NEWS &information

IAH - THE WORLD-WIDE GROUNDWATER ORGANISATION

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

DECEMBER 2022

Also in this issue:

In September, thousands of people joined the IAH Congress organised online by our colleagues in Wuhan, China – this must surely be a record for IAH! Read congress report within, and there's the call for next year's congress in Cape Town, South Africa.

STUDENT MEMBERSHIPS

At the AGM IAH members supported the idea of new, free (no HJ) student membership, to add to our existing "discount rates" for student members (which include HJ). Great news!

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LATEST IAH-SOS PAPERS

Two more titles to tie in with our "Year for Groundwater", namely Rural Water Supply and Groundwater and Irrigated Agriculture and Groundwater.

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INTERNATIONAL ASSOCIATION OF HYDROGEOLOGISTS

Find us at https://iah.org. Connect by email info@iah.org and on social media:

@iahgroundwater @iahgroundwater

Find IAH groups www.facebook.com/iah.org

1973 50th 2023
IAH CONGRESS
CAPE TOWN | SOUTH AFRICA
17-22 SEPTEMBER 2023
The International Association of Hydrogeologists

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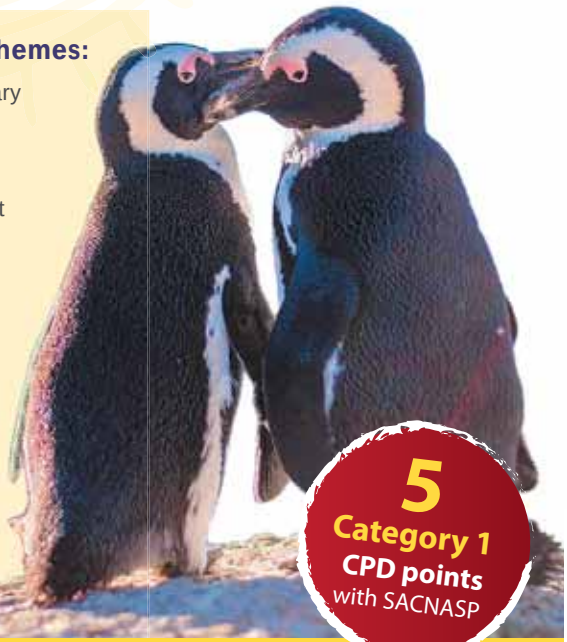
CALL FOR ABSTRACTS OPEN

At the closing ceremony of IAH 49 held in China, the groundwater torch was passed to South Africa to host IAH 50. We congratulate the conference organisers on hosting a successful conference under the trying circumstances posed by the Covid-19 pandemic. The Congress theme for IAH 50 is Groundwater: A Matter of Scale. This theme combines scientific advances through local to global scale experiments and case studies, with those extending over various temporal scales. We invite participants from academia, civil society stakeholders, governments, industry, international organisations and non-governmental organisations who wish to present their work on the specified theme and subthemes to submit an abstract. We request the IAH Commissions and Networks to explore topics under the subthemes. The conference's theme provides a broad topic of interest to direct the submissions of abstracts. However, all papers are welcome that advance our groundwater understanding.

The congress has the following sub-themes:

- The connectedness of groundwater and planetary sciences
- Catchment scale integrated surface water and groundwater studies
- Scale aspects of groundwater flow and transport systems
- Critical zone sciences - a multidisciplinary, cross-scale science
- Upscaling/downscaling techniques
- Local-scale, pore-scale, and discreet scale
- Polycentric groundwater governance systems
- Improving shared sustainable use of groundwater resources that cross two or more jurisdictional borders

For more information on the sub-themes and guidelines on how to submit your abstract please go to: https://iah2023.org.za/abstracts/



5 Category 1 CPD points with SACNASP

IMPORTANT DEADLINES

Now open	*Call for abstracts*	**3 April 2023**	*Abstract acceptance confirmed*
21 November 2022	*Online registration opens*	**3 May 2023**	*Early Bird Registration closes*
1 March 2023	*Abstract Submission deadline*	**31 July 2023**	*Late Registration closes*

Website: https://iah2023.org.za **Email:** deidre@iafrica.com

Seasons greetings to all, as we draw to the end of an eventful "Year for Groundwater".

It's been a long and demanding year, as in many parts of the world we have begun the process of stepping out of the shadow of the Covid epidemic, with opportunities to participate in so many activities. The pandemic casts a long shadow, though, as we know from our colleagues in Wuhan, who were forced to take the decision to hold this year's IAH Congress online. Despite this, there were record audiences at times, as thousands attended some of the plenary sessions.

IAH's authoritative views and support have been very much in demand throughout the year, in support of World Water Day and "Groundwater: Making the invisible visible". In recent weeks IAH has also been awarded the status of Associate Partner of UNESCO, which recognises the assistance we have provided for many years, particularly to the Intergovernmental Hydrological Programme. We can expect this to continue and grow, along with IAH's reputation. If you would like to be directly involved in IAH's outreach, let us know.

The UN Groundwater Summit in Paris in December is the next high-level event where we can display our credentials to a wide-ranging audience of policy- and decision-makers and help show the contribution that groundwater can make to achieving the Sustainable Development Goals.

The new IAH Strategy to 2030 points the way to the increasing importance of groundwater and the work we all have to do for its sustainable management in a changing world. It also shows the way for improving the support for all our members – and would-be members – across the world.

We thank all our members who contributed to events and activities around the world as part of this "Year for Groundwater". It's been quite hectic at times and we hope that everyone will be able to take a well-earned break at the end of the year. Thank you to our Chapters, Commissions and Networks and all who keep these vital groups running. We hope to see all of you next year at a conference – in-person or online. Come back refreshed and ready for all the new challenges in 2023 – and don't forget to renew your membership and encourage others to join too!

Ian, Kellie, Sue, Sharon

IAH SECRETARIAT

IN THIS ISSUE

ADVERTISING & COPY 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.

We are also happy to consider groundwater related articles from our members and supporters.

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

Email knicholson@iah.org for further details.

FROM OUR PRESIDENT

Dear members, dear colleagues...

The recognition by society of groundwater as a key component of water cycle is a relatively recent, changing public perception. Groundwater's role for ensuring the well-being of the planet is increasingly acknowledged, but more can be done.

To maintain public understanding and continue to promote the proper management and protection of groundwater, the hydrogeological community needs to be more active, magnifying its efforts in groundwater assessment, management, and protection, thereby transforming theoretical knowledge into practical actions. The current IAH vision on main challenges, useful tools and possible solutions offers the possibility to help achieve the United Nations' Sustainable Development Goals.

This possibility, combined with the breadth and depth of competence, and collective capability of its members, means that IAH is well-placed to contribute to progress, particularly through support to UNESCO's International Hydrological Programme. To this end, UNESCO has now recognised IAH formally as an Associate Partner.

IAH was recognized and fostered by the Water Sciences Division of UNESCO from the early days of the Association and our co-operation has steadily increased. Our aims correspond with those of UNESCO in seeking co-operation in education and sciences - the international legend for hydrogeological maps developed jointly with UNESCO in the 1960s still serves as a model throughout the world. Our work complements UNESCO's in promoting an interdisciplinary and integrated approach to watershed and aquifer management and to water research.

The number of UN and other activities that IAH is invited to support is increasing, a response to IAH's growing reputation, with requests for reviews and help with planning future events. Currently many activities and web meetings tend to fall on the IAH Executive Committee, which is very challenging. It would be great to organize a cadre of people to address these activities and this is something that we will be working on in 2023.

In the meantime, our year ends in Paris in December, with the UN Groundwater Summit, where IAH will have a further opportunity to show its credentials to the wider world of policy and decision makers. If you're going to be at this event, don't forget to bring your 100ml vial of groundwater for our side session mixing ceremony. We are symbolically mixing groundwater from all over the world, and sending 10 ml vials of the mixture back with Summit participants to their home countries. The groundwater in these vials can be used (perhaps with local media attention) to either: water plants (to show groundwater's importance to agriculture and ecosystems), artificially recharge an aquifer (to demonstrate the hydrologic cycle and how groundwater can be augmented and managed), or placed

in a surface stream or lake (to show how a huge portion of our surface water comes from groundwater). And we will also once again urge signing of the Sao Paulo - Brussels Agreement and add a note on the Indigenous Peoples Groundwater Declaration, which is being drafted by colleagues in Australia.

Groundwater is a lifeline in the face of climate change and population growth. Together we promote its wise use and protection. Thanks to your continuing work, this invisible treasure is becoming more visible to all. Please, continue to make the world a better place for all.

DAVE KREAMER
IAH PRESIDENT

São Paulo-Brussels Groundwater Declaration

It's STILL not too late to add your name to the São Paulo-Brussels Groundwater Declaration if you haven't already done so. With your help, IAH and all its partners will use the Declaration to inspire the actions needed to further the understanding, wise use and protection of groundwater resources throughout the world.

