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# CAREER PROFILES Options and Insights

**JO-ANN ROSARIO-LLANTÍN | Consultant in Physical Oceanography; Founder, Executive Director, and Principal Scientist, Coastal and Environmental Research Applications Inc. (jrl.cera@gmail.com)**

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

I signed up for an elective course in oceanography during my last undergraduate year in physical sciences at the University of Puerto Rico at Mayagüez (UPRM)—and got hooked. I was admitted to the UPRM Marine Sciences Department for a master's degree in physical oceanography, studying tidal currents in Mona Passage. After my master's degree, life took me somewhere off track. For about five years, I lived in Arizona, always missing the ocean and wanting to go back and pursue a doctorate in physical oceanography. Long story short, I decided to go to the Florida Institute of Technology (FIT) in Melbourne, though the decision to remain away from family in Puerto Rico and Arizona was hard. My PhD research concerned application of a hydrodynamical numerical model to describe the flushing characteristics of Mosquito Lagoon and the north segment of Indian River Lagoon on the Atlantic coast of Florida. It's a very hot topic now because of frequent algal blooms, fish kills, and other related issues in this environmentally and economically important system.

## **How did you go about searching for a job outside of the university setting? Is this the only job (post-academia) that you've had? If not, what else did you do?**

During the final years of working for my doctoral degree, I was a NOAA Graduate Sciences Program fellow. I spent 16 weeks training at the NOAA National Environmental Satellite, Data, and Information Service-National Ocean Data Center (the latter is now the National Centers for Environmental Information) and received a job offer upon receipt of

my PhD. However, as time passed and circumstances changed, I declined to move to the DC Metro area. The decision to stay in Florida was a mixed bag of outcomes, yet after the rude awakening of not finding a job as a “local not affiliated” physical oceanographer, I decided to go out on my own. A friend who was an instructor for an introductory oceanography class was no longer going to teach it, so I taught the class for a year. While teaching as an adjunct, I kept looking for ways to work as a physical oceanographer in the world outside of academia. I went to lectures and meetings, and asked local nonprofit organizations for interviews to discuss their projects and a possible need for my services as an oceanographer. No luck there—until that one day when I received a call from the founder of one of the nonprofit organizations I visited telling me to call a number for a company looking for an oceanographer to hire as a consultant. That was the moment I became my own boss and registered as a consultant in physical oceanography. After that, I have been lucky enough to be employed on my own while starting my own nonprofit organization.

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

My current jobs are independent consultant in physical oceanography, and Principal Scientist, Founder, and Executive Director of Coastal and Environmental Research Applications Inc. (CERA; <http://www.cerainc.org>), a nonprofit science and education organization. As an independent consultant, I mainly work on short-term projects subcontracted from other smaller firms and universities, providing technical services and working with large data sets. CERA



focuses on the study of coastal and estuarine dynamics, making use of creative, innovative, and cost-effective technologies along with classical methodologies to provide insights into the processes governing these marine systems. My principal objective is to draw a new generation of thinkers and tinkerers into developing a passion for STEM careers and the ocean.

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

My education opened the door to a larger world. I have been lucky to work on boats, be part of a scientific crew, and see dolphins swim alongside the bow in the light of a beautiful sunset at sea. I've been lucky to learn many things in the classroom and also to pick up some amazing tricks of the trade from colleagues and friends. It's a thrill to participate in conferences, whether presenting or just listening to new studies, networking, making new friends, and finding collaborators. My education has allowed me to grow in self-confidence and helped me gain the necessary knowledge to take on increasingly challenging responsibilities. To me, learning never stops. I'm always seeking the next challenge to expand on what I know and learn new interesting technologies and gain new skills.

**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?**

A business and project management course, as well as proposal and grant writing training, would have been very useful. After starting my own consulting firm, a nonprofit, and soon another small LLC, I now know that learning how to start a business, run it, and keep it running on my own took longer than necessary. My advice is take some form of business management and proposal writing training. I strongly believe that no matter where you end up working, those skills and knowledge will be quite helpful.

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

The administrative side of things is not necessarily something I like doing, but it has to be done. Perhaps one day I will have someone else taking care of those tasks for me. But I must admit I'm passionate about working on my own. It can be hard at times, but the flexibility it provides is very important to me, and it is its own reward. My work at CERA gets more exciting each day—the connections, the ideas when the right people work together, it's fantastic. I think this is what I was born to do—engage other people to work with innovative technology and its application in oceanographic studies and bring it all together to explain the processes shaping our marine systems.

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

Work toward making new and lasting connections at school and conferences and participate in a variety of trainings, even those outside your area of expertise, that will give you new perspectives and problem solving skills. Volunteer to work at a conference, teach a class, or give a talk at a workshop, and participate in field studies. All of these activities will open your eyes to how things get done, will improve your self-confidence, and may help you decide which path is right for you. Ultimately, and perhaps most important, remember to take time to smell the ocean breeze and feel the sand under your bare feet. 🌊

**ERIKA MONTAGUE | Consultant (erika@liquidlabslc.com)**

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

I earned my BS and MS (2001) degrees in biology at California Polytechnic State University, San Luis Obispo, specializing in molecular biology as an undergraduate and marine biology during my graduate studies. My master's thesis focused on spatial and temporal variability of planktonic bioluminescent species in coastal regions. I received my PhD in oceanography in 2007 from Johns Hopkins University while conducting research at Harbor Branch Oceanographic Institution (HBOI). My PhD thesis involved the development of non-invasive instrumentation to study species in remote and extreme marine environments.

