



Ocean Observatories

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Outline

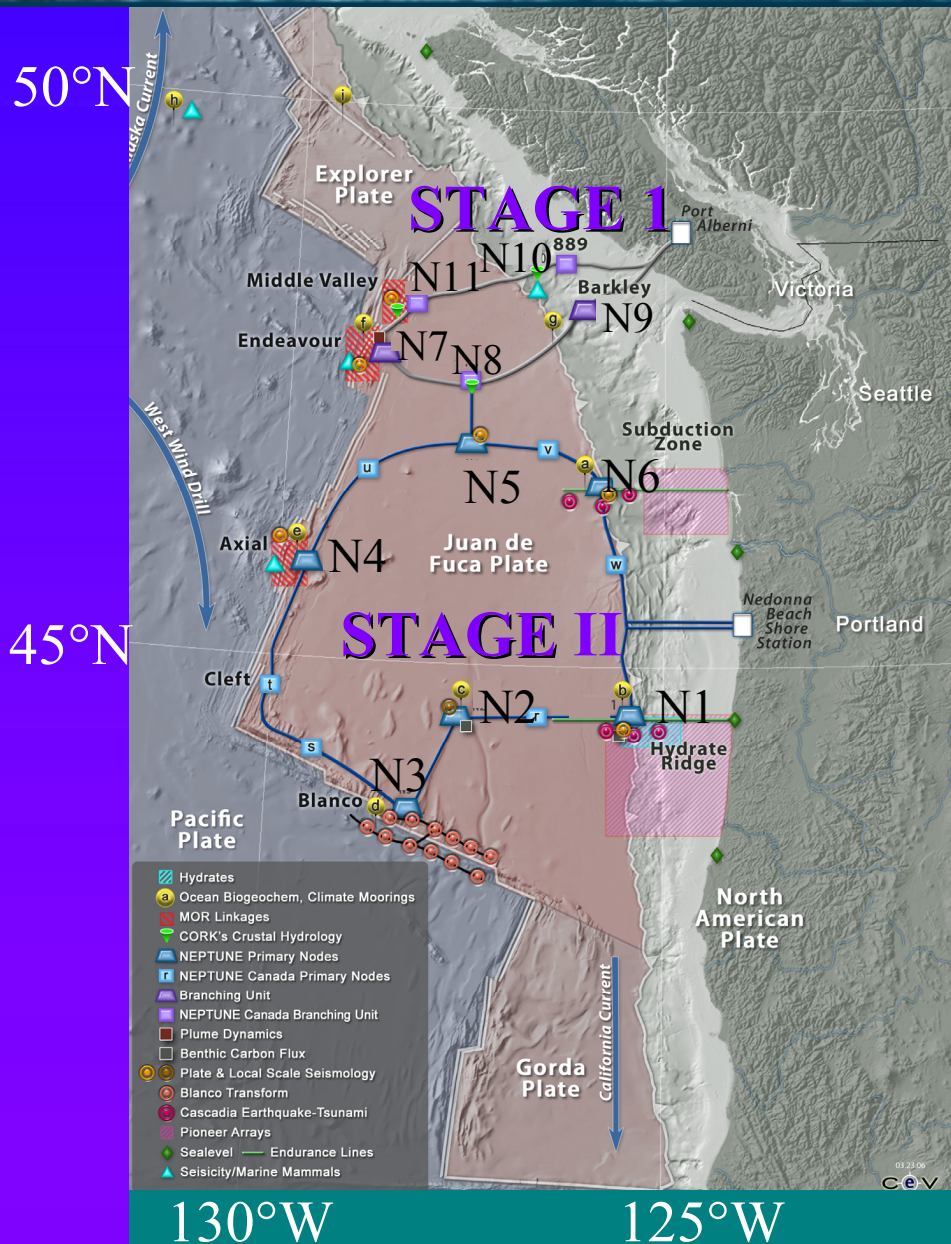
- Facility needs
- Timeline & implementation plans



