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- Welcome to "Further Together," the ORAU podcast. As ever, its me, your host, Michael Holtz in the communications and marketing department at ORAU, and I have had the pleasure of speaking to a number of our NASA postdoctoral program fellows. And this episode is another one, another great interview with a gentleman named David Burtt. Dr. David Burtt, welcome to the "Further Together" podcast. I'm so glad you're here.

- Thanks, Michael. It's a pleasure to be here. Thanks for hosting.

- Absolutely. I'm so glad to have you. David, just briefly by way of introduction, tell me a little bit about who you are and kind of how you got to the NPP program.

- Absolutely. If we're talking life experience, I'm a San Francisco Bay Area kid. Started out in California, went up to Washington State for my undergraduate at Whitman College. Was really interested in geology and chemistry, and then took a little bit of time off, interned down at NASA Ames back in the Bay Area, decided that grad school was the move and pursued a PhD out on the East coast at Stony Brook University. And that was kind of where I got into more of the planetary science side of things, and then came down here to NASA Goddard where I've been ever since.

- Awesome. So in terms of your fellowship, what is the focus of your project?

- We're looking a lot at Martian geology and really trying to figure out what the climate and the conditions we're like throughout Mars' history. So yeah, so we're getting a variety of data sets back from the rovers, and I've been working on some of the data taken directly from the rovers as well as working in the lab to make samples that help us kind of contextualize that information to see if we can reproduce some of the samples and some of the data that we're getting from Mars.

- That's really cool. And I know people love NASA anyway, but people I think are, you know, so interested in the rovers and Mars, and knowing that, you know, the Artemis Project is focused on, you know, one day hopefully having a manned mission, right? So is all of this, I'm assuming, is part of laying the groundwork for that eventuality?

- Couldn't have said it better. Yeah. This is all , you know, were there habitable conditions on Mars at any point? What's the history of liquid water? What did the atmosphere look like? Because we know that if we're gonna try and end up on Mars or on other planets throughout the solar system, we have to understand how it came to its current state. We have to understand that full history.

- And kind of have an idea of what we need to do to prepare for us to be on the surface if we can get there.

- Exactly.

- Awesome. David, has science always been an interest for you? I mean, did you see yourself like as a kid, "I'm gonna work on?"

- I don't know if I knew I was gonna work on a Mars rover, but yeah, science has always been, it's always been a passion of mine. I think I kind of wound my way gradually into geology, and chemistry, and planetary science. But you know, really understanding the world around us and finding these fun intersections between these different fields has always been something that I really liked doing.

- Cool. That's awesome. I know that science is a collaborative sport. I have to imagine when you're talking about a project as large as the rovers, you're working with a lot of people.

- Oh, yeah, yeah. There are dozens of folks. More than dozens. We've got hundreds of people on the team, and that's been one of the really enjoyable things both as part of the NPP and joining the Mars Science Laboratory team with the Curiosity Rover is seeing just how collaborative of an environment it is. How people are making every opportunity to get everyone involved, to make sure people have the chance to say, "Hey, I'd like to help or here's what I can contribute." And then genuinely attributing credit where credit is due to the folks who have been helping out. You know, I just got back from the team meeting that we had in Toulouse a couple weeks ago, and it was wonderful. Everyone was so supportive. It was really cool to see that, you know, how do you manage to have 300 people work decently in sync with each other and not fight over data sets, and yeah, and do all that.

- One project together.

- Exactly. Yeah.

- I love it. And I have to imagine too that in there, and throughout your career, you've had mentors that have really helped guide you and shape where you've gotten to today.

- I mean, it is the understatement of a century to say that I would not be here without the mentors that I've had throughout my life and my career. There are too many to name.

- My gosh. No, totally understandable. On the flip side of that, have you had the opportunity to mentor younger scientists yourself?

- I have. I'm currently in. I'd love to give a shout out. There's a fantastic post. Let me get the name right. It's a post baccalaureate mentorship program here at Goddard where it's a bunch of early career scientists, postdocs, new civil servants mentoring folks who are fresh out of undergrad, but haven't really decided if they wanna go directly into their careers or to go to graduate school yet. And so I'm involved with that program. Full credit to the leadership. They've put together a great program there, and that's something I really enjoy doing is being involved with that kind of mentorship and outreach.

- Yeah. Yeah. David, where are you in your fellowship in terms first year, second year?

- Oh, that's a great question. I think as of nine days ago, I'm into my second year, which shouldn't be happening so soon.

- Right. And I'm just wondering if, you know, to get to where you are what kind of obstacles have you had to overcome in life, in education, all the things?

- Yeah, the big one that stands out to me was I didn't get into grad school the first time I applied. I should rephrase that. I got into one program. It ended up not being a good fit when I went and visited. Both sides agreed, "Maybe not for us."

- Not right.

- And that was when I decided to take a year off. And this is part of why I'm so passionate about that post baccalaureate program because the year that I had off between my undergraduate and graduate studies was fantastic. Had some wonderful mentors, great research opportunities over at NASA Ames.

- Awesome.

- And I'd be lying if I said that wasn't a difficult time, you know, facing unemployment, trying to figure out next steps. There were simultaneously too many options to choose from and no options at all, and that was daunting to face.