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

After completing my PhD, I went on to a two-year postdoc in the Engineering Department at Monterey Bay Aquarium Research Institute (MBARI). Toward the end of my formal MBARI postdoc, I received fellowship funding from both NOAA and the Schmidt Ocean Institute,

which allowed me to stay on for an additional two years. Although the bulk of my time and focus was spent on research and development during those four years at MBARI, I was also a part-time instructor at the local community college.

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

During my postdoc it became evident that my interests were increasingly focused on the "interface" between science, technology, operations, and the private sector. I had developed a large network of people from many different sectors of the ocean industry, and leveraged that network to find new positions and projects. Tools like LinkedIn allowed me to see positions available in my area and the people in my network who were connected to those organizations. I also contacted companies I was wanted to work with and asked about consulting and full-time work. Finally, organizations such as the Marine Technology Society further expanded my networking circles and introduced me to other specialties in marine technology.



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

I started consulting after my time at MBARI and have continued to do so during my other positions and expeditionary work. I was the Director of Science and Technology at OceanGate Inc., a private company that offers manned submersibles for hire, where I served as the chief scientist and project manager for research and development, assisting clients with the implementation of existing and new technologies to meet their specific needs. In 2012, I was selected as a member of James Cameron's DEEPSEA CHALLENGE expedition, and worked

with the lander and manned submersible teams to maintain and deploy critical scientific instruments and sampling devices during the test-dive phase of the expedition. Additionally, I was the Director of California Operations at a STEM education organization, Science from Scientists, helping to deliver STEM education into the classroom through real-world science and technology professionals.

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

Currently, I consult for foundations, companies, and private interest groups to help navigate funding, development, and implementation of ocean-related projects aiming to bridge the gap between diversified stakeholders. Someone recently called me a matchmaker in the marine industry, which I think accurately describes a lot of my work. My broad background in multiple areas has enabled me to see the bigger picture and seek out the correct experts required for each task. This type of work has been cultivated over years of field experience combined with a social network of industry members.

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

Mentors, mentors, mentors. These people give insight into the past and often forecast into the future. They will provide you with knowledge and connections that cannot be gained from a book, and if you choose wisely, opportunities in the field and at meetings. My three primary academic mentors offered advice that dictated my education. Mark Moline, then at Cal Poly, understood how the funding landscape was changing and involved his graduate students, myself included, in proposal preparation, exposing us to a wide range of resources (government, private, and corporate). Not only did this help me understand the funding landscape and proposal processes, but it also prepared me for consulting work with foundations and private groups. While deciding on a PhD program,

Edie Widder's advice on communication between disciplines resonated with me and put into words a path that I was already gravitating toward. She noted how there were many excellent scientists and talented engineers in our field but very few people who were capable of understanding the needs and language of both. Because my interests were in both science and technology, I took engineering courses and worked side-by-side with the engineers on our projects. The third piece of critical advice came during my first day at Johns Hopkins from Tom Osborn who explained first and foremost above any ocean-specific courses, "a student should master the core subjects, such as, physics, chemistry, biology, mathematics (and so on)." He was absolutely correct. Topics I struggled with during my oceanography degree were directly related to my lack of depth in the root subject, and I found myself always turning back to the basics in order to work out a problem.

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

Many universities now offer interdisciplinary courses, combining science, law, engineering, and/or business, which I think is fantastic. Although I took both science and engineering courses and had a lot of "learn by doing" experiences, I would have enjoyed taking an Ocean Engineering for Scientists course earlier in my program. Project management and business development are critical components in most projects, both within and outside of academia. Understanding budgets, timelines, and staff allocation are all essential skills for a successful project; however, many scientists and engineers do not get this in their academic training.

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

From deep-sea exploration to vetting proposals for foundations interested in sustainability and tech development, my career has covered a wide range of

projects and disciplines, but the consistent theme has always been discovery. Seeing or learning something new about the ocean through my own experiences or the eyes of a colleague piques my interest and motivates me to push the boundaries of marine technology. Going to sea is my biggest *reward* in this job, even when it comes with a heavy load of work and little sleep, but my biggest *joy* has been realized by sharing those experiences with others. Because my ultimate goal is to bridge the gap between the marine industry and other sectors, the more I am able to communicate about an ocean phenomenon, process, or tech/data/sampling need, the more valuable those conversations become.

Doing anything ocean related comes with many challenges, and, unfortunately, equipment failure is part of that deal, but limited time and budgets make the sting of equipment malfunction more acute.

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

Join networking organizations and groups both within and outside of your specific industry while continuing to reach out to people in your existing and new networks. Jobs, funding, and projects are always changing so keep checking in with people and companies. Don't be afraid to ask lots of questions and find value in each conversation with other professionals. Lastly, keep other students and young professionals in mind when you find an open position that may not be suited for you but could be for another colleague. It will help them out and someday the favor may be returned. ©