. (=2018)



# In Memorium

We are saddened to report the death of Brian Morris in July. Having started out on a career in the banking industry, Brian quickly decided on a complete change of direction and re-trained as a geologist and then undertook the Master's course in Hydrogeology at University College, London. After graduating, he spent the greatest part of his working life in the groundwater programme of the British Geological Survey.

During this time, he took part in many of BGS' technical cooperation projects, including periods in the 1970s in Yemen and Sri Lanka. From 1982 to 1987, he was resident in Honduras, working on groundwater investigations for Tegucigalpa, other towns, rural communities and irrigation. In the mid-1990s, he was seconded to the UK's National Rivers Authority (now Environment Agency) to lead on some of their groundwater activities. He continued to have an interest in urban impacts on groundwater quality, working on city assessments in Kyrgyzstan and Bangladesh and advising extensively elsewhere in the world, and published extensively on urban groundwater issues. Brian was a committed member of IAH, particularly contributing to congresses in the Spanish-speaking part of the world.

Brian was an active member of his village community, continuing to serve as a Parish Councillor until early 2019, stepping down after 24 years. He was also Secretary of the Village Hall Management Committee for 14 years and a trustee of a village charity, also for 24 years. Brian was an enthusiastic gardener, growing most vegetables from seed, but what he really enjoyed after retiring was having time to learn to fly a glider and scuba diving. He and Liz took up camping again, and playing with his young grandsons also gave him much pleasure. IAH colleagues will remember a hard-working and enthusiastic hydrogeologist, committed to guiding and supporting those with whom he worked, and generous with his encouragement for younger members of our profession.

SECRETARIAT



## Reminder: Check your records

Are you receiving your regular IAH messages and alerts with HJ link, latest news digests, competitions 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



## Feature writing competition

Thank you to all those who submitted articles and images for our recent feature writing competition. As many of you will be aware, we extended the entry deadline by a few weeks, as it became clear during congress that people had not seen the earlier calls. We will be reviewing entries over the forthcoming weeks - look out for announcements in the early part of 2020.

SECRETARIAT



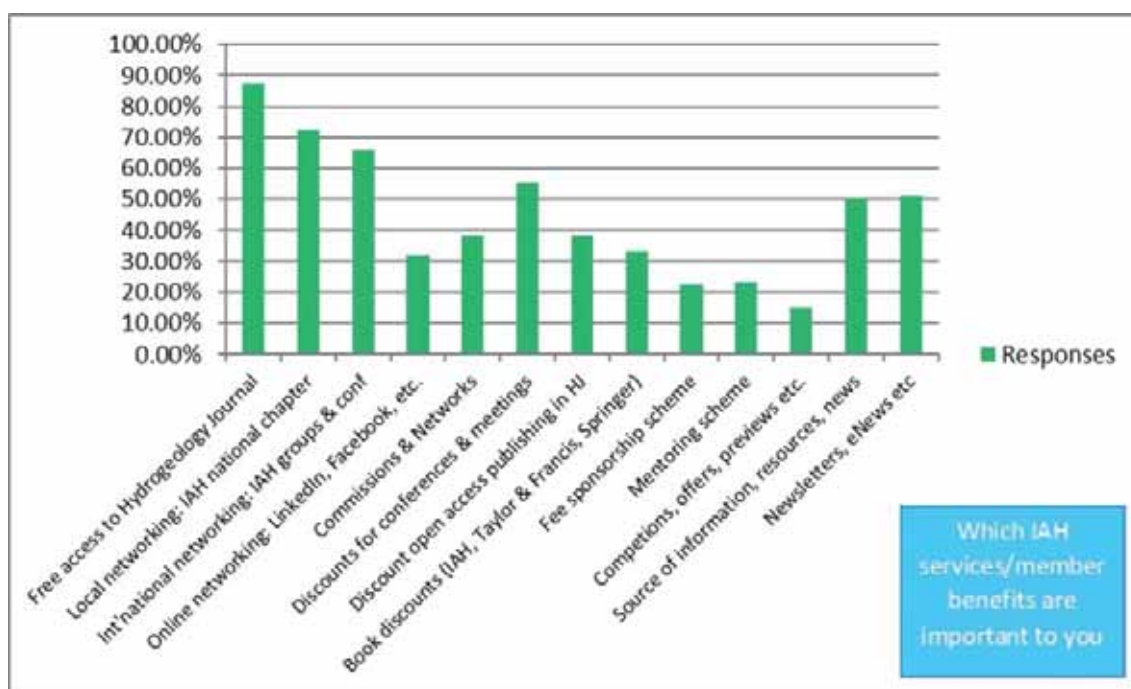
Questions or comments? Email [info@iah.org](mailto:info@iah.org)

# 2019 Survey Results



We carried out a survey of our members' and supporters' views this year and although we had a fairly small response, mostly from members but also some supporters, the results probably represent the views held by many others. Responses came from more than 30 countries, with a good spread of ages from 18 to 65+ and 26% response from females (in line with our membership data, though nearly half of our members have not provided information on gender). Thank you to all who provided their views.

