

OSU Ocean Observing Center *and* The Ocean Observatories Initiative

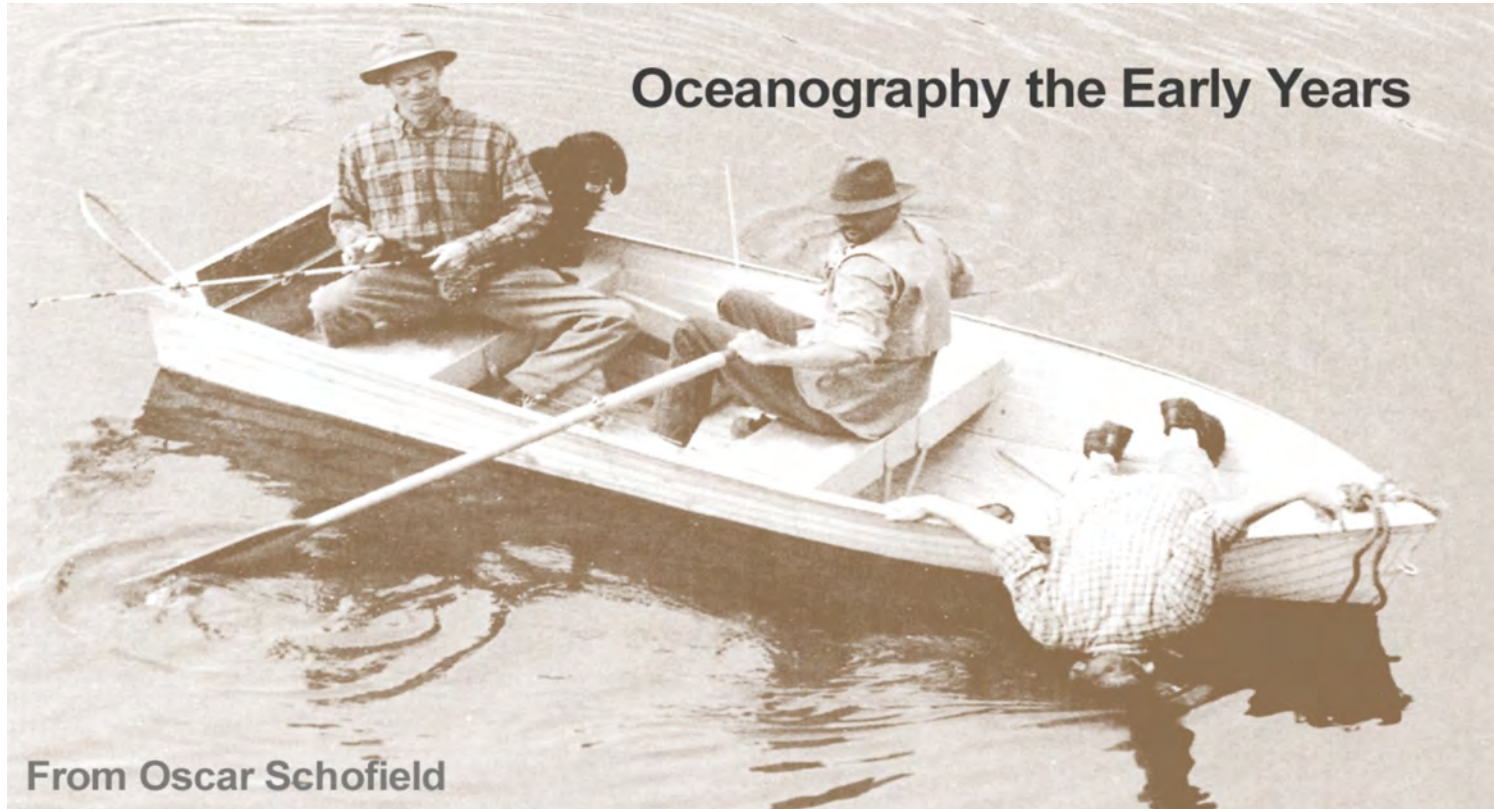




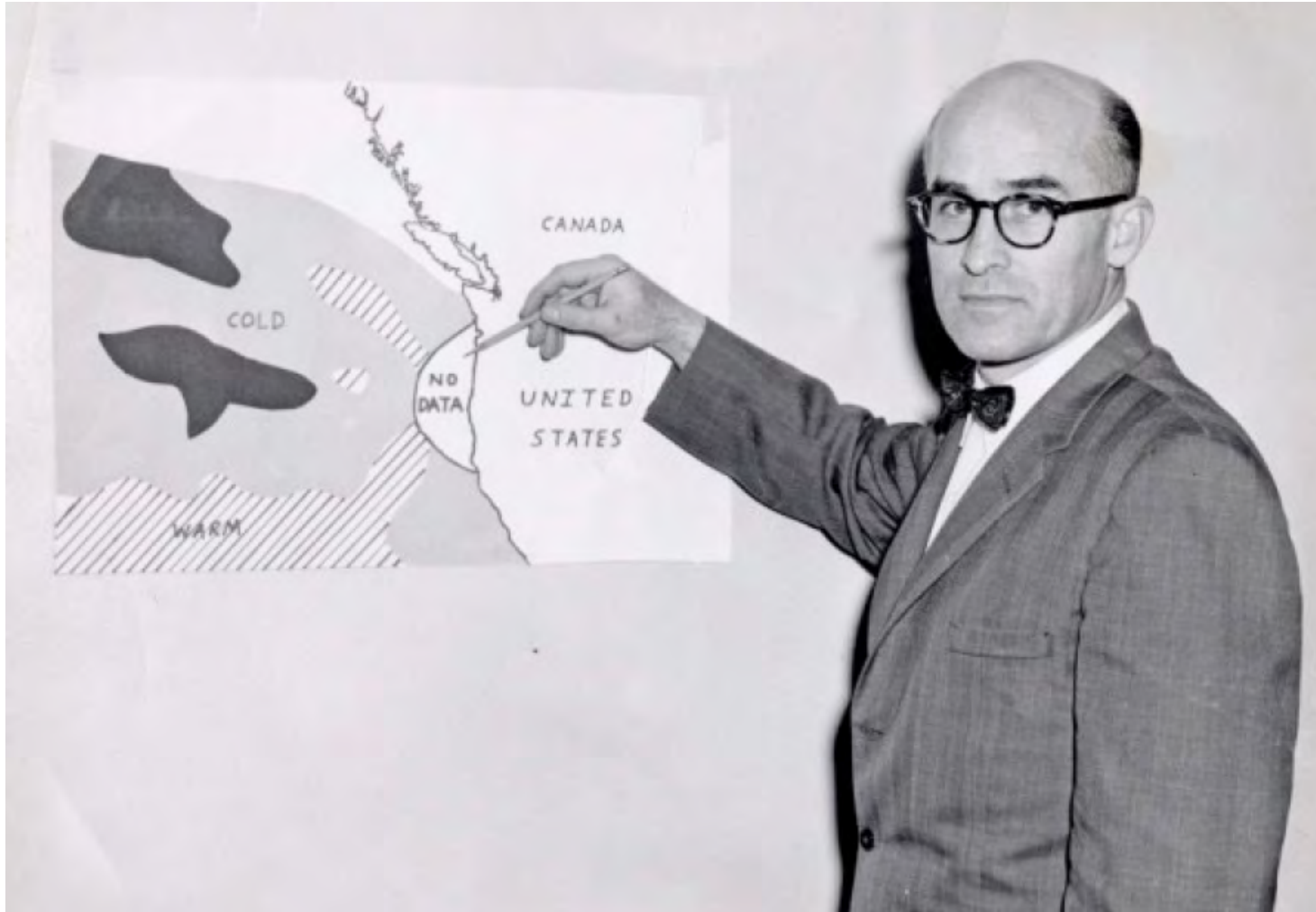
OSU Retirement Association March 10, 19 2016



Early Ocean Observations



No information off Oregon? We can help with that !



