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2010 Ocean Sciences Meeting: Media Tip Sheet

Integrated optical/acoustic communications system for deep-sea data transfer and vehicle control

Underwater communications between ships and smaller, autonomous and robotic vehicles thus far has been limited largely to sound, or acoustic, systems. Now, researchers led by WHOI senior engineer Norman E. Farr have developed the first undersea optical communications system that—complemented by acoustics—enables a virtual revolution in undersea data collection and transmission, along with the "transfer [of] real-time video from un-tethered [submerged] vehicles" to support vessels on the surface. "This combination of capabilities will make it possible to operate self-powered ROVs [remotely operate vehicles] from support vessels without requiring a physical connection to the ROV," says Farr. This will reduce costs and simplify operations, he says. Adds Farr: "It's a game-changer."

Time of Presentation: Feb 23, 2:00 - 2:15 PM

Location: PB253

ID#: MT23A-05

Related links:

http://www.whoi.edu/fileserver.do?id=58869&pt=2&p=69436

http://www.whoi.edu/page.do?pid=10897&i=1562&x=84

Extending autonomy for exploration, discovery, and characterization of deep sea extreme environments

Scientists are beginning to experiment with ways to give autonomous underwater vehicles (AUVs) more decision-making capabilities, and on a research cruise in September 2009 off Santa Barbara, Calif., scientists from Woods Hole Oceanographic Institution (WHOI) demonstrated that they could teach a new robot some old tricks. They equipped an AUV called *Sentry* with a high-tech "nose"— an underwater mass spectrometer developed by WHOI scientist Rich Camilli that can detect and identify minute quantities of chemicals in seawater. Then they gave *Sentry* some brains, in the form of software to analyze the chemicals it was sniffing—in this case, naturally occurring oil, gas, and other hydrocarbons leaking from the seafloor in areas known as "cold seeps." Finally, they gave *Sentry* the ability to change its pre-programmed course and operating mode, so it could home in on targets and begin sampling right away, instead of waiting to return on a subsequent mission. Camilli and his WHOI colleague Dana Yoerger present their results.

Time of Presentation: Feb. 22, 5:30-7:00 p.m.

Location: Poster Hall E

ID#: MT15A-15

Related links:

http://www.whoi.edu/oceanus/viewArticle.do?archives=true&id=69406

http://www.whoi.edu/oceanus/viewArticle.do?id=55446

A 22-year Record of Plastic Marine Debris in the Atlantic Ocean

An analysis of 22 year's worth of some 64,000 pieces of ocean-surface plastic debris reveals that much of the debris is concentrated in a region of the Western North Atlantic Ocean at a latitude of 24

to 37 degrees North. Surprisingly, the annual amount of debris, collected by the Woods Hole-based Sea Education Association (SEA), does not seem to be growing, despite increases in plastic production during this time period. This could be because anti-pollution messages are actually having a positive effect, or there could be other factors at work involving surface circulation or other marine-related phenomena. In any case, tracking the location of the debris is helping oceanographers learn more about ocean dynamics and circulation, says Chris Reddy, director of the WHOI Coastal Ocean Institute. “This data set provides a baseline for future studies, “ says Kara L. Law of the Sea Education Association. Adds Reddy: “It’s a silver lining in a cloud of pollution.”

Time of Presentation: Feb. 24, 8:15-8:30 a.m.

Location: E147

ID#: IT31C-02

Related link:

http://www.sea.edu/academics/plastics_at_sea.aspx

Modeling ocean acidification's potential to impact commercial marine harvests at regional scales

WHOI researchers Sarah Cooley and Scott Doney combine model-based predictions with quantitative biological data to forecast the possible effects of ocean acidification on commercially important species. This information may help aquaculturists and marine managers implement adaptive strategies.

Time of Presentation: Feb. 25, 1:45-2:00 p.m.

Location: E145

ID#: IT43D-04

Related link:

http://www.whoi.edu/page.do?pid=39136&tid=282&cid=57867&ct=162

Did changes in the subpolar North Atlantic trigger the acceleration of glaciers in Greenland?

The Greenland Ice Sheet’s contribution to sea level rise doubled over the last decade due, to a large extent, to the widespread acceleration of outlet glaciers in western and southeastern Greenland. Fiammetta Straneo of WHOI, G.S. Hamilton of the University of U of Maine and others report new data that traces the phenomenon to an infusion of warming, subtropical waters found offshore of Greenland. They find that “very warm water of subtropical origin is present inside a major glacial fjord in East Greenland and that it is continuously replenished via exchange with the shelf, where large volumes of subtropical waters accumulate seasonally.” This finding, combined with the observed oceanic and atmospheric changes that have occurred over the North Atlantic, suggest that the warm-water flow appears to be a significant cause of

mass loss from the Greenland Ice Sheet, according to the scientists, and the acceleration of the glaciers.

Time of Presentation: Feb. 26, 1:45-2:00 p.m.

Location: D136

ID#: PO53A-04

Related link:

http://www.whoi.edu/page.do?pid=7545&tid=282&cid=69134&ct=162

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