vision takes form

regional cabled observatory infrastructure installation a success

Narrator: Live from the bottom of the Pacific Ocean 300 miles off the Oregon Coast: High definition video brought to you by APL-UW scientists and engineers.

Russ Light: The camera is at about 1800 m — about one mile below the ocean in an abolutely perfect position over a hydrothermal vent. This is the first time a high-definition camera has been placed on the ocean floor that is capable of delivering the video signal in an uncompressed format. And to go from the standard video output, which is known as HD SDI, out of the camera and then get that into a format that can be transported over this Internet-style 10 GB per second fiber optic network was a major challenge and that kind of hardware didn't exist.

We basically have a full-up camera system that we can manipulate with various parameters. Pretty much anything you can do with a hand-held camera, we can do from the seafloor.

Narrator: HD video is just the beginning of a new undersea network of eyes and ears. APL and the UW School of Oceanography are spearheading a $239 million National Science Foundation project to wire a big chunk of the seafloor off Oregon and Washington with broadband Internet and high voltage power. By 2015, the goal is to provide live, real-time 24/7 data flows from the deep seafloor.

A wide array of instruments will constantly monitor currents, temperatures, salinity, life forms, and volcanic activity. A crucial first step in creating the REGIONAL SCALE NODES network: lay miles of fiber optic cables that form the backbone of this network.

Dana Manalang: We had about 23 kilometers of extension cables that we had to put on the seafloor. And we were using ROCLS — a remote cable-laying system that attaches to the ROPOS ROV. So that was new for most of us on the cruise. ROPOS had done it. So they gave us a lot of guidance. We had some really interesting terrain on the seafloor to deal with. All kinds of lava flows and some big collapsed areas. And so figuring out how to lay the cable in a way that we would start it and end each cable in a location that we needed to make our measurements was a challenge.

James Tilley: I was responsible for designing most of the electronics in the junction boxes that we put down that interfaced with the instruments.

Narrator: In short order, a newly installed seismometer detected an event.

Tilley: I think within about 15 minutes or half an hour of turning on the seismometers, we actually saw our first earthquake. And that was quite the experience to be involved with and to see that.

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Manalang: The installation of the instruments is painstaking because these are seismic instruments that have to be leveled into place. And to turn it on and have all systems work flawlessly and to get that data was pretty exhilirating. The sea really is a very active location and to see the science come alive right in front of us was pretty impressive.

Narrator: Ready to go back to sea to continue work in 2014?

Manalang: We've got a lot of work before we go back next summer. But sure. Absolutely.

Tilley: Looking forward to it.

this is apl — the applied physics laboratory at the university of washington in seattle