TENOC Report to the CNO -1959-
(The Next Ten Years of Oceanography)
Wayne Burt: "In general, coastal oceanography out to the 1000 fathom depth has been neglected. This is particularly true of our west coast ... Oregon State College is in a unique position to carry out a research program of vital importance to the nation." This was the start of the *Newport Hydrographic Line.*



Ocean Observatories Initiative

Permanent Presence on a Global Scale

OOI has supported the **construction and operation** of an interactive, integrated ocean observing network.

The OOI will provide transformative technology to give current and future generations the ability to study multidisciplinary ocean processes.

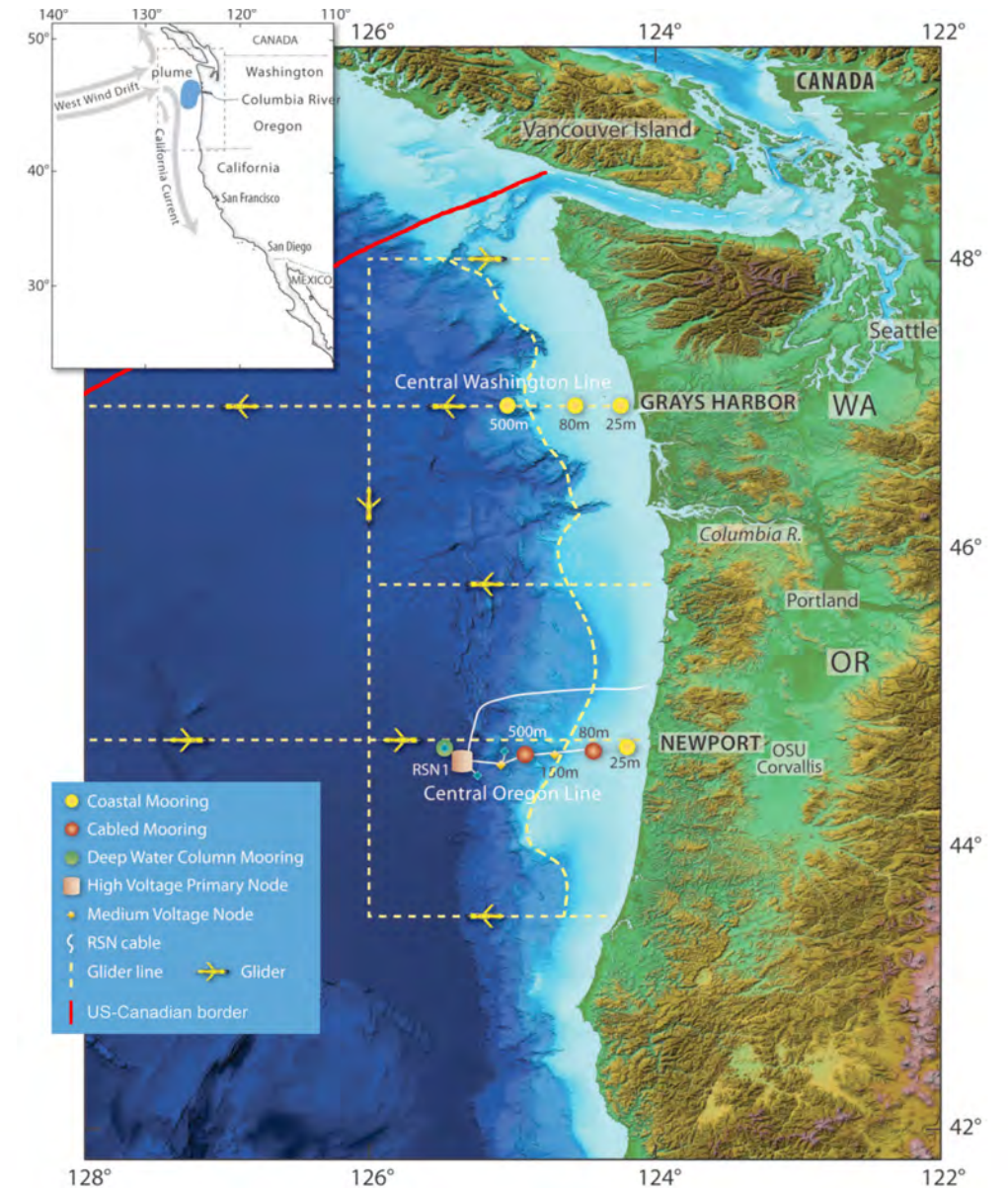
It will transform ocean science research and education by providing unprecedented power, an interactive connection with diverse sensors, and near real-time access to data.

Construction was funded by a 6 year grant from NSF. Operations designed for 25 years



Scope: *The Endurance Array*

- The Endurance Array has two lines of cross-shelf moorings (inner-shelf, mid-shelf, and slope) off Newport and Grays Harbor.
- At the Newport line, two of the sites at 80 and 600 m depths will have cabled as well as uncabled platforms.
- Six glider lines will support the Endurance array by resolving mesoscale spatial variability.

