MARCH 2023

IAH NEWS

Indigenous declaration signing

AGC2022 was the perfect opportunity to initiate the signing of the Indigenous Declaration, a way forward to recognise the important role Indigenous people provide in our water resources.

It's still not too late to add your name to the Indigenous Declaration, to sign visit: declaration.iah.org.au

We welcome all International Association of Hydrogeologists (IAH) members to sign the Indigenous Groundwater Declaration to acknowledge, champion and support through actions for the betterment of including and respecting Indigenous knowledge in groundwater activities, deliberations, decisions and policies.

This Declaration is the first of its kind within the international groundwater community. Indigenous people's long association and connections to groundwater covers a broad range, such as historic use for consumption and survival in a dry landscape and a suite of cultural and spiritual connections associated with knowledge and use of the water and places associated with groundwater.

FROM THE PRESIDENT

Dear IAH Australia members

Hello and welcome to the latest edition of the IAH newsletter. For those don't know me, I'm Kelly, I took over as President from Ian Brandes de Roos in January 2022. I continue this year on IAH Australia National Committee supported by executive members Greg Hoxley (Vice President), Ron Colman (Treasurer), Graham Hawkes (Secretary), Cathy Reidy (Marketing Admin) and Margaret Shanafield (NCGRT representative).

I hope that 2023 has been kind to you so far and that you are managing to strike a healthy balance between work and play. IAH is a member organisation of the Australian Geoscience Council and is well represented with Greg, Ron and I all sitting on the committee as a councillor or executive. A major focus of the Australian Geoscience Council is to grow the number of geoscientists in our industry. This isn't an unknown phenomenon in our groundwater space, many of us feel the pinch of not having enough hydrogeologists and groundwater scientists to share the workload.

An initiative that the National Committee is focussing on this year is our Early Career Hydrogeology Network (ECHN). A subcommittee has been formed with representatives across Australia and New Zealand to identify areas for development and support for our early career development and support for our early carer colleagues. If you are an early career IAH member and would like to hear more about upcoming ECHN events, please send an email to secretariat@iah.org.au to register your interest.

What a riot AGC2022 was, congratulations to Sarah Bourke and the whole organising committee for running this fantastic event. I was lucky enough to gather many of the IAH state committee members who volunteer their time to run technical events throughout the year for a breakfast during the conference. We spoke about our experiences and the focus for the year ahead. It was great to meet you all in person!

IAH State and national committee representatives took the opportunity to meet in person for breakfast whilst attending the AGC.

We're now working on the organisation of AGC2023, this time the conference will be co-hosted by IAH and the New Zealand Hydrological Society (NZHS). The call for abstracts is not far away, so be sure to have a think of what you can present.

If you're in Brisbane, I'll see you at the local IAH events, and if not I look forward to crossing paths with you in Auckland NZ at the next AGC!

Kelly-Jane Wallis
President - Australian Chapter, IAH

ANNOUNCEMENT!

NZ AUCKLAND - NOV 28-DEC 1, 2023

The next Australasian Groundwater Conference (AGC2023) will be co-hosted by the New Zealand Hydrological Society (NZHS) in Auckland later this year. The theme is "Manaaki wai | Caring for our water: learning from the past, adapting for the future".

SAVE THE DATE! We want to see you in Auckland in November 2023!

Abstract submissions will dates will be announced soon.

IAH INTERNATIONAL CONGRESS - MELBOURNE 2025

We are very excited to announce that Melbourne has been selected to host the IAH International Congress in 2025.

This will be a joint conference with the Australia Groundwater Conference and its the first time that Australia has hosted the IAH Congress since Perth 2013.

It will bring leading groundwater professionals from around the world to our own backyard.

The National Executive has been supporting the local bid committee through the process and professional support has been provided by Olivia Wanigatunga from the Melbourne Convention Bureau.

Its early days yet, but the bid committee will quickly transform into a conference organising committee and will be looking to draw on help from across the groundwater community in Australia.