Ocean Research Interactive Observatory Networks



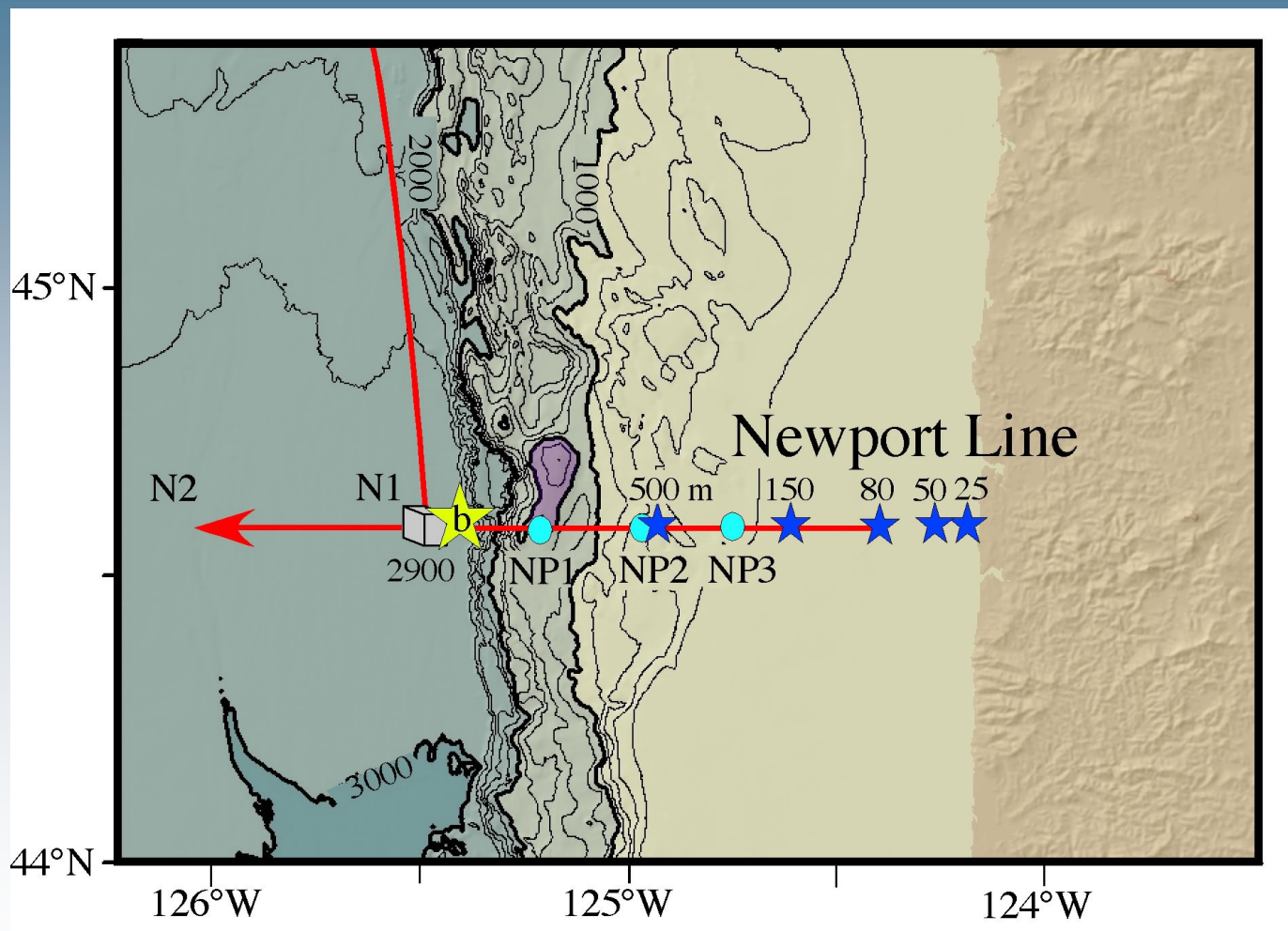
The Regional Cabled Observatory (RCO)



- Hydrates
- Ocean Biogeochem, Climate Moorings
- MOR Linkages
- CORK's Crustal Hydrology
- NEPTUNE Primary Nodes
- NEPTUNE Canada Primary Nodes
- Branching Unit
- NEPTUNE Canada Branching Unit
- Plume Dynamics
- Benthic Carbon Flux
- Plate & Local Scale Seismology
- Blanco Transform
- Cascadia Earthquake-Tsunami
- Pioneer Arrays
- Sealevel
- Endurance Lines
- Seisicity/Marine Mammals



