

Ocean Observatories Initiative (OOI); Construction Progress Update

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Introduction

The OOI project is an integrated infrastructure of science-driven sensor systems designed to measure physical, chemical, geological and biological variables at the air-sea interface, in the ocean, and seafloor. OOI is linking technology and advanced engineering capabilities through a unique cyberinfrastructure that provides end-to-end management of diverse resources operating in virtual laboratories and classrooms, bringing ocean observing data to a vast user community of scientists, educators and the public. OOI sensors are supported on a variety of platforms, including moorings, profilers, AUVs, gliders, and seafloor platforms. The Coastal, Regional, and Global Scale Nodes of the OOI are integrated by an advanced Cyberinfrastructure, with networking tools for educators provided by the Education and Public Engagement component. Funding for the OOI is provided by the **National Science Foundation** through a cooperative agreement with the Consortium for Ocean Leadership (OL). The OOI Implementing Organizations are funded through sub-awards from OL. Construction funding began in September, 2009. The major accomplishments of 2011 are highlighted in this poster. **OOI program will conduct informational discussions at 12:30 – 14:00, Tuesday (Ballroom D), Wednesday (Ballroom J), and Thursday (Ballroom D).**

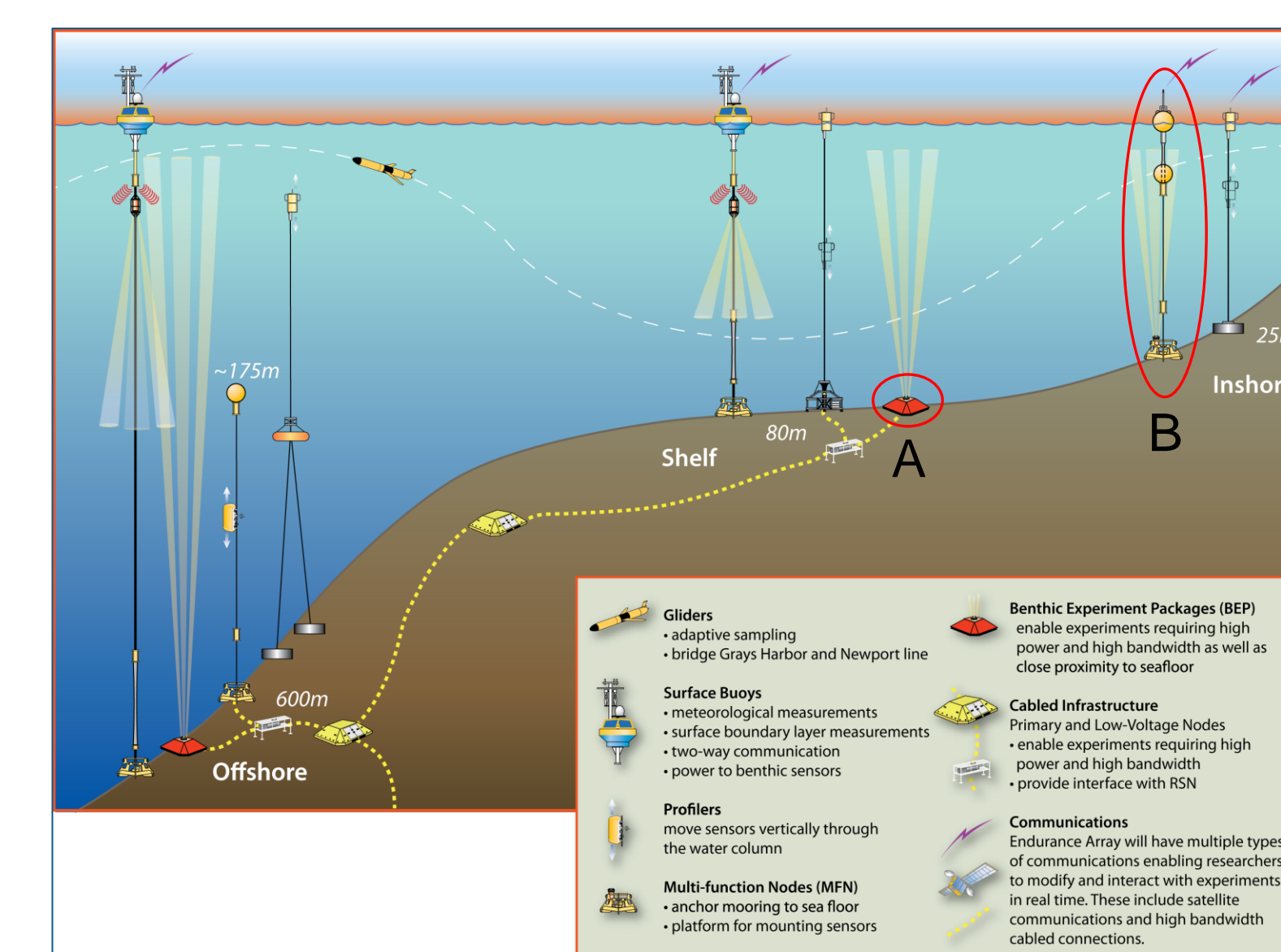


The OOI network locations of the Coastal Endurance Array and Pioneer Array, the cabled Regional Scale Nodes, and the four Global Scale Nodes (Station Papa, Southern Ocean, Argentine Basin, and Irminger Sea). Graphic credit: OOI RSN program and the University of Washington (UW) Center for Environmental Visualization (CEV).

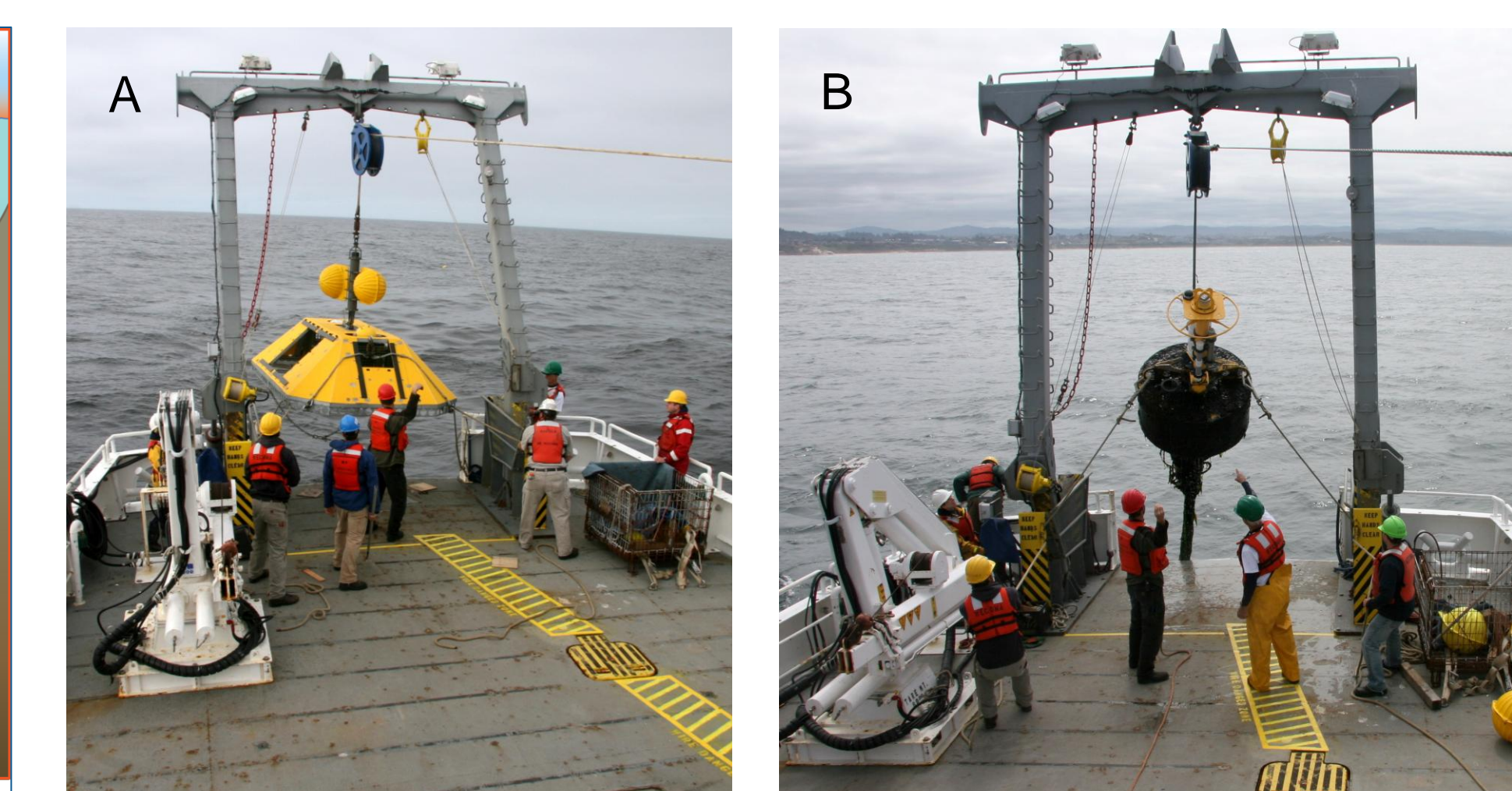
Coastal and Global Scale Nodes At-sea Tests

