Sanchita Pal:

So currently, as we know that we are in a peak of solar cycle, so we are seeing so many solar storms are coming every month, I will say. So therefore, it is more motivating for me currently to do my research so I can see directly the impact of my research.

Speaker 2:

You're listening to Further Together, the ORAU podcast. Join Michael Holtz and his guests for conversations about all things ORAU. They'll talk about ORAU's storied history, our impact on an ever-changing world, our innovative, scientific and technical solutions for our customers and our commitment to the communities where we do business. Welcome to Further Together, the ORAU podcast.

Michael Holtz:

Welcome to Further Together, the ORAU podcast. As ever, it is me, your host, Michael Holtz from the Communications and Marketing Department at ORAU. And one of our, I guess, signature keystone programs that we manage for NASA is the NASA Postdoctoral Fellowship program. And I have the pleasure today of talking to one of the NASA postdoc fellows. Her name is Sanchita Pal. And Sanchita, welcome to Further Together. I'm so glad you're here.

Sanchita Pal:

Thank you. Thank you. Thank you, Michael. I'm very happy to be here. So this is my first interview in this platform, I'll say.

Michael Holtz:

Oh, nice. Your first podcast. All right.

Sanchita Pal:

First podcast I think in my life.

Michael Holtz:

We're breaking new ground here. I love it. Yeah, I love it. So Sanchita, if you would, tell me a little bit about who you are, where you live, where you are in your fellowship, just kind of the basics of who is Sanchita Pal?

Sanchita Pal:

Yeah, sure. So I am Sanchita Pal. Yes. And I came from India. So I'm a Indian citizen and currently I'm with the J-I Visa here in [inaudible 00:02:15]. And then I started here from 2022, May. So that time I was not an NPT fellow here. I joined as a contractor in NASA Goddard with the Solar Orbiter Satellite Project. And then I wrote a proposal and then it went through. And finally, I'm [inaudible 00:02:40] as a postdoc program fellow, and I'm in the second year. So it started on September, my second year started in September.

Michael Holtz:

Okay.

Sanchita Pal:

And so my work is mainly, if I briefly say about my work, so that is mainly to predict and to analyze the solar eruptions which are affecting our planet. So mainly the Earth. So we do it using models, using AI and observations techniques and that's all. Briefly, from my research, what I do in my research.

I did my PhD in India, in Central Institute, and then my PhD was mostly on how this, as I said that my research field, the solar storm, so how does the solar storm behave, how they origin from the sun. These are all things I did during my PhD. And after finishing PhD, I went first to University of Helsinki, Finland. So there I did two years of postdoc, my first postdoc, and I had a very good experience there, the weather and the new culture, everything. I really... Yeah. And then I finished that, and also before finishing that I got this opportunity in Goddard and I did not want to miss the opportunity and I came back here.

Michael Holtz:

Awesome. So you've been at Goddard as a fellow since September, am I understanding that correctly?

Sanchita Pal:

Yeah, yeah. As an MPP fellow, I am here from 2023 September.

Michael Holtz:

Okay, last September. Okay.

Sanchita Pal:

Last, yeah, it's my second year. Yes.

Michael Holtz:

It's your second year. Okay, awesome. And you do research into solar storms. Does your research include the impact on Earth? I know we often hear in the news there's a solar flare, there's a solar storm and how it could impact cellular communication and those sorts of things.

Sanchita Pal:

Exactly, exactly. So my research exactly includes those all things. And mainly I work on the solar coronal mass ejection, so they are not solar flares. So there are second type of solar storms which are more massive and which are more important to understand, because they are more impactful to the planets than the solar flare I'll say. So they're the major driver of space weather. And so currently as we know that we are in a peak of solar cycle, so we are seeing so many solar storms are coming every month, I'll say. So therefore it is more motivating for me currently to do my research so I can see directly the impact of my research.

