Kelly
Welcome to the American Meteorological Society's podcast series on careers in the atmospheric and related sciences. I'm Kelly Savoie and I'm here with Jason Emmanuel, and we will be your hosts. Our podcast series gives you the opportunity to step into the shoes of an expert working in weather, water, and climate sciences.

Jason
We're happy to introduce today's guest, Mona Behl, who is an oceanographer and associate director at NOAA's Sea Grant program at the University of Georgia. Thanks so much for joining us!

Mona
Thank you for having me.

Kelly
Mona, did you major in oceanography?

Mona
Yes.

Kelly
And where did you get your degree?

Mona
I got my PhD in physical oceanography from Florida State University.

Kelly
And did you have an oceanography degree as an undergraduate degree, or did you major in something else and then switch?

Mona
No, I actually got my bachelor and master degrees in physics honors school from the Center of Advanced Studies in physics at Punjab University, India. I came to the United States only 13 years ago to pursue my PhD at Florida State University.

Kelly
What made you transition from physics to oceanography? What sparked your interest in that?

Mona
The quest to learn more and understand the world around us, honestly. My journey from physics to oceanography was very random. Like many physics scholars, I aspired to be an astronomer. I was selected to go to grad school in the UK but could not afford it. Around the same time, I came across an article in the newspaper about a scientist at Florida State University who provided a physical science explanation of Jesus walking on water. I got in touch with the professor and shared my interest in using my background in physics to study weather and climate. I was eventually selected to pursue a doctorate in physical oceanography at Florida State University. I

often like to share that I come from a landlocked state in India and had never seen the ocean until I came to Florida to pursue my PhD.

Kelly
Very interesting.

Jason
Did you have a specific area of research within physical oceanography that you focused on?

Mona
Absolutely, and thanks for that question, Jason. So for my PhD I looked at what happens to the atmosphere of Europe when the Atlantic meridional overturning circulation slows down. So I'm not sure if you've heard, but there's this huge ocean current in the North Atlantic, which is responsible for keeping the temperature of the poles and the equator to where it is. It is responsible for exchanging heat between the ocean and the atmosphere. The water sinks at the higher latitudes in the polar regions, and it rises in the form—so it moves, this current moves in the form of a conveyor belt. And so this conveyor belt kind of sinks in the higher poles, in the higher latitudes, and it rises in the lower latitudes. And there's sufficient— Scientists have sufficient evidence to show that this Atlantic meridional overturning circulation is slowing down. So I looked at what happens. I used simple conceptual models and analytical techniques to study air–sea interaction and understand what happens to the atmosphere of Europe if this Atlantic meridional overturning circulation slows down.

Jason
Cool, thanks so much for the explanation. So what would happen to Europe?

Mona
Well my study, which I conducted six years ago, my research showed that the temperature of Europe will cool. There would be localized cooling, but it wouldn't cool by a whole lot. So there would still be localized cooling in the region where the Atlantic meridional overturning circulation takes place in the upper latitudes, but it would not be substantial.

Jason
Yeah so what was your first job in the field, and could you give us a brief overview of how you ended up where you are now?

Mona
Sure! So after earning my PhD I got the opportunity to work with the American Meteorological Society policy program in Washington, D.C. That experience strengthened my resolve to work in the interface of science and society. Towards the end of my fellowship, I was selected to lead the research program at Texas Sea Grant, which is housed at Texas A&M University. For those who do not know, Sea Grant is a marine analog of land-grant universities in the United States. It was formed back in 1966 by Dr. Athelstan Spilhaus, who was a South African geophysicist and oceanographer. So as a research coordinator at Texas Sea Grant, I coordinated the biennial research proposal process, developed and maintained the program's grants and fellowship portfolio, facilitated information exchange between research and extension, created technical

reports and databases, and assisted in strategic planning and evaluation of the program. I transitioned into a leadership role with Georgia Sea Grant here at the University of Georgia back in 2015. I currently serve as the associate director of Georgia's Sea Grant program and provide overall administrative and fiscal oversight to the program. I also hold public service and academic faculty appointments here at the University of Georgia.

Jason
So as an associate director and, like, in the leadership position, do you still get a chance to do any research, hands-on research?