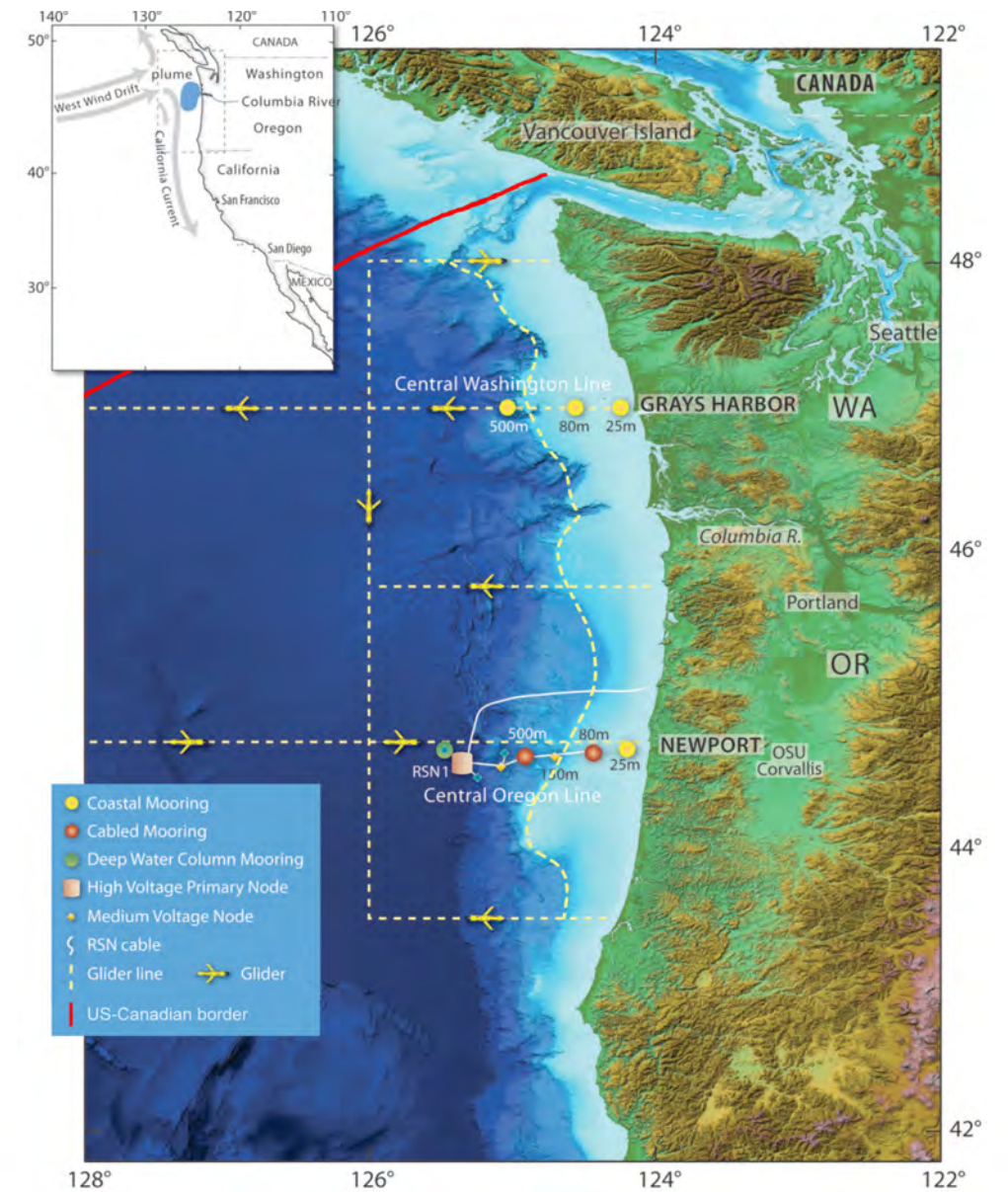


Scope: *The Endurance Array*

The ***Endurance Array*** will provide a new view into oceanographic phenomena that are key to Pacific Northwest coastal zones and the world.

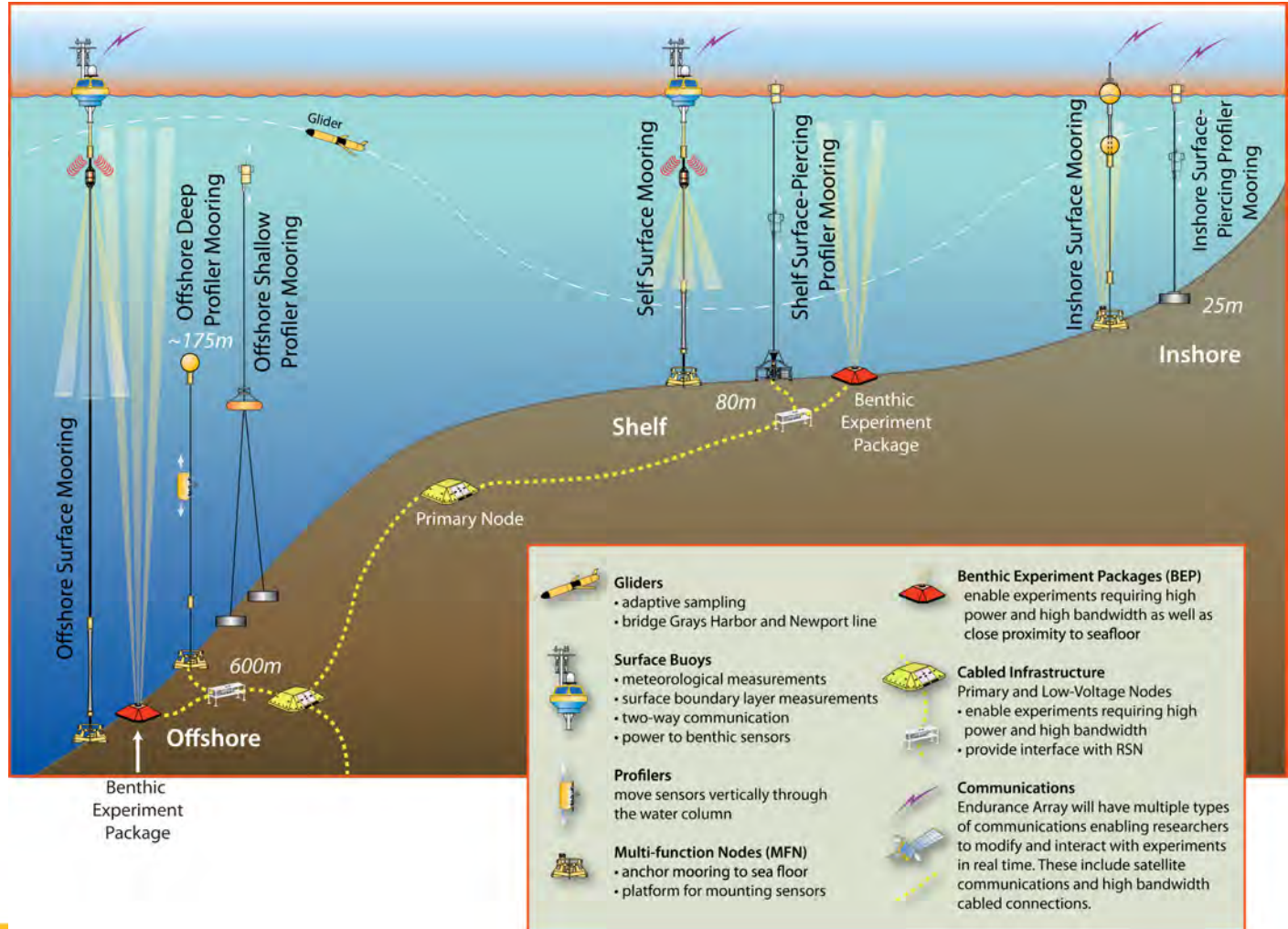
These include:

- River influence upon the coastal zone
- Sustainable marine ecosystems
- Harmful algal blooms (HABs)
- Low-oxygen and dead zones
- Methane seeps and hydrates
- Air–sea exchange & climate variability
- Ocean acidification