Michael Holtz:

Right. Sanchita, what are some of the impacts that we might see, if any, of solar storm that's happening?

Sanchita Pal:

So there are several different. So first is it has planetary impact, like our Earth, it has a magnetosphere we know, so that actually protect us from these kind of heavy impact of these solar storms. And there are other planets like Mars and Venus, which do not have magnetosphere, and they are very much affected by this kind of storm because they can lose their atmospheric mass, which is a huge field of study right now, as we are planning to go to Mars, right? Human exploration is going to start in Mars. So it's the NASA's mission, Artemis mission, which is coming in future.

My research, I will say, that will be very helpful to also these kind of missions because these solar eruptions, which are having high energetic particles and radiation [inaudible 00:06:56] so they can heavily impact the space-based system. Like the human in space, in ISS. And then other spacecraft, communication spacecraft, navigation spacecraft like systems. So they are highly impacted by these kind of eruptions. So I don't study that, how do they impact, but I study mostly on what properties of them are responsible for this impact and whether we predict them-

Michael Holtz:

I gotcha.

Sanchita Pal:

Yeah, whether we can predict them or whether we can automatically detect them, these kind of things.

Michael Holtz:

Okay, that makes sense. I have to ask you, because you were born in India, you did a postdoc in Finland, now you're doing a postdoc in the United States. The cultural shift I'm sure has been really interesting, right?

Sanchita Pal:

Yeah, it is excellent. So in India, it's a huge country and with huge population. So the life was different, the research was different. I'll say that it was more competitive because there were many people like me and who were in the same field. It must be because, there are many population, as I said. India is a very good place for doing study research. It's a good country for doing all these things. And then once I did a PhD there, and then I got a chance in Helsinki.

So Helsinki is completely different kind of place where the population is so small, it's a cold country and it's really, the cultural shock I got, really, it's a big shock. Because even they themselves tell that they are cold from inside. I mean, yeah, that most [inaudible 00:08:46] is cold. Even the people are very cold. They don't talk much because for the language barrier, I will say, the language is completely different.

But of the research field is a good field where you will not see much of these things. People will talk to you and you'll mingle with the people very nicely. So that was good for me to be in a university. And then I really liked that. I really like that. But I'll say that that time it was a COVID time and as already Helsinki is very cold place and very few people are there, but the COVID time really, it was more, less people. The whole day. I could not see a single person.

Michael Holtz:

Sure.

Sanchita Pal:

Yeah. It was not a good feeling. And I like to talk, I like to be social. That was the time I got it-

Michael Holtz:

So you already have asocial people.

Sanchita Pal:

Right.

Michael Holtz:

And then you've got the pandemic on top of that. So you could go days without interacting with another human being.

Sanchita Pal:

Right, right. And then that was the time when I got chance here. So then I took up, I'll say, okay, I need people and also I need to change a bit my research place, I'll say.

Michael Holtz:

Right.

Sanchita Pal:

And it helped.

Michael Holtz:

And of course it's NASA, right?

Sanchita Pal:

Of course. Yeah. It's a great opportunity. Yeah.

Michael Holtz:

Have you always been interested in science, Sanchita?

Sanchita Pal:

So yeah, science, I will say yes, but not in space science. Because see, I was in a school, which I'll say, which was not that great school. Which was not that great school because I was from a small city. So small town schools, you know how they happened, right? I mean, they were great for me that time, but now I will say that there are many, many best schools out there. But I'll say that that school really, I will say, motivated me to come in this place because we had a very good geography teacher that time. So that geography teacher, so the sun, [inaudible 00:11:09] and how they behave, these kind of things, they showed me with the different kind of books. And also I have not seen ever the sun and any planets with the telescope that time.