Let's make the invisible visible! And like those who've already done so, share this - and your photos on social media - and ensure the messages contained reach those those who need to see it.

Groundwater is critical to Earth's survival: Aquifers, our planet's natural water reservoirs, hold 97% of the fresh and liquid water

Everyone must face these issues: Sustainable groundwater management needs monitoring, regulation, and communication

It is imperative to protect groundwater through the following urgent actions: Strengthen the institutions responsible for the governance of groundwater so that they promote efficient, inclusive, ethical, democratic, and socio-ecologically conscientious policies

Let's make the invisible visible: There must be an effort by governments, hydrogeologists, NGOs, and all of society to make perceptible this crucial resource for planetary well-being and dignified human life.

Read/sign here: https://iah.org/gwdeclaration

MEDIA FOCUS

A selection of groundwater related features from around the world

GROUNDWATER RECHARGE SOLUTION TO URBAN FLOODING IN PAKISTAN

Pakistan's recent climate-induced flooding has given the world a wake-up call to come up with solutions to tackle drought and urban flooding to avoid human catastrophes in the future. The country's experts have forcefully suggested the adoption of groundwater recharge well technology as a national policy to counter both urban flooding and drought, to help manage the impacts of climate change.
https://tribune.com.pk/story/2378684/groundwater-recharge-tech-ultimate-solution-to-urban-flooding-experts

HOW THE BENGAL WATER MACHINE HELPED TRANSFORM BANGLADESH'S ECONOMY

Pumping groundwater by Bangladesh's 16 million smallholder farmers has led to a massive storage capture from surface waters to aquifers rivalling the storage capacity of the world's large dams, according to a study. Pumping during the dry season reduces groundwater levels that are later restored by leaching from ponds, rivers and lakes during the monsoon months. The capture of surface water leads to the recovery of groundwater levels and helps limit flooding in a process the study authors call "The Bengal Water Machine".
https://qz.com/bangladeshs-groundwater-usage-helped-its-economy-1849629096

TIMELY STUDY ON RISING GROUNDWATER OFFERS HOPE FOR DROUGHT-STRICKEN EAST AFRICA

New research indicates better groundwater supply management could hold the key to help combat the impact of climate change in East Africa, where countries are currently facing the worst drought and food insecurity in a generation. Findings showed the total rainfall within the main rainy season, called the 'long rains', is declining across the Horn of Africa Drylands but rising in the other rainy season, known as the 'short rains'.
https://www.bristol.ac.uk/news/2022/october/rising-groundwater-media-release.html

LA SIEMBRA DE AGUA, UNA TÉCNICA MILENARIA EFICAZ PARA ENFRENTARSE A LA SEQUÍA

Dicen en Perú que el que cosecha agua sin haberla sembrado es un ladrón. La frase está llena de significado. En España tenemos un par de millones de pozos que cosechan agua subterránea sin que sus propietarios sepan que el agua también se siembra. Los pueblos quechuas y aymaras lo hacen en los Andes desde hace más de mil años mediante la construcción y manejo de amunas, cochas y bofedales, entre otros sistemas. También se siembra agua en Sierra Nevada, España, desde la época de Al-Ándalus, mediante las acequias de careo.
https://theconversation.com/la-siembra-de-agua-una-tecnica-milenaria-eficaz-para-enfrentarse-a-la-sequia-191971

REPORT: 90% OF ALL U.S. COAL PLANTS ARE CONTAMINATING GROUNDWATER

More than 90 percent of the country's coal plants are contaminating water across 43 states, according to a new report. And nearly half of them have no plans to clean up the mess. The study, released by the environmental watchdogs Earthjustice and the Environmental Integrity Project, looked at 292 sites around the country, from the desert outside Las Vegas to the coast of Massachusetts. The researchers focused specifically on coal ash, a toxic byproduct of burning coal to produce power.
https://grist.org/regulation/report-90-percent-coal-plants-contaminate-groundwater-pollution/

[ed: we'd welcome links to news items, particularly in other languages. Email info@iah.org or tag us in social media]

LATEST FREE RESOURCES

NEW IN OUR STRATEGIC OVERVIEW SERIES

Rural Water Supply and Groundwater

Groundwater is a key resource for reliable domestic water-supply for many millions of people in rural communities world- wide. These wells when protected and maintained, provide good quality water and are central to achieving the UN-SDG targets for rural water-supply. With village locations they avoid the need for the hours that might otherwise be spent, particularly by women and children collecting domestic water from distant sources.

Irrigated Agriculture and Groundwater

Irrigated agriculture has brought enormous socio-economic benefits to many regions. It has also impacted underlying groundwater and its dependent environment. Often the resource is over-exploited. Intensive irrigation can cause leaching of nutrients and pesticides and in some settings progressive aquifer salinization and/or microplastic pollution are emerging problems. Better government regulation and monitoring is needed, along with education and incentives for farmers for sustainable use.

All titles in IAH Strategic Overview Series, including some translations

GUIDELINES FOR GROUNDWATER INFLOW AND HEAT MANAGEMENT IN TUNNELS

The IAH Italian Chapter Working Group GESTAG (Sustainable Water Management in Tunnels) has published the English version of the Guidelines for Groundwater Inflow and Heat Management in Tunnels. Download free from https://www.acquesotterranee.net/acque/article/view/592

The purpose of the guidelines is to provide practical and authoritative advice and examples on how to manage groundwater and heat impact in tunnel projects. The emerging trends for the management of intercepted groundwater and geothermal heat in tunnels are presented. They are targeted at practitioners involved in underground infrastructure projects. Organized into eleven chapters, the guidelines illustrate methods for setting up hydrogeological studies and predictive models of impacts, planning the valorisation of intercepted inflows and geothermal heat, choosing chemicals according to their impact on groundwater quality in drill and blast and TBM excavation techniques, and defining the monitoring plan criteria.

The so-called non-technical issues relating to communication and social acceptability of groundwater management in tunnelling are also discussed, and the regulatory framework in Europe is provided.The new version of the Guidelines for Groundwater Inflow and Heat Management in Tunnels include the English translation of the Italian version published in 2020, with an extension of the chapter 6 on the use of geothermal heat in underground works. For further information contact Antonio Dematteis at antonio.dematteis@lombardi.group.

IAH'S ANNUAL GENERAL MEETING

This year's AGM was held online again and IAH President, Dave Kreamer, thanked everyone for joining the meeting and supporting IAH.

Secretary General, Jane Dottridge, reported on what had been a very busy year so far. With UN World Water Day 2022 being 'Groundwater: Making the Invisible Visible', the Executive Committee and Council, as well as members generally, have been involved in many activities, including contributing to the World Water Development Report, the World Water Forum in Dakar, the 'Groundwater and SDGs' conference in Paris, the Stockholm World Water Week and World Toilet Day. The year's activities culminate in December with the UN Groundwater Summit in Paris (see page 14).

A big part of Jane's year has been pulling together IAH's strategy to 2030, which underlines our support for the UN SDGs. The MAR Commission had published the first in what she hopes will be a series of free books as part of the new Strategy, and two new papers in our Strategic Overview series were now available. Jane also highlighted the Strategy's call for efforts to support increasing diversity and inclusion.

Teodóra Szőcs, Vice President for Finance and Membership, was pleased to report that IAH's finances remained in good health and Council were able to recommend that once again there should be no increase in membership fees. This was supported by the AGM. The proposal for free student membership (without HJ) for a period of 3 years was also agreed (the small fee for student membership including HJ would continue).

The proposal for a review of membership fee categories, with the aim of bringing these once more into line with World Bank categories, was also agreed. The results of the review would be available for the next AGM, in 2023. Membership continues to be reasonably strong, with more than 4000 members in 137 countries, 6% of these benefiting from sponsored membership. Teodóra thanked members for the donations that made this possible.

Marco Petitta, Vice President for Programme and Science Coordination, reported that several IAH commissions and networks had submitted papers for a Hydrogeology Journal Topical Collection, as part of the 'year for groundwater'. These will be published in the first issue of 2023, summarising some of the key themes for our commissions and networks across 2022.

ECHN, IAH's Early Careers Hydrogeology Network, has many energetic and capable members and Marco proposed that they should become more involved in C&N boards. This would give ECHN members opportunities to help these important IAH groups and would provide support for the existing committees. He believes that this would undoubtedly be to IAH's long-term benefit.

He thanked all those involved in IAH's C&Ns and said it was his intention to meet each chair by in the coming months to discuss their plans and how IAH generally can help support these.

IAN DAVEY, SECRETARIAT

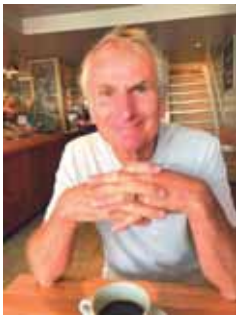
Find IAH groups

IAH'S AWARDS PRESENTED DURING AGM

This year's IAH award winners were announced at our AGM and are all, as ever, worthy recipients.

