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CITATION

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CAREER PROFILES Options and Insights

KATHERINE BRODIE | Research Oceanographer, US Army Engineer Research and Development Center (katherine.l.brodie@usace.army.mil)

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

I earned a PhD in marine science with a focus in geological oceanography from William & Mary's School of Marine Science at the Virginia Institute of Marine Science (VIMS) in Gloucester Point, Virginia. My PhD focused on developing and utilizing remote-sensing approaches (e.g., lidar and video) to make measurements of coastal morphodynamics during storms in a region prone to erosion on the Outer Banks of North Carolina.

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

No, I went directly from finishing my PhD to a job as a research oceanographer at the US Army Engineer Research and Development Center (ERDC)'s Coastal and Hydraulics Laboratory (CHL) in Duck, North Carolina.

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

My graduate research fieldwork was conducted very near ERDC's Field Research Facility (FRF). My graduate advisor, who had completed a postdoc at the FRF and knew the researchers and engineers there well, introduced me to them during our field experiments. I applied for a graduate student internship at the FRF during the last year of my PhD (similar to the current Pathway's Internship Program), and actually worked on site for the last six months of my PhD. It was a great opportunity to meet the researchers and staff and get a feel for the organization and research opportunities. I then applied directly for a position upon completion of my degree.

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

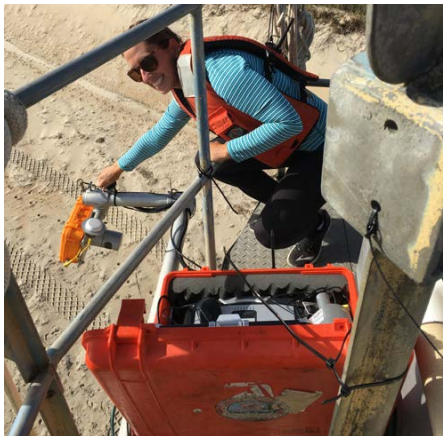
Yes, this is the only job I've had since completing my PhD.

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

Being an intern with ERDC as a graduate student was a great way to get to know the organization as well as potential new coworkers. As a research oceanographer here now, I split my research portfolio evenly between basic (e.g., how do waves break and suspend sediment in the surf zone), applied (e.g., can we accurately predict storm inundation and shoreline change), and operational (e.g., what is the optimal design of a dune for coastal protection) coastal research that supports ERDC's civil and military missions. My passion has always been field-based coastal research, combining my love of the outdoors with a scientific understanding of physical processes, so finding a job that allowed me to continue to participate in and design field experiments was important.

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

In addition to expertise in coastal processes, my oceanographic education provided me with a solid foundation in critical thinking, scientific research approaches, and analytical problem-solving skills that I apply daily in my current job. These skills allow me to develop new research projects and have confidence in tackling research on subjects that I may not be an expert in, but am asked to work on. The technical coding and data analysis skills I learned in graduate school have also been critical to my ability to be productive as



a researcher. In addition, the connections I made with colleagues—both my peers and outside mentors—at conferences and meetings while completing my degree have been invaluable after finishing graduate school in maintaining a research community. Finally, all of the opportunities I had to present my work—whether informally at seminars, at public outreach events hosted by the school, or at scientific conferences—have proved extremely useful post graduate school when discussing results and communicating with program managers or upper management. For example, I've learned that sometimes a casual, well-worded, five-minute phone call can have a much larger impact than a 20-page carefully crafted proposal—be confident, learn to speak and think on your feet, and know your audience.

Is there any course or other training you would have liked to have had as part of your graduate education to meet the demands of the job market?

The more coding and computer science classes, the better! I have found I am becoming less and less constrained by data collection methodologies (even in the challenging surf-zone environment) and more and more constrained by the quantity of data we can collect—whether

that's figuring out where to store data, how to access data efficiently, or how to analyze and filter data effectively. The more confident and prepared you are to interact with large data sets, the more quickly you will be able to turn the data into scientific results and publish! I also think taking the time to learn how to communicate your results effectively, both verbally and graphically, to a wide range of audiences is critical to being successful at bringing in funding.

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

Yes! My office looks out at the Atlantic Ocean. I get to live and work at my field site, so as a field researcher I couldn't ask for a better research job or source of inspiration. I also enjoy getting to work on the mix of basic, applied, and operational research projects—as a researcher it's really rewarding to see something that started small transition all the way to being used by practicing engineers who are solving tough coastal management problems. I have also been impressed with the resources within the government and the access to state-of-the-art instruments to conduct my research. I have also been pleasantly surprised about all of the opportunities to mentor students and continue to collaborate and interact with academia.

