

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 will give you the opportunity to step into the shoes of an expert, working in weather, water, and climate sciences.

Jason: We're excited to introduce today's guest, Marshall Shepherd, Georgia Athletic Association Distinguished Professor of Atmospheric Sciences and Geography at the University of Georgia in Athens, Georgia. Welcome, Marshall. Thanks so much for joining us.

Marshall: Hey, guys. Thanks for having me.

Kelly: Marshall, could you tell us a little bit about your educational background and what sparked your interest in meteorology?

Marshall: Well, what sparked my interest in meteorology, surprisingly, was a honeybee. I was stung by one when I was touching them in my yard when I was a young kid. I thought I wanted to be an entomologist as a kid, and got stung by one and realized, after almost dying, that I'm highly allergic to bee stings. And so, was coming up on a science project in the sixth grade and realized I need a different plan, a Plan B, if you will, pun intended, and so I went with a weather project. Can a sixth grader predict the weather? And I made weather instruments out of things around the house and made a little weather model for my little town, Canton, Georgia. And so, that's kind of how it all began. I won the science fair, went on the district, and from that point on, I knew I wanted to be a meteorologist. But I never, even then, I never wanted to be a TV meteorologist or even a forecaster. I was always more interested in the how and why of the weather, and so that's what started getting me to research schools in the South, that were good in meteorology. And I discovered Florida State University, and went there for my Bachelor's and Master's degree in '91 and '93. Went away for a year to work, and then went back and did my PhD.

Jason: Cool. So, after attaining your degrees, what was your first job in the field, and how did you end up where you are now?

Marshall: Well, it's interesting, there's a little story that relates to the AMS because I always value the AMS contributions to my career. AMS started when I was in my Master's program. They started the AMS Industry Fellowship Program, and I happened to be in the first class, or cohort, of fellowship recipients back in, I believe, '93. I was funded. My fellowship was sponsored by an aerospace company at that time called TRW. And so, I'm always grateful for that initial funding from the AMS and TRW. I went to work out of my Master's at a small contractor to NASA called SSAI. In the Washington DC area, they have these various, what they call, beltway bandits, these companies that contract to the federal agencies, and so they were essentially one of those.

Marshall: But then, eventually, I got hired on as a meteorologist at NASA, a civil servant, a federal employee. Worked there for a while and realized they had some programs that would allow you to apply and go back to do your PhD or go back to school, and it's a fairly older

workforce at NASA so a lot of people didn't apply. They were already settled in, but I was fairly young at that point and didn't have any kids, wasn't married. I said, "Hey, I'll apply for this. I got it and was able to go back and do my Doctorate.

Jason: Nice. Can you describe your position at NASA or what you did there?

Marshall: Well, early on, I was really more in a support scientist role. I was a young scientist, this is particularly before I got my PhD, but once I got the PhD, I became a scientist driving my own research agenda and writing grant proposals to NASA to support my research which, at that time, was mainly focused on urban climate and rainfall effects. I was also involved with the Tropical Rainfall Measuring Mission, or TRMM. And then, after TRMM ran its course, NASA realized it needed a new satellite mission to measure rainfall from space, and so it started thinking about this mission called the Global Precipitation Measurement, or GPM mission. So, I was asked to be the deputy project scientist for that mission, so in that role, I was working with scientists and engineers and the community at large, also our Japanese partners at the Japanese space agency, to develop this mission that met science needs but also can be engineered to do so. I'm proud to say that our satellite is in orbit now and taking great measurements, data for rainfall, for weather prediction, assessment of hurricanes, and for climate diagnostics as well.

Marshall: So, the really neat thing about being a scientist at NASA is, it's part research, it's part mission and program development, it's part service and outreach. I did a lot of outreach through doing television on the Today Show or national television or briefing Congress or whatever it took. So, it really allowed me to diversify my skill set. I like to say that I'm a scientist, and now a professor, but I'm not really typical of either of those. I mean, what people have in their mind as what a scientist looks or dresses or thinks like or a professor. I try to deliberately shatter those narratives.

