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# CAREER PROFILES Options and Insights

**DENISE M. AKOB | Research Microbiologist, US Geological Survey (dakob@usgs.gov)**

## *Degree: When, where, what, and what in?*

I earned a BA in biology from St. Mary's College of Maryland in 2002. I completed my PhD in biogeochemical oceanography at Florida State University in 2008. My doctoral research focused on understanding microbial bioremediation of uranium in contaminated subsurface sediments.

## *Did you stay in academia at all, and if so, for how long?*

I did a postdoc in the aquatic geomicrobiology group at Friedrich Schiller University Jena in Germany from 2008 to 2012. I was supported for the early part of my postdoc through the Marie Curie Postdoctoral Fellowship Program and later from German Science Foundation (DFG) grants. I joined the US Geological Survey (USGS) directly after my postdoc. Now that I am at the USGS, I still consider myself an academic, just the government kind!

## *How did you go about searching for a job outside of the university setting?*

I always expected to continue in the university setting with a goal of becoming a professor, as I enjoy mentoring students, doing research, and teaching. I didn't know much about nonacademic jobs and didn't think that I would be qualified for a position like the one I have now. During the last year of my postdoc, I applied and interviewed for jobs for about six months, which included submitting 33 applications to academic positions (assistant professorships and postdocs), industry positions, and the USGS job. I was fortunate to land interviews for seven jobs—five academic, one industry, and the USGS position. Interviewing at universities and with industry and the government was an excellent experience. I made

lots of connections during these interviews. I chose the USGS position because it is a 100% research position—the tenure process honestly intimidated me. In addition, I liked the idea of doing societally relevant research and having the opportunity to connect with stakeholders who utilize the results.

## *Is this the only job (post-academia) that you've had? If not, what else did you do?*

This is the first position I've had since my postdoc, and I would consider it my only post-academic position.

## *What is your current job? What path did you take to get there?*

I am a research microbiologist in the National Research Program, which is part of the Water Mission Area. The USGS is a nonregulatory agency, and I conduct basic research needed for a fundamental understanding of the processes that affect the availability, movement, and quality of US water resources. My research focuses on understanding how microorganisms impact their environments and biogeochemical cycles, and in turn, how environments impact microorganisms. Although I investigate both contaminated and pristine environments, my work right now is focused on understanding microbial impacts on Cold War biogeochemistry (uranium and chlorinated solvent contamination) and energy production (either by mitigating degradation of contaminants from hydraulic fracturing or oil spills or by enhancing natural gas production). My basic job responsibility is to carry out all phases of the scientific process, from designing innovative research projects through communication of results in scientific papers and at scientific conferences.



## *What did your oceanographic education (or academic career) give you that is useful in your current job?*

My oceanography degree provided me with a highly interdisciplinary background that all of my research has built upon. Being highly interdisciplinary allows me to collaborate with a wide variety of researchers and helps me to cross the border between the life and the Earth sciences. This is an excellent asset when working at an agency like the USGS where research spans ecology, geology, hydrology, chemistry, and biology.

## *Is the job satisfying? What aspects of the job do you like best/least?*

I love my job! I definitely found the job of a lifetime, because I can focus 100% of my time on research. The most rewarding part of my job is that I get to carry out curiosity-driven research that is societally relevant and highly applied. All of the science that I do is within the umbrella of the USGS mission, and it is really satisfying to do work that is critical for understanding and protecting our nation's resources. Since joining the USGS, I've interacted with managers from numerous federal and state government agencies, and I like seeing that my science can impact managers' decisions.

***Do you have any recommendations for new grads looking for jobs?***

My top advice for all graduate students is to: (1) network, and (2) publish. Having a strong network is critical for advancing your science and gaining exposure

to new opportunities. I found out about my current position through an email chain that was forwarded to me from collaborators. I'm not sure I would have found the opportunity otherwise. Publishing is a key part of the job search

puzzle—publications show prospective employers what you have done and highlight your capabilities to think through and complete the scientific process. 📧

**DANIELLE SUMY | Project Associate, Incorporated Research Institutions for Seismology ([danielle.sumy@iris.edu](mailto:danielle.sumy@iris.edu))**

***Degree: When, where, what, and what in?***

I received a bachelor of science degree in geophysics in 2005 from Florida State University and a PhD in marine geology and geophysics in 2011 from the Lamont-Doherty Earth Observatory of Columbia University.

***Did you stay in academia at all, and if so, for how long?***

I stayed in academia for about three years after I graduated from Columbia University.