Access to Hydrogeology Journal is still the most popular benefit from IAH membership and HJ is considered to be a good or excellent journal. But many of the other IAH benefits, such as opportunities for networking and sources of information, are also highly valued.

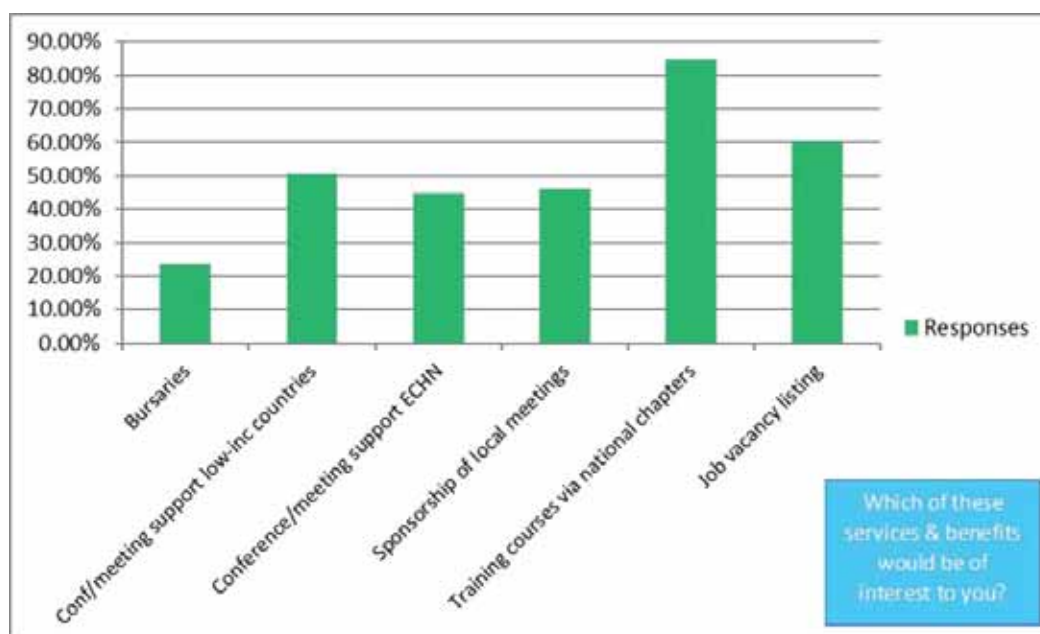


The IAH website is seen as generally good and excellent. Likewise, IAH's educational material and resources (e.g. Strategic Overview Series, conference and training listings, videos, useful links, etc) are considered to be mainly good.





Of the benefits and services that respondents would like to see, training courses and a listing of job vacancies are the most popular. These, and others, are under review.



The vast majority thought that IAH represents good value and they would recommend IAH to their colleagues. Most thought that the price of membership was about right and that fees should not rise, though a significant proportion thought that it would be acceptable for the fees to rise by a few %. On the other hand, for the few non-members who responded, cost of membership was the determining factor in not joining IAH. (Note that there will be no increase in fees in 2020).

We want to improve how we communicate with members and supporters. In the survey, direct contact through email and eNews was preferred by most but many were also interested in information provided through social media, particularly LinkedIn. We can see, too, from other records that different forms of social media are favoured in different countries.

Many of the items considered in this survey have been developed or improved under our 10-year Forward Look plan, which comes to an end in 2020. The results of the survey and comments about use of different languages, suggestions for further website development, and much, much more will provide a valuable resource when the next Council members take office in 2020 and begin to consider the next strategic plan. In the meantime, if you want to contact us at any time please do so, at [info@iah.org](mailto:info@iah.org).

SECRETARIAT

## MEETING REPORTS

# IAH 46<sup>th</sup> Congress, Malaga

Andalucia is known as a land that has both spawned and inspired great writers, poets, actors and painters – and it has now enthused more than 700 presenters and delegates from around 80 countries who came together for the 46th IAH Congress in Malaga in September.

As well as the presentations, posters, technical side-meetings and field visits across the spectacular Andalusian landscape, there was flamenco, tapas and an old tobacco factory – now one of Malaga's most architecturally stunning buildings, which these days houses a museum with one of the world's outstanding vintage car collections.

The overall theme of the Congress was 'Groundwater Management and Governance: Coping with Water Scarcity', in a region that seeks to do just that. Presentations worked through sustainability and governance, methods and tools for assessing groundwater, and threats such as pollution, urban development and climate change. In a region that has such spectacular karst topography, one session was dedicated to karst and groundwater.

Keynote speakers for the topics were drawn from across the world and in turn were able to present their own global experiences. In addition, the Opening Lecture was given by Jesus Carrera of CSIC and a further plenary was presented by John Cherry, who updated us on 'The Groundwater eBook Project: An Evolving Platform for Groundwater Education and Practice'. The final keynote was given by Stefano Viaroli, representing ECHN, who took a wry look at the positive and negative aspects of water supplied in both bottles and through public water systems in 'The Good, the Bad and the Bottled: considerations of the effects of our habits on water and environmental protection'.