Thanks to the work from the local bid committee:

Dr Ben Hall (EarthEon)
Prof Matt Currell (RMIT University)
Prof John Webb (La Trobe University)
Prof Wendy Timms (Deakin University)
Dr Elisabetta Carrara (Bureau of Meteorology)
Tara Taylor (Jacobs)

IAH INDUSTRY AWARD WINNERS

The IAH Award winners for 2022!

In 2022 IAH Australia invited the hydrogeology community to nominate their peers for recognition of outstanding contributions. IAH Australia's awards recipients were:

Groundwater Professional

Phillip Commander

Innovation & Technology

Damian Merrick (HydroAlgorithmics) & C. Turnadge, E. Banks, M. Shanafield & T. Rasmussen (CSIRO)

Industry Excellence

Josephine Searle

Early Career

Devmi Kurukulasuriya

Student

Ellie Morkunas & Claudio Ariel Vergara Saez

Best Photo

Kittaya Bushaway

AGC 2022


AUSTRALASIAN GROUNDWATER CONFERENCE
IAH AUSTRALIA


SLR


AUSTRALIA


AUSTRALASIAN GROUNDWATER CONFERENCE
IAH AUSTRALIA
The Western Desert Kidney Health Project


RioTinto
The ancient Pilbara landscape in Western Australia is rich in cultural heritage and environmental value on a global scale.
It is a privilege to operate in this unique region where we must responsibly manage water and minimise our impact during exploration, operations and closure.
Water is a key part of our operational environmental footprint and we often need to mine below the water table.
As we adapt to the challenges of climate change, how we manage water is more important than ever.

TECH TALKS - Latest series

We have had an exciting start to 2023 with a variety of tech talks in each state, here's what you may have missed....
Follow us on iah.org.au, LinkedIn and Facebook for more upcoming events.

NEXT SERIES:

NSW TECH TALK - APRIL 11 - Sustainable Management of Groundwater Extraction
VIC TECH TALK - APRIL 18 - Groundwater Management
VIC TECH TALK - APRIL 27 - The Occupation of Qatar

Remote sensing and groundwater

QLD TECH TALK - MARCH 16

Hydrogeology of the Eastern Highlands

NSW TECH TALK - MARCH 14

The effect of Natural and Induced Groundwater Flow Paths

VIC TECH TALK - MARCH 14

University of Colorado Boulder

Proudly brought to you by: RMIT UNIVERSITY IAH AUSTRALIA

Groundwater Relief

Gerraint Burrows

QLD TECH TALK - FEB 16

Vertical Connectivity

A discussion of connected surface water-groundwater systems in the context of protecting baseflow in the Murray-Darling Basin

NSW TECH TALK - FEB 14

Methods for measuring methane concentrations and isotopic attribution in Great Artisan Basin aquifers and alluvium

QLD TECH TALK - JAN 19

MEMBER PROFILE

RAY HATLEY

Ray Hatley likes nothing more than travelling the world chasing, and climbing, volcanoes! But right now he's the Capability Executive – Hydrogeology for WSP Australia, overseeing a "big team" of groundwater professionals working mainly on big infrastructure and mining projects across Australia.

So how did this die-hard hard-rock geologist come to be calculating ingress rates from the Hawkesbury Sandstone in Western Sydney?

Well, that's a long story! After High School and a compulsory stint in the army in South Africa, I started a Chemical Engineering degree but switched to Pure Science and loved geology enough to do a Master's on structural and geochemical controls of Archean greenstone and granitic gneisses and their adjacent Permian Coal Measures. But to pay for that I then got a job as a mine geologist at a Witwatersrand gold mine where I developed a side interest in risk management of groundwater in an overlying karstic aquifer! The structural training paid off and I found analog models for stress and strain could be applied to groundwater. Then a base metals' exploration job in Namibia, where karst groundwater was again an issue!