Kelly: So, once you got your PhD, did you know that you wanted to go into teaching?

Marshall: Well, and the nice thing about a professor is like, I never wanted to be a professor or a teacher at all, honestly. It's going to sound odd, I am, but I don't actually think of myself as a teacher at all, even though I do teach. But at a place like University of Georgia and the major universities, professors actually don't teach that much maybe for one or two courses. When I tell people I'm a professor, the first question that comes out of their mouths is, "Oh, what do you teach?" But reality is, we don't actually teach as much as people think. We certainly do teach, but I may teach one or two courses a semester at most. Research I or research driven universities are very much focused on that.

Marshall: And so, a good chunk of what we do involves research, involves acquiring multimillion dollar grants and advising our Doctoral and Master's students, and publishing papers in the peer review literature and coming to AMS meetings and publishing new results, and those types of things. So, the teaching is just a small part of a much larger portfolio of what professors do. So, even when I came to the university, I was like, "Well, I don't know. I've never taught. I mean, I'm coming here because I'm a scientist and I can continue to do my research," but as I've taught, I mean, I guess I'm sort of good at it. I've won a couple of universities' top teaching awards, so I kind of backed my way into it. I'm

not trained as a teacher at all or an educator, but it comes along with the territory, I guess.

Kelly: Well, that's very interesting because I'm sure a lot of people just assume that, like you said, professors at universities, they just teach classes most of the time and do a little bit of research, but it almost sounds like it's flipped, like you teach a couple of classes and-

Marshall: Well, I think it depends, Kelly, on where you are, also. I'm at a major research university. Now, there are smaller universities or liberal arts colleges or more teaching intensive universities where the professor may teach four classes a semester or something like that. But the reality is, in an environment like I am at, at a University of Georgia or Florida State or Penn State, some professors may teach as little as one course per year, so it just honestly depends on where you are. But University of Georgia's a major Research I level university, as many of our peer and aspirational institutions are, so yeah, it's just a common misconception. I even see it among the students because I think many students that come here just have the perception of their teachers in high school because they just see them teaching four or five classes all day. We're doing a lot of other things, one of which is teaching, but in some cases it's not even the majority of the time spent.

Jason: So, looking at your career and your education, did you have any mentors that provided you with guidance to help you construct the path that made you so successful today?

Marshall: Yeah, absolutely. I mean, some of the names are usual suspects in the AMS world. Dr. Warren Washington, I hold up as a very important mentor of mine. He, when I was a young grad student, invited me to spend some time with him at UCAR, NCAR, where he gave me so many words of wisdom just during that four or five days that I've visited him that I even now pass on to some of my own grad students about just balancing your expectations and becoming the best expert you can in your science field first before people start asking you to do many other things and get you distracted. Those are things that I value. Warren Washington, by the way, was the first African American president of the AMS, and he was actually one of the first persons I reached out to when I was asked by Keith Seitter to consider running for the AMS. He was one of the first emails I sent because I knew he had this experience.

Marshall: Dr. Franco Einaudi at NASA, that was a very important part of my career, he really gave me some of my... Also an AMS president, I should mention. He gave me my first opportunity to be a NASA scientist and has been a very strong advocate for my career from the start. I remember even a time when he asked me to run or be on the AMS executive council or executive committee, and I think people were like, "Well, he's too young," or, "He's not ready yet." And I think Franco was a big advocate of me, then, and so I appreciate him.

Marshall: So, my mom was a big source of mentorship, as well as parentalship, because she's a single parent. But yet, coming up and nurturing my interest in science and sports and all of the other things that I did, I never felt like I didn't have any opportunities to do anything. I mean, I did everything, 4H, Model UN, played tennis and basketball at school, Beta Club. Pretty much whatever was going on, I was in it, and so she found the

time. And the reason I'm bringing that up is because I think it's very important for any young scholars listening to this, or young professionals listening to this, to try to develop it and be as well-rounded as possible. I work in a world of science and academia and highbrow, ivory tower-ness, but at times, I find many of my colleagues to be a little one dimensional in that regard. And it's so important to be well-rounded, and so I think some of those things, as I was coming along, really helped me in that regard.