The parts of the job I like the least involve all the other parts of being a principal investigator that you don't learn in grad school—spending time managing projects (including time, money, and people), sifting through rules and regulations that affect sending and receiving money, and all the other administrative tasks that come with being a government researcher. I cherish the time spent sitting down at my computer and "doing science" or when I get out in the field to collect data!

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

Internships can be a great way to "try out" a job to see if it is the best fit for you. Ask the PIs you talk with the tough questions: How much time do they spend "doing science" versus doing administrative tasks? Do they feel supported by their upper management? Are they happy with their work-life balance? Does the organization support and encourage continuing education (e.g., training, developing leadership and management skills)? Make sure you also understand their expectations for a first-year researcher versus an early career researcher versus an experienced researcher. The more informed you are about the details of a potential new position, the more informed a decision you will be able to make about what is best for you.

NICOLE RAINEAULT | Vice President of Exploration and Science Operations, Ocean Exploration Trust (nicole@oceanexplorationtrust.org)

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

In 2012, I was awarded my PhD in geological sciences from the University of Delaware.

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

No. While my office is on the Graduate School of Oceanography campus at the University of Rhode Island (URI), and I work with academicians and researchers, my postdoctoral fellowship at URI and subsequent full-time position with the Ocean Exploration Trust (OET) are not traditional academic positions.

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

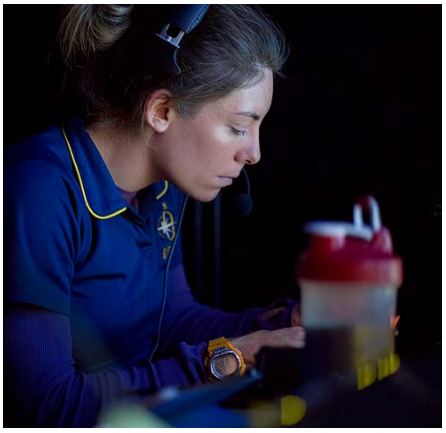
I was fortunate that I didn't have to do any job searching, and that my postdoc led to a permanent position.

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

Yes, this is the only job I've had since graduating from the University of Delaware.

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

I am the Vice President of Exploration and Science Operations for the Ocean Exploration Trust. OET is a nonprofit organization that explores the deep sea and helps to inspire and educate the next generation of STEM professionals through internships and outreach programs. I was offered an internship while I was working on my PhD. I sailed for a month on *Nautilus* as a navigator and was hooked on scientific exploration of the ocean. I returned each summer to intern aboard the vessel and was offered a postdoc with Robert Ballard in my final year as a PhD student. I knew that



accepting this nontraditional postdoc position would be a detour from a traditional research path, but I love working to expand the science capabilities of the ship and helping to chart the path for growing the scientist involvement in the program. When I had to decide between going back into research or starting my career at OET, I felt I had a lot left to accomplish and stayed.

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

Everything I learned is useful in some capacity of my job. Having a background in oceanography (my B.S. and M.S. degrees from the University of Maine and Rutgers University, respectively) and geological oceanography (PhD) gave me a broad base of knowledge that allows me to talk with scientists and researchers from varied backgrounds and put together expeditions that address all facets of oceanography. Exposure to various types of instruments and sensors and many field experiences, particularly during my PhD program, helped me understand the importance of marine technology in fully exploring the ocean and learn how to organize successful field operations.

Is there any course or other training you would have liked to have had as part of your graduate education to meet the demands of the job market?

I always recommend that students learn a skill that enhances their interests and abilities such as GIS, basic computer programming, boat operations, and familiarity with electronics/instruments. The more you can round out your knowledge with practical skills, the better your chances of landing a job or internship.

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

My job is incredibly satisfying. I love being able to plan an expedition season, help build teams to conduct the research, lead expeditions on *Nautilus*, and then see the vast amounts of knowledge we gained at the end of a six- to seven-month field season. I really enjoy working with students and seeing them learn and grow. I also love interacting with scientists and building teams of researchers who are excited to work with our data. My least favorite part of the job is the paperwork—signing off on hundreds of forms per cruise season—but the end result makes it worth it!

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

Never turn down an opportunity to try something new. Seek out professors whose research interests you and ask if they need help in the lab or field—or if they know someone who does. You never know what you're going to love doing. Academic research is one part of what is available to you with an oceanography degree, but there are government, private, and other organizations looking for educated, motivated people. Ask around and take the initiative to reach out if you find something interesting.