Mona
Absolutely. I would say 80% of my job responsibility is, is most mostly administrative, and you know, another 80% is probably research as well. Georgia Sea Grant is located in, is housed under the Office of Public Service and Outreach at the University of Georgia. And all public service faculty, and which I am one, are required to conduct public service, research, and applied research—undertake applied research projects and, and implement some public service programming, so I have adjunct appointment with the Marine Science Department and a public service appointment under the Office of Public Service and Outreach, like I said, where I do conduct applied research.

Kelly
So other than the Visiting Fellow Program, what other opportunities did you pursue that you knew would be beneficial to getting a position in oceanography? Were there certain professional development opportunities that you took advantage of?

Mona
I would like to highlight two opportunities that were instrumental in putting me on my career—current career trajectory. Those experiences were the AMS Summer Policy Colloquium and the NSF-sponsored Expert Witness Training Academy. I got to participate in both these experiences as a graduate student at Florida State. The Summer Policy Colloquium is an intense 10-day experience in Washington DC that introduces scientists and professionals about the importance and need to use science— sound science to inform public policy choices. And led by the William Mitchell College of Law, the Expert Witness Training Academy is focused on training scientists to be better communicators in an adversarial setting. These two experiences sparked my interest in exploring opportunities beyond academia in the science–society interface. So in addition to applying for generic postdoctoral positions after my PhD, I also explored opportunities in science policy. Being an international scholar, I did not qualify for either of the congressional fellowships and unfortunately was not selected for the two science policy fellowships that are open to international scholars, which are the John Knauss Marine Policy Fellowship and the Presidential Management Fellowship. However, I did keep in touch with the leadership of the AMS Policy Program and was lucky enough to be given the opportunity to work with them as a visiting fellow in 2012.

Kelly
Wow, so that's some really interesting and neat areas. That expert witness one sounds really, really cool. How did you even find out about that?

Mona
That is interesting, and thank you for your question, Kelly. I, again, it was the AMS Summer Policy Colloquium. I got the opportunity to participate as a graduate student, and the NSF paleoclimate program provides stipends to about 10 graduate students to come to Washington DC and participate in this 10-day experience. It was during the Summer Policy Colloquium back in 2011 that I first learned about this new program that the NSF Paleoclimate Program was going to sponsor, which was, which is the Expert Witness Training Academy. So I found out about the Academy through the Summer Policy Colloquium.

Jason
So could you—I know you mentioned being a visiting fellow with the AMS Policy Program, but for people who are unfamiliar with the program, could you just give a little more background about what you did in that program?

Mona
Absolutely. Thanks for your question, Jason. It was a life-changing experience for me. I got the opportunity to work with a small interdisciplinary group of researchers, and I was exposed to a number of issues at the intersection of science and policy. One of the most important lessons that I learned was the value of scientific integrity and ethics. My experience at AMS truly cemented my resolve to pursue nonacademic opportunities to advance science, and it was then that I started to apply for various positions in science, administration, management, and leadership and eventually landed with two job offers and a national fellowship. So once again the AMS Policy Program tends to lead a number of workshops, a number of policy studies in cutting-edge issues in weather, water, and climate science professions.

Kelly
Did you have any mentors that provided you with guidance as you progressed in your career? Do you have anyone in particular that you learned a lot from?

Mona
Absolutely. Mentoring is invaluable. I'm a product of my mentors who consistently provided me with love, encouragement, and support and guidance at every step of the way. Something that I find really special about my culture, that is, the Indian culture, is the recognition of a centuries-old tradition in India called the guru–shishya parampara. This tradition fosters a thoughtful exchange of ideas, expertise, and friendship between a guru, who is the mentor, and shishya, who is the mentee. The relationship between a guru and a shishya is an emotional, spiritual, and intellectual friendship that is built on the foundation of trust, respect, and commitment. I've been lucky to have several gurus, i.e., mentors, to guide me during my personal and professional journey. That begins at home with my parents, my sibling, my late fiancée, and then a number of teachers that I met in my academic journey. Somebody that I connect with and I cannot visualize my life— visualize my life without is Dr. Bill Hooke with the American Meteorological Society. I turned to Bill for everything.