Scope: Plan View *Endurance Array Oregon*

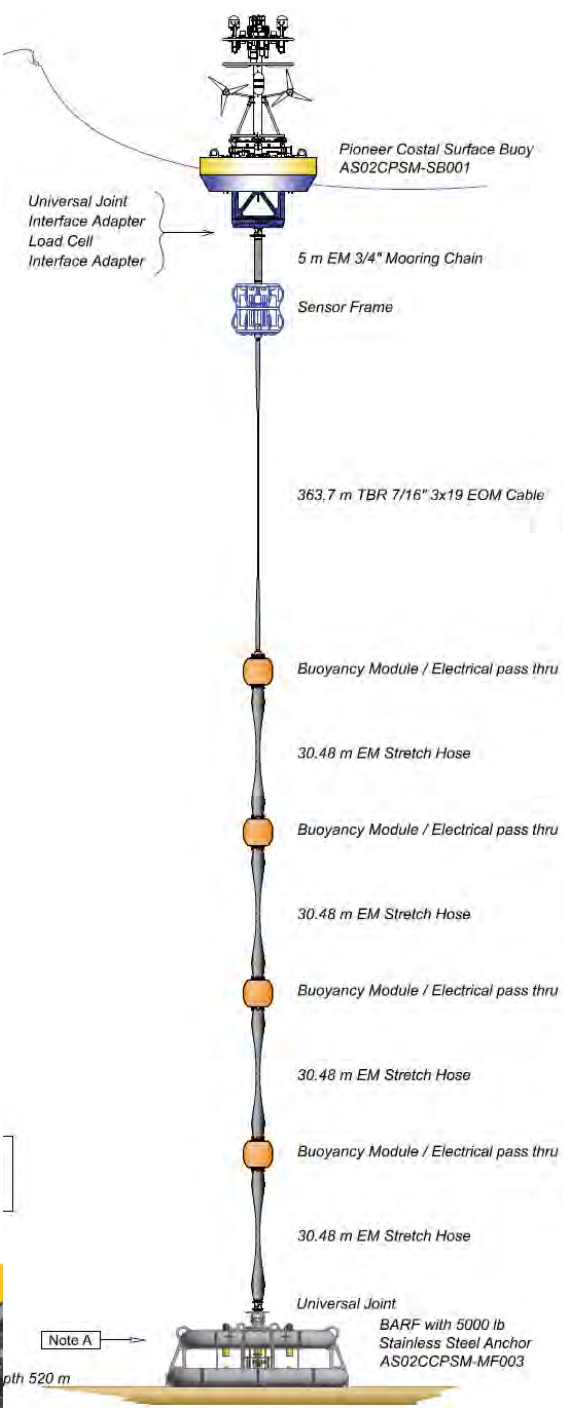
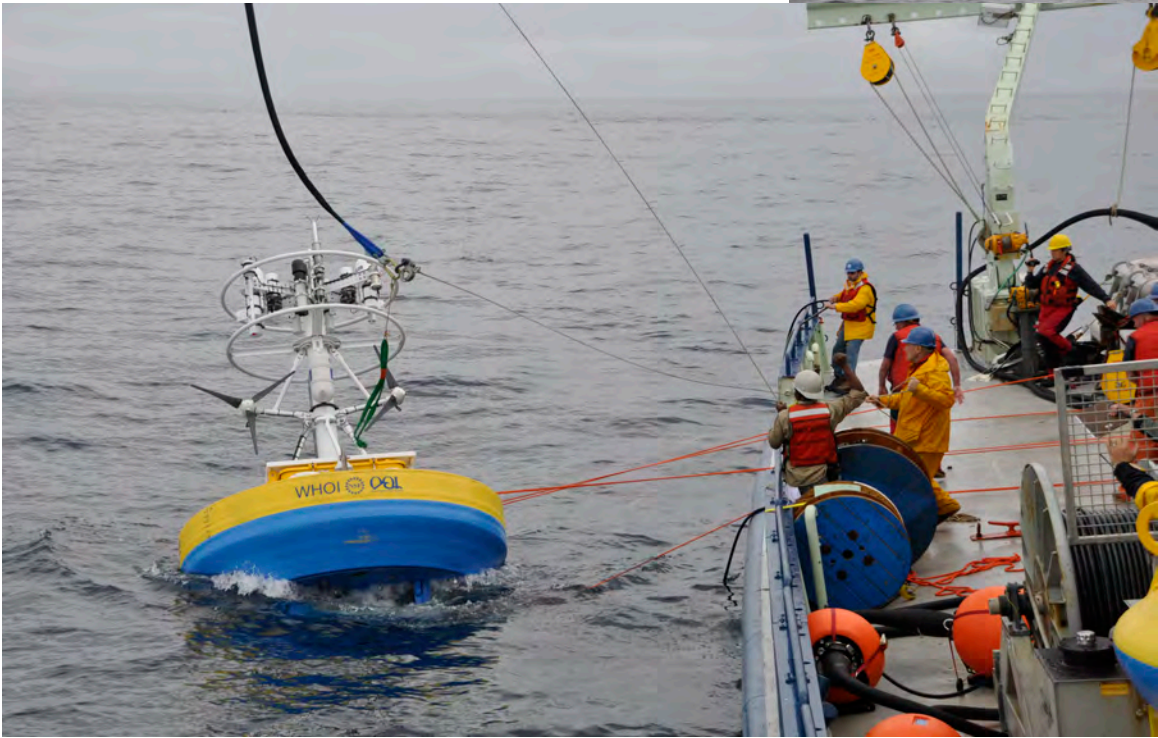
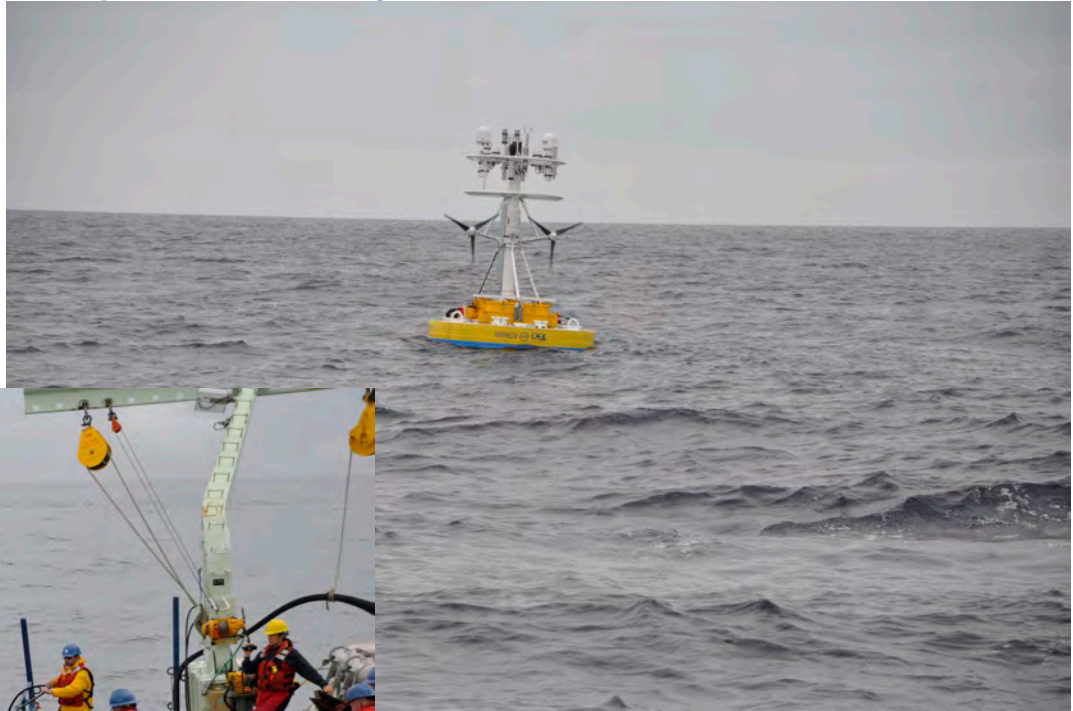
- uses fixed and mobile assets to observe cross-shelf and along-shelf variability in the coastal upwelling region off Oregon and Washington
- provides an extended spatial footprint that encompasses a prototypical *Eastern Boundary Current* regime
- joins with the cabled infrastructure.



Permanent Inshore moorings in 25m of water!