Several field trips were laid on, which took participants far and wide across Andalusia. Some opted to see the Sierra Gorda Mountains, with its 1000 metres thickness of Jurassic limestones and dolostones and its karst system wetlands. Others found out how hydrochemical and isotopic techniques and study of aquifer-river interactions had revealed sources of water and contaminants along the coastal areas, or reflected on the fragile equilibrium between scarce rainfall and demands on available water resources.

Cultural additions to the technical matters included a visit to the UNESCO World Heritage Antequera dolmens site, an ensemble of megalithic buildings with 5,500 years of history. Nerja Cave, one of the most important tourist caves in Spain, with about 450,000 visitors annually and one of the richest archaeological sites in prehistoric art forms of southern peninsular, was also one of the destinations.



Some activities were already well underway during the weekend, even before the opening of Congress, with courses on various techniques and tools for groundwater management, a workshop of the IAH Commission on Transboundary Aquifers on the 'Future of Transboundary Aquifers: Research, Management, and Policy Directions' and the IAH council meeting. IAH Commissions and Networks held a series of side meetings during the week. ECHN held 'A round table discussion on the differences in groundwater governance globally and how we can learn from each other's experiences' and also found time and energy for the traditional ECHN social event where there was much networking activity and a few drinks as well!



A 'Wikipedia edit-a-thon' was led by members of the Burdon Network, to transfer content from the Africa Groundwater Atlas into Wikipedia, the aim being to make hydrogeology information for Africa more visible and accessible to a wider audience ([http://earthwise.bgs.ac.uk/index.php/Wikipedia\\_edit-a-thon](http://earthwise.bgs.ac.uk/index.php/Wikipedia_edit-a-thon)). The Africa Groundwater Atlas project is being carried out by BGS in partnership with African hydrogeologists and is part of the 'Unlocking the Potential for Groundwater for the Poor (UPGro) Research Programme'.



A Book exchange, organised by ECHN and supported by the British Geological Survey, who donated and paid for the transport of more than 100 books from one of their libraries, proved popular. Delegates added to this by donating their own books and then selecting volumes to add to their own personal libraries.

#### Feedback

There were lots of comments about the quality of organisation and content but also the friendly atmosphere in comparison with other events. (Presumably not IAH events?! – Ed). Some who weren't able to attend still followed events on social media and heard very positive feedback from colleagues and friends.

Delegates in their feedback sheets commented that the scientific programme was good, with good keynotes and field trips. Congress provided a 'Great opportunity to network – with fascinating talks'. The overall scores on our feedback sheets showed nothing less than good or very good and one delegate when asked what was most valuable about the Congress, simply stated 'Everything!' The IAH stand in the exhibition hall well-visited and fellow exhibitors stated the event was 'Excellent!' and that they had established some very promising business leads too.

Some commented that support was needed to help co-chairs decide how to work together and that care should be taken to avoid similar topics in parallel sessions. Plenaries should be on particular themes rather than case studies; and there should be more presentations about groundwater remediation. More space should be provided for posters. And even with such

*[continued over...]*



## MEETING REPORTS


*[...continued from previous]*

good ECHN participation, one delegate made the plea, 'More ECHN needed!' It's certainly the case that good support from ECHN members will help ensure that IAH can continue to thrive.

It was good to see Bartolome Andreo with a big smile across his face as the rigours of organisation gradually gave way to the realisation of a successful event, being enjoyed by all. And no wonder, when there was feedback that included, 'A well-planned and outstanding Congress' and 'You and your colleagues on the various committees and the volunteers deserve great credit'. You can see more smiles at the Congress 'IMAGE GALLERY' at <http://www.iah2019.org/> and also additional photos at <https://iah.org/members/photogalleries>.

For those IAH members who weren't lucky enough to be there, we will be uploading the keynote videos to our website in the near future. We are very grateful to Jared van Rooyen and his ECHN colleagues for all their hard work in making the recordings and of course to the speakers who have given permission for their presentations to be published in this way.

IAN DAVEY

 Photos: <http://www.iah2019.org/> and <https://iah.org/members/photogalleries>.  
Keynote videos (when available): <https://vimeo.com/channels/1415869>





## World Water Quality Alliance, Italy

IAH Secretary General Bruce Misstear delivered a keynote address to the meeting of the World Water Quality Alliance on 17th September 2019. The meeting was held at the European Commission's Joint Research Centre at Ispra, Italy. The World Water Quality Alliance (WWQA) comprises more than 80 partner organisations including the various UN agencies concerned with water, other international water organisations, research institutes, universities, NGOs and scientific associations such as IAH. The Alliance's activities are coordinated by UN Environment. The aim of the alliance is to carry out a world water quality assessment and to identify solutions for meeting the Sustainable Development Goals. It constitutes a direct implementation action towards the United Nations Environment Assembly, UNEA, Resolution on "addressing water pollution to protect and restore water-related ecosystems" (UNEP/EA.3/Res.10 from 2017).

