

KCTS Pledge Night Break 5_ Transcription

00:00 **Host:** Dr. Gary Lagerloef is the lead scientist and the principal investigator for the satellite Aquarius which is above us right now doing its thing. I understand we're kind of getting to the end of a cycle for a number of satellites, and we got to figure out what we're going to do to continue this investigation. What's going on?

00:29 **Dr. Lagerloef:** Well, a number of things. Yes. You're right. Of those satellites that we talked about earlier in NASA's stable of earth remote sensing, only three of them have been launched within the last two years. The others are aging. There are a number of new missions that are coming online. The National Academy of Science actually wrote a report that gave NASA recommendations about what the next 10 years should be for earth remote sensing. We call it the decadal survey. NASA is in the process of implementing that. So what we have to be launched in the next two years is a mission called the Orbiting Carbon Observatory. That's going to measure carbon dioxide in the atmosphere, a big greenhouse gas that President Obama was talking about yesterday. It'll show the sources and sinks of carbon emissions. We'll monitor the growth of carbon dioxide in the atmosphere. It's going to be a very important climate research mission. Following that we have the soil moisture mapping mission. There's another NASA mission which is going to do kind of an analog of what Aquarius does over the ocean by measuring salinity, which is sort of the fresh water content of the ocean. This SNAP mission is going to measure the fresh water in the soil and land. That's going to be useful for agriculture, for monitoring floods, and a whole number of practical applications and scientific research. So we got some new things coming. Following that there will be a follow on mission for GRACE. That's the gravity recovery experiment. That monitors changes in the gravitational field that represent changes in the reservoirs of fresh water. We can watch changing ice mass in Greenland and Antarctica with that mission, and a lot of other things. Lots of new things in store. I bet that NOVA in two or three years can make a whole new program like this one on the latest observations of earth from space.

02:10 **Host:** Was there any surprises with Aquarius, your satellite that you worked on? You designed it. You said it's performing perfectly. Was there anything about it that surprised you?

02:22 **Dr. Lagerloef:** Well, that's the best part of doing something like this. It's the surprises. Now that we have collected almost two years of data, and we could play this in an animation—if you go to our web site aquarius.nasa.gov you'll see one of the animations there and you can look at it—it's the fact that the salinity is really variable, you can see it jump around with the seasons, and you can see rivers coming and going—the Amazon outflow is really conspicuous in that. I'm finding this to really be fascinating. It's opening up all kinds of new areas of research to really understand what's happening in the ocean with this dataset. It's fascinating.

02:59 **Host:** Are you going to sign on to another satellite mission at some point, or is one enough?

03:05 **Dr. Lagerloef:** Early in my career I worked on TOPEX for a while, but this salinity measurement has really been my passion for the last 20 years or so, most intensely in the last 10 years

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since we started this project. This is kind of my career swan song. I'm going to stay working on this data as long as the mission continues to collect data. I'll gradually phase out and go into retirement in a few years, but there's still a lot of really interesting work to do. I don't think I'm going to start with a new satellite mission right now.

03:39 **Host:** For a young person who is interested in science, is interested in environmental sciences, interested in this kind of technology, to finish up the work that you've been doing, how do they get involved? Where should they point themselves?

04:53 **Dr. Lagerloef:** Well, it depends on where they are. If they are a graduate student or want to go to graduate school, find one of the universities that are engaged in satellite remote sensing. There are several. The University of Washington is one. There are early career opportunities and postdoc fellowships and so forth. We have about 30 or so research grants that are basically for the ocean salinity science team that NASA funds at various universities. There are opportunities for graduate fellowships and so forth. If you really have a passion for the science, find people that are working in it. Get to know them, get involved. You'll find a way.

04:31 **Host:** Talking to you I can just tell you're excited about what you are discovering. You're excited about what you've done. I can tell it's really rewarding.

04:40 **Dr. Lagerloef:** It is. It's fun. I really like being engaged at the frontier of something. This is really a frontier kind of enterprise.