The IAH Presidents' Award went to Craig Simmons, acknowledged by academics, government, industry and the public as one of the leading authorities on groundwater and water science. He is the Matthew Flinders Distinguished Professor of Hydrogeology, Schultz Chair in the Environment at Flinders University and Foundation Director of the Australian Research Council's National Centre for Groundwater Research and Training in Australia.

Ritchie Morris of MEGA (Morris Environmental & Groundwater Alliances) was awarded this year's Applied Hydrogeologist Award, as selected by an independent panel. Ritchie has covered the range of hydrogeological highlights during his long career and has used his knowledge to contribute to sustainable life and societal well-being.



For his long contribution to IAH, Nick Robins was awarded Honorary Membership. As well as other support for IAH, He was appointed our Books Editor-in-Chief in 2006, continuing in this role until 2021. Nick oversaw the publication of 20 books in IAH's prestigious series, 'International Contributions to Hydrogeology', the 'blue books', and Selected Papers, the 'green books'.

Follow the link below to find out more; we are sure you will join in with our congratulations to all three.

https://iah.org/about/awards

IAH COUNCIL

IAH Council met in September and October, online once more, and members nearest the international date line had a rather early start or a delayed bedtime!

Overall, IAH's year has been busy and successful. Council and other IAH members have made considerable contributions to activities related to World Water Day 2022 and the 'year for groundwater'. This included publicity events in Africa, support for attendance of two IAH delegates from Sub-Saharan Africa at the World Water Forum in Dakar, and preparations for the Groundwater Summit in Paris, where IAH is hosting a session on 'Innovation and groundwater" and a side event on how groundwater changes lives.

Finances are in good shape and again we have achieved a surplus, having spent little on travel and accommodation for in-person attendance at events. This gives IAH financial security, but Council remain especially keen to use these funds for charitable purposes and for member benefit. With IAH's authoritative views and expertise much in demand for policy-related events, Council are also committed to ensuring that the Association's contributions should be cost-effective. It was noted that online events can often give far greater exposure and lower costs than those restricted to in-person attendance.

[...Council Meetings; continued from previous]

Membership is slightly lower than in recent years (currently 4080 members) and in consequence income from subscriptions has fallen a little. Royalties from Hydrogeology Journal and IAH Books were a little lower but other sources of income were stable. The fall in membership appears to relate to retention of members rather than recruiting new members and President Dave Kreamer asked Council to work with their chapters to encourage renewals and members' involvement.

Council agreed several items to be put to members at the AGM:

- no increase in membership fees for 2023, particularly given the current global situation and IAH's sound finances
- free student membership (excluding Hydrogeology Journal)
- a proposal for review and updating of the membership country fee bands, in line with the Word Bank global income categories (as was previously the case)
- a new strategy for the period to 2030

The work of our Commissions and Networks is a vital part of the IAH strategy and Council discussed how they could be supported and their activities boosted. Possibilities included having more than one co-chair to share duties and also that there could be an ECHN co-chair to help with future resilience.

A suggestion was put forward for a new commission to deal with the ecosystems-energy-food production nexus. This could incorporate the scope of both the Groundwater and Ecosystems Network and the Groundwater and Energy Commission, which had not been able to progress in the way that had originally been intended. If members are interested in this suggestion, please contact us at info@iah.org.

IAN DAVEY, SECRETARIAT

IAH RENEWALS, 2023

Please note that we are currently finalising changes to IAH's banking arrangements in the UK.

For those who renew their membership directly via our central system we propose to delay renewals by a few weeks, so that we can ensure that everything is in place ready to receive your subscriptions. We hope that this delay will not discourage you from renewing your membership when the time comes and apologise for any inconvenience this may cause you.

If you manage your IAH membership via your National Chapter please continue to do this as normal.

National Chapters - Sharon Warden will be in contact with you directly to confirm the new arrangements.

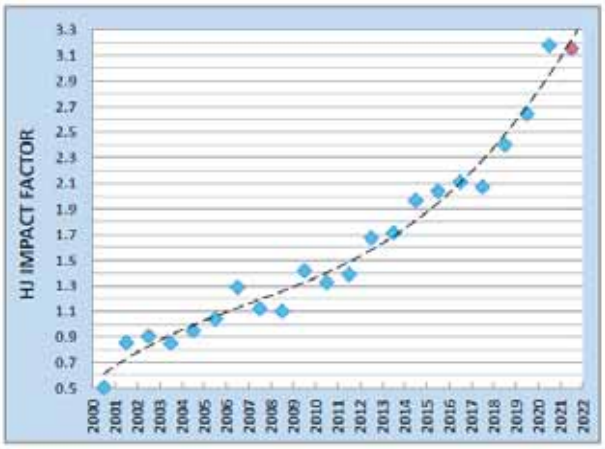
Questions or comments? Email info@iah.org.

HYDROGEOLOGY JOURNAL

Hydrogeology Journal (HJ) has experienced a significant and continuing increase in its scientific Impact Factor (IF) in the past years (see figure just below). The current (2021) IF is 3.151 (red point on graph), about the same as last year (3.178).

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 of 428,752 downloads in 2021 (increased from 364,777 downloads in 2020). This is a measure of how many time readers download HJ articles. This means that people read and use HJ content, perhaps for professional and for practical water-resources management purposes, even though many of these users do not ever reference these HJ articles in journal publications that are included in IF counts (which would make the IF even higher).



We're delighted to see that HJ continues to achieve the IAH goals to serve the professional/practical and scientific communities in groundwater hydrology.

CLIFFORD VOSS, HJ EXECUTIVE EDITOR

The 2022 "year for groundwater" will end in early 2023 in the Hydrogeology Journal

Among the initiatives promoted by IAH during this year to "make the invisible visible" is a "Topical Collection" of Essays to be published on Hydrogeology Journal at the start of the next year.

When the WWDR on Groundwater was published last March we asked to our Commissions and Networks to write an essay related to their topic. Some of them reacted by preparing the related manuscripts which were subsequently reviewed following the editorial rules of Hydrogeology Journal. The result includes about 8 essays which will be published in the first issue of the Journal in 2023. Some papers are available online, some others are still under the editorial process.

This coordinated effort will offer to the IAH and groundwater community a comprehensive update on relevant topics, including: global challenges, emerging threats and novel approaches on groundwater quality; a risk-based regulatory approach for managed aquifer recharge; threats and opportunities about groundwater and climate change; global perspective on assessing groundwater quality; to care about transboundary aquifers and how to solve their issues; terminology-related challenges on regional groundwater flow; management of seawater intrusion and freshwater supply in coastal aquifers.

We warmly thank all authors involved and the Commissions and Networks working hard on their efforts for IAH members, not only by these essays but also by activities including meetings, courses, papers, conferences, spread by their websites and communications. A special thanks also go to the editorial team of Hydrogeology Journal, who helped coordinate this Topical Collection, as practical demonstration of the activity of IAH on modern and future challenges.

MARCO PETITTA, VICE PRESIDENT, PROGRAMME AND SCIENCE COORDINATION

IAH's Strategy to 2030

The IAH Forward Look initiative provided a strategic plan to guide the Association's development from 2010-2020 with actions proposed under five headings:

1. Education and academic development
2. Internal development of IAH
3. Informing and influencing global policy
4. Enhancing alliances with external agencies
5. Enhancing the development of groundwater science

The concerns and wider aspirations of IAH leading to 2030 are enshrined in the São Paulo-Brussels Groundwater (BraBel) Declaration. In order to meet the objectives and progress the urgent actions, IAH and its members require a strategy to continue the good work already underway and improve the sustainability, equality and diversity of the organisation by increasing membership, retaining members by providing benefits and good communication, education, outreach and knowledge transfer and collaboration with other organisations to promote understanding, wise use and protection of global groundwater resources.

The actions now proposed to take us to 2030 are based on the results of the members survey, some further consultations, with more to be done in the future with working groups.

Active involvement of members, diversity and inclusion

- Ensure members in countries with no National Chapter have an opportunity to join others.
- Encourage established National Chapters to support others, e.g. Portugal and Afghanistan.
- Commissions and networks to have an organising committee, including two early career members.
- Encourage sharing of information and wider member participation.
- All committees should aim for diverse membership and plan for succession and sustainability.

Education and career development

- Collaborate with Groundwater project, GroundwaterU etc. May need a new working group or network.
- Continue IAH mentoring scheme.
- Establish a new working group/ network to develop guidelines for professional development.

Outreach and influencing global policy

- Review current activities for effectiveness and impact and decide future priorities.
- Create a new working group or network to involve more members in outreach and influencing policy.
- Set up a 'call tree' for contacts and volunteers to interaction with international organisations.

Communications

- Upgrade IAH website.
- Consult a selection of members about communications based on the survey responses.
- Organise periodic joint meetings of IAH's groups to share success stories an provide mutual support.

Member benefits

- Many benefits follow from the actions in other topics, but needs revisiting soon.
- Follow up member benefits with commercial companies, e.g., Dell.