Bruce's keynote address was delivered jointly with Claudia Ruz Vargas of the International Groundwater Assessment Centre in the Netherlands (IGRAC). The topic of the keynote address was Global Implications of Groundwater Quality. Even though groundwater provides about half of the world's drinking water and more than 40% of agricultural water supplies, it is "out of sight, out of mind" and has often been ignored in previous global water quality assessments. The lecture highlighted the range of anthropogenic and naturally-occurring pollutants that can affect our precious resource. Human activities that are leading to increased pressures include urbanisation and intensification of agriculture. As well as traditional pollutants, emerging contaminants such as pharmaceuticals and microplastics were also highlighted. The importance to human health of naturally-occurring contaminants including arsenic, fluoride and radioisotopes was also stressed.

The complex 3-dimensional nature of groundwater flow systems, the long time scales involved and the lack of reliable data on groundwater quality in many

regions, pose particular challenges when attempting to assess groundwater quality on a global scale. A number of institutions that are particularly concerned with groundwater quality issues internationally contributed to the development of a draft work plan at the workshop. In addition to IAH and IGRAC, these organisations - which were referred to in the workshop as the "Friends of Groundwater" - included the Federal Institute for Geosciences and Natural Resources (BGR), Germany; the Swiss Federal Institute of Aquatic Science and Technology (Eawag); and Umvoto from South Africa. The draft work plan envisages the development of a short white paper addressing global groundwater quality challenges and some further actions which would be dependent on future funding opportunities. It is anticipated that members of the new IAH Commission on Groundwater Quality will be actively involved in the global groundwater quality assessment activities.

**BRUCE MISSTEAR, SECRETARY GENERAL**



Bruce Misstear delivering the keynote address at the meeting of the World Water Quality Alliance in Ispra, Italy, in September

*[continued over...]*

## MEETING REPORTS

[...continued from previous]

### Water Futures Conference, India

IAH is a member of the Water Future and leads the 'Groundwater Management Working Group'. The objectives of the working group include "Securing groundwater resources for livelihoods, food security, climate resilience and economic growth while sustaining the resource for future generations". Karen Villholth and Shammy Puri are the Co-Chairs and help to lead the overall programme. In each of the past two years a major international conference was organised – this year's took place in September 2019 in Bengaluru, India.



The following sessions were held within the conference. In each session between five and eight presentations were given by scientists and experts from India, Africa and Europe.

- Groundwater Assessment and Analytics
- Groundwater quality and assessment
- Innovation to achieve sustainable groundwater use in India – Special Session – GRIPP-IWMI-IAH
- Groundwater and climate adaptation
- Analysis of groundwater contamination
- Groundwater governance
- Groundwater assessment and agricultures

In addition to the technical sessions there were also a number of Special Sessions – IAH representatives participated in the session on Water and Climate change: challenges (Karen Villholth), and India Water Security – key issues (Shammy Puri). A key and important output of this Conference was an Action Plan towards Sustainable Water Futures. The framework of the Action Plan is to leverage advanced cyber-infrastructure and integrate multiple subsystems in the domain of, but not limited to, hydrological, biogeochemical, and ecological and anthropogenic processes. It can be developed by embedding existing scientific models with big data analytics, cloud computing, augmented intelligence, deep-learning techniques and distributed ledger systems like blockchain technologies to verify information flows. The system can be powered by the growing arsenal of free, publicly available digital information streams and in near real-time enable us to operationalize predictive science and technological inventions for water-related decision-making across numerous scales.

The Bengaluru Action Plan was prepared for delivery at the Budapest Water Summit to high level ministerial representatives. The Budapest Summit took place as a follow-on event in October, and was attended by nearly 900 participants. At the Budapest summit a special session linking the Bengaluru meeting was devoted to "What Science Can do to Prevent the Water Crises and Shape Sustainable Water Future?".

**SHAMMY PURI, CO CHAIR, GROUNDWATER WORKING GROUP OF WATER FUTURES**



[https://water-future.org/working\\_groups/groundwater-management/](https://water-future.org/working_groups/groundwater-management/)  
[https://www.budapestwatersummit.hu/en/Summit/News\\_Center](https://www.budapestwatersummit.hu/en/Summit/News_Center)



# Groundwater Quality 2019, Belgium



The 10th international Groundwater Quality conference was held 9-12 September in Liege University, Belgium and presented a wide range of European, African and American research into groundwater quality.

IAH's Urban Groundwater Network organised a session during which a coherent range of abstracts were presented from African and European urban research perspectives – discussing some key themes of sustainability of groundwater use in African cities, and key rural-urban groundwater interactions.

Callist Tindimugaya (IAH's regional VP for Sub-Saharan Africa) gave an opening keynote which provided a pertinent insight of the value of catchment-based approaches to urban groundwater management, and how these can form a valuable lens to aid groundwater management across the urban-rural interface. This theme was picked up by many of the individual presentations within the session.

Work presented by the AfriWatSan research consortium and from regional work in Mozambique and Maputo presented a more detailed look to sustainability of urban groundwater use, from a quality perspective, and what management approaches may help support the sustainability of use. The perspective from European urban research, and Canada, provided a very interesting comparison and insight to the session themes. A commonality of themes and management approaches emerged from the presentations across the different urban geographies.

