The Evolution of Open Ocean Exploration Transcription

I am speaking and Annette is driving the talk here from her desktop. So I will ask Annette to launch right into The Evolution of Open Ocean Exploration. As a seagoing scientist, our heritage in oceanography comes from about 150 years ago with seagoing studies. The Challenger expedition was sent out to try and understand what they could of the ocean circulation. What was on the bottom? How deep it was?

A very basic navigation of oceanography, and one of the things that they were able to do is study the variations of temperature of the ocean, and salinity of the ocean; these are the two properties that really define the ocean circulation for us. The ocean is salty, and the salinity varies from one place to another. The temperature varies from one place to another. Both of those properties along with depth determine the density of water, and those variations of density leads to the ocean circulation.

Well, next if we advance forward to the present day we have other kinds of ways of observing the planet besides going to sea for a couple of years and taking a few bottles of water. We have the International Space Station for example, that circles the planet about every 90 minutes. The astronauts are able to look out and take pictures of the planet. Also there are sensors on the space station for sensing various aspects of the ocean.

Recently in 2011 we launched the SAC-D satellite from Argentina with the Aquarius sensor on it. This sensor shown here on the left part of the satellite is a microwave sensing instrument to measure the salinity of the ocean. It seems, even to me, incredible that we can measure salinity from space, and it's quite a technical challenge. We've known how to do it theoretically for decades, but never had the technology to really do it from orbit. So I'm going to be happy to talk to you in more detail tonight about Aquarius, and how we measure salinity from space.