Congresses

- Continue congress programme ensuring good geographical spread, offering hybrid options.
- Support local conferences organised by National Chapters and regions.
- Encourage and promote short online technical meetings, shared with wider IAH membership.

Publications

- Discuss future and sustainability of HJ with editorial team and publisher.
- Consider how to continue new digital book series after MAR overview.
- Complete current SOS series and translate more.
- Start new format SOS series with Groundwater Quality topic.

GROUNDWATER SUMMIT

The UN-Water Summit on Groundwater is the culmination of the "Groundwater: making the invisible visible" campaign , implemented throughout 2022. This focuses on the SDG 6 Global Acceleration Framework, which is intended to deliver accelerated results that mobilize UN agencies, governments, civil society, private sector, and other stakeholders around five cross-cutting and interdependent "accelerators". IAH is hosting the session on Innovation - new, smart practices and technologies that will improve water and sanitation resources management and service delivery. The scope of the Innovation accelerator is presented in this session of the Groundwater Summit.

Our additional Side Event "Groundwater Changing Lives", which takes place the day before the Summit, will provide new insights to promote groundwater management that can take into account local perspectives and enable policy makers to more easily support groundwater stakeholders, including the marginalised and poor that depend on it. Delegates will share and mix groundwater samples from around the world and water plants in UNESCO's gardens in a demonstration of hydrogeological unity – if you're a delegate, bring your 100ml sample!

Innovations in Groundwater Technology, Communication, Education and Management

As a part of the United Nations Secretary-General's Decade of Action to deliver the Sustainable Development Goals (SDGs) by 2030, the SDG 6 Global Acceleration Framework provides governments with guidance to achieve this, though progress is slow. This Framework is intended to deliver accelerated results that mobilize UN agencies, governments, civil society, private sector, and other stakeholders around five cross-cutting and interdependent "accelerators". They include Innovation, i.e., new, smart practices and technologies that will improve water and sanitation resources management and service delivery. The scope of the Innovation accelerator is presented in this session of the Groundwater Summit.

Innovations can be both technical and non-technical, based on scientific research and certainly beyond the research into implementation phase; successful innovation is something that can be effectively translated into operational management and delivers improved groundwater governance outcomes. Innovation implies actions and priorities relevant to the local context (e.g., 'low technology' in one context can be an innovation in another region). Although aquifers occur in a regional to international dimension, often groundwater is used at the household level, giving groundwater resources a more local and personal dimension. Optimization of groundwater use and ensuring its quality is then, not only a question of applying the latest advances in technology, but involves ensuring equity and the active engagement of the community.

During the Innovation Session, an overview of currently available and accessible advancements related to groundwater will be presented, followed by a panel discussion where some specific innovations will be highlighted by international experts. General areas of innovation in groundwater resources include:

1. Technological innovation and discoveries - tools for solving practical problems in applied hydrogeology (field activities and monitoring).

2. Conceptual advancement such as improvements in problem solving, policy actions, and regulatory controls - theory, guidelines, policy and governance actions able to innovate the hydrogeological approach and contribute to solve management and protection problems.

3. Upgrading educational approaches - innovation in educational activities for students, professionals, young people and society.

4. Communication and social innovation - Informing decision-makers and the general public of groundwater science, supporting policy and community decisions, socio-hydrogeological assessment and social media engagement.

Key messages for this session are:

- A very wide range of innovative solutions are already available in both the technical and non-technical areas, and there is an urgency for their financing, adoption, and implementation if the SDG's are to be achieved on target by 2030. Application of these innovations and new, cutting-edge practices is a cost-effective way to achieve SDG6 and its target 6.1 (By 2030, achieve universal and equitable access to safe and affordable drinking water for all, where groundwater plays an essential role worldwide).
- The current challenges for implementation of ground-breaking actions include: (a) promoting the widespread trial, adoption and review of novel and practical actions to maximise benefits, (b) ensuring that that groundwater innovations are accessible and appropriate for local conditions, and (c) enlisting agencies and governments to ensure a timely investment of resources to adequately support innovations and implement innovative actions.
- All new innovations need to be sustainable in the longer term and be accompanied with/followed by excellent communication, education/training, community involvement, and maintenance. Innovations need the opportunity to be robustly trialled and evaluated to build evidence of sustainable success.

Find out more at the link below.

IAN DAVEY

https://groundwater-summit.org/

WORLD TOILET DAY

World Toilet Day 2022 focused on the impact of the sanitation crisis on groundwater. This observance, held annually since 2013, celebrates toilets and raises awareness of the 3.6 billion people living without access to safely managed sanitation. It is about taking action to tackle the global sanitation crisis and achieve Sustainable Development Goal 6: sanitation and water for all by 2030.

The 2022 campaign 'Making the invisible visible' explored how inadequate sanitation systems spread human waste into rivers, lakes and soil, polluting underground water resources.

However, this problem seems to be invisible. Invisible because it happens underground. Invisible because it happens in the poorest and most marginalized communities.

Groundwater is the world's most abundant source of freshwater. It supports drinking water supplies, sanitation systems, farming, industry and ecosystems. As climate change worsens and populations grow, groundwater is vital for human survival.

The central message from World Toilet Day 2022 is that safely managed sanitation protects groundwater from human waste pollution. Currently, the world is seriously off track to meet the promise of Sustainable Development Goal (SDG) 6.2: to ensure safe toilets for all by 2030.

The campaign continues to urge governments to work on average four times faster to ensure SDG 6.2 is achieved on time. Policymakers are also called upon to fully recognize the connection between sanitation and groundwater in their plans to safeguard this vital water resource.

Key messages from World Toilet Day 2022

- Safe sanitation protects groundwater. Toilets that are properly sited and connected to safely managed sanitation systems, collect, treat and dispose of human waste, and help prevent human waste from spreading into groundwater.
- Sanitation must withstand climate change. Toilets and sanitation systems must be built or adapted to cope with extreme weather events, so that services always function and groundwater is protected.
- Sanitation action is urgent. We are seriously off track to ensure safe toilets for all by 2030. With only eight years left, the world needs to work four times faster to meet our promise.

Find out more, including stories from around the world, at https://www.worldtoiletday.info/

https://www.worldtoiletday.info/

GROUNDWATER STORIES

We are working with IGRAC to produce a world map of facts, figures and photos, to bring information about groundwater to a world-wide audience. It is aimed at anyone who is curious about what lies beneath the ground surface under our feet. If you are interested in helping with this project let us know.

Maybe there are groundwater stories and highlights near you that you think we should tell a wider audience about. How many people outside our groundwater world really know what lies at the bottom of a well, or knows that a lush desert oasis is groundwater, tens of thousands of years old.

We want to make groundwater visible to teachers, schoolchildren, their parents and their families, their friends and colleagues – so that they understand the importance of using this hidden resource wisely to help manage the water and climate change challenges that face us all.

We're proposing to tell our groundwater stories in five ways:

1. Discover and explore groundwater: groundwater can be visible to everyone if you know where to look. It supplies our springs, rivers, lakes, ponds, wetlands, forests and even the sea.

2. The history of groundwater: Groundwater has been used by people since ancient times, with development of groundwater in ancient cultures and groundwater's significance recognized in ancestral worldviews and religions.

3. Fact and figures: We find groundwater everywhere including in the driest places on earth. Groundwater is young and also very old. There are big reserves under the Sahara, the Atacama desert and other deserts. Groundwater crosses boundaries, may be near the surface or deep below the ground and can appear as submarine discharge from under the sea bed. It is shipped around the world in products as embedded water – used to grow cotton and make clothes in one country, sold in another and discarded in yet another.

4. Challenges: Groundwater depletion – dry wells, dry rivers, lakes and wetlands, subsidence; rising groundwater where industries have move out of urban areas Groundwater contamination and remediation, including cchallenges related to different types of mitigation/remediation measures, geogenic arsenic or fluoride contamination

5. The future of groundwater: Sustainable management of groundwater and sustainable approaches to activities such as agriculture that are dependent on groundwater; managed aquifer recharge (MAR) and nature-based solutions

Tell us your about favourite groundwater story – in words, photos and videos! Contact us at info@iah.org

49th IAH Congress, Wuhan China

In September, thousands of people joined the IAH Congress organised online by our colleagues in Wuhan, China – this must surely be a record for IAH! Plenary sessions were opened up to a worldwide audience, which no doubt helped to boost the number of participants, but the daily sessions were also well-attended by the several hundred delegates who registered for the full congress. This was a very successful event, with many excellent papers presented..

Yanxin Wang, Chairman of the 49th IAH Congress Organising Committee and President of China University of Geosciences, gave the welcoming address at the Opening Ceremony. The theme of the Congress was "Groundwater Sustainability and Poverty Reduction" and Prof Wang noted, "Poverty reduction is a top-priority task of societal development for most countries and regions in the world. Unfortunately, a majority of the underdeveloped countries and regions have suffered from serious problems of water scarcity and pollution. In tackling this global challenge, the international community of hydrogeologists bears the common mission and ultimate responsibility to help people get access to sustainable safe supply of fresh groundwater."

