

Scientists to Use HDTV for a High-Definition Look at Surreal Sea Floor

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Ocean scientists are planning for the first time to use a high-definition (HD) television camera for live views of an area of the sea floor that has been twisted by earthquakes and volcanic eruptions and is dotted with eerie spires and chimneys venting water as hot as 700 degrees Fahrenheit.

On Sept. 28 and 29, the team will broadcast images from the Endeavour Segment of the Juan de Fuca Ridge on the sea floor 200 miles off the coast of Washington state and British Columbia. The transmissions are the first from the sea floor anywhere in the world to be broadcast live in HD video, which gives seven to 10 times the clarity of standard definition.

Called VISIONS '05, for Visually Integrated Science for Interactive Ocean Networked Systems, the expedition is studying how tectonic-plate interaction can support exotic and ancient microbial life forms deep within the sea floor. Instruments, cameras and robots are being used to study the unusual microorganisms that flourish there.

The expedition is funded by the W.M. Keck Foundation, the National Science Foundation (NSF) and UW, and is using the research vessel Thomas G. Thompson and two remotely operated submersibles from the Woods Hole Oceanographic Institution.

Plans call for real-time, HD video from the sea floor to be transmitted from the remotely operated vehicle, Jason II, back to the Thompson

through a 6-mile-long electro-optical tether. Weather permitting, an onboard engineering-production crew from the ResearchChannel will produce a high-definition program on Sept. 28 and 29, 2005, using shipboard and live, sub-sea HD imagery. Scientists from the ship and in a Seattle studio plan to narrate the live broadcasts from 2 to 3 p.m. PDT (5 to 6 p.m. EDT) on those days.

"These broadcasts will give students and the general public a rare glimpse of the wonders of the ocean depths," said Marge Cavanaugh, deputy assistant director for geosciences at NSF, "and allow them to discover what draws oceanographers, geologists and biologists to careers in the geosciences."

The Endeavour Segment is one of the most geologically and biologically active sites in the global network of mid-ocean ridges and represents one of the most extreme environments on Earth, say University of Washington (UW) oceanographers John Delaney and Deborah Kelley, chief scientists of the Sept. 1-to-Oct. 4 expedition.

While the public broadcasts are available only in standard-definition--the same quality as regular television--UWTV and NSF are pioneering the broadcast of live high-definition video from the sea floor to selected research groups and sites in six countries capable of handling the high-bandwidth Internet data, said Michael Wellings, director of engineering at UWTV.

"This crisp resolution dramatically enhances a scientist's ability to operate in remote environments," Kelley says. "The incredible quality of the video will soon allow the public to connect with scientists online as they conduct their experiments in the deep sea"

Television viewers can see the hour-long broadcasts on UW's ResearchChannel (channel 9400 for subscribers of Dish Network). The

live broadcasts, sponsored by NSF, ResearchChannel and UWTV, are weather-dependent because storms could prevent the launch of the remotely operated vehicle that carries the underwater camera to the sea floor.

"This broadcast provides an example of how the excitement of scientific discovery can be shared with a global audience," said Delaney. "Even 2 years ago, we could not have transmitted high-definition quality imagery via satellite from a ship."

Daily updates about the expedition are posted at www.visions05.washington.edu/ .

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