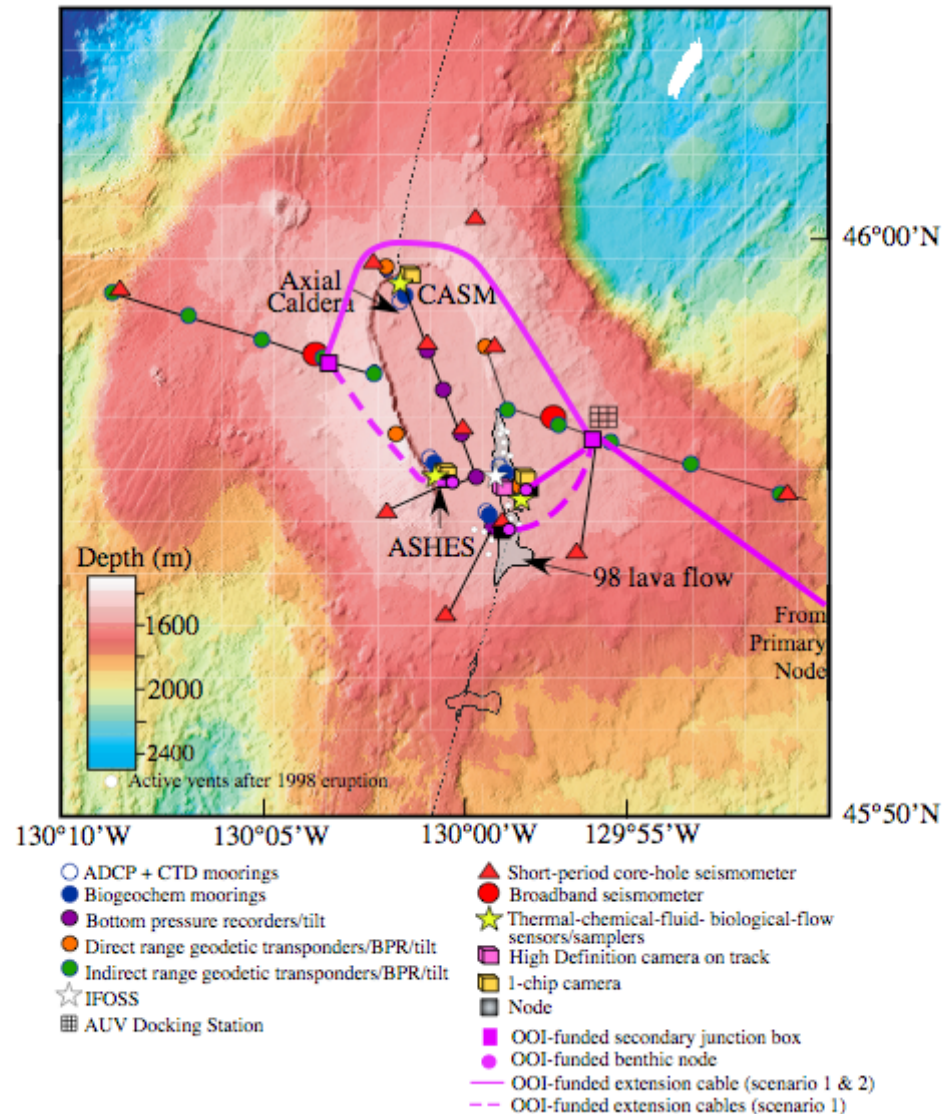
Node 1





Node 4

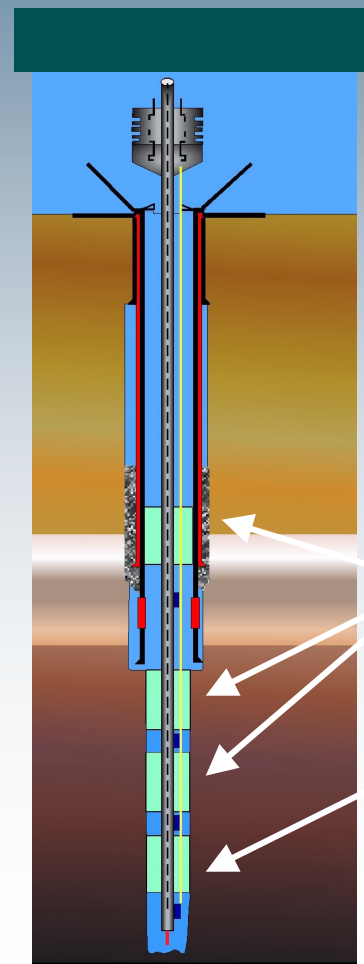
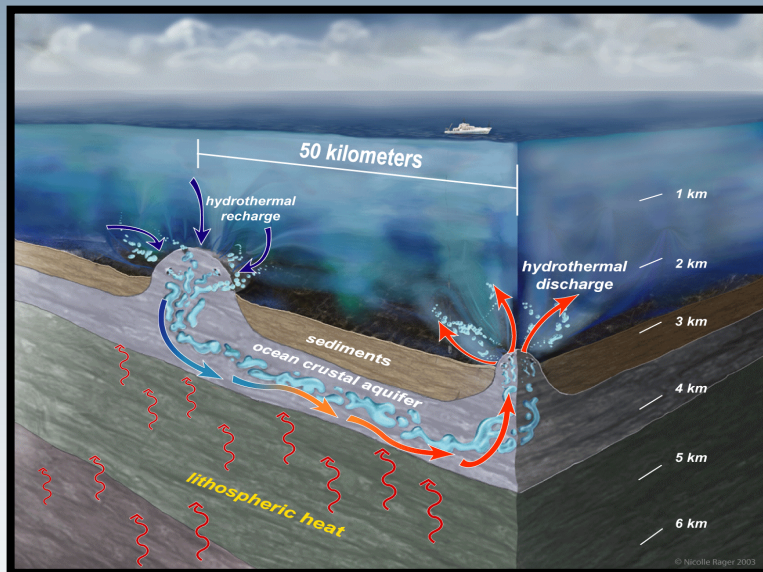
Axial Volcano Node