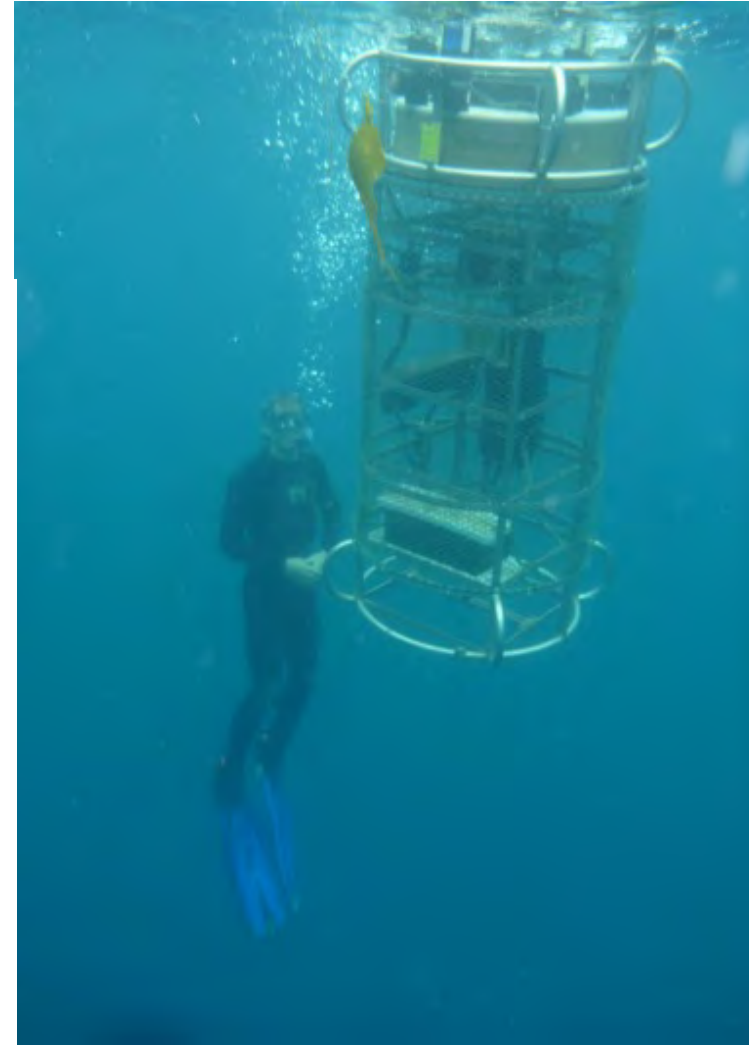
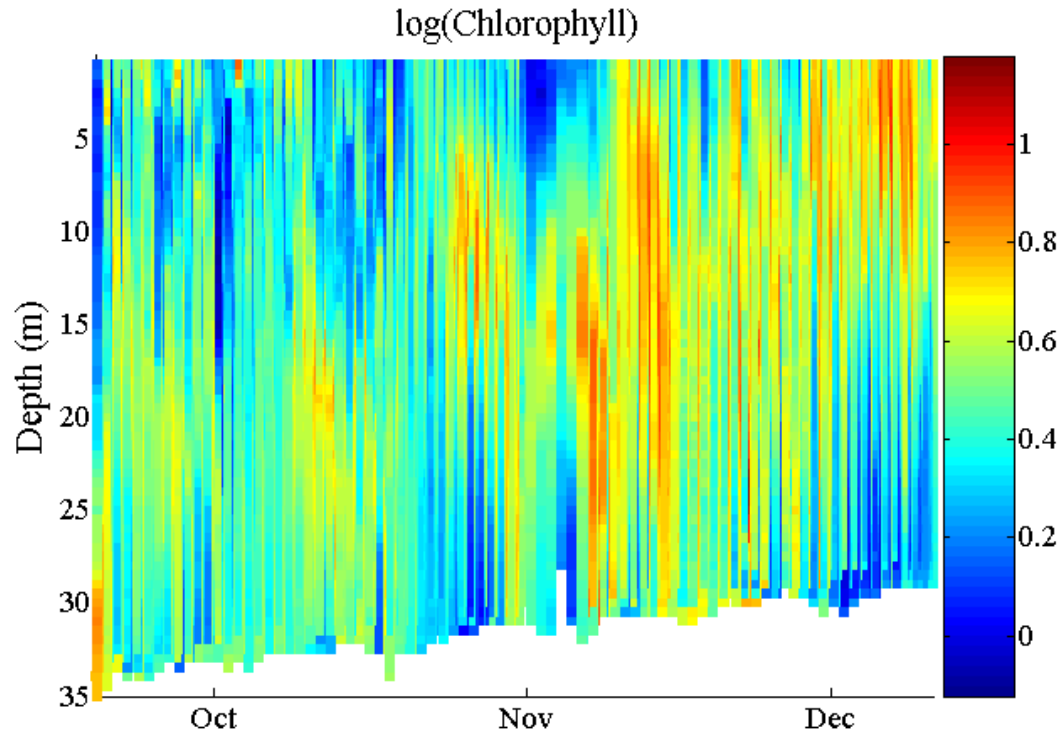
Coastal observing moorings deployed off OR and WA



Coastal Surface-Piercing Profilers

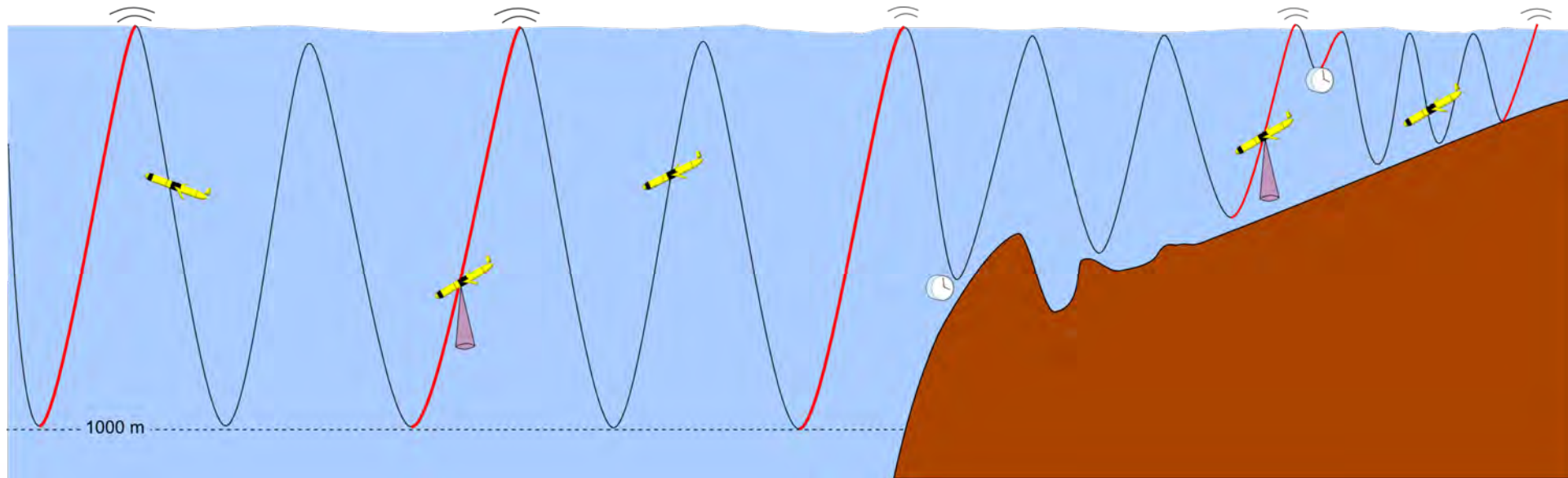
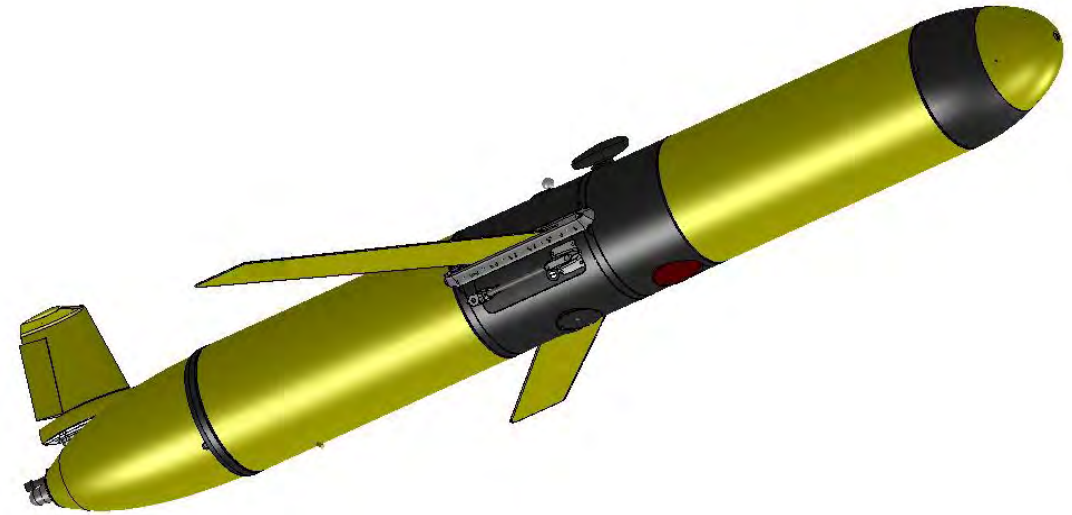
“profile” (move vertically) ...

