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What is your current occupation?

I am a Research Scientist in the Energy Geosciences Division at Lawrence Berkeley National Laboratory. In this role, I am involved in several U.S. Department of Energy projects such as the Watershed Function Scientific Focus Area (SFA), Advanced Long-Term Environmental Monitoring Systems (ALTEMIS), and Next Generation Ecosystem Experiment-Arctic (NGEE-Arctic). Currently, I am leading the Carbon Removal and Mineralization Program and developing initiatives to identify potential for net negative emissions.

What is your educational background?

I received my Ph.D. from the interdisciplinary Water Management and Hydrological Sciences program at Texas A&M University in 2012. With a Bachelors and Masters in Technology in Agricultural and Food Engineering from the Indian Institute of Technology, Kharagpur, I also hold a minor in Mathematics and Computing.

A key message for students is that the geoscience workforce is dynamic, and boundaries between sectors and occupations are fluid. How has this been true in your career?

Since my childhood I have had a strong impulse to close a running tap of water that was flowing without purpose, and when I learnt that there are only limited fresh water sources, the desire became even stronger: to withhold a single drop from going waste. I was always scared of the question: What if there is no water around us? What if my situation is like that of the ancient mariner “Water, water, everywhere, Nor any drop to drink.” I was completely boggled by the

rapid industrialization and modernization. What use were they if they were the cause of environmental pollution especially water? This question aroused my curiosity and prompted me to explore if there are ways to turn the technology around: from polluting to conserving, from wasting to managing. This passion has framed my career thus far.

My PhD research was focused on understanding the transport of chemically reactive solutes through water systems, especially to quantify the impacts of soil textures and subsurface heterogeneity. The relevance of this research is a direct consequence of the ease of groundwater contamination and challenging aspects of environmental remediation. Currently, I am working on quantifying carbon and nitrogen budgets in agricultural soils under different aquifer management practices, again with a focus on managing and preserving groundwater quality.
So, my simple suggestion would be to follow your passion. And, if that entails adding new skills and exploring new dimensions, this will just be another way to infuse energy and enthusiasm to realize your passion.

Where do you see your sector moving in future years? How would you advise students to prepare to be competitive job applicants and successful employees?

The biggest opportunities in future years would entail resolving scientific challenges in the face of climate change and increasing human pressures. One skill that I would recommend to students is using interdisciplinary approaches and tools. My own research has benefited significantly from integrating across disciplines to develop a comprehensive understanding about biogeochemical responses across scales. There are many advantages to using an interdisciplinary approach – one, that it provides different angles, assumptions and solutions to a given problem and two, it amplifies diverse voices and promotes a culture of team science.

What is the role of networking in your sector? Do you have advice for a student who is just beginning to build their network? What is the best way for students to get their foot in the door?

Networking offers an opportunity to connect with a diversity of researchers at different stages in their career. More importantly, it can help develop out-of-the-box ideas or research topics that have not been considered or well-funded thus far. Networking and crowdsourced papers that involve this diverse community can be instrumental in pushing ideas forward. As a first step, conferences can offer amazing opportunities to network and collaborate with like-minded scientists.

What does a “typical” day of work look like for you?

A typical work day for me includes dedicated writing time and running model simulations. A lot of my time also goes into managing projects, literature review and sitting on meetings to finalize research plans, provide guidance/mentorship, and hearing about state-of-the-art research through research talks/seminars.

What is the best part of your job?

The best part of my job is meeting and conversing with students. It is heartwarming to see when my students get excited about an idea.

Do you have any other comments or advice for students looking to enter your sector of the geoscience workforce?

Another piece of advice for students is to think beyond their own research questions and sites and frame those in the bigger picture. Is your research transferable? Are the same issues/methods you developed appropriate for another site or field? By presenting a broader vision of your work, you will also be able to capitalize on the fluid situation within sectors and occupations.

Learn More:

https://deeply.thenewhumanitarian.org/water/community/2018/10/05/deeply-talks-drought-on-the-colorado-can-we-adapt-to-changing-runoff