RCO has the Highest Density of ODP Holes in the Ocean Basins

Hydrothermal Breathing Holes



thermistors,
pressure sensors,
± seismometer

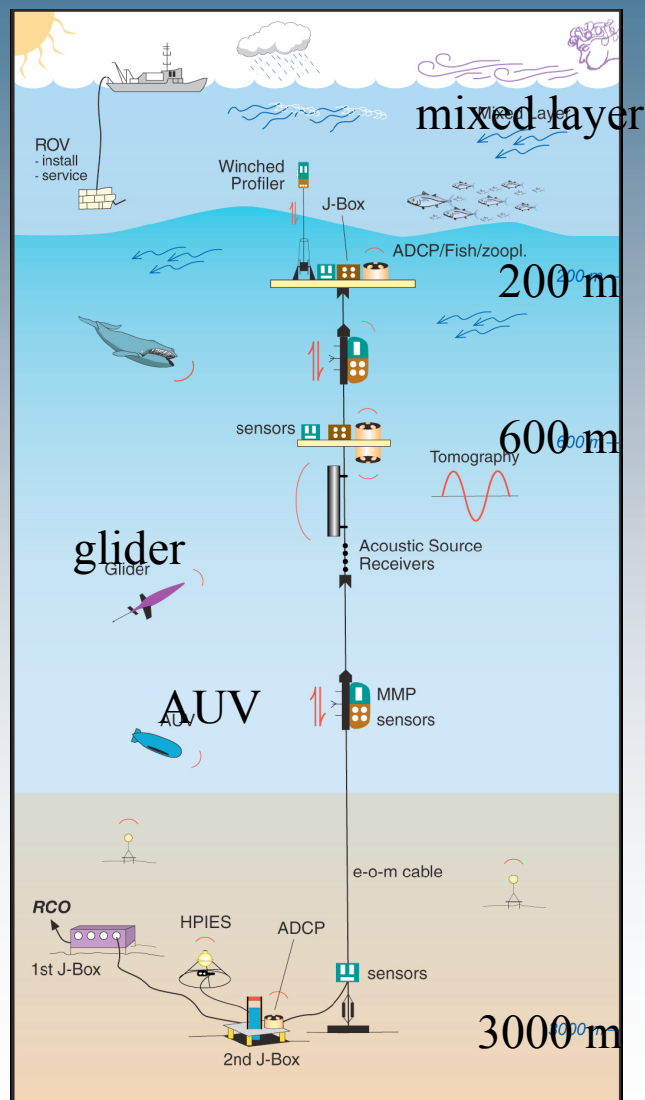
CORKS

packer

microbial-fluid
samplers



RCO Moorings: the 3rd Dimension





Regional Cabled Observatory Requirements

Global class vessel

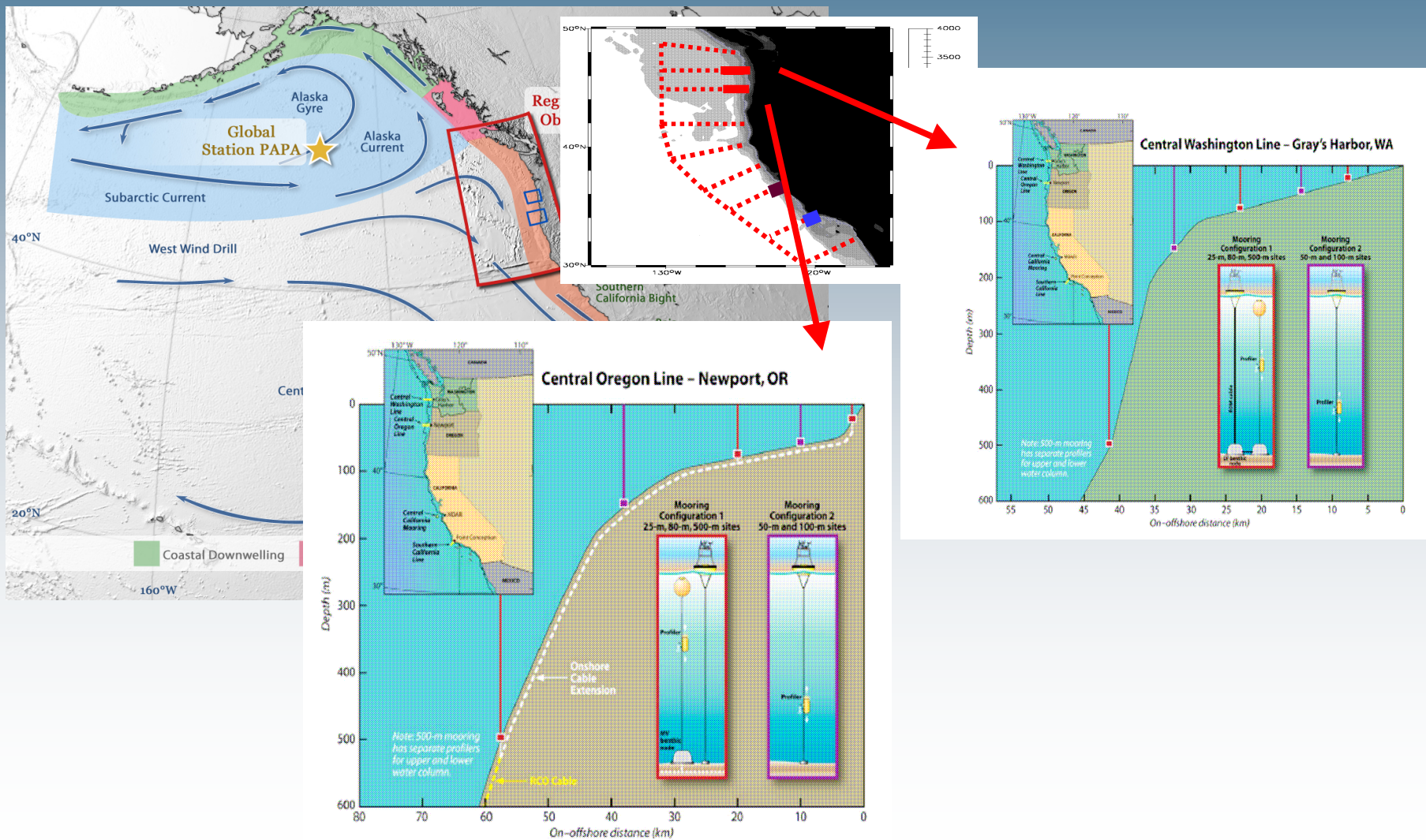
- 160 days per year
- May-Oct that can operate a working class ROV up to sea state 5