- from near-bottom through the surface
- 8 instruments onboard collecting data



Coastal gliders

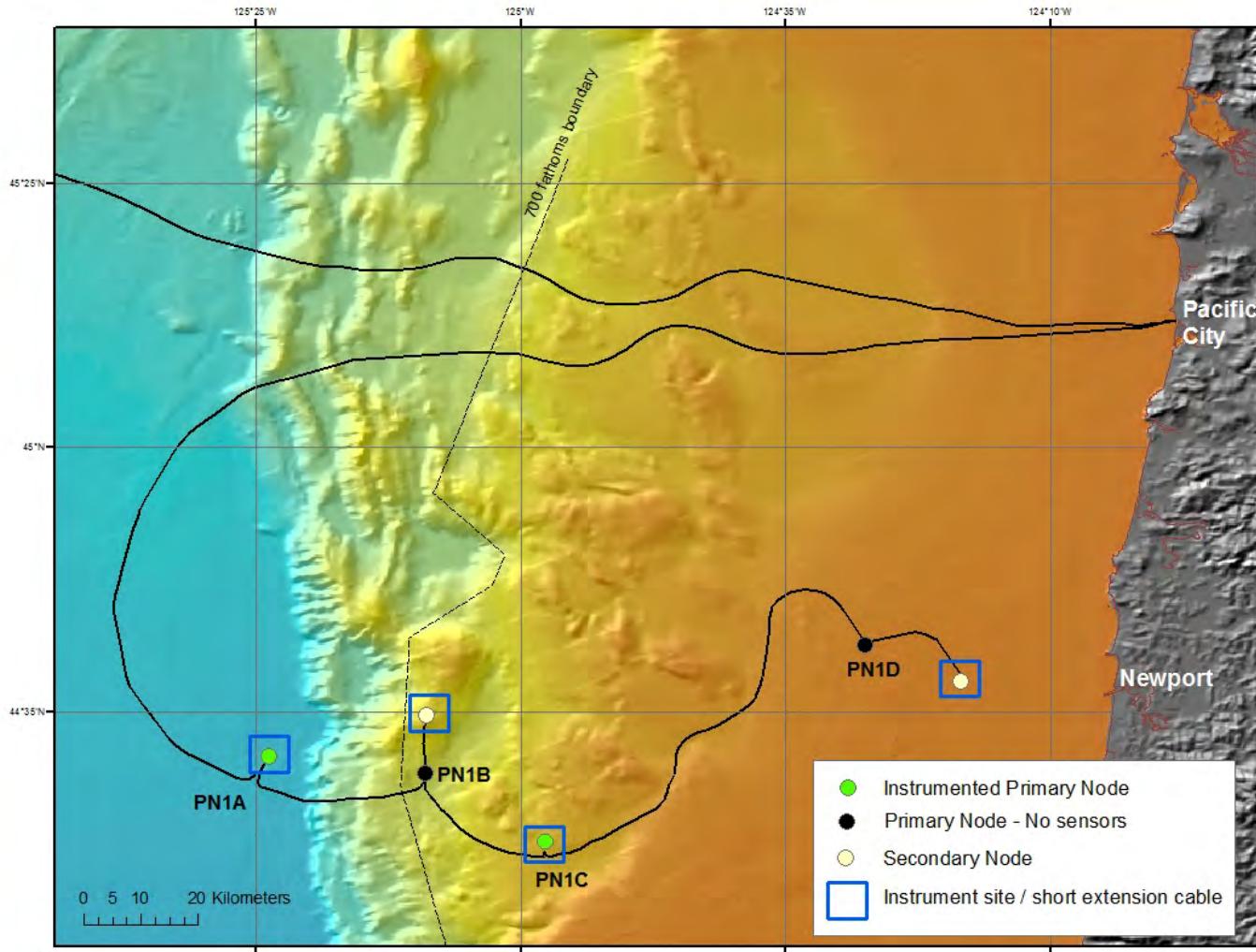
Coastal gliders will be used to resolve oceanographic features over the shelf and slope between and afield from fixed platforms the Endurance array.