As I said, I was from a small town, these things were not that much [inaudible 00:11:30]. And then when I came to my study, higher study I'll say, so that time I did a project on this field and this project actually helped me, motivated me coming to this situation where I am currently. The project was mainly on how sun influence our GPS system. The system which we use every day, how the GPS system is influenced by the solar impact. So that project was, I'll say that project, I could not end the project because that was a huge project and I was not that much educated on this field like I am currently.

Michael Holtz:

Right, right.

Sanchita Pal:

Because when I think about the project, what I did, I'll say that no, that was a very preliminary work I did, but that motivated me really. That motivated me to come here and that was the click time, I'll say [inaudible 00:12:28].

Michael Holtz:

Okay. The light bulb kind of went off and said, "This is what I want to do." I love it. So this is your second year of the NASA fellowship. Talk about how the fellowship has impacted your life. I mean, I know change of country, change of culture. What has the impact then on I guess your ability to do the work that you've wanted to do and where do you see yourself headed?

Sanchita Pal:

So I'll keep it in this way that, okay, so my MPP supervisor is very good person, so I get a lot of freedom to do work here. So the proposal which I wrote for my MPP, that proposal, obviously that proposal, the aim of the proposal, the research aim that I follow, but the way of fulfilling the work, I get a lot of freedom in doing that. That I really like. And also this proposal, MPP gives me opportunity to collaborate with other people, other group. That I really like.

Recently I went to India, I came back in last week. So there we had a very good collaboration with an institute and that really helped me. It's helping me, I'll say my work. So that everywhere, so we have collaboration with even school teachers. Sorry, college teachers, not school. So he's a very good computer scientist. So I am not from a computer background, but I'm using AI, artificial intelligence in my work. So therefore I need some expertise from that field, the computer science field. So even we do collaboration with college professors also, so that I really like. Yeah, it's a versatile field, I feel like that.

Michael Holtz:

Yeah. For sure.

Sanchita Pal:

Yeah. Also, along with this, my supervisor, sometimes we take the interns and we learn from them also, and I love to teach them on my field. And the intern, they also help our work. That's a good thing here. So I'll say in a single briefly, I'll say that this gives me a lot of opportunity and freedom to work on my interesting field. So this is a rare thing to get. What you like, you are doing that and you are paid for that.

Michael Holtz:

Right? Which is amazing. You get to get paid for what you like to do. And it sounds like you've talked about collaborating with others and even mentoring other interns. And so there's a lot of that sort of cross work, cross collaboration going on. And ultimately, as you said at the beginning, your research is helping get an understanding of the Artemis project and helping build the groundwork for missions to Mars. And that has to be exciting.

Sanchita Pal:

Yeah, of course. So recently in that context, I would like to say that very recently, we did a work and it got published in a very prestigious journal, astrophysical journal. So there we showed that how we can use artificial intelligence to automatically detect this kind of solar storm before they reach at any planet. So it's like you can take that, I'll say that technique and that technique you can even implant in the satellites. And those can automatically detect whether the solar storm is impacting on our planet or on any other planet like Mars or anything else or not.

So that's a very good thing I'll say now because we are now very much into monitoring the space weather, right? Because we are currently more on space-based systems. So there are many satellites now going every day, even small communication satellites also. So these, my model which developed here recently. So that will be very helpful for these kind of things because no human intervention will be needed. It will just automatically update us that yes, there is a solar storm and you have to be careful about that, it's coming in [inaudible 00:17:13]. Yeah, it's kind of that.

Michael Holtz:

It's sort of like meteorology for space.

Sanchita Pal:

Kind of. Yes.

Michael Holtz:

Ish, right?

Sanchita Pal:

So that kind of direct application of work... So I'm from an engineering background, so I did my [inaudible 00:17:32] and then after that I came to [inaudible 00:17:37]. So I'll say that I was more interested in application oriented. So this project is helping me to get [inaudible 00:17:48].

Michael Holtz:

That's amazing. I love it. What advice would you give to an up-and-coming scientist who might be following in your footsteps?