Prof Wang was disappointed that it had not been possible for colleagues from around the world to meet in-person and participate in field trips in China, saying too that "China is an amazing country for hydrogeological studies!" He looked forward to hosting visits of international colleagues in the near future.

IAH President, Dave Kreamer thanked Prof Wang and his team for their hard work in preparing the congress. He also thanked the dignitaries and senior hydrogeologists Dr. Zhongbo Yu, Prof. Zengqian Hou, Dr. Zhijun Niu, Prof. Chuntang Hou, Dr. Aimin Wu, and Prof. Jun Xia, who all gave an excellent overview of the fine groundwater work ongoing in China. He went on to say, "This Congress will undoubtedly bring more recognition and awareness of the varied, high-quality research in China, and give the wider community a realisation of the critical importance of groundwater. You have truly advanced the goals of the United Nations and their 2022 World Water Day theme of "Groundwater: Making the invisible, visible".

Keynote addresses included presentations from Abraham E. Springer, the 2022 Birdsall-Dreiss Distinguished Lecturer, on "The stories told by springs"; and Chen Zhu, the 2021-22 Henry Darcy Distinguished Lecturer, on "USA hydrogeochemistry in the 21st century". Other keynotes ranged from replenishing deep aquifers to the impact of groundwater-borne nutrients on the sea, and the role of groundwater in climate warming and in carbon cycles.

The closing ceremony featured a commitment to reunite at the next IAH Congress in Cape Town, where the "Groundwater Torch" would be received. This bottle of groundwater had travelled from 47th IAH Congress in Sao Paolo to the 48th IAH Congress in Brussels and now to China, emulating the passing of the Olympic torch, with the aim being to inspire international cooperation and raise awareness about groundwater. At each stage groundwater from the host country is merged and a sample is passed on to the next.

Delegates remarked that the organization, speakers, translation, and technical coordination were all superb. The programme was exceptional, with great technical content and delightful artistry. Even the music during the breaks was enjoyable!

Two special issues, one in Journal of Hydrology, the other in Applied Geochemistry, will be published, featuring selected presentations of the congress.

The plenary presentations are available at https://mudu.tv/?c=portal&a=index&id=km2ejbmy

Groundwater highlighted at IWA's World Water Congress, Copenhagen, September 2022

Groundwater took centre stage on the first day of the International Water Association's World Water Congress & Exhibition, with the 'Groundwater Forum', organised by the Capital Region of Denmark, ATV Soil & Groundwater and IWA's Groundwater Management Specialist Group. The Congress itself attracted more than 3,500 participants, and around 150 attended the Groundwater Forum across the day, half being groundwater specialists and the others being drawn from water utility and regulatory agencies.

The Groundwater Forum's aims were to promote groundwater to the wide audience represented by IWA and congress and exhibition attendees as a crucial resource to achieve the Sustainable Development Goals, and critically, safe drinking water for all.

Examples from around the globe were featured under the overall theme of realising a sustainable approach to managing groundwater and protecting its quality. Topics presented covered management and co-operation around scarce resources and competing interests, quantifying groundwater sustainability, risk assessment of emerging pollutants and sharing of groundwater data.

The Forum was followed the next day by a Groundwater Management Workshop organised by the IWA Groundwater Management Specialist Group, led by IAH's Stephen Foster and Radu Gogu.

The Forum concluded that a 'twin-track' approach to groundwater management is needed for the developing and developed world as summarised in the table, provided over.

The developed world needs to focus on:

The development and protection of peri-urban wellfields, which are often threatened by diffuse agricultural pollution and, in some cases, by industrial activity or by excessive groundwater abstraction for irrigated cultivation

More strategic use of groundwater resources, in conjunction with surface-water sources, to improve the climatic resilience of public water-supply

Rising groundwater levels in the older urban areas, as a result of water-well abandonment, which can then cause costly excessive inflows to sewers, structural damage to building foundations and flooding of basements and underpasses.

The main issues in the developing world are:

Waterwell pollution in cities, primarily as a result of ground discharges from inadequate types and densities of in-situ sanitation systems

Rationalising private groundwater abstraction for self-supply (whose quality is often questionable and use often undermines water utility finance) with investment and development of public utility water-supply

More integration of groundwater and surface-water resource exploitation so as to produce a water-supply that is resilient to extended drought and more easily adapted to cope with climate change.

Table 1 : Global Diagnosis of Principal Urban Groundwater Management Needs in a Changing World

	GROUNDWATER ISSUE	UNDERLYING FACTORS/CAUSES	POSSIBLE SOLUTIONS	INSTITUTIONAL ACTORS
DEVELOPING CITIES	City Waterwell Pollution	• predominantly from inadequate design and excessive density of in-situ sanitation systems	• modify in-situ sanitation design to reduce ground pollution • selective introduction of mains sewerage systems • identify new deeper groundwater sources	• water utility • regulatory agency • public health agency
	City Falling Groundwater Levels	• excessive public and/or private waterwell abstraction • differential settlement of building foundations	• enhance proportion of imported utility water-supply • harmonise private waterwell use with utility water-supply • introduce managed recharge schemes	• water utility • regulatory agency • local government
	Resource Use to Improve Water-Supply Security	• groundwater use is key to resilient water-supply for climate-change adaptation but needs sustainable management and effective protection to fulfil this role		• water utility • regulatory agency
	Peri-Urban Wellfield Development & Protection	• identify principal catchment areas of main wellfields ans protect the quality of their recharge by agreement with local farmers and/or public land acquisition, and by detailed monitoring of potential point sources of groundwater pollution		• water utility • regulatory agency
	City Rising Groundwater Levels	• causing excessive sewer inflows, basement flooding, etc • abandoning downtown waterwell use on quality or demand grounds • recharge from water-mains leakage	• reduce water-supply distribution losses • reintroduce waterwell pumping for secondary uses according to quality • improve subsurface construction to resist groundwater inflows	• water utility • regulatory agency • local government
DEVELOPED CITIES	Industrially-Contaminated Land Legacy	• historically poor industrial practices with extensive areas generating groundwater pollution plumes and/or surface hazards	• surveying to map affected areas of land • selective remediation or detailed monitoring in cases where major threat to groundwater quality or surface land-use	• water utility • public health agency • local government

It may not be possible simply to transfer the lessons learnt from experience in the developed world to areas undergoing development. There are limitations on regulatory agency capacity, water utility attitudes (as a result of the narrow training of many personnel), and on organisations with long experience of groundwater data collection and interpretation.

Sound groundwater data in urban areas supports not only a resilient water-supply but also extends to helping to manage drainage and flooding issues. In all major cities there is a need to incorporate groundwater data into the urban master-planning process. The Forum highlighted the need for water utilities, regulatory agencies and local government offices to act, using available academic institutes for data interpretation, to improve the protection of vital groundwater supplies.

STEPHEN FOSTER

Jo.in Hydrocafe

See all presentations on YouTube: Jo.in Hydrocafe

IAH contributes to the success of the 12th Jeju Water World Forum

The 12th Jeju Water World Forum (WWF), the first WWF held face-to-face since the Covid-19 pandemic, was organised jointly by the Jeju Special Self-Governing Province and Jeju Special Self-Governing Province Development Corporation, in early October. Its key theme "Groundwater, More Than Water" and its series of presentations reflected the importance and value of groundwater, and the complexity in ensuring its sustainable use. Korean and international experts from UNESCO, the International Association of Hydrogeologists (IAH), Hungary, France, Poland, the USA attended.

95% of Jeju island's water supply is groundwater which requires a detailed understanding of the importance of its preservation and sustainable management. The attendees of the Forum – in addition to the importance and value of groundwater and specifically the Jeju groundwater - discussed how environmental impacts can be reduced, the importance of reducing plastic pollution, eco-friendly packaging and solutions proposed to achieve this. Other key topics included climate change and its impact on groundwater resources. Integrated water management and increasing the use of alternative sources of water - like precipitation, surface water, cleaned wastewater etc - from 3.6% to 20% was another interesting topic. In order to achieve sustainable water management, the need for strengthening expertise of water-related organisations and their personnel, and the operation of a real-time groundwater information management system and pollution monitoring system was highlighted. We learned about the results of the research regarding the conservation of the Samdasoo water resource.

The importance of consumer-orientated companies, consumer loyalty and such involvement as the public are become more aware of packaging, sustainability and potential effects on the environment was also highlighted. Life Cycle Assessment of eco-friendly packaging around the world, and the current goal of achieving carbon neutrality were also presented, together with a proposal for the increasing use of recycled PET (rPET) and reducing the weight of PET bottles.

We also learned about the global groundwater conservation and management project from UNESCO and the bottled mineral waters in Europe, their legal framework, physicochemical properties, isotopic composition and quality standards. The preliminary results of studies carried out by the Institute of Geological Sciences of Polish Academy of Sciences on the influence of the bottling process on the natural isotopic composition of water as presented through Polish medicinal waters were made available, while results on the influence of prolonged storage in PET bottles were shown based on Polish and French research.

