

Comparing Ships to Satellites Transcription

One of the areas that's kind of exciting and interesting to think about as an oceanographer is the comparison between the early seagoing with the Challenger expedition which was really the length of this football field or a little less same sort of size than the Knorr. We've been going to sea for a 100 years in 300 ft. research vessels. Well, the new research vessel on orbit is carrying astronauts is the International Space Station. All astronauts train in earth observing before they go to orbit. When they are up there they can look out the window and identify where they are, use the cameras to identify interesting features, look for volcanoes going off or interesting ocean circulation features that they can see. For example the coral reefs can be seen from space. You can use images like this with different colors to make estimates of the different depths of water.

You can see hurricanes from space quite clearly. We now watch these grand disasters unrolling right in front of us from the space station or from a satellite. We not only get the view from the astronauts, but also from the sensors like the wind measurements on QuickScat. Here's Hurricane Isabel. These are real quantitative measurements of not only the ocean, but the atmosphere that we can incorporate in models and do simulations.

The separation between measuring from satellites and measuring from the space station is now about zero. We're actually taking what we were measuring on satellites and installing similar measurements on the space station. So not only will astronauts be able to take photos of hurricanes and talk about them, but they'll be sending back detailed measurements of winds, and temperatures, and other types of measurements as time goes on. We've taken oceanography from ships and sensors on ships, now to space and sensors on our spacecraft.

This leads me into trying to give you a view of the Aquarius/SAC-D observatory. What does one of our earth observing satellites look like? A typical earth observing satellite has a number of instruments on. Maybe a couple of them are the star attraction. For the Aquarius/SAC-D satellite, the bottom part of this shows the SAC-D observatory, it's the scientific application satellite for Argentina with sensors on it for measuring fires over the Pampas, the MWR, the microwave sensor for measuring temperature in the coastal waters. But the star attraction for us was the Aquarius instrument which we put on and launched this satellite for the Argentinians. You'll get a picture of the size of it in a few minutes. Just this antenna which is an Aquarius reflector is 2 m. across. It seems more like a small bus than a car size thing. You can [?] radiometer [?] on Aquarius. Aquarius is a microwave radiometer, but it is actually 3 radiometers that cut out a swath across the earth as it moves along.