- And, you know, for a lot of up and coming scientists a situation like that can derail a scientific career, right? You can decide I gotta make money, so I'm gonna go over here and get a job, as opposed to, you know, do an internship or stick it out and chase the dream, so to speak.

- Absolutely.

- What would you say to up and scientists that might be following in your footsteps, David?

- I would push them as hard as I can while knowing that it's their journey, it's theirs to figure out and to navigate, but have the courage and the self-confidence to say whether or not you like what you're doing. One of the foundational experiences for me came during grad school. I was a couple years into the program. I've been doing research for a couple years and the broader isotopes and geochemistry was great. I was having a bunch of fun with that. But the particular project that I was working on really wasn't doing it for me. It was terrestrially focused, and it was interesting, but it didn't really get me up in the morning, you know. And what made that so scary was that I was coming up on my preliminary exams. This is the point where you're, you know, either you're finishing up with just a master's or you are convincing the department and your advisor, "Yeah, fund me for three or four more years, I'm worth it." And you have to give a proposal to say this what I'm gonna do for the remainder of the program. And I was having such a difficult time talking myself into I wanna keep doing what I'm doing. And finally I pulled my advisor aside. And I wanna emphasize this was not on him. He was so supportive, and you'll see it in a second. But I pulled Greg aside, and I was like, "Hey, this ain't doing it for me. Can we shift gears somehow?" And he was so supportive, and he said, "Yes, let's kick around some ideas. Let's talk about what kind of pivot we can make because you're pretty far into the program already. You don't wanna to ditch all the stuff that you've done up until this point, but how can we repurpose that? How can we get you going in a better direction?" And I ended up switching things over to where I was studying meteorite impacts. And that got me out of bed. That was fabulous. You know, to me, that felt like such fulfilling work because it felt more like I was asking meaningful questions and I'd answer them. And so very long answer to your question, but I would say to the folks out there, all of your undergraduate, your graduate, any internships, any post baccalaureate opportunities, all of those are your chances to learn and try things out. Nothing is set in stone at that point. You can always pivot. And having the faith in yourself and your own abilities to say, "Eh, I've put a lot of time and effort into this, but I need to switch." Do it.

- And it's too like having someone on your team, basically on your side, to say, "I can see this isn't working," right?

- Yes. Having that advocate was huge. Full credit to my advisor on that for saying, "Yeah, yeah, maybe we should get you on a different path."

- What is it about science and STEM fields that you find most empowering?

- Oh, a good one. I think it's asking the interesting questions. It's being out at a bar with your friends couple of drinks deep, and they ask you a really out of left field question, and you have the tools and the abilities to actually make an educated guess at bare minimum. Or even say, "Whoa, that's an interesting idea. I don't know the answer right now, but maybe let's see how we could figure that out." And working your way through that question, how you might answer it because I think those are the kinds of questions that really spark people's imaginations and get them excited. That's why I like being involved with this stuff. Seeing other people's passion about it too, right?

- Yeah, absolutely. So you're working on Martian geology. Do you hope, do you see yourself, maybe one day going up there seeing it for yourself?

- This is the question that everyone fires my way.

- I'm sure. I'm sure.

- And my partner gives me death glares every time. And my answer every time is, yes, I would go only if it was, you know, the plan was to go there and die there basically. I think I have too many folks here who mean the world to me and too many experiences that I still wanna go through first before I take that leap.

- Do that on this planet before go to another one, right?

- Exactly, yeah.

- I love it. David, last question for you. What brings you joy?

- What brings me joy? It's something simple, but I think there's a level of profoundness to it, is connections. Drawing connections between people, drawing connections between concepts. I don't know if there is, I mean, I'm sure there are, but there are few more joyful experiences than meeting someone new and , you know, having that connection right off the bat. Being in a classroom and seeing a student who's been just struggling to get their head around this concept and it clicks. Finally, they're like, "Oh, I get it now."

- And you see that.

- That is so satisfying. It's so joyful. You know, we've got the holidays coming up. Seeing that connection with people's friends and their families. To not ramble on for ages, that's what brings me joy.

- That's great. Well, you know, you sort of alluded to that in your answer about gonna Mars, you know, with your partner, and your family, and friends, like, obviously.

- Yeah, there's a lot of joy there, and I'm not quite willing to give up just yet.

- I totally get that. Totally get that. Alright, well, David, that really is my last question. So thank you so much for spending this time with me and letting me get a little bit of insight into the work that you're doing. And I hope our path cross again, and we can dig a little further into the work that you're doing and what you've learned about Martian geology and all of that. I'd love that.

- Absolutely. You tell me when and where. This has been a pleasure.

- Awesome. Thank you so much, David. I appreciate it.

- Thanks, Michael.

- [Narrator] Thank you for listening to "Further Together" the ORAU podcast. To learn more about any of the topics discussed by our experts, visit www.orau.org. You can also find us on Facebook, Twitter, and LinkedIn @ORAU, and on Instagram @ORAUTOGETHER. If you like "Further Together," the ORAU podcast, we would appreciate you giving us a review on your favorite podcast platform. Your reviews will help more people find the podcast.