Coastal Gliders: in Laboratory and Preparation for Deployment



Regional Cabled Network

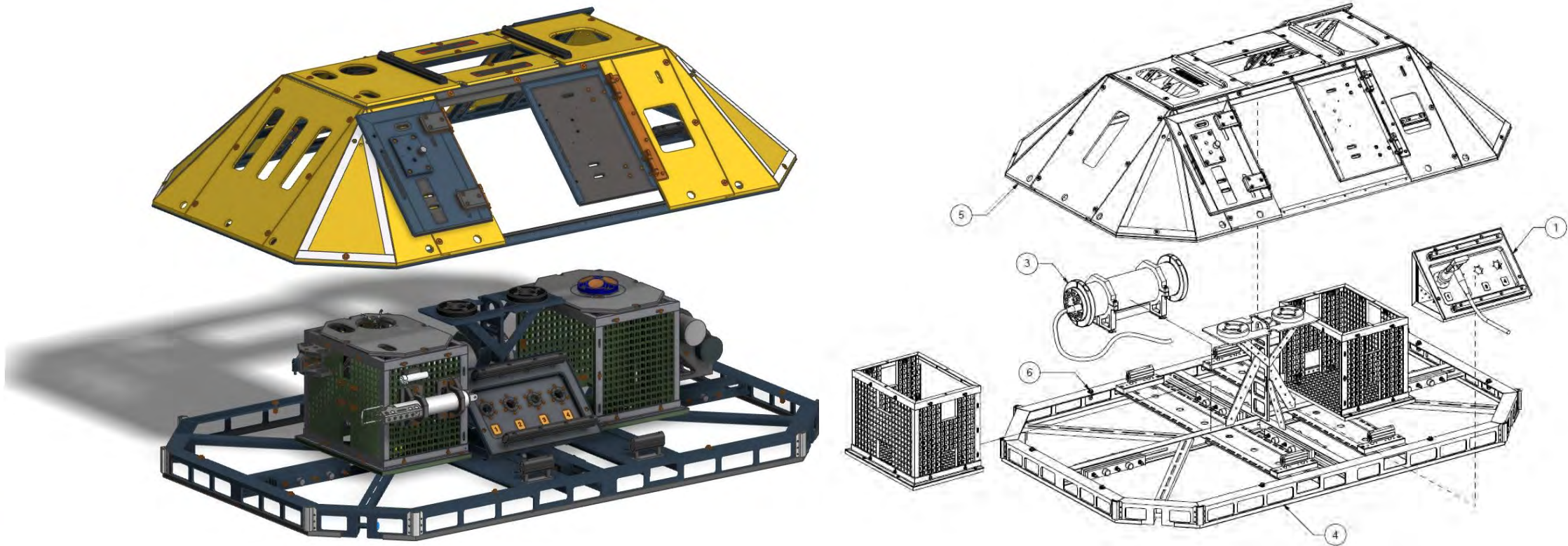


The Regional Seafloor Cabled Network provides high power and high bandwidth connectivity to instruments installed on the seafloor and deep water column moorings via undersea fiber optic cables. Two electro-optical undersea cables, totaling 880 km, were installed, landed, and connected to the shore station at Pacific City, OR.



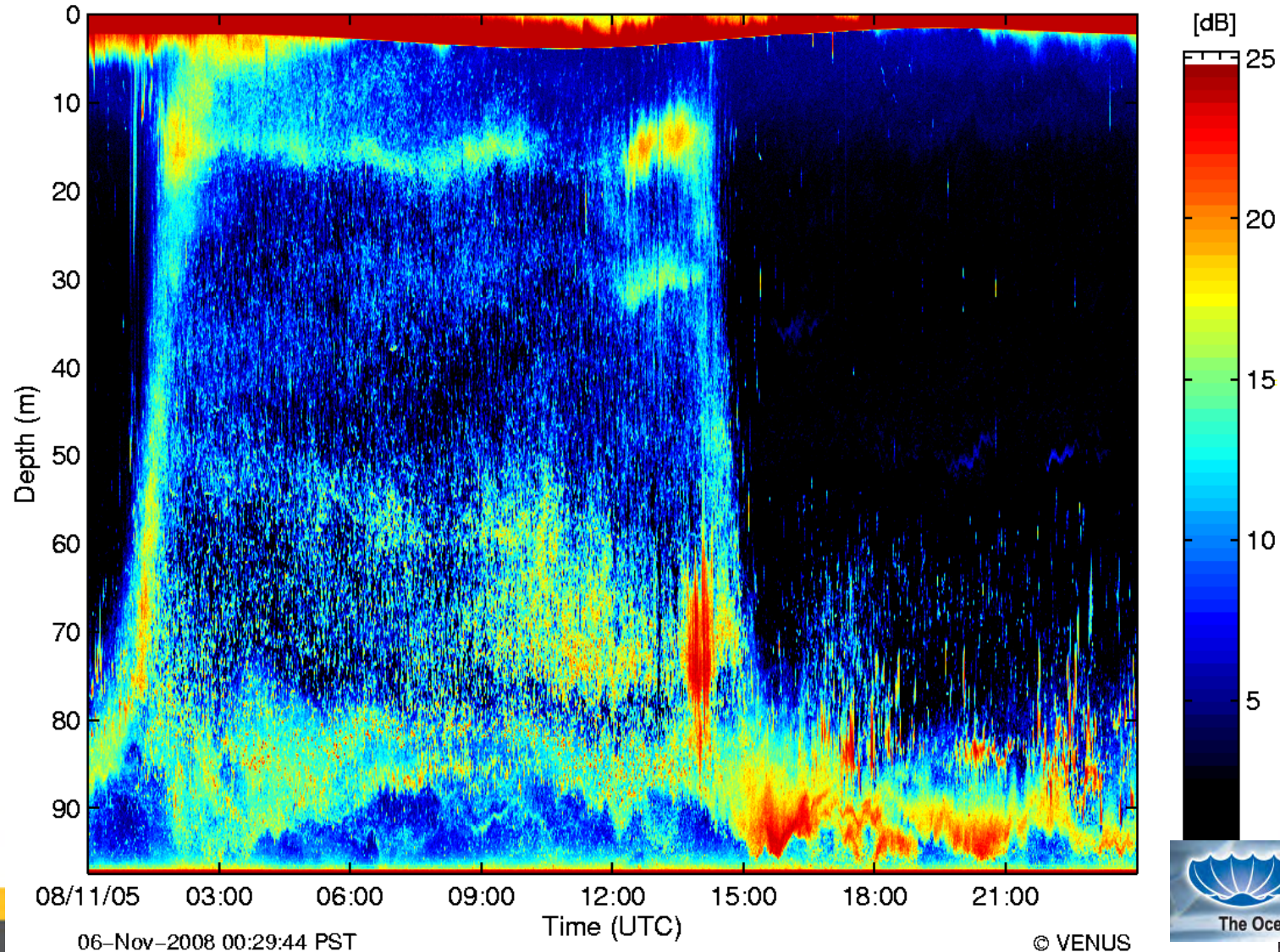
Cabled Benthic Experiment Package

- The Benthic Experiment Package (BEP) is exclusive to the Endurance Array, and provides a low profile (trawl resistant) mounting platform for sensors that require high power and bandwidth as well as near proximity to the seafloor.