Test deployments of the Endurance Array inshore mooring, multi-function node, and benthic experiment package designs.

Successful deployment and recovery of the 25-m surface mooring with multi-function node anchor and benthic experiment package were conducted off Newport, OR. Sea trials were conducted with the Teledyne Webb Research S-G2 Slocum glider off the Oregon and New England coasts. *For related information see posters B1126, B1127, B1133, and B1134.*



Graphic showing the infrastructure of the Endurance Array - Oregon Line. Graphic credit: Oregon State University (OSU).



Test deployment of the Benthic Experiment Package design (A) and inshore mooring and multi-function node (B). Photo credit: C. Risien, OSU.

Test mooring designs for the Pioneer Array and Global Array deployed in the mid-Atlantic Bight.

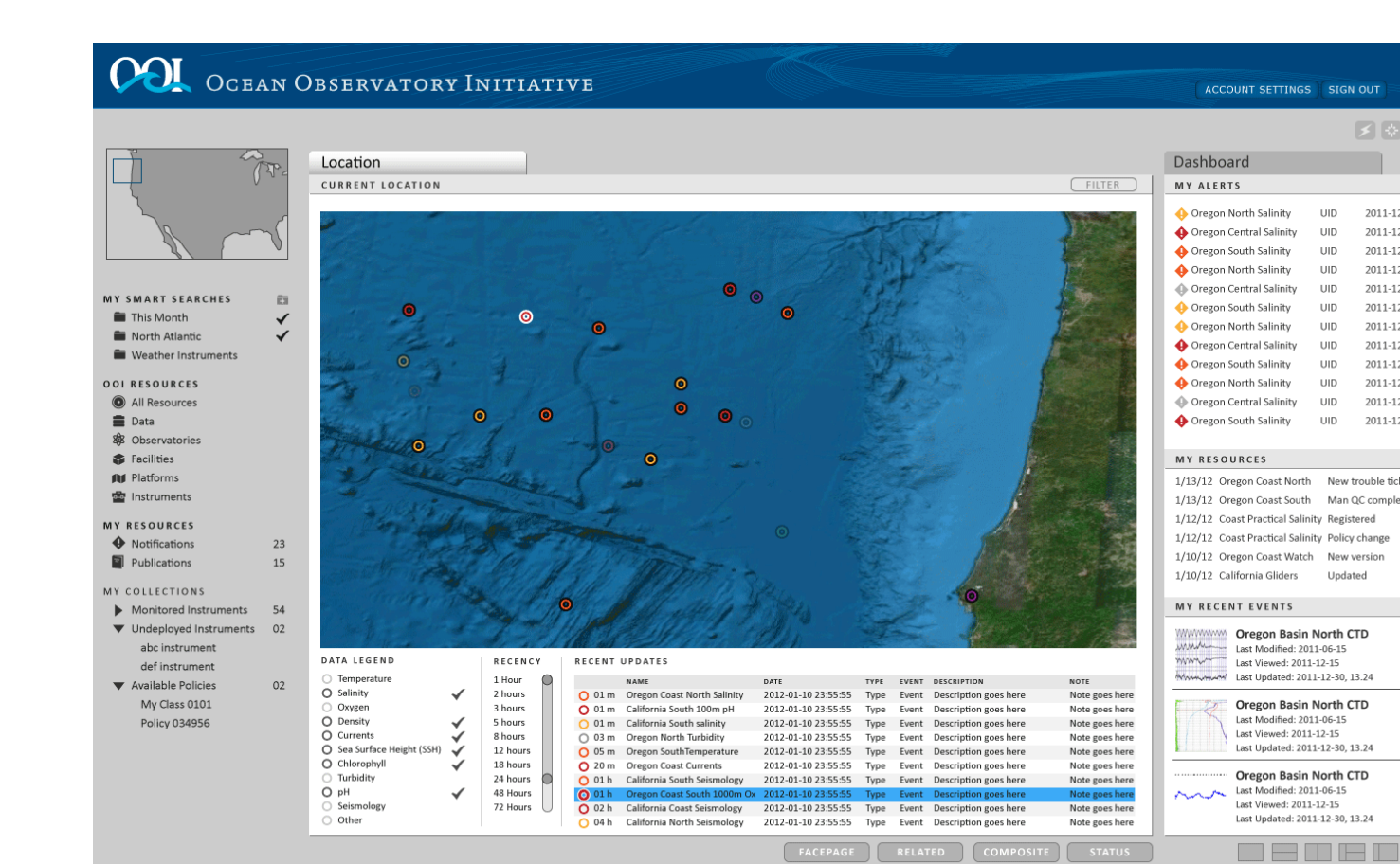
In September three moorings were deployed south of Cape Cod, MA. Two Pioneer test designs, a surface mooring and moored profiler, were set at the shelfbreak. A test design of the Global hybrid profiler mooring was deployed on the slope. Data sets from these test moorings can be accessed through the OOI website. Deployment of coastal gliders will begin this year. *For information about OOI planned data products, see posters B1131 and B1128.*