I came to Australia in the early 1980's with CRA and got burnt out (literally) running around the deserts of the Pilbara and Kimberley! Escaped to Sydney and started a Master of Applied Science at UNSW under Michael Knight, was exposed to Franz Kalf and ended up at Australian Groundwater Consultants (AGC), where I worked alongside great hydrogeologists like Bill Morton and spent a fair bit of time in Far North Queensland.

AGC amalgamated with Woodward Clyde in the late 1980s and I went to Chicago to work on hydrocarbon remediation, but when they were bought out by URS in the late 1990s I circuitously found my way to Golders and worked on contaminated sites for 5 more years before getting back into mining and resources in the early 2000s.

The mid-2000s saw an explosion of CSG activity in Australia and I was in the thick of it in Brisbane for nearly 10 years. By 2013, however, most approvals were granted and the industry all but died for groundwater consultants!

Back to Sydney and finally settled into WSP shifted to infrastructure projects in NSW and Victoria (Roselle, Westconnex, Western Sydney Airport). I still do oversight some mining and oil and gas work.

You clearly love travelling, did Covid have a big impact on you?

Covid has had a big impact on everyone and I am no exception. I've also had some severe back issues over the last 10 years which curtailed things a bit. Covid also saw a huge loss of good, foreign hydrogeologists leaving Australia and unable to get back! Still trying to make up for that hole. Australian universities are not producing enough groundwater graduates and I don't think the government is grasping the dire need for good engineers and scientists from overseas to augment and inspire our home-grown graduates.

CONTINUED NEXT PAGE..

You're a modeller, though I don't hear a lot of modelling come through your experience.

I'm solution driven, trying to resolve hydrogeological conceptualisation problems and then use the quantification processes (be that statistics, modelling or GIS) that allow me to communicate those concepts, outcomes and solutions. Graphical presentation and numerical modelling are still emerging trends that have made great strides in the last few decades.

You need so much good quality data to run a good numerical model and analytical solutions are often just as good and give the right guidance in most situations. There is a place for regional numerical models, but often this is overkill. I urge everyone to listen to some of John Doherty's talks. Always think through the processes and concepts and work through the basics first.

Oh, and remember, MODFLOW wasn't around until the mid 1970s. Through the '80s and '90s most calculations were done with pen and paper! On a related note, get out and manually measure groundwater levels! Don't rely on loggers. There's always a failure rate and its always just when you don't want it!

What advice would you give to early career hydrogeologists?

I love mentoring, so I have lots of advice! I think hydrogeologists must not be afraid to be jacks of all trades early in their careers. Get exposure to as much as possible. A lot of hands-on, ground experience. Travel as much as you can in the early part of your career and find the specialisation that gives you the most satisfaction. Then find a mentor to help you get there!

I do think being a hydrogeologist is perhaps not as attractive as other careers for the monetary gain. But we need to instil that sense of adventure and wonder that comes with hydrogeological projects. It's not an overnight profession. It takes time and experience to be good and to get the most out of it. But if you're in for the long haul you can get great satisfaction!

Okay, but what if you weren't a hydrogeologist?

I'd be a vulcanologist, of course!

IAH NSW MEMBER

IAH INTERNATIONAL SPONSORSHIP

IAH Australia and IAH NSW are jointly sponsoring two hydrogeology students from the Addis Ababa University, School of Earth Sciences in Ethiopia who are under the supervision of Professor Tenalem Ayenew (Professor of hydrogeology and water management). Both students commenced their post graduate Masters thesis in early 2022 and have provided updates which are summarised here.

1.0 Sintayehu Hailu Sahle - Steady State Groundwater Flow Modelling of Kullen Valley (Eastern Ethiopia).

The Kullen Valley aquifer in Shinile area, which is part of Awash Basin, is an important source of groundwater to intended water supply for Djibouti and local people and also irrigation in the area. The system is over exploited and no groundwater investigations have been conducted so far.