Jason
Yeah that's great to hear. And both my parents are Gujarati, so I feel like I relate to the guru

discussion. So, looking forward, do you think the future job market is promising for careers in oceanography?

Mona
Absolutely. I think there is a dire need for geoscientists in the world that we live in today. And let me explain why. Each year, the World Economic Forum—that comprises leaders from the private sector as well as the public sector across the globe—the forum puts together a report called the Global Risks Report that outlines the major environmental, societal, technological, economic, and political risks that are faced by humanity. The report also outlines how these risks are interconnected to one another. So you see environmental risks do not exist in a limbo; they're very much interrelated with societal, technological, economic, and political risks. Extreme weather events, climate change, and scarcity of water resources happen to be the top global risks in the world that we live in today. We need oceanographers, atmospheric scientists, geologists, climatologists who can collaborate with social scientists to address these global challenges and capture new opportunities related to these risks. So from my humble perspective, there has not been a more important time to be an oceanographer or an atmospheric science—scientist than today.

Jason
Yeah, thanks so much. That was very insightful.

Mona
Sure!

Kelly
So at NOAA Sea Grant program, in your position, what is your typical day on the job like?

Mona
So I look forward to being at my job every single day. I know it sounds cliché, but no two days are alike. My position calls for me to ensure that the federal and state money that we invest has real-world impact. I'm required to keep a finger—to keep my finger on the pulse of our constituents' needs and build innovative and collaborative teams to address those needs here in Georgia. We make investments in natural and social science projects that are directed towards natural resource and societal issues in coastal Georgia. To do my job well, I am required to stay current on the activities and accomplishments of the projects that we fund. That means I travel to some of the most beautiful places on the coast, take occasional trips with researchers, down, down rivers or into the marsh, and have great conversations with very smart people who tell me about the work they're excited about. I also get the opportunity to provide mentorship and guidance to the next generation of scientists who are engaged in our program through various scholarships and fellowships. Being in the job that I am today is absolutely an intellectual perk, but I think it's also a social perk, and I am very grateful for that.

Kelly
So that's excellent that you get to do some field work when you travel. So you must like that, that break from being in the office to be able to get out there and see what's happening.

Mona
Most definitely, Kelly. If I'm not sitting in front of my computer dealing with an administrative or a fiscal matter, I am—I get the opportunity to interact with individuals from diverse coastal communities in Georgia. I also get the opportunity to visit various universities and colleges and listen to scientists tell me about some cutting-edge research that they're—they're conducting at their departments. And in my position I get to be a connector, a matchmaker, bringing science to and making that—that science relevant to the society so it's—it's truly it's truly amazing.

Jason
Yeah, it sounds like a job so varied, but if you had to pick just one thing that was your favorite, what do you like most about your job?

Mona
One of my primary responsibilities is vetting research proposals—that is, clustering proposals into overlapping topic areas and panels, recruiting panelists and other reviewers, overseeing the review panels, and making funding recommendations. Additionally, I get to monitor and oversee funded research. Therefore, I have the opportunity to reflect on the work of others, communicate the impact and benefits of publicly funded research, and also bring my own vision to advancing the field of ocean, coastal, and marine sciences. Being constantly in touch with the stakeholders, I also get the opportunity to learn of the constantly changing research needs and how science can serve the society better. Leadership and management roles can be fairly challenging, but it is these challenges that I do enjoy the most.

Kelly
I was just going to ask that about what do you find the most challenging on your job, but you have answered that.

Mona
Lack of diversity and positive role models happens, actually, to be one of the most challenging aspects of the job that I'm in. It is no surprise at this time that geosciences are the least diverse STEM field. And ethnic and racial diversity in atmospheric and ocean sciences is worse. Being an international woman of color in physical sciences, I have often found myself to be the quote "only one" at various instances throughout my academic and professional journey. Being in a leadership position, like I mentioned before, it's challenging, it's exciting, but it's, it's also—it can be also a very lonely place at the same time. And it would be—it would be really, really helpful to see more leaders who look like me and who have had experiences that are similar to me.

Jason
Yeah I could see that. But I feel like by being a leader yourself, you're kind of, you know, encouraging or serving as an example for future people, future women of color to also pursue that same opportunity.