ROV needs to be capable of:

- Laying cables up to 5-7 km
- Placing instruments in predetermined locations
- Connecting ROV laid cables to instruments or extension cables to EOM cable moorings.

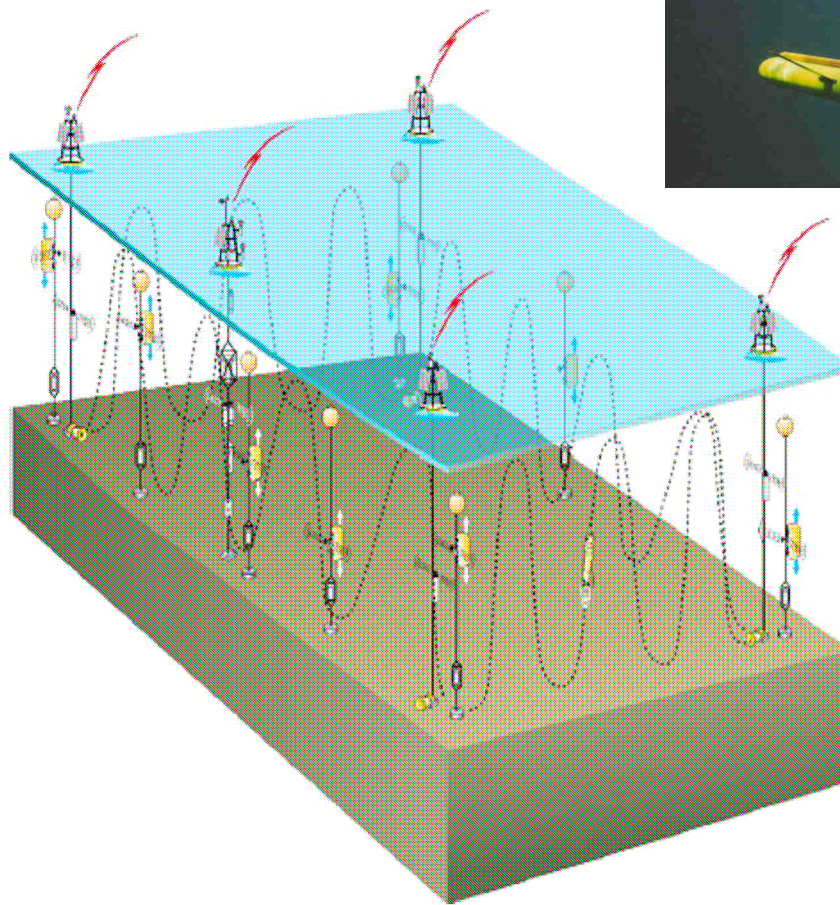
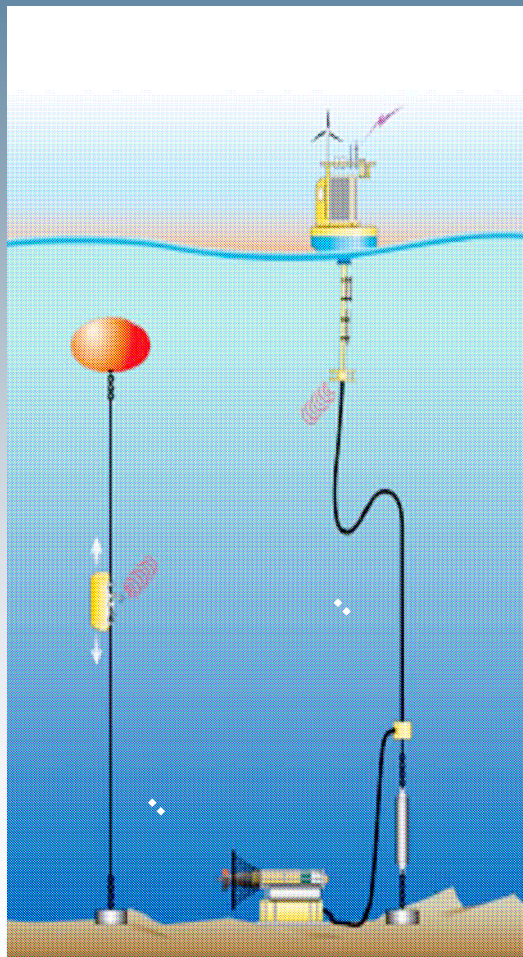