This thesis aims to predict the impacts of this over exploitation, through developing numerical ground water flow and geochemical model which fits best to the actual hydrogeologic condition of the area

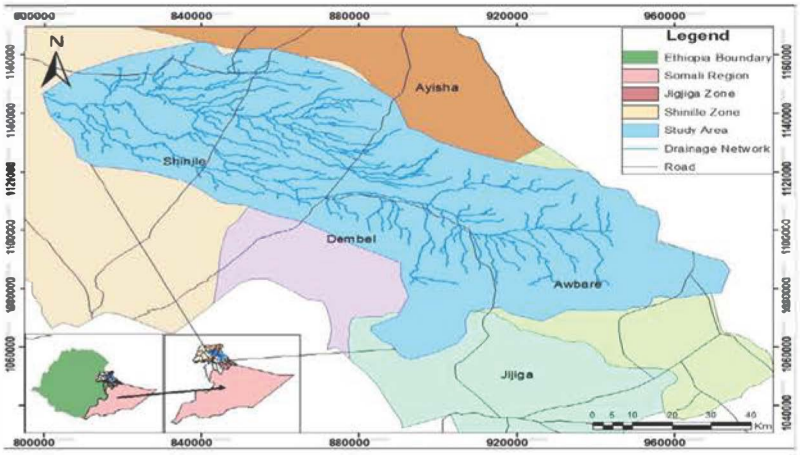


Figure 1 Kullen Valley study area

Sintayehu studies are well underway having written up the known geology and hydrogeology of the prospective groundwater zones of the Kullen Valley and commenced his field studies. The location of the study area is shown in Figure 1.

Field studies to date have included collecting groundwater quality parameters for pH, electrical conductivity and temperature and monitoring groundwater levels. Shown in Figure 2 is Sintayehu monitoring groundwater levels.

Figure 2 Field water level measurement

ETHIOPIAN STUDENTS

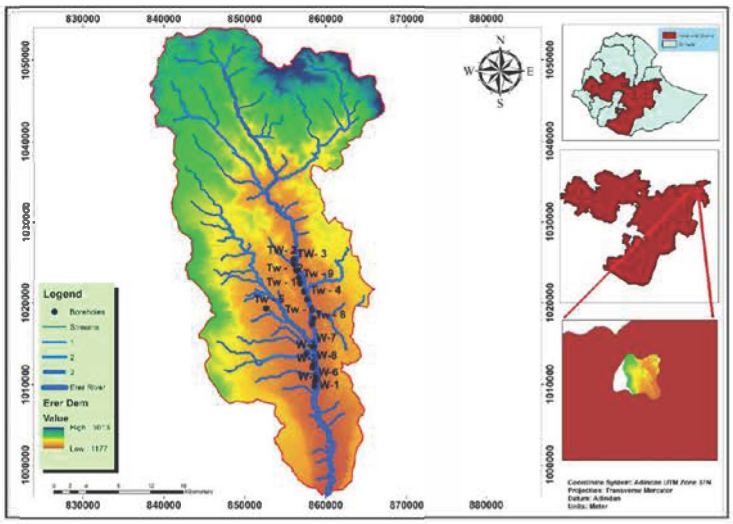


Figure 3 Erer Valley study area

Sintayehu noted that the following challenges have been encountered in undertaking these field studies.

- Lack of transportation due to incremental of current fuel market price
- Absence of cooperation from local administration
- Access road problem due to rainy session
- Security problem
- Shortage of budget

2.0 Tofik Yasin - Numerical Groundwater Flow Modelling for Groundwater Management of Erer Valley, Ethiopia.

The Erer River Alluvial Valley (ERAV) is found in Harari and Oromia regional states about 10 to 20 km east and southeast of Harar town. It is elongated in a north-south direction in the south-eastern part of the Ethiopian plateau and drains into the Wabi Shebele river basin.