Mona
I hope so. Thank you for saying that.

Jason
So looking back on your career so far, is there anything you might have done differently?

Mona
My academic training has been strictly in physical science. I had my, like I mentioned before, my bachelor and master degrees in physics and a PhD in physical oceanography. I wish I could've taken some classes in social science, in particular, science policy, classes in communicating risk, and, more fundamentally, maybe some classes on history and philosophy of science. I think those—that that kind of academic background might have been really—it could be really helpful in the job that I'm in right now.

Kelly
Now that you've moved into this management position and you're, you know, in a job that you really love, what types of professional development opportunities do you engage in now to keep current?

Mona
So I participate in national meetings and conferences. AMS happens to be my professional home and I like to go to the AMS Annual Meeting in January. I also participate in ocean sciences meeting. I tend to—being a Sea Grant program, I tend to participate in a lot more state, local, and regional conferences that happen to draw a much smaller crowd around themes that are more place-based. I also participate in science policy and communication discussions both regionally as well as nationally. And something that I'd like to emphasize is the engagement on different boards and committees of various professional societies, and in particular AMS. Serving on review panels for research and fellowship programs has also been extremely important to me to help me stay current in my field.

Jason
Thanks, I feel like that'll be helpful for our listeners. And so do you have any advice that you would give to students or early-career professionals looking to land a job in oceanography or a similar field?

Mona
Well, reflecting back on my academic and professional journey, I think I have three things to share. One of them is stay in a mode of constant learning. Change is continuous so it's critical to constantly learn and update your proficiencies and expertise. It's also important to kind of stretch yourself outside of your comfort zone as you stay in that constant mode of learning. The second important thing is to stay relevant. There are various challenges that are interconnected, like I spoke of, these societal, economic, political, technological, environmental challenges, and they require us to stay abreast of our field through constant learning, maintaining a depth of knowledge—a depth of knowledge and understanding of various challenges. Then also being able to tease out what is most important and how might we use science to address these challenges. So staying relevant is critical. And last but not the least, being in a leadership position has taught me that relationships are everything. At the end of the day, it is people, it is, it is your relationship with your peers, your mentors, your colleagues, that matter the most. And so investing the time, the energy, the effort to build a relationship, have fierce conversations, and

work towards common goals, you know, is very important. So those are the three things that I had to say: stay in a mode of constant learning, stay relevant, and relationships are everything.

Kelly
Yeah, networking seems to be, you know, so beneficial to most students and early career professionals. Everyone we've spoken to has, you know, emphasized that—that it's really, really important to make sure you make those connections. Do you think that if a student wanted to be an oceanographer or go into oceanography that they could go the route you went, where they could get an undergraduate degree, say, in physics, and then move on to get a Masters or a PhD in oceanography? Did you feel that that was an okay route to get to where you are now?

Mona
Absolutely. And thanks for that question, Kelly. I had no idea when I was pursuing physics, you know, in terms of the career opportunities and the career tracks that it would open for me. But you could, you could, your major could be chemistry, biology, physics—any of those majors can lead to an academic and a professional career in oceanography. I pursued physical oceanography because of my academic foundation in physics, but I got the opportunity during grad school to interact with chemical oceanographers, geological oceanographers, biological oceanographers, marine biologists, so there are just a plethora of fields that you can pursue with—if you have the foundation of physics, chemistry, mathematics, biology.

Kelly
That's great advice because I know a lot of students aren't really sure what they want to do when they start college, and to have one of those degrees that kinda give you a foundation for other sciences is, is definitely an avenue that they can take. And then they can change and decide what they're the most interested in as they move up in school. So Mona, we always ask our guests one last fun question at the end of each of our podcasts. What is your favorite hobby?

Mona
Oh, I love to listen to music. I also like to paint and I hike.

Kelly
Where do you hike? You hike around where you work, or do you have a favorite place?

Mona
Interesting that you ask, Kelly. So I got a chance to be in the Himalayan Mountains for a month this past October, and that has been one of my favorite places to hike.

Jason
Well thanks so much for joining us and sharing your work experiences. That's our show for today. Please join us next time, rain or shine.