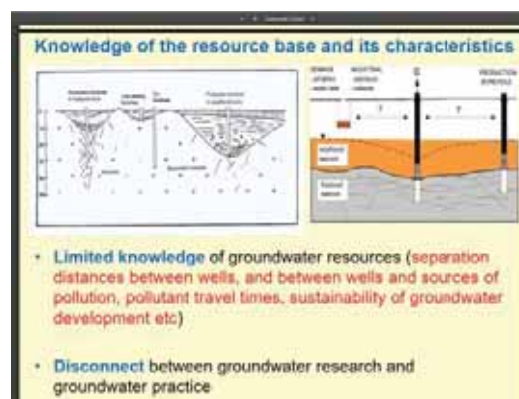
The programme and a number of the presentations can be found at: [https://www.uee.uliege.be/cms/c\\_4476800/fr/presentations-et-posters-gq2019](https://www.uee.uliege.be/cms/c_4476800/fr/presentations-et-posters-gq2019)

HELEN FALLAS, URBAN GROUNDWATER NETWORK DIRECTOR

 <http://aimontefiore.org/GQ2019/>



Snapshots from the many presentations available to view following GQ19



DECEMBER 2019

## Reaching out...

National chapters and other groupings act as a focus and help promote contacts, between senior professionals and students alike. They organise national and regional scientific meetings, training courses and field visits and may also be able to develop co-operation between organisations and promote the importance of sound groundwater management in their own country. They can also provide mutual support between chapters, as was highlighted at the national chapters' meeting in Malaga.

Also in Malaga, IAH Council was pleased to give its support to the establishment of a new national chapter in Namibia. They also agreed that the Oman Water Society should become an IAH 'Associated Organisation'. (It is currently not possible legally for an international organisation to have a branch in Oman).

We welcome enquiries about potential new chapters, from all regions. This is particularly relevant for our next congress in Sao Paulo, Brazil, which will be able to provide support not just to current IAH members across all of Latin America but will also help them in the aims for developing existing and new IAH national chapters.

Wherever you are, your new chapter could be a new and independent organisation in your country or could be hosted by an existing organisation. Existing associations within countries and regions, with common goals to those of IAH, can be recognised as Associated Organisations with which IAH agrees to co-operate.

If you and your colleagues would like to know more about forming an IAH group, contact us at [info@iah.org](mailto:info@iah.org).

SECRETARIAT

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

  **Ireland**  
Annual field trip

Our Irish chapter features once again, this time for its annual field trip which was at the 'home' of Irish karst in Counties Clare and Galway. As an overall tenet for the field trip, the group explored the many and varied aspects of the karst hydrogeology of the area. Both days focused on the Burren and surrounding lowlands, with many and varied sites visited. The field trip guide for this, and previous years' is available to view on the chapter website.

SECRETARIAT



Field trip attendees at a stop near Doolin ( Photograph by Malcolm Doak)

 <http://www.iah-ireland.org/annual-field-trip/>





## India

### National Conference on Groundwater Management in Mining and Social Sectors

A National Conference on “Groundwater Management in Mining and Social Sectors” was jointly organised by our Indian Chapter (INC-IAH) and Society of Geo Scientists, Jharkhand (SGSJ) in September at Ranchi.

Its aim was to create a knowledge platform for a variety of stakeholders including government organisations, researchers, industry, NGOs and voluntary organisations, to enable views and experiences in the field to be shared, to better understand problems and to suggest potential solutions.

More than 250 Delegates from 16 states India attended. Out of a total of 52 research papers submitted, 26 papers were presented in four technical sessions under different sub-themes: Ground Water Challenges in Mining Sectors, Ground Water Challenges in Urban and Rural areas, Ground Water quality and Ground Water Sustainability. During the conference, papers presented by Mr Pradip Paul and Ms.Ritu Bala were judged as “best paper presentations” under the the young scientist category.

#### INDIA NATIONAL COMMITTEE



Dr D. Saha, INC-IAH Secretary, delivering address



Ms Ritu Bala receiving “young scientist paper” award



## South Africa

### 2nd South African Development Community (SADC) Ground Water Management Institute Groundwater Conference

The second annual South African Development Community (SADC) Ground Water Management Institute Groundwater Conference was held on 4-6 September in Johannesburg. IAH’s South African National Chapter was one of the co-sponsors.

The conference theme was ‘Groundwater’s contribution to the achievement of Sustainable development goals in the SADC Region’. It had three sub-themes, (1) contribution of research towards the understanding, the status, trends and risks to groundwater, (2) measuring progress towards attaining SDG targets, collection and management within the SADC member states, (3) Policy, legal and institutional considerations at the national and trans-boundary level. Seven keynotes were given and three panel discussions took place.

Full information and supporting documents including presentation notes can be found on the conference website.

#### SECRETARIAT



<https://sadc-gmi.org/sadc-groundwater-conference/>



# 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 - you do not have to be an IAH member to participate. For the full listing and contact/website information, see the link below.