Accordingly, Processing MODFLOW for Windows (PMWIN) will be used to develop the groundwater flow model to evaluate the groundwater system, its current scenario, and the prediction of future groundwater stress in the study area.

Tofik has summarised the geology and hydrogeology of the Erer Valley and commenced his field studies. The area of the alluvial valley is 1013 km2 as shown in Figure 3.

Field work to date to support the modelling has included measuring groundwater level and spring discharge of the boreholes and springs in the study area measuring river width, river stage and river bed thickness of the main Erer River, collecting geohydrological information's of the main boreholes found in the catchment and collecting data from the users about the abstraction rate (both from daily recorded water meters and the electrical consumption).

Monitoring water levels as part of this study is shown in Figure 4.

Figure 4 Monitoring groundwater levels in the Erer Valley

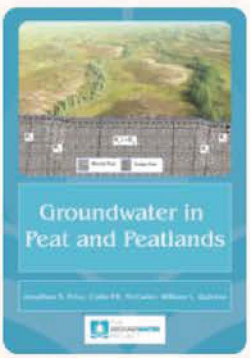
groundwater project

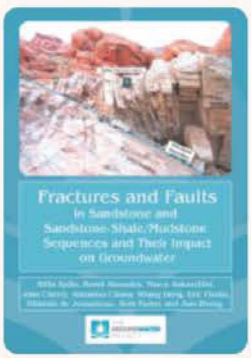
Last year IAH Australia was incorporated as a Founding 50 donor of The Groundwater Project.

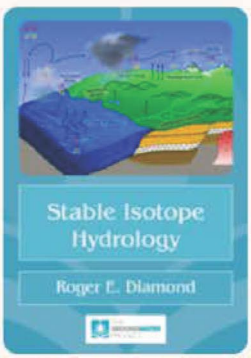
Help make groundwater visible – If you speak more than one language then consider becoming a volunteer translator. Translating Groundwater Project's books is a way to allow speakers of your language to have access to quality groundwater content for free.

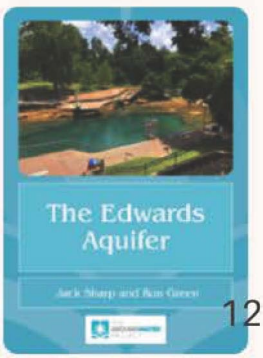
Don't miss this opportunity and be part of The Groundwater Project: **https://lnkd.in/dVnk_fGV**

Recent Releases









Training & Scholarships

SCHOLARSHIPS

NCGRT has lucrative PhD scholarships on offer for students with skills in maths, physics, chemistry, engineering and/or earth sciences.

Projects include groundwater flow through faults and dykes, managed aquifer recharge in mining environments, water quality of mine pit lakes, and other issues related to mining and mine closure.

Successful candidates will be based at Flinders University, Adelaide, and will join a dynamic research environment within the NCGRT, which is Australia's leading groundwater research and training institution. Tax free scholarships of up to $40,000 per year are available, together with generous project support, including conference travel and professional development. To find out more visit: https://www.seek.com.au/job/66028497

Closing date for expressions of interest is Friday, April 21, 2023.

TRAINING

Specialised courses are offered when there is enough interest throughout the year through NCGRT. They include:

- The Australian Groundwater School
- Getting to Know Groundwater and Surface Water
- Groundwater for Decision Makers
- Soil and Groundwater Pollution
- Well Design
- Managed Aquifer Recharge
- Groundwater Modelling
- PEST (Parameter Estimation Software)
- Mining Hydrology
- Hydrochemistry and Environmental Isotopes
- Hydrogeology of Fractured Rocks
- Groundwater and Vegetation
- Surface Water – Groundwater Interactions
- Field Methods School
-

Visit groundwater.com.au to learn more on what courses are available.

APRIL
12

FIELD METHODS IN HYDROLOGY (in person)

AUG
7

AUSTRALIAN GROUNDWATER SCHOOL ONLINE