Sanchita Pal:

Well, there are many, I will say, but name it. First is I will say that what I feel, that networking was a very good thing. I mean, in my case I will say, so you have to take the opportunity, whatever is coming to you, and you have to network with the full collaborators, with the scientists which are in higher, they are more knowledgeable person. So if you get the chance to network, of course you do. Because currently, we cannot do all these things, a single person cannot do all this thing together. And more we collaborate and then more we expand and then ultimately it will be good for the humanity, I'll say.

Yeah, maybe it will happen that someone can say that, "Oh, you don't know this," but they should know that the other thing I know very better. So that's how someone will do the best in some field. I will do some best in my field and then if we collaborate and we network, the complete scenario will give the best result. So that's the thing, that networking is a very good thing which we have to achieve. And of course, so study and then pursue your interest. These are of course everyone like to do. So those are not the kind of special thing I will say to [inaudible 00:19:27].

Yeah. And also another message is just accept what is coming to you. I mean, the opportunity, don't miss the opportunity. That I really realized from my side that, that time, if I did not come from Helsinki to here, if I missed the opportunity to come in Goddard, I don't think that I would have been in this place where I am right now.

Michael Holtz:

Sure, sure. So be open to new things, so to speak, and new opportunities. I love it.

Sanchita Pal:

Yeah.

Michael Holtz:

So you're in your second year of the fellowship. Why would you recommend a fellowship to others?

Sanchita Pal:

Well, first of all, this is also true that the fellowship, like the first point I should, this is a very practical point, that the fellowship amount, which is the fellowship money I'll say, so that is a very good amount to survive in US, I will say. So that's one of the best fellowship in US. So I really appreciate this thing, that I'll say this gives us opportunity to do research as well as to fulfill what we want in our side-by-side research.

An example, I'll say I love to play music, musical instruments. So along with the research, so I recently bought a very good, my keyboard I'll say. And of course I bought by my money and it is a bit expensive and I really like that. And the good fellowship really helped me in pursuing my hobby.

Michael Holtz:

I love it though. Right, right. So fellowship opportunity helped you fund a hobby, right? I love that.

Sanchita Pal:

Exactly. Exactly.

Michael Holtz:

Plus music and science go so closely together, right? So you can justify, right?

Sanchita Pal:

Exactly. Yeah, yeah, yeah. And as I said already that you are getting paid for what you want to do [inaudible 00:21:52] thing that no one, very few people can get that. So that's another thing.

Michael Holtz:

Right. Exactly.

Sanchita Pal:

That's right.

Michael Holtz:

Last question for you, Sanchita. What brings you joy?

Sanchita Pal:

What brings me joy?

Michael Holtz:

Joy?

Sanchita Pal:

Okay. So I like to do outdoor activities as well as, as I said that playing musical instruments and singing, these all things bring me a lot of joy when I get very... Research is sometimes frustrating, when we do not get result, when we fail to get result. So that time we really don't keep our mind calm. And that is a very hard time and my hobby and this kind of outdoor activities that help me a lot, so this brings me joy. Of course when I meet my home people after a long time when I visit India, that also brings a lot of joy to me.

Michael Holtz:

Awesome.

Sanchita Pal:

Yeah, so last week I came back from India, as I said. It was my work trip as well as seven days I was with my home, my close ones. So after I come back from there, I am fully energized now. So I'll [inaudible 00:23:11]-

Michael Holtz:

I love it. Little work, a little rest and relaxation, a little connection with the family.

Sanchita Pal:

And also this MPP gives me these all things together and that's a really great thing. Yeah.

Michael Holtz:

It sounds like a great opportunity and great things are happening for you. I really am grateful for the opportunity to talk to you about your fellowship.

Sanchita Pal:

Thank you. Thank you. I'm also grateful to be here.

Michael Holtz:

Awesome. Thank you. Paul. Sanchita Pal, thank you so much for joining me. I appreciate it.

Speaker 2:

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