## SECRETARIAT



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

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

## REGIONAL GROUNDWATER FLOW COMMISSION (RGFC)

RGFC organised a topic at the Malaga congress entitled "Innovative approaches for understanding groundwater flow systems", which was supported by the EU H2020 ENeRAG (Excellency Network Building for Comprehensive Research and Assessment of Geofluids) project. The sessions dealt with a wide range of methodologies applied in hydrogeology from the more conventional technologies (such as hydrogeological mapping, hydrodynamics, hydrochemistry, isotopes, tracers, etc.) to the most innovative new trends in modelling. In addition, Carlos Molano's Groundwater Spreadsheets short course ahead of congress was devoted to providing the basic concepts and mechanisms of movement and storage of water and chemical compounds in porous media, applying analytical and numerical modelling using spreadsheets.

Looking ahead, we have an International Symposium on Geofluids, Budapest, Hungary, 8-10 July 2020. This aims to bring together scientists, professionals, stakeholders to share and discuss all kinds of aspects of geofluids, i.e., groundwater, geothermal energy, hydrocarbon, geogenic contaminations and hydrothermal mineral resources, with special emphasis on harmonized exploration and utilization. See the website <http://geofluids2020.hu/>

### RGFC COMMITTEE



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

## COMMISSION ON KARST HYDROGEOLOGY (KC)

The KC held its annual meeting on 26th September, during congress week. The meeting was coordinated by chairman Augusto Auler, assisted by co-chairman Zoran Stevanović and was well attended with approximately 35 people. Highlights are provided on the KC website, as well as information on current projects and initiatives.

During congress we also awarded the Young Karst Researcher Prize to the three best presentations by young karst scientists. The winners were Marie-Amélie Petre from HydroSciences, Montpellier, France; Emmanuel Dubois from University of Québec, Canada; and Flann Corcoran from TU Berlin, Germany. Congratulations!



### 50th anniversary

The Karst Commission will have its 50th anniversary in 2020. A celebration will occur during the UNESCO Karst meeting in Bowling Green. Details of the ceremony are being planned in conjunction with the UNESCO Karst conference organizers. For information about the conference, go to <https://unescokarst2020.com/>.

### KC COMMITTEE



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



# EARLY CAREER HYDROGEOLOGISTS NETWORK (ECHN)

It is always a pleasure to be present at the IAH Congress as part of ECHN. This year we would like to start with acknowledgments to the Organizing Committee that helped us with the organization of ECHN activities. A special thanks goes to Jorge Prieto for his support before and during the congress.

The Annual General Meeting was held on Monday, September 23rd, with the participation of about 60 attendees. During the meeting, some attendees asked for opportunities in the working world for an ECH, for help in the creation of a National Branch in their own country and to be involved in the ECHN Steering Committee. We gathered two new members joining the Steering Committee, Jade Ward (UK), as co-chair, and Fatima Monji (Netherlands), as part of the task team. Luis Camilo Suescún (Colombia), Antonia Genot (Chile), Richard Hoffman (Belgium) and Yassine Echelfi (Honduras) are the new recruits that joined the Steering Committee in 2019. The Steering Committee and ECHN would like to acknowledge and express its gratitude to Raquel Sousa, the outgoing co-chair, for her passion and contribution to the growth of the ECHN.



The Botanical Garden of the University of Malaga was the scene for the ECHN Social Function on Tuesday evening. Lounge music, beer, and some Spanish traditional products, as “jamón serrano y queso”, delighted the cocktail party. There, more than 120 attendees were encouraged to meet new people among the congress participants by playing a hydro-bingo game and looking for “a geochemist”, “a modeler”, “an Asian guy”, “an African girl”, etc. At the end of the night, everyone came back home with a new network of contacts from all over the world!



The ECHN side session was organised to align with the congress' theme on Groundwater governance and management. The session was moderated by our very own outgoing co-chair, Raquel Sousa, who coordinated a round table discussion with an esteemed panel of experienced hydro's. The panel was comprised of Dr. Makoto Taniguchi (Japan), Dr. Neno Kukuric (Netherlands) and Fanus Fourie (South Africa). It was an eye-opening experience for all who attended and an interesting showcase of the differences between governance approaches, regulations, and priorities.

To continue with the evolution and the knowledge transition in our association and local network, interesting presentations and posters were presented for some of our ECH's, since “groundwater responses to climate change”, “optimization of water resources”, “applied groundwater modeling in mining” topics attached attention to young and senior hydrogeologists, and ECHN gives thanks to all of them for sharing their experiences and knowledge in Hydrogeology with us. The ECHN approached our keynote a little differently this year by hosting a competition to all early careers to submit an abstract. The keynote was awarded to Stefano Viaroli who presented an excellent keynote titled “The Good, the Bad and the Bottled: considerations of the effects of our habits on the water and environment protection”. Stefano closed the 2019 IAH Congress on Friday, September 27th. We would like to take this opportunity to thank the IAH and UNESCO for allowing us every year to give an Early Career keynote, as well as this years cash prize!



[continued over...]