***How did you go about searching for a job outside of the university setting?***

I networked and talked with as many people as I could about job opportunities outside academia and about their own career paths. Discussions led to introductions to others, and that networking system perpetuated so that I started to get to know a lot of people. I went to trade conferences, like the Society of Exploration Geophysicists annual meeting, with business cards and talked with as many companies as possible. I became involved on a volunteer basis with other projects so that I could keep my options open.

***Is this the only job (post-academia) that you've had? If not, what else did you do?***

This is the first “real” job I have had outside of academia.

***What is your current job? What path did you take to get there?***

I currently work as a project associate at the Incorporated Research Institutions for Seismology (IRIS). The IRIS Consortium

is a federally funded nonprofit seismology facility with colleges and universities as its voting members. I work in both the Instrumentation Services and Education and Public Outreach divisions of IRIS. My primary projects with Instrumentation Services are the Central and Eastern US Seismic Network and the Global Seismographic Network. My primary projects with Education and Public Outreach are the Early Career Investigators group, the Quake-Catcher Network citizen-science project, and developing field experiences for undergraduates.

After earning my PhD, I began a National Science Foundation (NSF) Postdoctoral Fellowship at the United States Geological Survey (USGS) in Pasadena, California, and at the Southern California Earthquake Center (SCEC) of the University of Southern California in Los Angeles. As an NSF postdoc, it was very important to me to produce research that advanced the field, and participate in and produce resources for all levels of formal and informal education. Thus, I conducted research with the USGS and pursued education opportunities with SCEC. During that time, I also became involved as a leader in the IRIS Early Career Investigators group. Through interactions with this group, IRIS staff had an opportunity to watch me grow and develop through my postdoctoral experiences, so that when an employment opportunity arose, I was notified.

***What did your oceanographic education (or academic career) give you that is useful in your current job?***

Oceanography and marine science in general are very cross- and interdisciplinary.



The techniques and skills that I learned through my research and education can be translated quickly and efficiently, whether they are applied to marine science or to other scientific aspects. As a marine geology and geophysics student, I learned about seismology, hydrology and hydrogeology, thermodynamics, and rock mechanics, among others disciplines. My dissertation focused on the mechanics and triggering of earthquakes in both mid-ocean ridge hydrothermal and transform fault settings. I had to learn about seismology and fluid flow, and their interactions. Thus, when I began my postdoctoral fellowship and started to work on wastewater injection induced seismicity in Oklahoma, I could translate my knowledge of fluids and rock mechanics to a completely different environment.

In my current job, tasks move rather quickly, and I have to apply my scientific knowledge and my written and verbal communication skills to myriad tasks on a daily basis. In any one day, I could work on early career related tasks, jump to analyzing instrumentation noise, and then help to facilitate a workshop. My

multi- and interdisciplinary background allows me to switch tasks pretty regularly without losing momentum.

***Is the job satisfying? What aspects of the job do you like best/least?***

Overall, I find my job satisfying. The best part is that I get to participate in and interact with the seismology community at large. There is constant and consistent interaction with the community through workshops, conferences, and events. The intellectual stimulation from networking with such a diverse group of people is highly valuable. On the flip side, since I am split between two directorates within IRIS, I can sometimes find myself either spread too thin because there are too many tasks at one given time, and during other periods, rather lonely because a group is out of the office or there are no pressing tasks. The ebb and

flow of the academic school year creates a cyclic nature to the job that can sometimes be difficult to handle. Time management is essential.

***Do you have any recommendations for new grads looking for jobs?***

Network, network, network! Speak with as many people as you can, and have your 20-second “elevator” speech ready so that potential employers get a glimpse of what you do without being overwhelmed. Also, lots of graduating PhDs have many marketable skills outside of academia, but a resume needs to have a different pitch for pursuing nonacademic career tracks. For instance, though certain prospective employers may not be particularly interested in the specifics of how many publications you have or how many talks you gave at conferences, they may be encouraged to know

that you have excellent written and communication skills and that you can lead an independent project.