I had the privilege to represent IAH at this event and talk about "The Value and Role of Groundwater in the New Normal Era", about the global groundwater resources and the UN sustainable development goals. I addressed some questions related to how we can deal with acute concerns like demand for more water, the differences between water governance and water management, the challenges related to groundwater in the New Normal Era, and how IAH addresses such important issues, contributing to making the invisible visible, leading the world in groundwater awareness of changing priorities.

TEODÓRA SZŐCS, VICE PRESIDENT FOR FINANCE AND MEMBERSHIP

Share knowledge and memories... @iahgroundwater #iahgroundwater

5th IAH Central European Group Conference 2022, Rogaška Slatina, Slovenia

CEG is an informal group within IAH that brings together several National Chapters from Central Europe. Its 5th conference took place in the spa city of Rogaška Slatina in October, organized by the Slovenian Committee of the IAH (SKIAH) and the Slovenian Geological Society. The conference theme was "Making Groundwater in the Danube Basin Visible".

I was invited to participate in the opening ceremony to chair one of the sessions. I was also pleased to give a presentation on "Geodiversity of Groundwater in the Danube Basin: a brief approach in the first International Geodiversity Day" (Abrunhosa & Andrade) in commemoration of the first UNESCO International Geodiversity Day (6th of October). Before the conference began, delegates enjoyed three scientifically rich field trips, which guided participants through the geodiversity of groundwater and its uses in Slovenia. We were also able to taste the famous magnesium mineral waters of Rogaška Slatina at a modern mineral water stall, enjoy the amenities of a beautiful small spa town, meet colleagues and friends, and make new acquaintances. The conference dinner was another moment to rejoice, in particular because for many in the room this was the first in-person conference in more than two years. After the field and cultural visits the mood was relaxed but focused for the start of the conference itself. The highlight was the eagerly awaited Darcy Lecture by Prof. Chen Zhu on "Hydrogeochemistry in the 21st Century", which was brilliant and inspiring. The scientific topics across the conference covered aspects of regional hydrogeology and geothermal water resources, in fundamental or applied research, and all of which had been carried out to a considerably high level. The final day included a fascinating lecture on the long-rooted history of the unique high magnesium thermal waters in Rogaška Slatina. Poster Sessions were preceded by the opportunity for presenters to briefly share their main ideas to the audience.

The conference had 60 very active participants from 16 countries, with a majority from Central Europe (50% from Slovenia, as is to be expected), western Europe, South and North America, and Africa. This was a very rich and successful IAH conference, that showed the long-term dynamism of the IAH in Central Europe and in the world.

After the Conference, the annual meeting of the UNESCO IGCP Project 636 "Geothermal resources for energy transition" took place, in person and online. I attended this as an observer and was impressed by the work, the results and goals of this network, which covers all the continents.

I suggested the team might like to consider a visit to the extremely rich (hydrogeodiverse) manifestations of geothermal resources and applications in Portugal, both Continental and in the Islands of Azores, for their next general meeting. I can now confirm that this suggestion was accepted and I and the local hydrogeothermal science and technology communities greatly look forward to this.

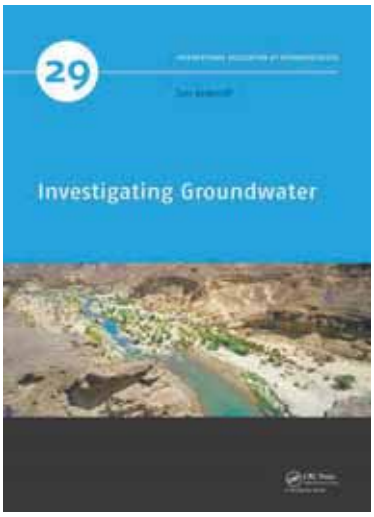
I thank Mihael Brenči , and the many deeply committed members of SKIAH, the Slovenian Geological Society and the students I met, for the warm welcome that I received. "Bem Haja!"

MANUEL ABRUNHOSA, IAH VICE PRESIDENT FOR WEST AND CENTRAL EUROPE

FROM THE IAH BOOK SERIES

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.

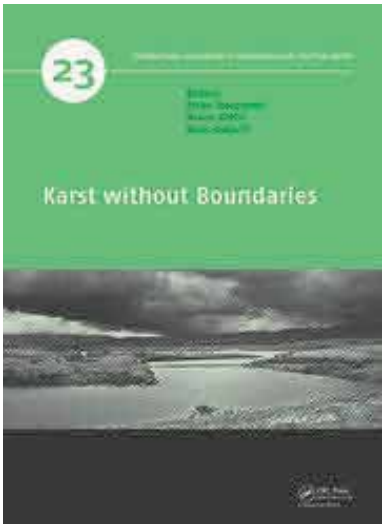
ISBN 9781138542495

AVAILABLE IN HARDBACK, PAPERBACK AND EBOOK

(30% OFF HARDBACK PRICE FOR IAH MEMBERS)

Karst without Boundaries

Edited By Zoran Stevanovi , Neven Kreši , Neno Kukuri



Karstified rocks of different lithology cover more than 10% of the continental surface of our planet. It is known that some 20% or even a few percent more of the global population largely depends on karstic groundwater but in many karst areas all over the world there are limited natural resources including absence of drinking waters. The problems of water shortage, equitable water use or water protection from pollution, become more problematic when they come to transboundary regions. The Dinaric region is a classical karst area where created borders of newly established countries after the civil war in 1990s resulted with an urgent need to create ambience for sustainable water management. The project DIKTAS is one of the first ever attempts to establish sustainable integrated management principles in a transboundary karst aquifer of the magnitude of the Dinaric Karst System. This volume presents selected papers from the conference held in June 2014 in Trebinje, Bosnia & Herzegovina including presentations of some of the project's achievements but also number of other research results conducted in karst environments worldwide.

ISBN 9781138029682

AVAILABLE IN HARDBACK, PAPERBACK AND EBOOK

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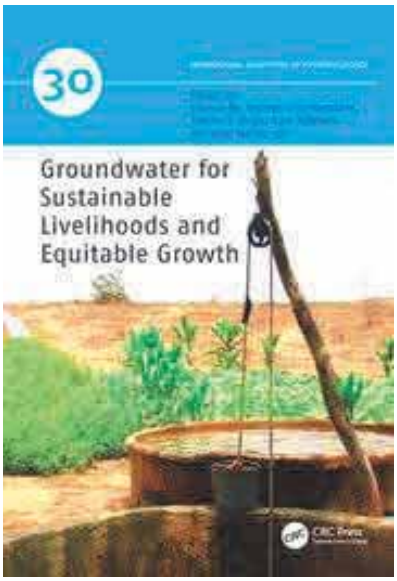
Members' **Book Draw**

Win a copy of "Groundwater for Sustainable Livelihoods and Equitable Growth"



Edited by Viviana Re, Rodrigo Lilla Manzione, Tamiru A. Abiye, Aditi Mukherji and Alan MacDonald. This book presents a collection of nineteen situation reports from diverse human and physical settings within the overall theme of groundwater and sustainable livelihoods. It forms part of the mission of the IAH-Burdon Groundwater Network for International Development to create a groundwater knowledge base that will contribute to sustainable groundwater management and development in low-income countries. The book is the very last book in the IAH Blue Book Series, International Contributions to Hydrogeology, and it forms number 30 of that series. To find out more about the book, go to https://www.routledge.com/Groundwater-for-Sustainable-Livelihoods-and-Equitable-Growth/Re-Manzione-Abiye-Mukherji-MacDonald/p/book/9780367903862

We have two copies of the book to giveaway to IAH members. To enter to win, complete your details including membership number here:

https://www.surveymonkey.co.uk/r/iah_book23s

Terms and conditions:

Prize draw closes 11.00pm GMT on Friday 31st March 2023. Entry is open to current IAH members only. One entry per individual (additional entries will be discarded). Two copies of the book are on offer for this draw. Each of the winners will be picked by random draw and will be contacted by email soon after the closing date. The winners will be also be announced at the end of the year.