Kelly: So, speaking of being well-rounded, beyond the required math and science courses that you took, were there other courses that you found helpful in your career, or do you wish you would have taken now that you've gone along your career path and know more than you did when you were in school?

Marshall: No, I think I had a pretty good feel for it. I mean, I knew I never wanted to be a TV meteorologist like forecasting on a TV station every day or something like that, but in college, I still took a public speaking course. I really honed my craft of writing. I'm a contributor to Forbes Magazine today, and I get a lot of compliments on these little 800 word articles I write for Forbes, monthly. And people compliment me on those things, like, "You have a way of writing that really reaches people even though you're talking about very technical things." And so, I took pride in that, and I think a lot of that came from being able to take public speaking classes and writing classes and the like. I mean, I'm very comfortable speaking in public now. In fact, I quite enjoy it. I don't get nervous at all in front of a TV camera or when I'm speaking to 10,000 people. I've had the pleasure of being a commencement speaker twice now, once at Florida State and once at UGA, and those are large arenas full of people. But I was very comfortable. In fact, I enjoyed the moment quite a bit. So, I think those helped.

Marshall: I mean, of course, you hit the nail on the head, Kelly. Meteorology is a very quantitative science, and so, as a director of a major program myself at a university, I have a lot of students that are interested in meteorology. But I sit them in my office and say, "Well, how is your calculus and your partial differential equations and your physics? Because those are what you need to be able to get through the AMS certified meteorology curriculum and atmospheric sciences curriculum that's on the books." Now, having said that, there are certainly opportunities and career pathways, now, within the field of weather, climate, and water that may not require all of the math and rigor that those degrees require. I mean, if you've had a few meteorology or environmental sciences or climate courses, I mean, I think there are emerging opportunities throughout the public and private sector to still scratch that weather itch that you may have, but even if you just didn't want to get through those partial differential equations.

Kelly: Right. And public speaking, that doesn't come easy to a lot of people, so that's definitely some good advice. When you were talking about speaking in front of a whole bunch of people, I swear my stomach did a little flip flop, like, "Oh, no!"

Marshall: Well, part of it is personality driven, too. You're right. Yeah. It's one of those things where you can certainly take classes. There are things like public speaking and oration classes in school, but even out when you're not in school, if you're a young professional out listening now, there're organizations and activities like Toastmasters that can help you hone your skills if you have a little discomfort speaking publicly. But I will say that

some of the things related to those types of abilities or just natural personality things, too, I have a personality where it just doesn't bother me. Whereas, my wife, initially, is very uncomfortable speaking in front of people. She's gotten better over the years, and is actually quite good at it now. She's a Girl Scout leader and has to do those types of things.

Jason: So, it sounds like you balance a lot of different responsibilities, but what is your typical day on the job like?

Marshall: It's a question I get often, and it's not very easy because I think every day is quite different. So, for example, today, on a Wednesday, I mean, I was taping my Weather Geeks Podcast at The Weather channel, and then I came over to the university to talk with you all. And then, I have an all hands meeting with the students in my program this afternoon, so not getting too much teaching or research done today. Tomorrow is Thursday, so I'll have a class, my Satellite Meteorology class tomorrow, I think I have a couple of media interviews concerning the Hurricane Dorian that, as we're taping, is actually happening in the Caribbean ocean right now. I'm certain that a few more of those will pop up because that's kind of a real-time current event type thing, so you just be prepared for that. And pop over to our UGA studios, if that's needed. I'll try to get some research in, or got a couple of proposals coming up that we're developing for future funding for our future research projects. I'll spend a little time on those.

Marshall: So, each day for me is a little bit different. One of the things that I told a group of young professionals at AMS, at a leadership workshop this summer is that, although the day might look different every day, one of the things that I have done, and I've done this for many years now in my career, is that I know that certain times of the day I do certain things better. So, I don't do things randomly in the day, I actually have certain parts of the day that I align for writing, for example. I write best between about 5:30 in the morning and 8:00, so I know that's my most productive writing periods so I usually will write then. Usually between 10:00 and 12:00 is when I do most of my interactions with my students. After lunch is when I really try to think and catch up on scientific literature and just do more research oriented activities. So, I think it's important that all of us think about what we do best at certain times of the day, so be in tune with our own diurnal tendencies and optimize to those.