ECHN STEERING COMMITTEE



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

DECEMBER 2019

## Commissions & Networks

[...continued from previous]

### URBAN GROUNDWATER NETWORK (UGN)

Our 2019 Annual Network members' meeting was held this year on 24 September, during congress. Due to parallel events, it wasn't possible for a full AGM – however, the meeting still provided useful discussion as to key events and agendas the UGN should aim to link to in the next years (2020-22).

The IAH UGN is continuing to develop collaborative efforts with the newly formed IWA groundwater committee. In addition to this, those attending the AGM agreed that the UGN should try to develop an increasing presence with the following networks and initiatives – either by co-chairing sessions, joint workshops, shared communications or developing partnerships:

- Resilient Cities agenda and programme
- EuroGeoSurveys Expert Urban Working Group
- ERAnet
- other IAH commissions and the IWA groundwater committee

Other actions identified were to look into the possibility of multi-lingual translation of the IAH UGN webpages.

During congress itself we had three urban-focused conference sessions, all of which saw a strong attendance of 45-65 delegates. Research was presented from all over the world – including, but not limited to: Canada, Norway, Japan, Slovenia, New Zealand, UK, Netherlands, India, Italy, Africa.

We are planning ahead for 2020 - visit our website for updates and contact information.

HELEN FALLAS



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

### COMMISSION ON MINERAL & THERMAL WATERS (CMTW)

The IAH Mineral and Thermal Waters Commission website is now up and running at <https://cmtw.iah.org/>.

As you will read, the commission is one of the longest standing groups of IAH – so as well as latest news and initiatives, you'll also find some interesting historical facts about CMTW and IAH overall.

The commission also draws your attention to MinWat 2020 – International Multidisciplinary Conference on Mineral and Thermal Waters, taking place in Caserta, Italy from 29 March to 2 April 2020. For details, see <https://minwatitaly2020.org/>

SECRETARIAT



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



*Ed: As previously mentioned, you can find the full list of commissions and networks on the IAH website at <https://iah.org/groups/commissions-networks> along with links to their sub-sites, which have further information on each group's activities. The latest additions are the Socio-Hydrogeology Network and the Groundwater Quality Commission (we're working on the websites – watch this space...).*



# 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

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.

586 pp; ISBN 9781138542495 Published price £148.99

(30% discount for IAH members)

Information about the book can be found on the CRC/T&F website <https://www.crcpress.com/Investigating-Groundwater/Acworth/p/book/9781138542495>; and for the member discount code on the IAH website [https://iah.org/members/discount\\_perks](https://iah.org/members/discount_perks)



## Selected Papers on Hydrogeology (IAH-SP)

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

### Groundwater Vulnerability Assessment and Mapping

Andrzej J. Witkowski, Andrzej Kowalczyk, Jaroslav Vrba

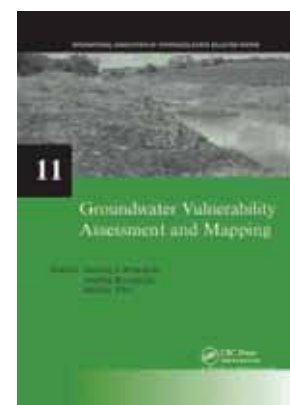
This volume presents the contemporary issues surrounding groundwater pollution risk assessment and the application of vulnerability and risk assessment maps for the effective protection and management of aquifers. Numerous new and improved approaches to intrinsic and specific vulnerability assessment (modified DRASTIC, GOD, VULK, VURAAS) are described, some coupled with geophysical and hydrological surveys and hydrodynamic and transport modelling. Widespread use is made of GIS format.

586 pp; ISBN 9780367388690 - CAT# K448274

Published price £54.99 (PB); £120 (HB); £37.79 (ebook); from £21.00 (ebook rental)

(30% discount for IAH members)

Information about the book can be found on the CRC/T&F website <https://www.crcpress.com/Groundwater-Vulnerability-Assessment-and-Mapping-IAH-Selected-Papers-volume/Witkowski-Kowalczyk-Vrba/p/book/9780367388690>; and for the member discount code on the IAH website [https://iah.org/members/discount\\_perks](https://iah.org/members/discount_perks)



# Geoethics & Groundwater Management Congress, Porto



This joint international congress, alongside the International Association of Promoting Geoethics (IAPG), is the first global event to tackle the many wide-reaching subjects of Geoethics in Groundwater Management. Taking place on 18-22 May 2020 in Porto, Portugal, it is being organised on behalf of the sister associations by the Portugal Chapter of IAH, ISEP - Polytechnic of Porto and the AIH-GE.

The congress themes are:

- Fundamentals of Hydrogeoethics: Cultures, principles and geoethical values in the philosophy of groundwater resources, legal frameworks, policies, management models, professional practices and citizen action;
- Lessons for a resilient and sustainable future with Hydrogeoethics: Case studies of geoethics in groundwater science-engineering, profession and management;
- Scientific and humanistic components of Hydrogeoethics: Education and professional training of geoethics in groundwater management.