SECRETARIAT

New **Members**

A warm welcome to the following new members, who joined our Association in the period 30 June - 26 October 2022

AUSTRALIA
Alba ANDRADE VILLAFUERTE
Behzad Ataie ASHTIANI
Cate BARRETT
Milad BARZEGAR TOUCHAHI
Kalman BENEDEK
Hugo BOLTON
Fergus BROWN
Douglas BROWN
Angus CAMPBELL
Sabrina CATANIA
Mohammad CHOWDHURY
Steve CLOHESSY
Corinna DE CASTRO
Chloe DEAN
Kate DOWSLEY
Leonard DRURY
Anna EDGAR
Ariane EOBOB
Hydro Geochem Group Pty Ltd (c)
Wijnand GEMSON
Michael GOGOLL
Lidia GOSSMANN
Liam GREEN
Anindita HARDIANTI
Morgan HARDING
John HARDLESS
Erica HOLT
Tina JAFARI
Jai KAARTINEN-PRICE
Andrew KENYON
Peter KHOR
Ashvath KUNADI
Emilie LAPOINTE
Bernarda LEON
Yue LIU
Pride MANGEYA
Ellie MORKUNAS
Hoang Long NGUYEN
Bryony OSBOURN
Natasha PASLEY
Julie PEARCE
Vair POINTON
Adam ROGAN
Zachary ROSSATO
Nathan RUGLESS
Margaret SHANAFIELD
Adam SIADE
Craig SIMMONS
Grzegorz SKRZYPEK
Niall SOMESAN
Alejandro TELLO MARTINEZ
Jacobs Group Australia Pty Ltd (c)
Nicolaas UNLAND
Zac WELLS
Kexin ZHANG
Luo ZHAOYANG

AZERBAIJAN
Nuray AGHAZADEH
GEO-SU GROUP LLC (c)
Elvin RUSTAMOV
Rauf ZEYNALOV

BANGLADESH
Md. Mohibul ISLAM
Md MONIRUZZAMAN

BELGIUM
Nathalie DECONINCK
in BW Assoc. intercommunale (c)
Yves RENSON
Nicolas ZAGOURAS

BOZNIA-HERZEGOVENA
Juroševi UROŠ

BRAZIL
Isadora AUMOND KUHN
Vitor CANTARELLA
Thiago MEDEIROS DO NASCIMENTO

BULGARIA
Yavor IVANOV

CANADA
Pana ATHANASOPOULOS
Geneviève BORDELEAU
Joel DEFOE
Jolene HERMANSON
Muhyminul ISLAM
Amanda MALATESTA
Shane O'NEILL
Tricia RITTALER
Nicolas SARGENT
Lauren SOMERS
Cole VAN DE VEN
Matthew VAUGHAN
Randi WILLIAMS
Sophia YEE
Nick ZULINSKI

CHILE
Andrea MEDINA SAGREDO
Camila MUÑOZ ASTUDILLO

CHINA, PEOPLE'S REPUBLIC
Yu CHEN
Xiaofeng CHEN
Fancui KONG
Yanlong KONG
Menghua LI
Xiaobin XUE
Ni YAN
Shengchao YU
Guanhua ZHU

COTE D'IVOIRE
Armel KOUAME

DENMARK
Bertel NILSSON

FRANCE
Aurélie FLOURIOU

GERMANY
Mohamed Mahmoud EL HACEN
Vincent RIED

HONDURAS
Lesbia CASTELLON

INDIA
RS ASHIKRAJ
D R DANISH
Rijumon DASGUPTA
Fenil GANDHI
Kshamta GOYAL
Hitesh Kumar JAIN
Anita JOSHI
Rajender KUMAR
Updesh Karan MATHUR
Indranil SEN
Chhagan SINGH SHEKHAWAT
Senthilkumar SUBRAMANI
Sundara SUNDARA PANDIYAN
Gomati VISHNOI

IRAQ
Zeerak Azizkhan AHMED

IRELAND
Leticia TEIXEIRA PALLA BRAGA

ITALY
Giuseppe Francesco Cesare LAMA

JAPAN
Kento AKITAYA

KAZAKHSTAN
Yernat ASSENOV
Evgeny SOTNIKOV

KENYA
Yussuf Jama HAJI

KOREA, REPUBLIC OF
Eungyeong KIM

MEXICO
Hector OROZCO

MOROCCO
Ithar KHAIRALLAH

NETHERLANDS
Lindsey KENYON

NEW ZEALAND
Alice SAI LOUIE

NIGERIA
Moshood OGUNWOYE

NORWAY
Elco LUIJENDIJK
Dwarika MAHARJAN
Ingeborg Sævareid SOLVANG

PAKISTAN
Khan Zaib JADOON

PANAMA
Valentina OPOLENKO

PERU
Jorge ZAFRA

SOMALIA
Saeed DUALEH

SOUTH AFRICA
Amy ALLWRIGHT
Oudi KGOMONGWE
Anton LUKAS
Andy MADULA
Luke TOWERS

SPAIN
Jose Antonio SERRANO REINA

SWITZERLAND
Peter FELDMAN

TUNISIA
Manfred MATZ

UGANDA
Michael OWOR

UNITED KINGDOM
Sima BAQA
Elena CREER
David HUGHES
Cameron MURPHY

UNITED STATES OF AMERICA
Cary ALBIN
Russell CRAWFORD
Amalia KOKKINAKI
Olaoluwa OLUWANIYI
Oluyinka OYEWUMI
Geoffrey RAWLING
John SIGDA
Stephen SILLIMAN

NB: those marked (C) are new corporate members

Check your records!

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

Ensuring that our members receive their IAH benefits such as Hydrogeology Journal, event and other discounts and offers 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. Thank you.

SECRETARIAT

https://iah.org/members/edit-details

Membership trends

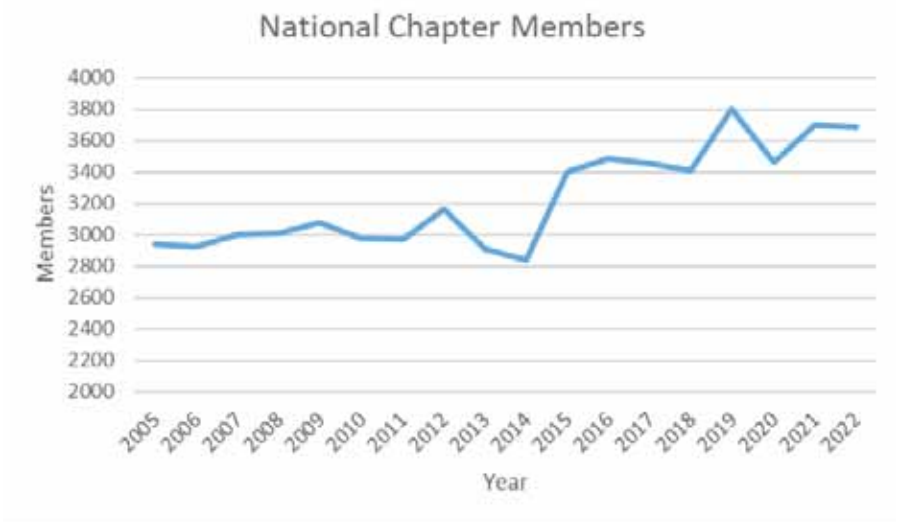
It seems that many professional associations have lost members during recent years, associated with the Covid pandemic and uncertain economic times. But although there has been a decrease in IAH membership during 2022 this is small, at just under 3%. Not surprisingly the membership of our national chapters has also fallen – but in fact total membership across all or our chapters has held up well, with a fall of less than 0.5%.

Some chapters have seen an increase, particularly those that have been able to hold major in-person conferences or have these coming up e.g. China, Australia, South Africa and Switzerland. Several others have also recorded strong growth. Some of our long-standing chapters have lost members, though, which has been a trend for a number of years, but the increase in the number of chapters has largely outweighed these losses.

The data seem to point to mixed fortunes. But the fact that IAH has increased its presence across the countries of the world (we now have members in 137 countries as well as more national chapters) is a welcome development. It seems also that in-person meetings have provided welcome relief from online meetings and new members have been able to take advantage of reduced registration fees. Despite the undoubted technical effectiveness of virtual meetings these are still no match for socialising with friends and colleagues, and networking with new acquaintances.

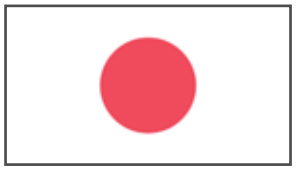
We still need to work out how to balance the financial and carbon costs of meeting in person with the opportunities for reaching out to a potentially very large audience online. But what we can be certain of, is that the ardent and enthusiastic members of national chapters can win over new converts to the IAH cause - and we thank all those involved for past and present efforts!

SECRETARIAT



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

Find IAH groups



Japan

The IAH Japanese chapter and the Japanese Association of Groundwater Hydrology (JAGH) co-hosted a joint international session at the JAGH 2022 spring meeting on 21st May. Around 50 participants attended either the on-site meeting at Tokyo University of Agriculture and Technology or via zoom online meeting.

Prof. Makoto Taniguchi, president of IAH Japan, gave a keynote lecture titled "Groundwater Sustainability- International platforms for groundwater hydrology and hydrogeology" and introduced activities of IAH and Japan chapter related World Water Day 2022 and others.