Design test deployment of the Global Hybrid Profiler mooring (left) and conceptual design of the mooring (right). Photo credit: T. Kleindinst, WHOI; graphic credit: WHOI.

First of four Cyberinfrastructure software releases (R1) complete.

The R1 release supports a fully capable, automated end-to-end data distribution and preservation infrastructure. Prototype interface screens for a variety of users are currently under development.



Example of an OOI user screen. Screen shot courtesy of S. Jul, OOI CI User Experience.

Major equipment and instrument vendor and models identified.

The supplier for gliders will be Teledyne Webb Research; Hydroid will supply autonomous underwater vehicles (AUV) and docking stations; wire-following profilers will be purchased from McLane Research Labs. *See poster B1129 for more information about OOI scientific instrument providers.*

Addition of the Education and Public Engagement (EPE) Implementing Organization

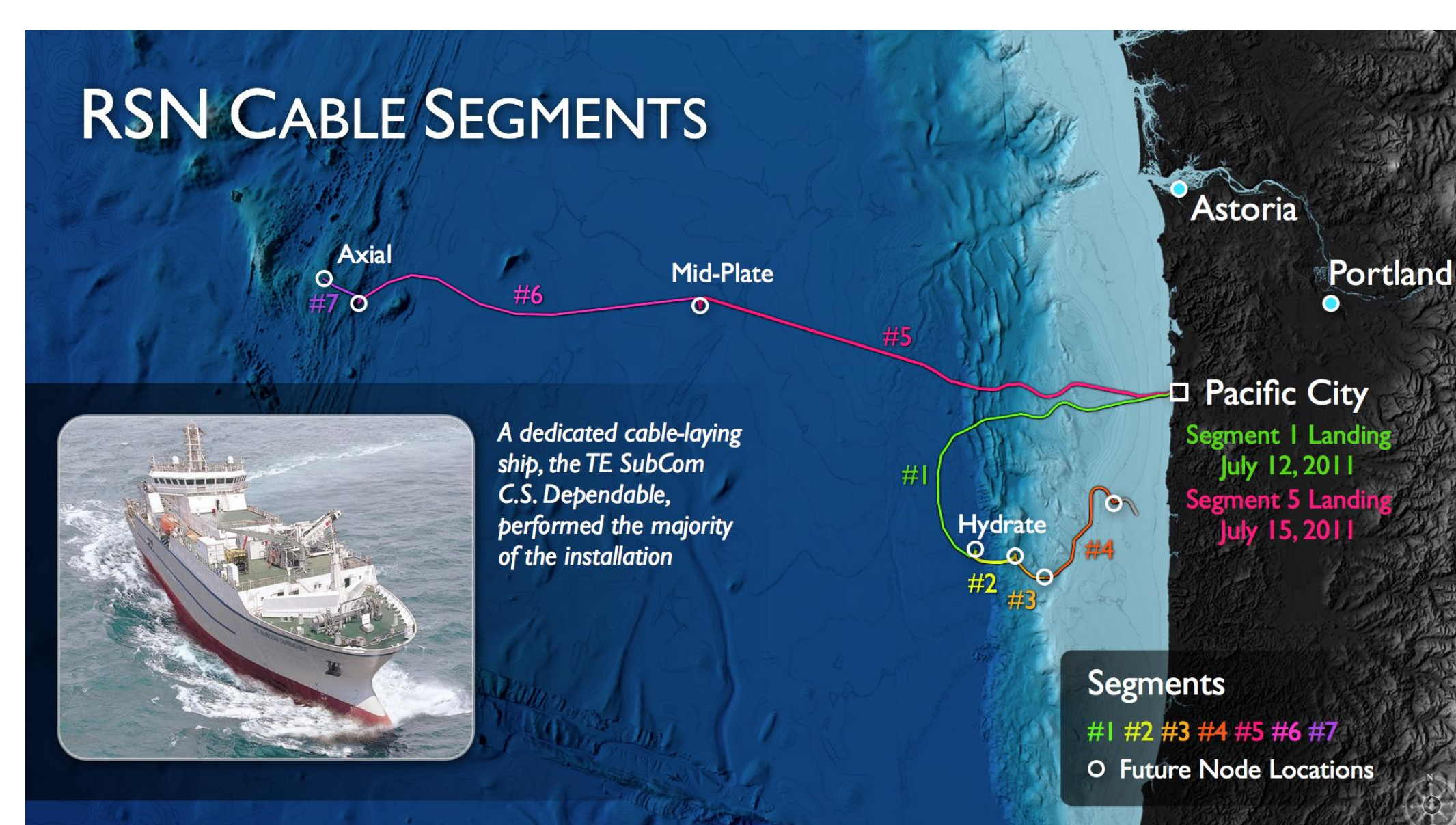
Rutgers, The State University of New Jersey, with its partners University of Maine and Raytheon Mission Operations & Services, joined the OOI team in March, 2011. The EPE Implementing Organization, leveraging the cyberinfrastructure capabilities of the OOI, will construct software and web-based social networking tools to engage a wide range of users including faculty, graduate and undergraduate students, informal science educators and the general public. *See Crowley et al presentation (ID:10528) and poster B0679.*