ENDURANCE COASTAL ARRAY





PIONEER COASTAL ARRAY

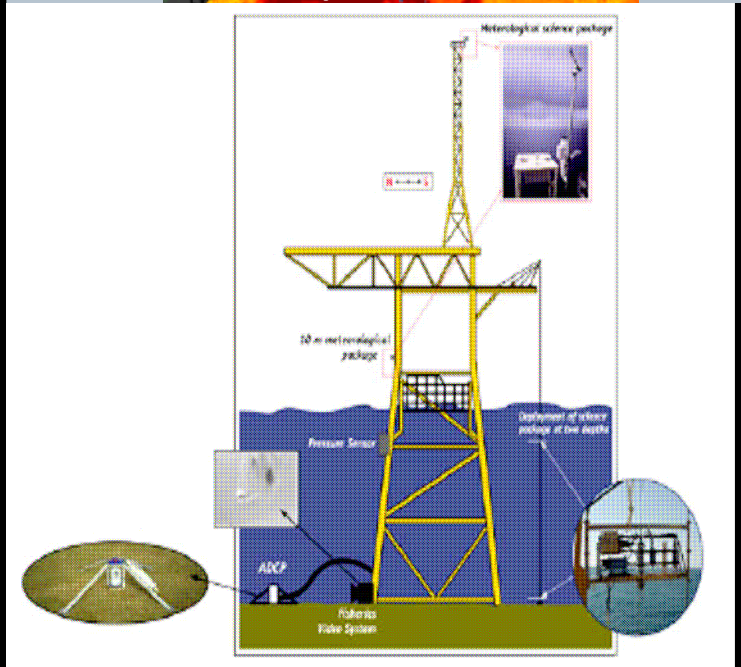
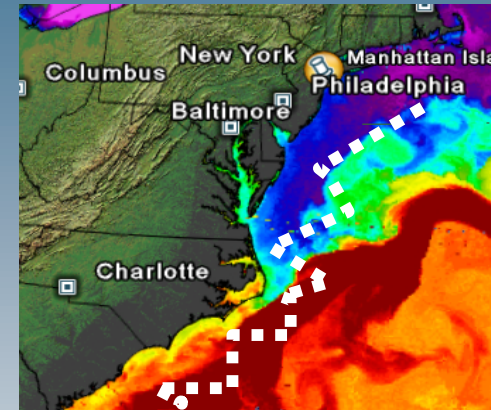
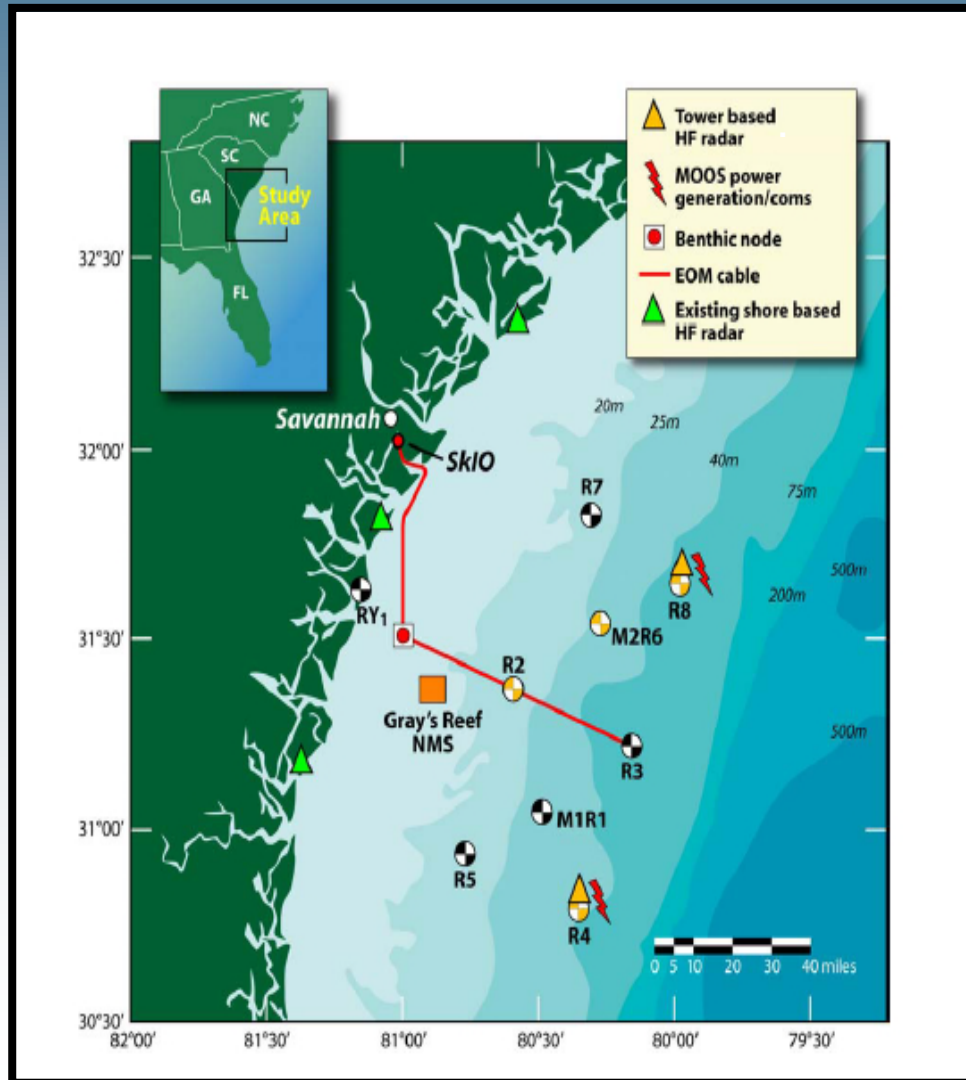