Jason: So, is that why you like most about your job, just that you get such a variety of things that you get to do?

Marshall: Yeah. What I really like most about my job is I don't feel like I... Hopefully my Dean or the President of University or my Department head are not really listening to this, but I think they would even agree with it themselves, but I don't really feel like I have a boss. I mean, university professors are sort of free agents. We kind of do our thing. No one's telling me what I need to do every day or checking off a box, "So, I need you to.." You kind of make your own agenda and make your own day, and it's a very flexible position that allows me to do the things that I do, whether it's AMS related with The Weather Channel, Forbes, or otherwise. As long as you're advancing the university's mission of teaching, research and scholarship, and service, you really are very flexible, and I think that's what I love. And candidly, it was somewhat that way at NASA. It was a little more

rigid and mission oriented, but I mean, I'm blessed to be able to work in this regard. I'd probably struggle in a position where I had to check the clock and just to check in and check out and account for my position and whereabouts at all times. That would probably drive me crazy at this point.

Kelly: What is the most challenging thing about your job right now?

Marshall: I think the most challenging thing about my job is, and it's not so much in my job, but it's just what I've taken on. It's just the whole misinformation around climate change and climate science and what we as scientists, who actually are experts in this area and have studied this area and publishing it, what we have to deal with in terms of the perceptions and the special interest in the agenda that we face. And frankly, criticism and attacks, at times, concerning the particular topical areas that we work in. In the social media and the Wikipedia, university, and Twitter tech degrees that are out there, the consumption of science and the Dunning-Krugerism, the Dunning-Kruger effect, where people think they know more about your field than you do. I find that an ever increasing challenge. Unfortunately, you're seeing even the highest level of... Even our leadership in this country, too, so it's a challenge.

Kelly: So, over the course of your career, and you've done so many different activities, what's the most exciting thing that's ever happened to you?

Marshall: Oh, wow. That's a tough question. I've had a lot of moments that just really check off a box for me. I think getting the Presidential Early Career Award, PECA Award, at the White House in 2004 from President Bush just ranks up there pretty high. I think, when I found out I became an AMS fellow, that was personally very fulfilling for me, as well as receiving the Landsberg Award for my work in urban climate, because those are really kind of nod to my research and my scientific career. Because a lot of people know me as someone that does a lot of media and outreach and those types of things. And yeah, I mean, people know Weather Geeks for example, they know I write for Forbes, but what I'm most always proud of is my scientific research. And so, to attain those honors, the PECA, the fellow, and the Landsberg Award from the AMS, those were rubber stamps on my scientific career, so I think those would be things. I have to say, one really cool thing, though, I received the Captain Planet Foundation's Protector of the Earth Award. If you don't know what Captain Planet-

Kelly: Oh, my goodness. That's awesome.

Marshall: Yeah. Captain Planet Foundation is a foundation that was started by Ted Turner, who owns CNN and many other things. Many people are familiar with Ted Turner, and his foundation does a lot of work. And so, several years ago I received the Protector of the Earth Award, which is a really neat award. And at the awards banquet, the other award recipient was Dr. Jane Goodall, who I'm sure most people know, as well. She received another of their awards that they give annually, as well, so it was neat to be recognized with such a high honor and also to get to share a stage with someone as legendary as Jane Goodall.

Kelly: Wow. You have a lot of things that you can be proud of, that's for sure. Those are all awesome.

Jason: Yeah. So, you kind of mentioned this before, you get to decide how you manage your own time, so would you say your job allows for a good work life balance?