***Was there anything missing from your graduate education or that you would have liked to have more of?***

As a graduate student at a research-heavy academic institution, I would have appreciated more opportunities to gain exposure to careers outside of academia and even outside the oil and gas industry. Research institutions tend to have myopic views of the opportunities that are available to graduates. I am especially proud to work with the IRIS Early Career Investigators group so that I can compensate for that—expose graduate students to the realm of opportunities that lie outside academia! ☺

**JULIET HERMES | Manager and Principal Oceanographer, Egagasini Node for Marine Offshore Systems, South African Environmental Observation Network (SAEON), Roggebaai, South Africa ([juliet@saeon.ac.za](mailto:juliet@saeon.ac.za))**

***Degree: When, where, what, and what in?***

I earned an undergraduate degree in biology from the University of Sussex (UK) but was not inspired, so I volunteered on a converted whaler/environmental oil spill cleanup vessel. There, I met someone who had just finished a degree in oceanography. I had never heard of such a wonderful degree, but I soon began studying for a master's in physical oceanography at the University of Wales, totally enjoying the theory as well as actually watching it play out in the ocean. I became completely hooked and wanted to understand more, so I continued on with my schooling and earned a PhD in physical oceanography from the University of Cape Town (UCT) in 2005. My PhD research focused on the large-scale interannual variability of the oceans neighboring South Africa and the interocean fluxes south of Africa on monthly through to interannual time scales. This region is of interest because evidence exists that

sea surface temperature variability in the South Indian Ocean (in particular, the Agulhas Current) may significantly influence weather and climate patterns in the southern African region, potentially having an impact on a huge number of people who rely on rain-fed subsistence farming. The Agulhas Current has also been shown to be a key part of global thermohaline circulation. Most of the work was done using numerical models.

***Did you stay in academia at all, and if so, for how long?***

I continued and expanded my work as a postdoc at UCT. I was offered postdocs in other countries, which would have been awesome opportunities, but I felt that there was still so much to do in the context of South African oceanography. Here, you have a lot of freedom as a postdoc to develop your own research agenda, lead proposals, represent South Africa at international workshops, and also lecture and supervise students. It was also a



life choice to stay in Cape Town. I hoped that if I could publish enough during my postdoc, it wouldn't matter whether I were in Cape Town or somewhere else. I remained a postdoc for two years.

***How did you go about searching for a job outside of the university setting?***

I was on a number of mailing lists for jobs all around the world as, at the time, the job market for permanent positions in

Cape Town for marine science was fairly limited. You pretty much had to wait for someone to retire, which most oceanographers don't ever do! Then, I saw an ad for the position I currently have and thought, why not?

***Is this the only job (post-academia) that you've had? If not, what else did you do?***

This is the only permanent position I have held. I also did some consulting and lecturing part time.

***What is your current job? What path did you take to get there?***

My job title is manager and principal oceanographer of the SAEON Egagasini Node for Marine Offshore Systems. My responsibilities include developing and maintaining the science plan; designing and implementing observation and modeling programs; writing project proposals; supervising students and interns; providing leadership (both scientific and business) to staff and contract positions, interns, and students; managing budgets and data; networking; sitting on various advisory boards; managing the education outreach component; capacity building; maintaining finances; reporting to the South Africa National Research Foundation; and conducting research on climate variability using long-term observations and models.

This position was an incredible opportunity for me as it was a new, government-funded organization, and my job was basically to set up the marine offshore component. I had plenty of freedom to do this. When I started, I relied very much on the networks I forged as a PhD and postdoc to help guide me, as I didn't have a clue about business plans or human resources. Now, I manage a team of inspiring people. I find the word management somewhat scary, but it is actually amazing to be able to work with a great team of people and help them to achieve their potential.

I would say the people management aspect takes up about 30% of my time,

with project management about 50%. The final 20% of my time is occupied with a variety of more academic tasks. I am a research fellow at two South African universities where I currently supervise six PhD students, three MSc students, and a number of honors students. I also work on smaller research projects and write proposals.

***What did your oceanographic education (or academic career) give you that is useful in your current job?***

My education gave me a passion for oceanography and an understanding of how to be a good mentor and supervisor. It also made me realize that oceanographers are incredibly lucky. We often get to work in amazing places, and because most oceanographers are passionate about the ocean, we always have something in common with our colleagues and collaborators.

***Is the job satisfying? What aspects of the job do you like best/least?***

I love my job. I love being able to work with many different people on many different aspects of marine science. I also love the fact I can still supervise students and work on capacity development within the country and Africa as a whole.

Because SAEON is a network, I am able to continuously foster collaborations where I see potential. I am given the freedom and encouragement to pursue many different opportunities. Sometimes it is difficult, as there are so many things to manage and I don't say no often enough, so I am at risk of becoming jack-of-all-trades, master of none. For example, on the one hand I am co-PI of a massive program to observe the Agulhas Current with a series of moorings, working with renowned international and national scientists and organizing cruises and data and equipment. On the other hand, I am co-PI of a project that is developing coastal models of South Africa.