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EAST COAST ENDURANCE COASTAL ARRAY





Coastal Observatory Requirements

Endurance Lines Pacific NW - O&M ship days per year

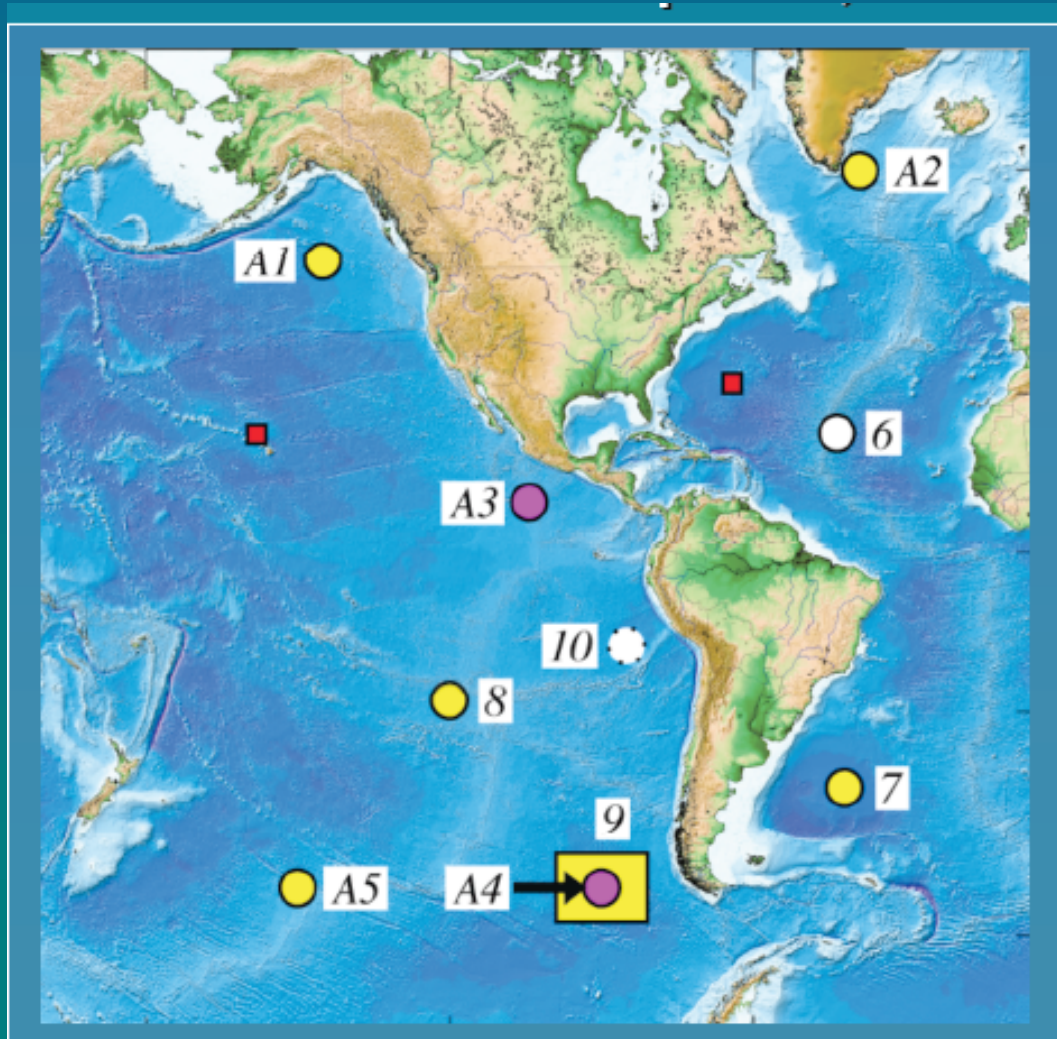
Small class vessel	24 d
Regional class	24 d
Regional + ROV	20 d