The Congress also features a selection of two day field trips, seven special sessions and the closing of a side event dedicated to the early education on groundwater and geoethics in secondary schools in Portugal. Springer will be the publishing partner of the event and a special volume of the proceedings (Springer ASTI Series) will include the extended abstracts of communications and a selection of keynotes.

In a changing and challenging world, where responsible water science and management is increasingly important, we invite you to take part as a founder of this new science to learn from shared knowledge, and to present your discussion on values and principles, case studies and strategies for ensuring a future with enough safe water for all in sustainable development and peace.

The deadline for abstract submission has been updated to 6 December 2019. We hope this will provide new opportunities for participation and hope to see you in Porto next year!

 Congress website - <https://geoeth-gwm2019.wixsite.com/porto>





# 47th IAH Congress, São Paulo

The Brazilian community of hydrogeologists, proudly represented by the Brazilian National Chapter of the IAH, are welcoming you to the city of São Paulo for the first congress organised by the International Association of Hydrogeologists (IAH), the Brazilian National Chapter of IAH/Brazilian Groundwater Association (ABAS) and the Latin-American Groundwater Association for Development (ALHSUD). We aim that the event will help promote the connection of hydrogeologists from Latin America as never before and strengthen IAH's reach worldwide.

Taking place on 20-25 September 2020 under the theme, 'AQUIFERS: STORING WATER FOR THE FUTURE', there will be sessions on hydrogeological science and technologies, as well as groundwater in the wider environmental and societal context. Amongst other issues, environmental isotopes, modelling and geophysical techniques will be considered alongside crystalline, karst and coastal aquifers, taking into account agriculture, urban development, economics and climate change. Expect to hear the whole range of groundwater management and governance considered under the umbrella of IWRM - integrated water resource management.

## Key Dates

Registration and abstract submission starts on: 1 December 2019

Abstract submission deadline: 30 March 2020

Early bird registration: 30 June 2020

 Congress website - <http://www.iah2020.org/>



DECEMBER 2019

## 2020 - SELECTION

8-20 February – Kozhikode, Kerala, India

3rd Indian National Groundwater Conference (INGWC-2020)

This conference will focus on 'Groundwater Resources Management for Sustainable Development with the Special Emphasis on Coastal and Urban Environment'. The Centre for Water Resources Development and Management (CWRDM) will host the conference in collaboration with AGGS (India), Central Ground Water Board (CGWB), NIT Calicut and GEOFORUM (MS), India.

<http://www.ingwc2020.in>

29 March - 2 April – Caserta, Italy

MinWat 2020

3rd International Multidisciplinary Conference on Mineral Waters: Genesis, Exploitation, Protection, and Valorisation.

The MinWat 2020 Conference will represent an exceptional opportunity to update knowledge about each MinWat core investigation activity among earth scientists from national and international institutions. Organised by IAH Commission on Mineral and Thermal Water (IAH CMTW), IAH National Chapter of Italy (IAHItaly), University of Campania, University of Napoli, University of Padova, University of Tuscia and Ferrarelle spa.

<https://minwatitaly2020.org>

18-22 May – Porto, Portugal

IGeoethics & Groundwater Management: theory and practice for a sustainable development

This joint international congress, alongside the International Association of Promoting Geoethics (IAPG), is the first global event to tackle the many wide-reaching subjects of Geoethics in Groundwater management. Organised by IAH Portugal Chapter / ISEP - School of Engineering, Polytechnic of Porto / IAH Spain Chapter.

<https://geoeth-gwm2019.wixsite.com/porto>

18-22 May – Bowling Green, Kentucky, USA

IUNESCO Karst 2020

The purpose of this meeting is to enhance communication and the sharing of ideas and resources between major international conservation and science programs that protect, study, or manage cave and karst resources. The meeting will bring together a diverse group of managers, scientists, educators, and community partners to share successes and challenges in promoting sustainability and community involvement while protecting fragile karst ecosystems. Organised by Western Kentucky University, George Wright Society, Mammoth Cave Area Biosphere Reserve, with collaboration from IAH's Karst Commission and many others.

<https://unesckarst2020.com/>

8-10 July – Budapest, Hungary

International Symposium on Geofluids

This symposium aims to bring together scientists, professionals, stakeholders to share and discuss all kinds of aspects of geofluids, i.e., groundwater, geothermal energy, hydrocarbon, geogenic contaminations and hydrothermal mineral resources, with special emphasis on harmonized exploration and utilization. We, therefore, welcome researchers in all aspects of geofluids' research. Organised by József and Erzsébet Tóth Endowed Hydrogeology Chair and Foundation, Regional Groundwater Flow Commission of the IAH, ENeRAG H2020 project.

<http://geofluids2020.hu/>

20 - 25 September – São Paulo, Brazil

IAH 47th Congress

Under the theme, 'AQUIFERS: STORING WATER FOR THE FUTURE', there will be sessions on hydrogeological science and technologies, as well as groundwater in the wider environmental and societal context. Organised by the Brazilian National Chapter of IAH/Brazilian Groundwater Association (ABAS) and the Latin-American Groundwater Association for Development (ALHSUD)

<http://www.iah2020.org/>



<http://iah.org/events>

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