

Polar Science Weekend 2017

Engaging Young Learners with Cool Science

- Ben Smith:** I've been doing Polar Science Weekend for twelve or thirteen years. I don't know exactly when it started but I was there for the first one.
- Narrator:** Polar Science Weekend at the Pacific Science Center is where scientists of today interact with potential scientists of the future.
- Wendy Ermold:** I've been doing Polar Science Weekend since its inception twelve years ago.
- Narrator:** APL's Wendy Ermold tracks the movement of water in the arctic by measuring salinity. Ben Smith examines the slow motion of massive glaciers. And Maddie Smith concentrates on less ice/more open water in the arctic and what that could mean. With displays based on their experience in the field the APL-UW researchers seek to engage young imaginations. Wendy Ermold offers a "Salinity Taste Test."
- WE:** A lot of kids know the ocean is salty, but they don't realize the differences around the world. Salinity concentration affects the density of water which can affect how the water flows. To make the 1% concentration, about as salty as your blood, I want one part salt per ninety-nine parts water. They get usually pretty excited when I say that the 1% bottle that they tasted, that's how salty your blood is. They're like, "Whoa, no way!"
- Narrator:** Wendy points out how salinity is a key indicator of how much sea water will be flushed from the arctic from year to year.
- WE:** It turns out when you get down to really low temperature, density is mostly controlled by salinity, so in the Arctic Ocean it's almost 100% driven by salinity.
- MS:** In our demo at the Pacific Science Center for Polar Science Weekend, we're trying to illustrate how waves move through ice and why that's different than how they move in open water. Often when I ask people what they think about in the arctic, they talk about ice and polar bears and things like that. I think people forget to think of it as an ocean where there actually are waves.
- Narrator:** Maddie Smith's demonstration illustrates the changes she's observed in the growing ice-free waters of the Arctic Ocean.
- MS:** The Sea State Project when we were up there we ended up in a really big wave event. We had 5 m waves which is like 15 feet, so that's pretty massive! Especially for the Arctic Ocean I think that's a pretty exceptional wave to see up there.
- BS:** With my research, we're interested in how the glaciers are flowing and how those speeds are changing.
- Narrator:** For Ben Smith the challenge is how to dramatize the slow steady progress of a glacier.

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BS: The glacier will change over time. So, we have a board and at the bottom of the board there's kind of a v-shaped piece of wood that is like a valley that the glacier flows into. If someone sees it early in the day it's just a blob high on the mountain (we call the 'board' the 'mountain'). If they come back later on then all the putty has flowed into the valley and is starting to ooze out onto the table below. There are often teachers and parents involved too, so they'll ask the leading question about what's happening to the glaciers. Then that's a great time to talk about how global warming ties in with what the glaciers are doing. They've receded by quite a bit.

Narrator: Ben Smith is helping NASA design measurements to be made by ICESat-2, scheduled for launch in 2018. This new satellite will track the height of the world's glaciers, a process simulated in this NASA simulation of how ICESat-2 works—this time measuring the heights of people attending Polar Science Weekend. Stirring the imaginations of the polar scientists of today and the potential polar scientists of tomorrow.

This is APL **The Applied Physics Laboratory at the University of Washington in Seattle.**