I miss being able to devote days to solving some sort of MATLAB or coding problem, or having that eureka moment

when you discover some really interesting relationship—but I can live vicariously through my students! I also sometimes feel that I skipped a few years of career development. It would have been good to have spent more time as a postdoc so that I could have published more, but that wouldn't have changed the path I have taken. Sometimes the "politicking" gets a bit much but I have grown to enjoy it and not take it too seriously.

I also love that I can surf during office hours and claim to be investigating the ocean!

***Do you have any recommendations for new grads looking for jobs?***

Form networks with your peers now and try to network with others as much as possible. Find out about opportunities and don't be afraid to ask for advice or contact people with whom you'd like to work. Don't just complete a PhD, do some lecturing or student mentorship, apply for different grants when you are able to, run workshops or paper reading sessions, and use your initiative. Keep a good balance. For example, don't lecture 10 different courses so you have no time to publish. Lecture for just a few courses to get experience and to build confidence in public speaking. That will be enough.

Always make sure your CV is up to date, comprehensive, and error-free. Send it to a mentor or friend for review. Mold it to suit the particular job you are applying for. If you are invited for an interview, find out as much information as you can about the organization and the position so you are prepared, and show initiative and interest.

Remember that your career is not your life. Try to keep a balance and find a job that makes you happy—work like a captain and play like a pirate! ☺

**FIONA HORSFALL | Chief, Climate Services Branch, National Oceanic and Atmospheric Administration (NOAA)  
National Weather Service (fiona.horsfall@noaa.gov)**

***Degree: When, where, what,  
and what in?***

I earned my BS in ocean engineering from Florida Atlantic University in 1989, and my PhD from the University of Miami/Rosenstiel School of Marine and Atmospheric Science (RSMAS) in the Division of Meteorology and Physical Oceanography in 1996. I worked with an ocean model to study the variation in the subduction rate of a passive tracer in response to changes in the atmosphere that I based on projected changes in global climate.

***Did you stay in academia at all,  
and if so, for how long?***

Just prior to defending my dissertation in 1995, I was offered a position at the National Hurricane Center (NHC) in Miami to work as a meteorologist programmer and research meteorologist. That summer was the worst hurricane season on record, so I was not able to finalize my experiments until the barrage of storms stopped, hence, the delay in finishing up my PhD until 1996. After defending, I stayed at the Hurricane Center and worked on extending track models out to five days, climatological studies of tropical cyclogenesis, and transitioning intensity models into operations.

***How did you go about searching for a  
job outside of the university setting?***

With RSMAS located in Miami and with a close collaboration with NHC, I was aware of openings, and the director was aware of my work in numerical modeling, which was the skill he needed at the time. It was serendipitous that I was looking for a job and frequently visiting NHC.

***Is this the only job (post-academia)  
that you've had? If not, what else  
did you do?***

I stayed at NHC until 2002 when I got the opportunity to transfer to National Weather Service (NWS) Headquarters to work on developing the climate services program at 150 offices nationwide. I stayed in that position until 2008, and then moved to the role of Director of the Climate Test Bed at the Climate Prediction Center, where I managed the transition to operations of research advances and developed plans for improving NOAA climate prediction activities.

***What is your current job? What path  
did you take to get there?***

In 2010, I was asked by the NWS Director to come back to Headquarters to assume the role of Chief of the Climate Services Division (now Branch). The NWS Climate Services Program has progressed significantly since I started working with it in 2002. In this role, I lead my team in developing training for NWS field staff in climate science and services, lead planning and policy development, develop and execute programmatic budgets, develop and nurture partnerships within the climate community both nationally and internationally, and coordinate requirements for NWS climate services.

***What did your oceanographic  
education (or academic career) give  
you that is useful in your current job?***

My current role requires that I have in-depth knowledge of climate, atmospheric, and oceanographic science. Not only do I teach staff in these sciences, but I also serve as a subject matter expert on various panels, working groups, committees, and other formal gatherings.



Photo credit: Mark Da Cunha

***Is the job satisfying? What aspects  
of the job do you like best/least?***

My job is extremely satisfying! I am in a wonderful position to create a vision for our program that is science based and provides a critical service to the American public.

***Do you have any recommendations  
for new grads looking for jobs?***

New grads should consider all options and carefully consider their passions. A career in academia is just one of many paths. At first, I was conflicted about joining the federal government because in grad school, you are trained to be an academic. However, using not only your scientific knowledge but also the discipline you gain from your intense program gives you more than just expertise in one specific area. My career has morphed over the years into management of science and services, and this suits me very well. The management option is quite dynamic, and to be truly effective requires a good foundation in science. There are many private sector options, too, and of course there is always government service, whether it be state, local, regional, or federal. 🌐