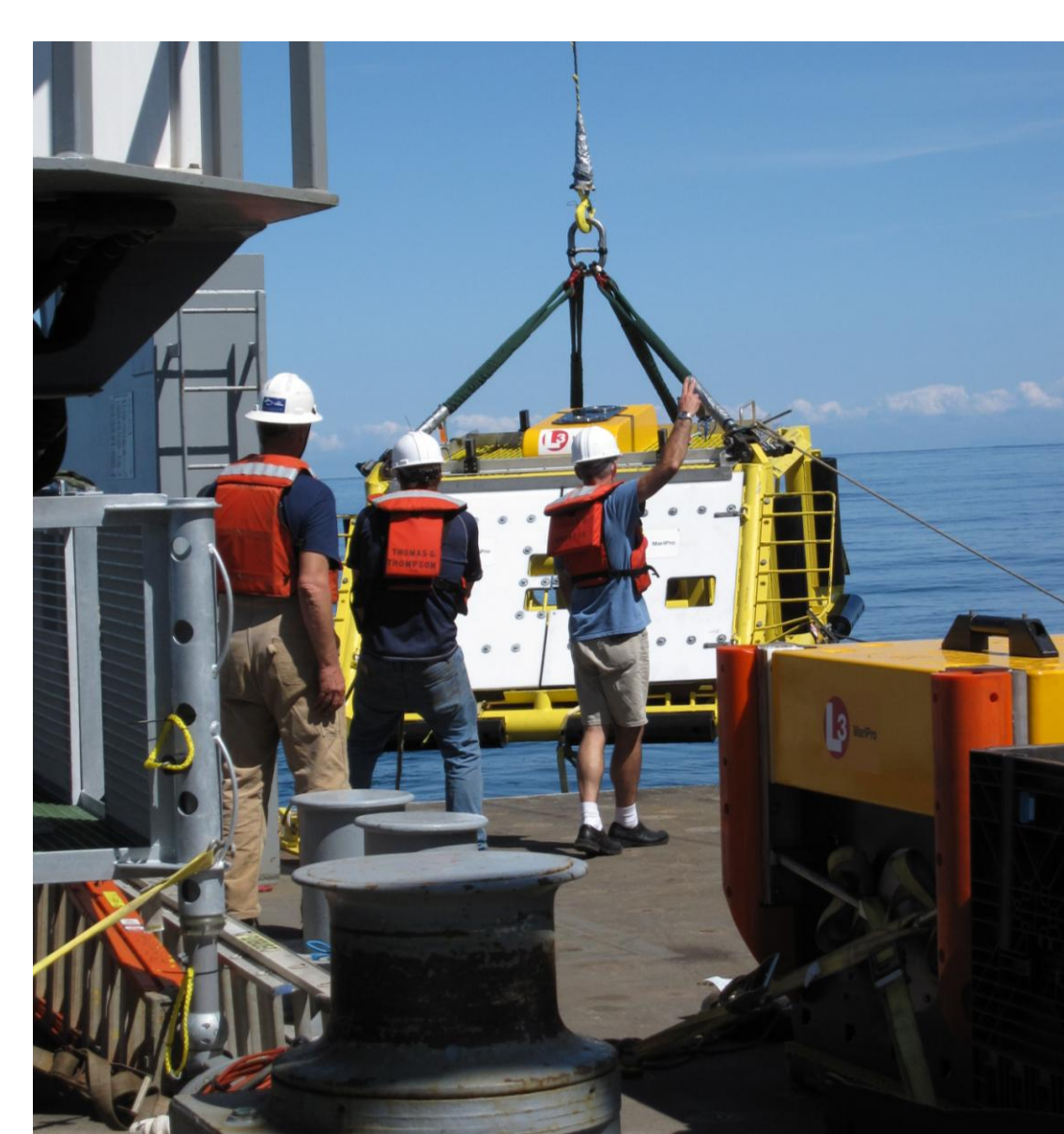
Photo credit: Rutgers University.

Regional Scale Nodes (RSN) Primary cable installation completed and shore station established at Pacific City, OR.

The RSN will provide high power and high bandwidth connectivity to instruments installed on the seafloor and deep water column moorings via undersea fiber optic cables. Two electro-optical undersea cables, totaling 880 km, were installed, landed, and connected to the shore station at Pacific City, OR. Seafloor surveys, engineering tests, and scientific experiments were performed during the RSN's VISIONS'11 Cruise, including testing of L3-MariPro's OOI Primary Node components. *For additional information see posters B1132, B1126, B0758, B0768, B0775; and presentations ID:11758 and ID:12542.*



Fiber optic cable segments installed off the coast of Oregon. The cable links the shore station to the Axial Seamount and Hydrate Ridge study sites. Graphic credit: OOI RSN program and UW CEV; ship image courtesy of TE SubCom.



Primary Node component testing during the VISIONS'11 Cruise. Photo credit: S. Banahan.

Upcoming in 2012

- Spring – Endurance Array glider deployments begin.
- Summer - installation of RSN Primary Nodes to be completed.
- Fall - Pioneer Array glider deployments begin.
- Glider data sets will be available through the OOI website.