Marshall: It does if you allow for it to. I see a lot of colleagues fall into this, "Oh, I have to be here until 10:00 PM," or... I have never been that person. I'm just going to be candid with you. I work hard and, like I said, I optimize the times that I work. It's weird because I'm probably one of, if not the most, productive faculty member in my department in terms of grants, money brought in each year, and the number of publications. I'm always near the top. Yet my work style is very different. I'm not in my office 20 hours a day or 80 hours a week type of thing, so I think it's very important.

Marshall: I have a 12 year old and a 15 year old. When I leave here, I try to really be at their football practices and take them to games or go to their curriculum night meetings at school. I'm right there. I mean, I don't want to be a passive part of their upbringing. I'm right there, and that's very important to me. I limit my travel for a lot of different reasons. One, because I just hate to fly, and I'm also trying to watch my carbon footprint issues, but two, because I want to be here in these formative years for my children.

Kelly: So, Marshall, you served as President of the AMS in 2013, could you tell us a little bit about that experience?

Marshall: Yes. It was a very surprising email from Keith Seitter saying that I'd been nominated by the nominating committee to run. Originally, I didn't even think I was going to do it until I talked to some mentors, and they were like, "Yeah, you have to almost do it. It would mean so much to so many people, and more importantly, we think you'd do a good job at it." So, I said, "Okay, I'll do it," because I didn't think I'd win because I'm running against a very highly respected colleague who I just thought would win. Then I won, and I was like, "Okay, well I guess this is real." It was a nice experience because it gets... I had a pretty good feel and understanding of the AMS because I had served on the council before, but to be able to come in and try to use your little one and a half to two years as President-Elect and President to help a society that you very much care about in its own way.

Marshall: One of my primary goals as AMS President was to break down the myth of what an AMS President is to the community. I wanted to be very accessible. I wanted the society to be very accessible. I think during the time I was President, I was very adamant about moving the society into the social media age and thinking about blogs and those types of things. I came in at a time when the AMS was just releasing its climate change statement, so I had to really navigate the fact that there were a small percentage of our membership that didn't like our statement or what it was saying. And so, I had to kind of deal with those issues, too. It's an executive level position, and I found that I was able to navigate it well, thanks in part to many of you all, and the support of the AMS staff was amazing during that time and also the council. And so, I think we moved the needle on a few things during my tenure.

Kelly: And how did you become involved with Weather Geeks? How did that all start?

Marshall: Well, that's an interesting question. After my term as President, I'm back in Georgia, I get an email from a colleague from Weather Channel asking for lunch. He's actually involved in AMS, too, Matt Sitkowski, so I knew him beforehand. And so, how foolish of me it would be to turn down free lunch at the Cheesecake Factory so we had lunch, and they were telling me about this idea that they just had, like a group of producers there and meteorologists at The Weather Channel, about a talk show about weather, kind of a Meet the Press Face the Nation type talk show about weather and related topics. Just where you just geek out on these topics, and so he was like, "You have a very well-known name in the field of meteorology and you know how to come across on television, so would you be interested in hosting it? You wouldn't have to be the sole host." They told me that we'd have one of our on-camera meteorologists be the managing host, if it will, kind of getting us in and out of commercials and keeping the conversation going.

Marshall: It was envisioned that I would be the expert host, is sort of there with our guests. But after about two or three episodes, apparently I masqueraded in that I knew what I was doing, and that people kind of resonated with it, and so they just made me the host flat out. And so, we had a good run. We did about four years or so of the TV show on Sunday afternoons. We got over a hundred episodes. But then, with the changing landscape of television, they loved the Weather Geeks brand, and it actually was pretty popular, but they wanted to extend it because they wanted to reach the 18 to 40 year old crowd. And they don't really watch TV anymore, so we tried to convert Weather Geeks to a podcast, which is what we're doing now. We're well into our second year of the podcast. So, between the television show and the podcast, we're sort of six years running now.

Kelly: So, what kind of topics did you usually cover? If you could just give a couple examples.

