ADVICE TO EARLY-CAREER PROFESSIONALS

with Russ Schumacher

• Where do you currently work and what is your position? I’m currently an assistant professor in the Department of Atmospheric Science at Colorado State University (CSU) in Fort Collins. I teach and do research in the areas of mesoscale meteorology, weather systems, and numerical weather prediction.

• What did you do to achieve your position? Coming out of college, I had decided that I wanted to get a Ph.D. in atmospheric science and go on to teach at the college/university level. I was also pretty sure that I wanted to teach at a smaller, primarily undergraduate institution, since that’s what I had attended myself as an undergraduate and had a great experience. However, once I got into graduate school I found that I really enjoyed doing research as well, and that the research area I was focusing on (extreme rainfall) was very interesting and was a topic where I could carve out my own niche. So I went on to get my masters and Ph.D. degrees at Colorado State and aimed toward getting a faculty position at a research university, where I could both continue my research career and be heavily involved in teaching. After finishing my Ph.D., I received a postdoctoral fellowship at the National Center for Atmospheric Research in Boulder, Colorado, and spent a year there both continuing the research I had done toward my Ph.D. dissertation and branching out into some new research areas while working with some of the top scientists in our field. Then, I was offered a faculty position at Texas A&M University, where I worked for two years teaching and doing research. Working at A&M was great—the students were excellent and my colleagues were outstanding to work with. But when I had the opportunity to come back to CSU—one of the top programs in the country and in a place that already felt like home—I couldn’t pass it up.

• To get to this point in your career, what role did mentors and advisors play? I have had some fantastic mentors and advisors over the years, and I certainly wouldn’t be where I am without their guidance. My professors at Valparaiso—specifically John Knox and Bart Wolf—were instrumental in both providing the background knowledge in meteorology and also in instilling an enthusiasm for atmospheric science that set the stage for the career path that I’m on. I was part of a summer Research Experience for Undergraduates (REU) in Oklahoma and worked with Dave Schultz, who first taught me what a career as a professional research scientist is like. My graduate advisor, Richard Johnson, was unconditionally supportive of the research I was doing as a graduate student and also of some of the opportunities outside of research that I wanted to pursue, like workshops and conferences. And there have also been a lot of informal mentors as well—people whose careers I look to for guidance and inspiration. (And to whom I apologize for not being able to mention all of their names here.) My advice is to seek out mentors whenever and wherever you can. They may or may not be your formal advisor, but there are a lot of people out there who are more than happy to share their experiences and offer helpful advice.

• Is there anything you would have done differently in college knowing what you know now about your job? I’m going to rephrase this question a little bit and talk about two things that I did do in college that I think were really beneficial. One is the Research Experience for Undergraduates. There are quite a few of these in meteorology at different places across the country, including Norman, Oklahoma; at Texas A&M University; and here at Colorado State. There are also similar programs like SOARS in Boulder. If you are interested in going to graduate school or in having a career in research, absolutely seek out these programs during a summer. Some of them are quite competitive to get into, so make sure to apply for as many as you can. Being at a research lab or research university really gives you a feel for what life in graduate school might be like. You might find out that you really don’t like it, and that’s a great
thing to learn before you get too deeply involved, or you might find out that you really have a passion for research and it will solidify your decision to pursue graduate studies. Furthermore, having some research experience as an undergraduate is almost a prerequisite for graduate school admission these days. Of course, I’m focusing here on research since that’s the type of career I’m in, but the same advice goes for other areas—there are internship opportunities available in forecasting, broadcast meteorology, and so on; take advantage of as many of these opportunities as you can to get a better sense of what type of career might be the best fit for you.

The second thing is to do as much reading and writing as you can. I was fortunate to be in an honors program in college that required writing lots and lots of papers. Of course, this was a lot of work at the time and wasn’t always fun, but the only way to become a good writer is through practice, editing, and revising. Whatever particular career you end up in, it’s almost certain that you’ll have to communicate what you’re doing in writing, and the better you are at it the more successful you’ll be. My former REU mentor, Dave Schultz, has written a great book (published by the AMS) called *Eloquent Science* that provides great advice for becoming a better scientific writer.

- **Whom do you admire in our profession? Why do you feel that way?** It’s hard to name just one person (or a few people), as there are a lot of people I admire in our field for a variety of reasons. But one person that I really look up to is Bill Hooke, who works for the AMS Policy Program and is the associate executive director of the AMS. Bill is a distinguished atmospheric scientist—his papers and textbook on gravity waves are still regularly cited—who went on to leadership positions at NOAA and the AMS. He initiated the AMS Summer Policy Colloquium, which has now gone for 13 years and has provided invaluable training about the policymaking process for scientists and educators. He is a strong advocate for the value of meteorology to our nation and world, and he also understands where it fits in the broader context of society. And he is simply an outstanding listener, leader, and person—setting a great example for all aspiring scientist-leaders.

- **What advice would you give to an early-career professional starting in this field?** There’s no question that the job market, and the number of available positions in graduate schools, are challenging right now. So you have to accomplish things that are going to make you stand out. For example, it’s probably not enough to simply get the top grades in your class as an undergraduate student—you also need strong research or internship experience. And you’ll want to have at least some knowledge of other disciplines: math, geography, computer science, communication, chemistry, hydrology, etc. The same goes for graduate students: it’s hard work developing knowledge that is both deep and broad, but it will pay off if you can do so. And of course for graduate students looking for jobs, one of the primary things you’ll be evaluated on is publications, so publish as much as you can. (This will be made easier if you’ve developed your writing skills mentioned above.)

- **What was the interview process like?** I know that this isn’t the case for everyone, but I actually had really good experiences during my interviews for faculty positions. In general, if you get invited for an interview, it means that you’re well qualified for the position and they’re strongly considering hiring you. So the main consideration is how well you’ll fit into the department and the university. In other words, whether your research fills a gap that isn’t currently represented, whether the classes you plan to teach will complement the rest of the curriculum, whether there are natural collaborations with the rest of the faculty, and so on, will heavily influence the hiring decision. My interviews didn’t have any aspects of the stereotypical interview (brainteaser questions, grilling about specific things on your CV or resume) but were instead an opportunity to get to know the place and the people and for them to get to know me to see if I would be the ideal fit for the open position. Of course, the process is also somewhat stressful and exhausting, but if you think of the interview as an opportunity rather than a burden, you can have a good experience whether or not you get offered the job.

- **What are some of the challenges facing early-career professionals?** I think the most difficult part about being an early-career faculty member is the uncertainty and waiting game surrounding grant funding. At a research university, it is expected that faculty members will secure external funding
to support their research, and this is true at many primarily undergraduate institutions as well. And although there are many funding opportunities out there, the competition for them can be very fierce, especially in light of reduced budgets at some of the scientific agencies in the past few years. Furthermore, the time it takes to get reviews and decisions back after you’ve submitted a proposal can be six to twelve months, which is an exceptionally long time when you’re trying to figure out how many graduate students you can support, what research ideas to devote your time to, and so on. I’ve been fortunate enough to have a few proposals funded, but I’ve had several rejected as well, and it’s challenging to be patient and understanding through the whole process.