Acoustic sensor for zooplankton

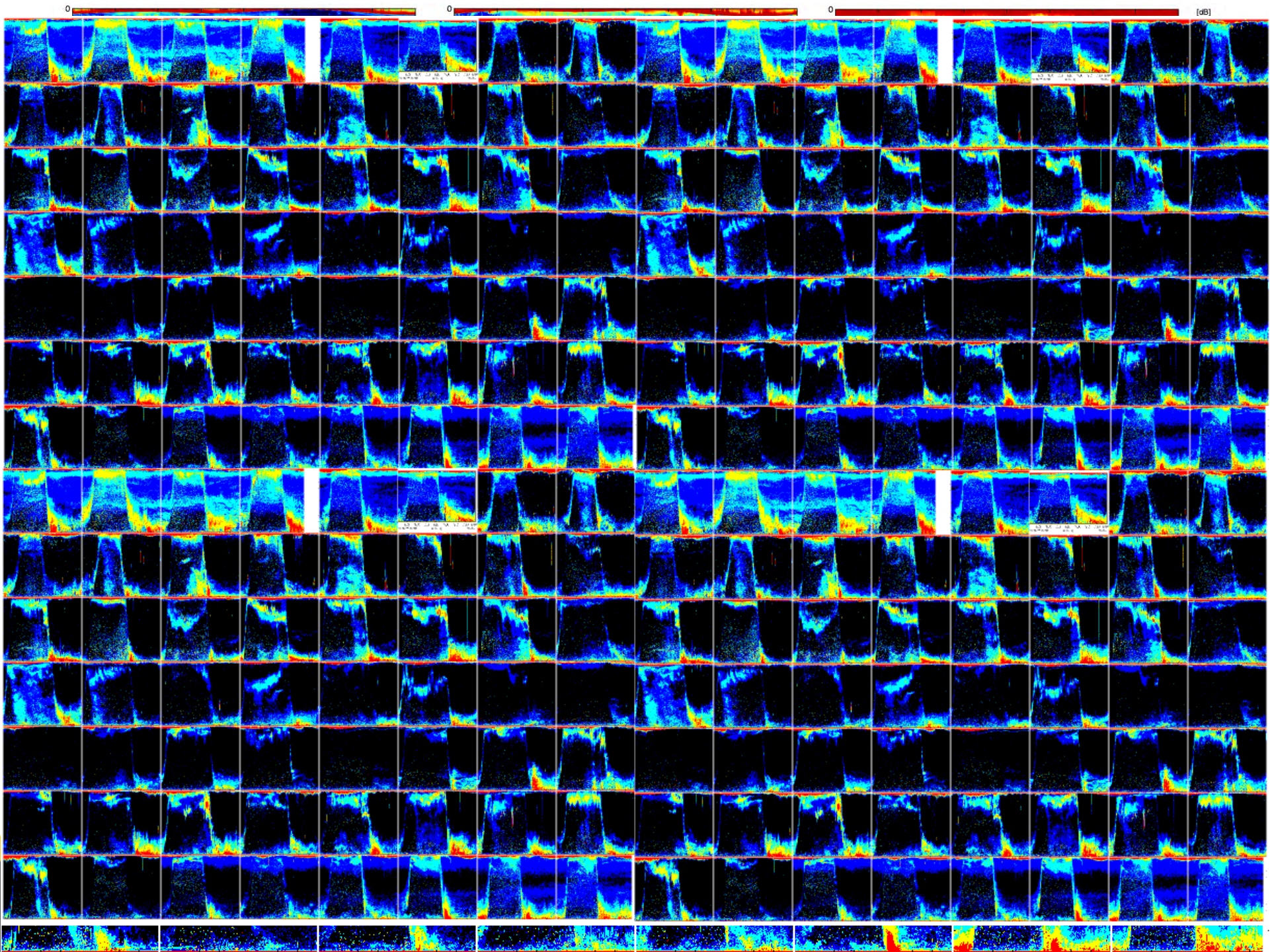
VENUS SI 48°39.0708' N/123°29.1774' W ASLZAP1007 97.4m



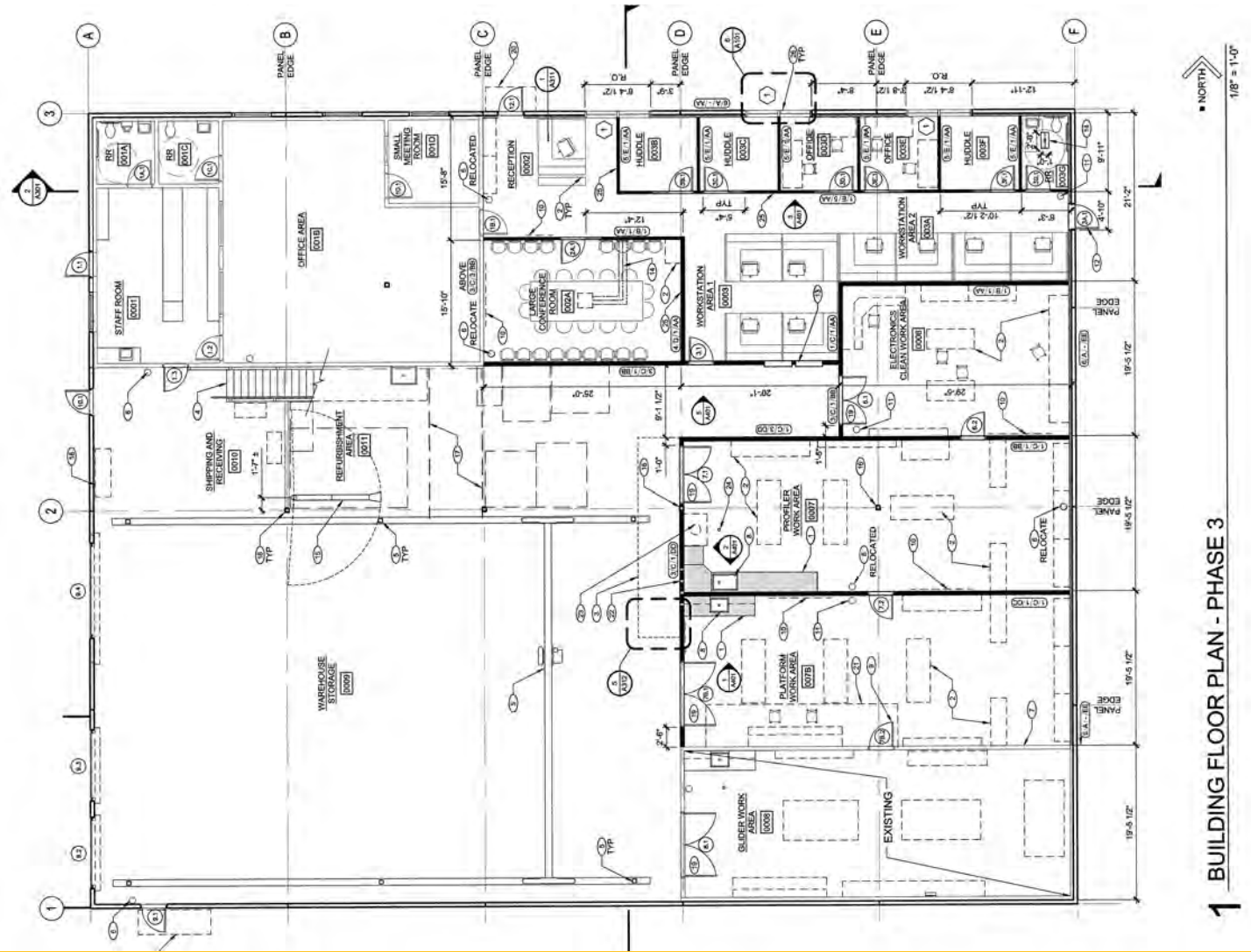
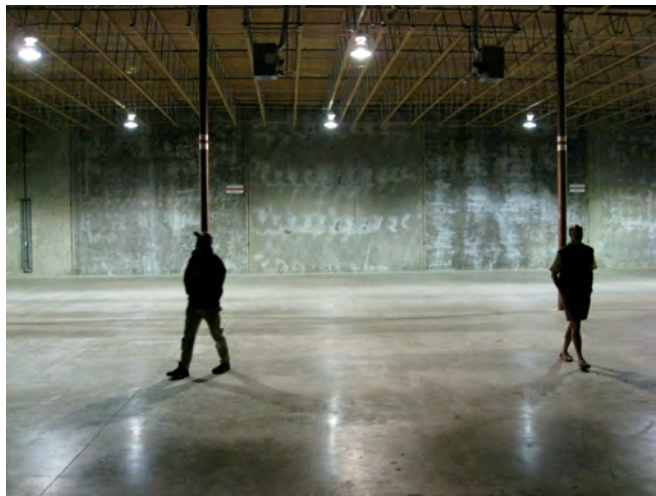
Courtesy of V. Tunnicliffe & C. Barnes (UVic)

<http://www.venus.uvic.ca>





The Ocean Observing Center comes *alive* ...



1 BUILDING FLOOR PLAN - PHASE 3



<https://www.youtube.com/playlist?list=PLKsgh77Ody8FWVwOHzumcILh-RLt44QGC>





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