Pioneer Array

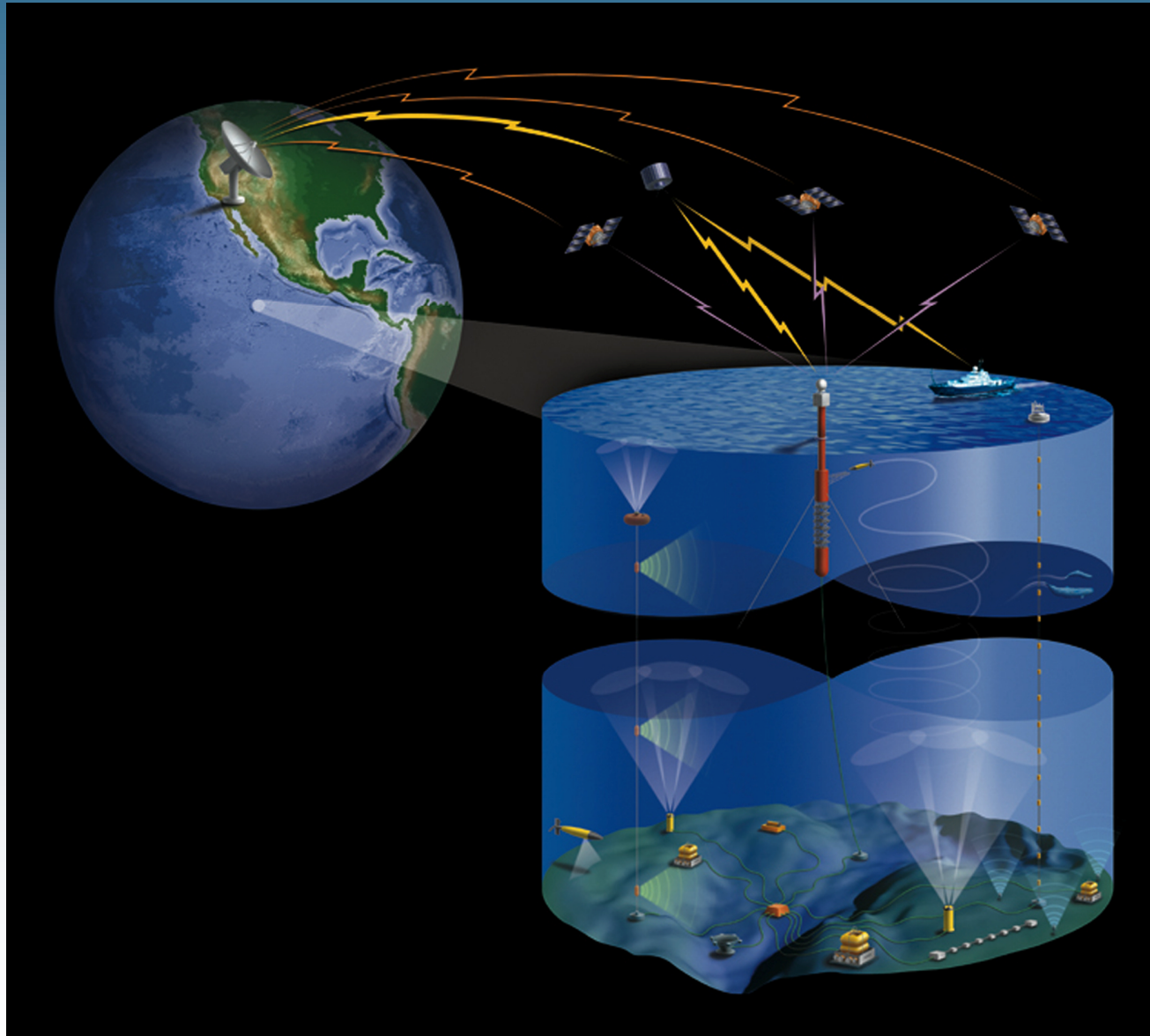
Deploy	16 d
O&M	14 d
	5 d plus ROV



Global Buoy Sites



High Latitude Spar Buoy





Global Buoys - 11 sites

Global class vessel O&M days per year

- 164 d
- 5 d with ROV

Intermediate class vessel

- 44 d

Ocean Observatories Initiative

