

GROUND WATER RELIEF

MEET THE MEMBER - JOSH RICHARDS

Area of Expertise: Hydrogeochemistry, conceptual modelling
Job Title: P-Hydrogeologist (currently also a doctoral student!)
Years' Experience: 4.5
Nationality: UK/NZ



PROFESSIONAL BACKGROUND.

Can you tell us a bit about your background in groundwater?

After completing a master's degree in geochemistry and rock–water interaction, I spent around three years as a consulting hydrogeologist, working for companies in New Zealand, Australia, and the UK. The work covered a broad range of hydrogeology, from landfill contamination and mine remediation to wetland protection and emerging contaminants. Over time I realised I wanted to deepen my technical skill set, so I returned to university to complete a PhD at the University of Bern.

What inspired you to pursue a career in groundwater?

It happened gradually. The more I worked, the more I noticed the practical and environmental importance of the field. I found myself increasingly motivated by how quickly and tangibly decisions in hydrogeology can make a difference to people's lives and the world around us. Everyday examples can be as simple as consenting a new water supply well or developing a water safety plan.

INSIGHTS AND EXPERIENCES.

Can you describe a particularly challenging groundwater issue you've encountered and how you addressed it...

The most challenging groundwater problem I've faced is the subject of my PhD. I work in a highly complex hydrogeological setting: a fractured, karstified carbonate aquifer in northern Switzerland, with strong human influences, interesting structural geology, heterogeneous aquifer properties and density-driven flow. I'm using novel combinations of tracers to untangle the different sources and drivers of contamination in the aquifer.
I've found the best way to tackle a complex problem is to break it into smaller, achievable goals. For example: "Over the next few weeks I'll finish the sampling campaign; the month after, I'll write it up." That way you can see yourself progressing, and hopefully, one day, everything comes together!



What do you enjoy most about working in groundwater?

I enjoy problem solving, and since water is the world's most important resource, solving problems in our field feels especially worthwhile. I particularly enjoy building evidence methodically and watching what starts as columns of numbers in a spreadsheet gradually come together into a coherent picture of how a groundwater system works. Every problem I solve adds to my expertise, and that sense of always improving, while doing something so tangible, is very rewarding.

What do you think are the most pressing challenges related to groundwater and water supply today?

I'd be surprised if any hydrogeologist didn't say climate change and the over-abstraction of water resources, particularly in increasingly arid regions. Beyond the physical problems themselves, though, I think communication around them is equally important. That means explaining these issues to the wider public, gaining broader recognition of them, and building trans-boundary cooperation to tackle them.

What is the best piece of advice you have ever received?

A great mentor once told me, "Fake it till you make it." That might sound a little irresponsible at first, but I don't take it that way. To me it means you have to believe you can do something before you can actually do it. Go into a challenge with confidence and humility, and trust that you have the skills to meet it. If you're willing to work hard, you probably do. It has always stuck with me.

GWR INVOLVEMENT AND ADVICE

What has been the most rewarding project you have worked on with GWR?

The desktop geochemistry studies I recently completed for Massakory, Chad, and Cox's Bazar, Bangladesh, have been especially rewarding. Both focused on the geochemistry of water supply wells in small settlements and refugee camps. In Massakory, we looked at how groundwater chemistry evolves as water moves through the deep aquifer, and whether there were signs of human influence on water quality. In Cox's Bazar, we used basic wellhead data to assess whether supply wells were degrading, identify which ones might be at risk, and look for spatial and depth patterns in these issues.

Both projects let me apply my skills to produce, I hope, meaningful results that will help plan safe abstraction and use in the future. They also opened my eyes further to the scale of the humanitarian challenges we face around the world.



What motivated you to join GWR's membership?

I wanted to be involved in projects that make a real difference to people's lives. I think feeling that you're contributing something meaningful matters a great deal for your own wellbeing, too. GWR gives me a way to use the privilege of the education and opportunities I've had to give something back.



Do you have any memorable stories or experiences from your work with GWR that you would like to share?

So far, all my GWR work has been done from my not-so-exciting desk, so I don't yet have stories to rival those of members working in the field! But it's a real pleasure to work with the people at GWR. Everyone is positive and supportive, and I enjoy the meetings and catch-ups throughout our projects.

What do you hope to contribute to the GWR community in the future?

I hope to stay involved as I am now. As my career progresses, I'd love to find opportunities within GWR, or in other humanitarian organisations, to contribute on a more regular basis.

What advice would you give to someone aspiring to get involved with GWR?

If you want to contribute, put your hand up! Don't let worries about the time commitment hold you back. I've found that you make time for the things that matter to you, and when you care about the work, finding that time comes naturally.

How has being a member of the GWR community benefited you professionally and personally?

Being a member puts the skills you've learned into perspective, because it makes you apply them in a very practical way. You also come to understand the constraints of working in challenging settings, where you rarely have a complete or tidy dataset. That pushes you as a hydrogeologist to fall back on fundamental geological and hydrogeological knowledge and piece the clues together. I really value that.