Marshall: Well, today we talked about managing risk as it relates to things like hurricanes and other natural disasters, but my guest last week was Art Smith, who's a world renowned chef, who's cooked for President Obama and Lady Gaga and has nine or 10 restaurants, I think, around the nation. We were talking about the relationship of weather and food and how weather and climate impacts his restaurant operation. So, the topics can vary. I mean, one of the beauties of the podcast is that it's a 40 minute podcast. You can find it out there on Apple Podcast or Stitcher or [weloveweather.tv](http://weloveweather.tv). The TV show was a 30 minute TV show, but by the time you took out the commercials and The Weather Channel weather on the 8s segments, we only had about 17 minutes of actual time. So, it always felt a little rushed. The podcast really allows us to take deep dives into a host of topics from weather or climate. Yeah, we had Dr. Jane Goodall on the show. We've had the EPA administrator under President Obama. We had President Obama's science advisor. We've had NFL football players on talking about weather and how it impacts the NFL games. So, just anything that we can literally geek out on about weather and climate, we'll do it.

Jason: So, are there any other professional development opportunities or certifications that you pursue that you could tell us about?

Marshall: No, my PhD is pretty much my certification. But I will say that, Keith Seitter always and like for AMS Presidents and others to get the CCM, the Certified Consulting Meteorologist degree. I never did actually because, frankly, I get calls all the time for that kind of thing anyhow, even though I don't have my CCM, because I was being a little bit casual. But the reality is, I think people when they see that you have a PhD, they assume you're an expert, so they assume that is credentialing. So, I've never really felt a need to get CCM, but if you're someone, perhaps, that wants to consult or do weather consulting or climate consulting, and maybe don't have the terminal degree, I think the CCM is a great pathway for many people. Now, if you go into the broadcast field, I think some kind of a CBM, the Certified Broadcast Meteorology, the CBM that the AMS issues, or perhaps the NWA seal is a must, actually.

Marshall: And frankly, the CBM is the gold standard, so if you're going into these... When TV stations call me about a student from my program that they want to hire, one of the first questions they ask is, can they get the CBM? And that's important because, in order to take the test to get a CBM from the AMS, you have to have gone through a program that has a certified AMS certified curriculum. And so, I warn you to be careful, if you're listening, because there are some... Well, I don't want to say that, but just to make sure the program that you're going through, at the end of the day, if your goal is to get the CBM, that program has the curriculum that will allow you to do so.

Kelly: So, Marshall, we always ask our guests one last fun question at the end of each of our podcasts, what is your all-time favorite movie?

Marshall: That's an easy one. Raiders of the Lost Ark. I mean, always has been. Although, Coming to America is a close second, with Eddie Murphy. And I hear there's a second version coming out in a year or so. But no, I've always loved Indiana Jones Raiders of the Lost Ark. As they got deeper into the franchise, some of the movies stunk, but the first one is always my favorite.

Kelly: Yeah. The first one-

Marshall: Yeah, the first one was great.

Kelly: Yeah, the first one was great.

Marshall: Yeah. That was always... I'm dating myself because there's probably some listeners, younger listeners, like, "What the heck is Raiders of the Lost Ark?" But I really loved that movie. I've watched it... But yeah, coming to America's definitely a close second. I mean, that's ...

Kelly: Oh, that one's hilarious.

Marshall: It's hilarious, and I see something different every time I watch it. Like I said, I'm one of these people that like... And I think Kelly and others have met me personally, you know, I'm a scholar and, I guess, an accomplished scientist, but outside of work, I'm a pretty

regular guy. So, I'm not going to [inaudible 00:28:48] movies that make me think too much. I just want to be entertained.

Kelly: Right. And I can't tell you how excited I am that there's going to be a Coming to America sequel. That's going to happen in a year? I got to look that up.

Marshall: Yeah, there's some media blips about it recently, and Eddie Murphy and Arsenio Hall and all of them are going to be in it.

Kelly: Oh, awesome.

Marshall: Yeah, I'm looking forward to that quite a bit, actually.

Jason: Well, great. Thanks so much for joining us, Marshall, and sharing your work experience with us.

Marshall: Oh no, no problem. I've really enjoyed it. I mean, I'm glad I could help you all out.

Jason: Well, that's our show for today. Please join us next time. Rain or shine.