

KCTS Pledge Night Break 1_ Transcription

00:00 **Host:** With me tonight is Dr. Gary Lagerloef. He originally hails from the University of Washington. You are a scientist that is involved in satellite technology. You are a principal investigator in a satellite program right now.

00:23 **Dr. Lagerloef:** Yes, that's right. I'm the principal investigator for the NASA Aquarius mission. Aquarius is a satellite that was just launched two years ago this month. It's designed to measure ocean salinity from space. Most people don't realize salinity is an important climate variable. It turns out it is very important. It requires some new technology to be developed to do this mission. This is really a pioneering mission. This is the first time we've had this capability to make these kinds of measurements in space.

00:53 **Host:** And we're going to find out all about Aquarius a little later in our program, cause it really ties in to the rest of the program. Where are we with satellites now? How many satellites are in orbit that measure climate change?

01:08 **Dr. Lagerloef:** Well, I can talk about the NASA satellites. NASA now has about 16 satellites that are currently functioning in orbit. One of them is Aquarius which is one of the newest ones in the fleet. Only three of these satellites have been launched within the last couple of years. Most of them are beyond their design lifetime. All of these satellites are either directly built by NASA or with a partnership with some other space agency to provide these observations. Some of these satellites are going to be going offline soon. There are new observations that are under way that are going to be launched within the next couple of years. But this is what NASA has in space right now. You are seeing a lot of this information on this program.

01:46 **Host:** When you first watched this program, what did you think about the science of it? I know this program is partially about satellites, but it is really about measuring climate change, and getting these measurements about earth. What did you think when you first saw this program?

02:01 **Dr. Lagerloef:** I thought it was fascinating. This is an extremely well done program. It covers a whole palate of earth sciences—a lot of different things. My field is oceanography. There's a lot of really good information about oceanography. It covers land science, and atmospheric science, and lightning, and a lot of other interesting things. There are a lot of features in this program that are really worthwhile.

02:25 **Host:** Well we're going to talk to Dr. Lagerloef a lot tonight. We're going to find out some fascinating things about satellites and sciences. But now it's time for you to go to the phone. You make these programs possible; it's because of you contributions. Now. If you don't think that public television changes lives, you need to watch this next clip. In the meantime write that phone number down, or log onto KCTS9.org. I think it's just fantastic that you hail from the University of Washington, and that you got your degree there, and that you are here in our own backyard, and that you are so involved in satellites. So this is a very important day in satellite history, is it not?

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03:08 **Dr. Lagerloef:** Yes it is. It turns out that 35 years ago today on June 26th, 1978 NASA launched the Seasat satellite. This was an important milestone in earth observations. It's the first time we really turned our attention from weather satellites which are the very first pioneering satellites that NASA developed to looking at the ocean. Seasat pioneered four different instruments which turns out to be legacy instruments for future generations of satellites, and future generations of instruments that have flown on a whole variety of satellites, a lot of which you are seeing in this program tonight too.

03:44 **Host:** So in 35 years, if you can, where have we gone from 1978 to now in terms of technology or the way we use research satellites?

03:55 **Dr. Lagerloef:** Wow. That's a big question.

03:57 **Host:** I know it is, but that's my job.

04:00 **Dr. Lagerloef:** There are so many really new and interesting missions and observations that are available to us today. From Seasat to today I think the descendants of the four instruments we pioneered on Seasat are in orbit today in various shapes and forms. The technology has improved probably tenfold, sometimes hundredfold in terms of the accuracy of the measurements. So we can get much more detail, better spatial resolution, better temporal resolution. We can really understand a lot of these physical processes that we're seeing in this program tonight, much better now than we could 35 years ago.

04:36 **Host:** I am going to ask you another big question. Do you think that we would have missed the early signs of global warming had we not had satellites? I understand that sort of the core measurement is temperature change. What has satellite research done to . . . ?

04:57 **Dr. Lagerloef:** Satellites are really making an enormous contribution to studying climate change because we can see the whole globe. We can see things changing and how they relate from one region to another. We have observations on orbit now for example the GRACE mission which is measuring shifts in the mass of water around the planet. We can see the melting of the ice in Greenland from this kind of observation. This is not possible from ordinary ground observations.