

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. ☺