

GCOE&AOB Seminar

Prof. John R. Delaney

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Date: April 14, 2009 (14:00-15:30)

Place: Research Center for Earthquake and Volcanic
Eruption Annex Bldg. #1 Meeting Room

**Title: “The Key to Future Research within the
Ocean Basins: Cabled Submarine Networks
Wired to Next-Generation Internet”**

--- Abstract ---

Interactive, Internet-linked sensor-robotic networks are the next-generation approach to enabling long-term surveillance of major, remote, or dangerous processes that are central to the habitability of our planet. Continuous, real-time information from the environment, specifically from within the ocean basins, will launch rapid growth in our understanding of the habitats and behavior of known and novel life forms, climate change, assessment and management of living and non-living marine resources, elements of homeland defense, erupting underwater volcanoes, major earthquake timing and intensity, and mitigation of natural disasters.

The Regional Component of the U.S. National Science Foundation's ocean observatory program will be a leader in this approach. The observatory's network of heavily instrumented fiber-optic/power cable will convert a major sector of the Juan de Fuca tectonic plate and its overlying ocean into an internationally accessible, interactive, real-time natural laboratory reaching hundreds of millions of users or viewers via the Internet.

Thousands of physical, chemical, and biological sensors distributed across the seafloor, throughout the ocean above, and within the seabed below, may be linked to partially or fully autonomous robotic platforms that are integrated into interactive networks connected by Internet to land-based users. The observatory is being designed to provide scientists, educators, policy makers, and the public with unprecedented levels of novel information about a broad host of natural and human-induced processes operating within the ocean basins. Data management and visualization challenges include handling large volumes of multidisciplinary data streams; assimilating real-time data into models; and providing data discovery and visualization tools that enable collaborative discovery by groups of researchers.