Two graduate students, including an international student in Japanese universities, presented their research activities as the general presentation. IAH members chaired, and active discussions were followed in English. The joint hybrid session provided good opportunity to share research ideas and experience as well as to introduce IAH's activities to the JAGH members.

https://japan.iah.org/

South Africa

Colleagues from the South Africa national chapter organised a virtual conference in September. Julian Conran reports that although there was some negatively over holding a virtual event, as opposed in person, going online enabled many more students to be involved, including those from neighbouring countries. The chapter is proud of the level of the professional planning involved in the event and technically, it was "perfect"; to the level that a backup of the presentations had been organised in case of any unforeseen glitches. Julian also reports that the content was excellent and of a very high standard, he having worked with the students beforehand to support them in their preparations. Financially the conference outturn was also healthy. Julian is happy to have received many very positive comments afterwards from a wide range of attendees.

http://iah.org.za/

COMMISSIONS & NETWORKS

As you'll have read elsewhere in the newsletter, a number of our commissions and networks have been busy preparing essays to be included in the HJ Topical issue, contributing to the summing-up of our 2022 'Year for Groundwater'.

Marco Petitta, Vice President, Programme and Science Coordination, is aiming to meet with the Chairs and Directors of all the Commissions and Networks in the coming months, to discuss plans and aspirations, where the constraints are and see what support from Council and members generally can be provided to help C&Ns continue to thrive. If C&Ns have particular matters that they might like support on, such as maintaining their websites, let us know at info@iah.org.

We welcome proposals for new Commissions and Networks, and a suggestions was made at the IAH Council meeting for a new group to cover the groundwater-ecosystem-food-energy nexus. If this is something that you would be interested in – or if your have other ideas – let us know at info@iah.org.

You can find out more about IAH's commissions and networks on their individual websites. For more information go to https://iah.org/groups/commissions-networks.

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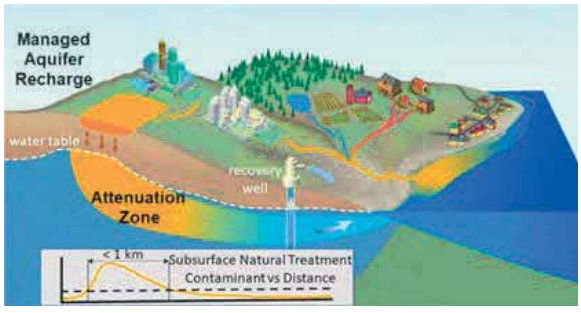
Commission for Managing Aquifer Recharge (MAR)

IAH's MAR commission continues to be extremely active, regularly producing updates, resources and mailings. Sign up for digests via link provided at the end.

The 11st International Symposium on Managed Aquifer Recharge (ISMAR 11), entitled "Managed aquifer recharge: A key to sustainability" has provided plenty of results. Most of them may be accessed via the GRAC website and in our IAH MAR files:

Videos and slides of the presentations (GRAC Website): https://www.grac.org/ismar-speaker-presentations/

The section "ISMAR" of our website, https://recharge.iah.org/ismar/ismar11, congregates some materials produced by the organizers and a new abstract book, assembled by IAH-MAR co-chairs and ISMAR 11 organizers.



As has been mentioned earlier in the newsletter, the commission has contributed to the Hydrogeology Journal's "Year of Groundwater" essay topical collection, by articulating the need to designate a subsurface attenuation zone in MAR regulations, so that 21st water quality challenges can be met. Over time, a risk-based regulatory approach has advantages over a prescriptive and quality approach, and is thus recommended. Look out for announcements on this in early 2023!

The next and last free-of-charge summer school, MARISS 2023, will take place from 3 July to 14 July 2023. The deadline for registration is 28 February 2023. Organizers would appreciate it if you could inform your colleagues, friends, and co-workers about this. For more info, see:

https://www.htw-dresden.de/en/university/faculties/civil-engineering/studies/subject-areas/water-sciences/research/planned-research-topics

ENRIQUE FERNÁNDEZ ESCALANTE

https://recharge.iah.org/

Share knowledge and memories... @iahgroundwater #iahgroundwater

Commission for Karst Hydrogeology

IAH's Karst commission has also had an active year; you can sign up for news digests via its website (below); they also have a LinkedIn group.

Zoran Stevanović has initiated the MIKAS (Most Important Karst Aquifer's Springs) project; its first online meeting being held in early August. The aim of this project is to bring together both the KC members and many national experts to (a) develop criteria for the selection of most important karst springs, which inter alia should include historic, aesthetic and scientific values; (b) establish the list of the most important springs at global level; (c) create the Code of Practice for these springs' utilisation and protection; and (d) promote these springs by their "in situ" labelling and internet publicising. The MIKAS project is supposed to run completely on voluntary basis with the duration of three years. If interested, ask Zoran (zstev_2000@yahoo.co.uk) for additional details.

The next IAH Commission on Karst Hydrogeology will be taking place during the 17th Sinkhole Conference (Multidisciplinary Conference on Sinkholes and the Engineering and Environmental Impacts of Karst) in Tampa, Florida (USA) in March 2023 (http://www.sinkholeconference.com). Organizers offer support for students by "Barry F. Beck Student Support Fund", which provides up to $1,000 in travel support funding, plus free registration.

PETER MALIK

https://karst.iah.org

Socio-hydrogeology Network (SHG)

The SHG has been expanding the resources available on its website (see link below). The aim is to bring together a selection of publications and materials dealing with the integration of social sciences into hydrogeology, the inclusion of local perspectives in hydrogeological assessment, notions of inter- and transdisciplinary collaboration and research, examples of science communication related to groundwater, and approaches that incorporate the social and political nature of water

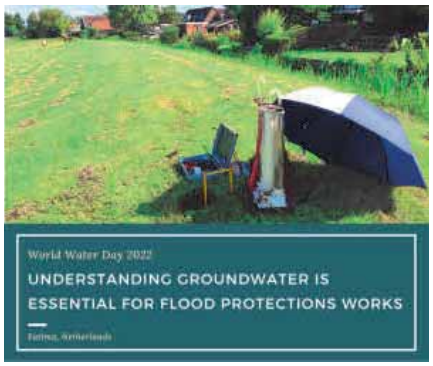
During SIWI's World Water Week SHG's Network Director Viviana Re presented "Socio-hydrogeology: uncovering the unseen connections between people and groundwater", during the online session on Valuing Groundwater.

https://sociohydrogeo.iah.org/

Early Career Hydrogeologists' Network (EHCN)

Our ECHN has been involved in background support for IAH's "Year of Groundwater" and has been undertaking its own strategy considerations alongside IAH's efforts.

Throughout the year ECHN has been posting thoughts and pictures on the importance of groundwater on its social media. One is pictured below; you'll find the rest on the ECHN website via the link below.



https://echn.iah.org/

DIARY DATES & EVENTS

2023 - SELECTION

20-24 March – Medellin, Colombia
VII Congreso Colombiano de Hidrogeología
Para esta VII versión de nuestro emblemático evento tendremos la participación, discusión y conocimiento de expertos internacionales, entidades Privadas, Gubernamentales, Asociaciones, Academia y Comunidad en pro del "Agua subterránea para el desarrollo sostenible". Organised by Asociación Colombiana de Hidrogeologos y IAH Colombia. https://www.asociacioncolombianadehidrogeologos.org

22 March - Worldwide
World Water Day
UN-Water Members and Partners decided that the theme of the 2023 World Water Day (March) and the World Toilet Day (November) campaign will be "Accelerating Change." The UN World Water Development Report will further focus on partnerships and cooperation with the provisional title "Accelerating Change through Partnerships and Cooperation". https://www.unwater.org/about-un-water/what-we-do/inspire-action

23-28 April - Vienna, Austria, and online
EGU General Assembly
The EGU General Assembly 2023 brings together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary, and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience. https://www.egu23.eu/

25-27 May – Trabzon Turkey
HYDRO'2023
Biannual National Symposium on Hydrogeology and Water Resources organized by Karadeniz Technical University and Turkish National Chapter HIDRODER. Email ktuhidro2023@gmail.com

14-16 June – Malta
Flowpath – National Meeting on Hydrogeology
The Italian Chapter of the International Association of Hydrogeologists (IAH) is pleased to invite you to the 6th Edition of FLOWPATH, the National Meeting on Hydrogeology. Following the tradition of the previous editions of FLOWPATH, the conference will be an opportunity for hydrogeologists and professionals to exchange ideas and discuss different issues on groundwater resources. https://www.iahitaly.it/news/flowpath/flowpath-malta-2023-first-announcement

17-22 September - Cape Town, South Africa
IAH 50th Worldwide Groundwater Congress
In 2023, we come together as hydrogeologists at the southern point of Africa.
The theme of the congress is Groundwater: A Matter of Scale. Research, modelling and consulting work is developing at discrete scales right through to regional scale work related to the critical zone and transboundary aquifers. Data starts at the molecular level and moves to "big data". We up-scale data and we down-scale data. Datapoints become temporal data. And we govern at different scales of involvement. Abstract submission is now open!
https://iah2023.org.za/

https://iah.org/events
For a fuller list of conferences, events and meetings and to submit an event

Share knowledge and memories... @iahgroundwater #iahgroundwater