



# OOI Update

## UNOLS FIC

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Consortium for Ocean Leadership



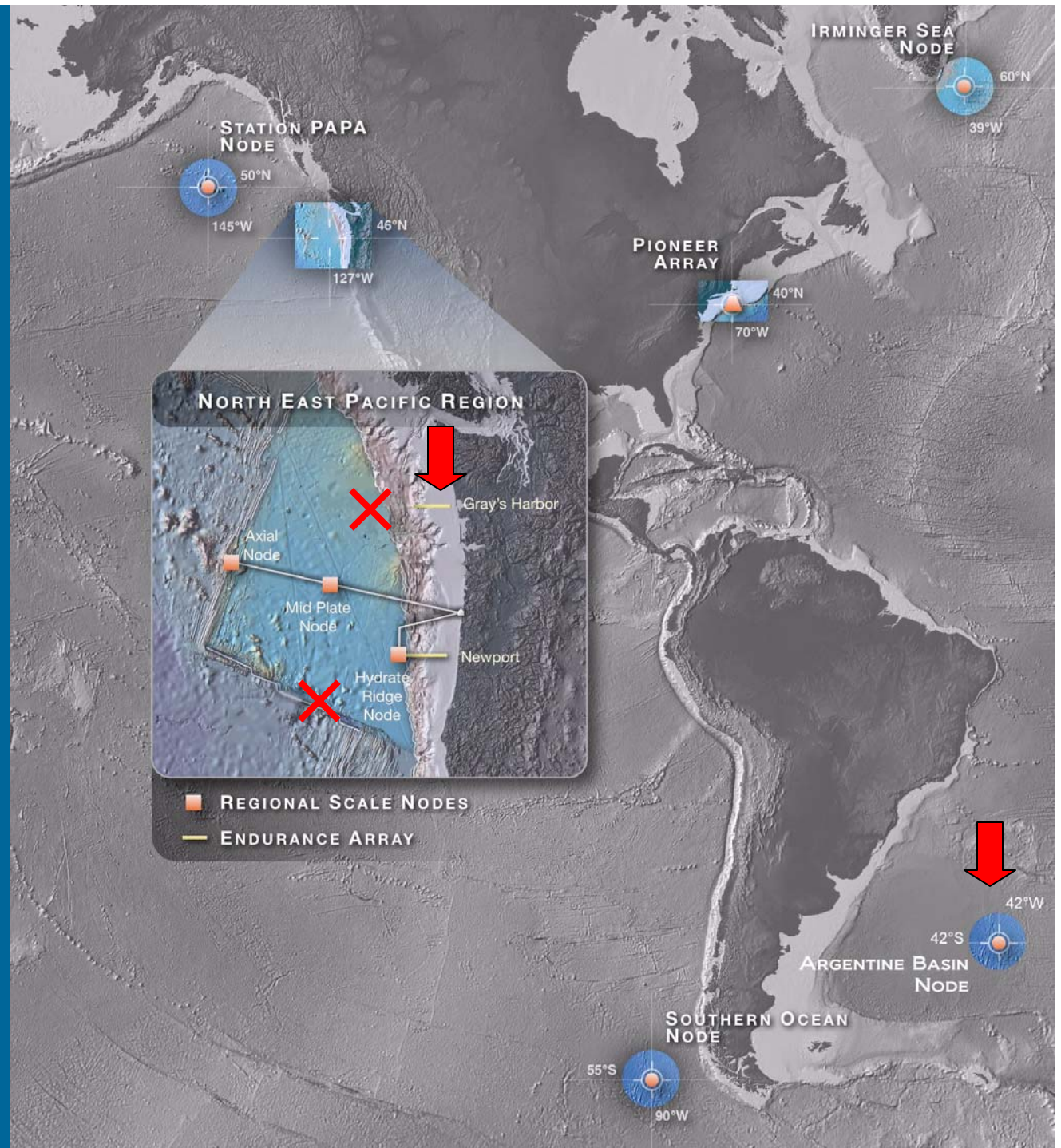
*UNOLS FIC*  
*October 14, 2009*

# Current Status

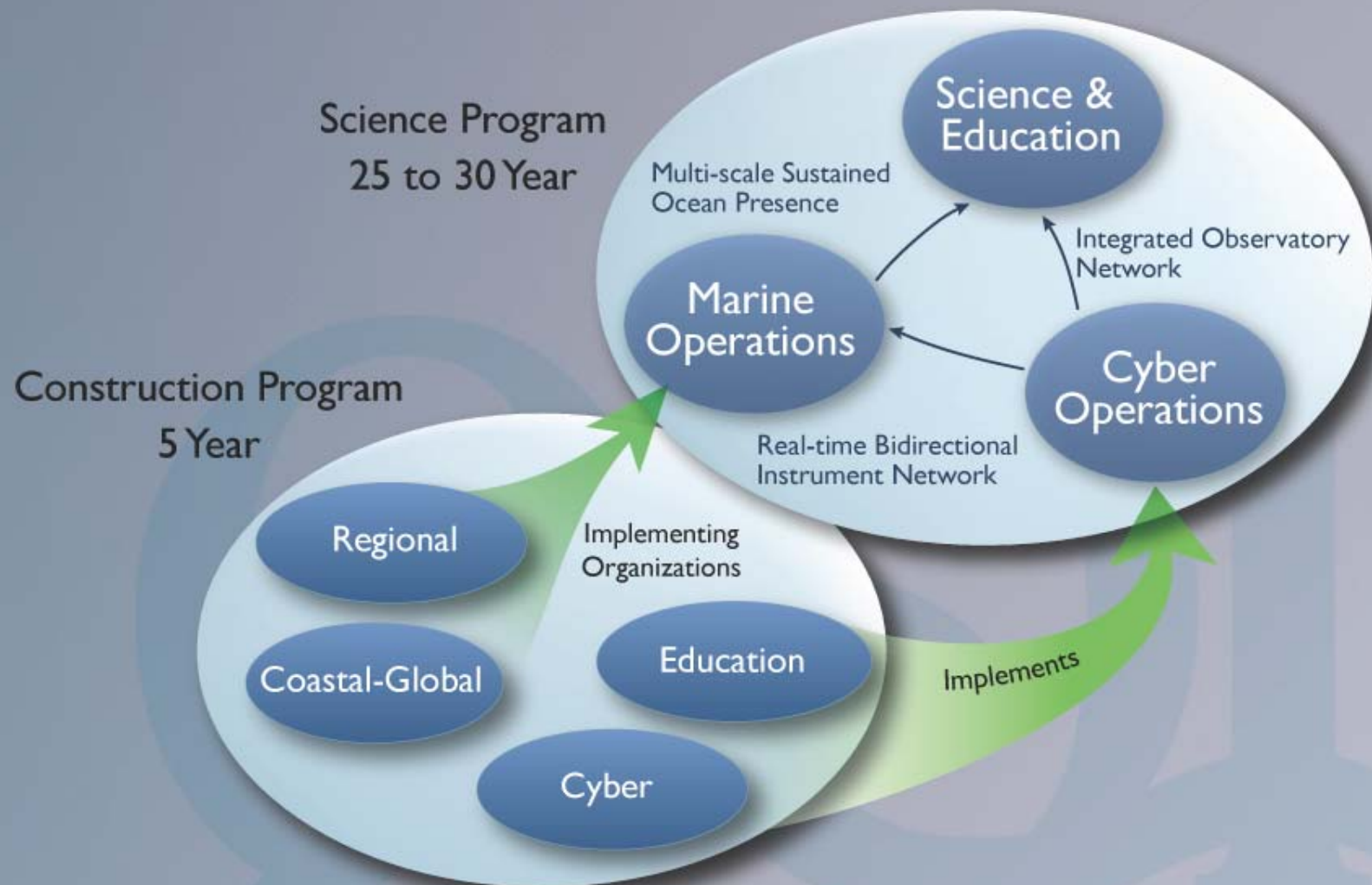
- Nov 2008- Successful Final Design Review
- March 2009- Design modification review
- May 2009- National Science Board approval
- September 2009- *National Science Foundation signs the Cooperative Agreement to begin construction*
  - 5 year construction; 2 years initial operations
  - *The project schedule is advanced 10 months.*

# Design Elements

- 4 Global Scale Nodes
- 3 Regional Scale Nodes in the NE Pacific
- Coastal Scale Nodes: Mid-Atlantic Pioneer Array, PNW Endurance Array
- Include mobile assets
- Cyberinfrastructure: enable adaptive sampling, custom observatory view, collaborative analysis
- Interfaces for education users

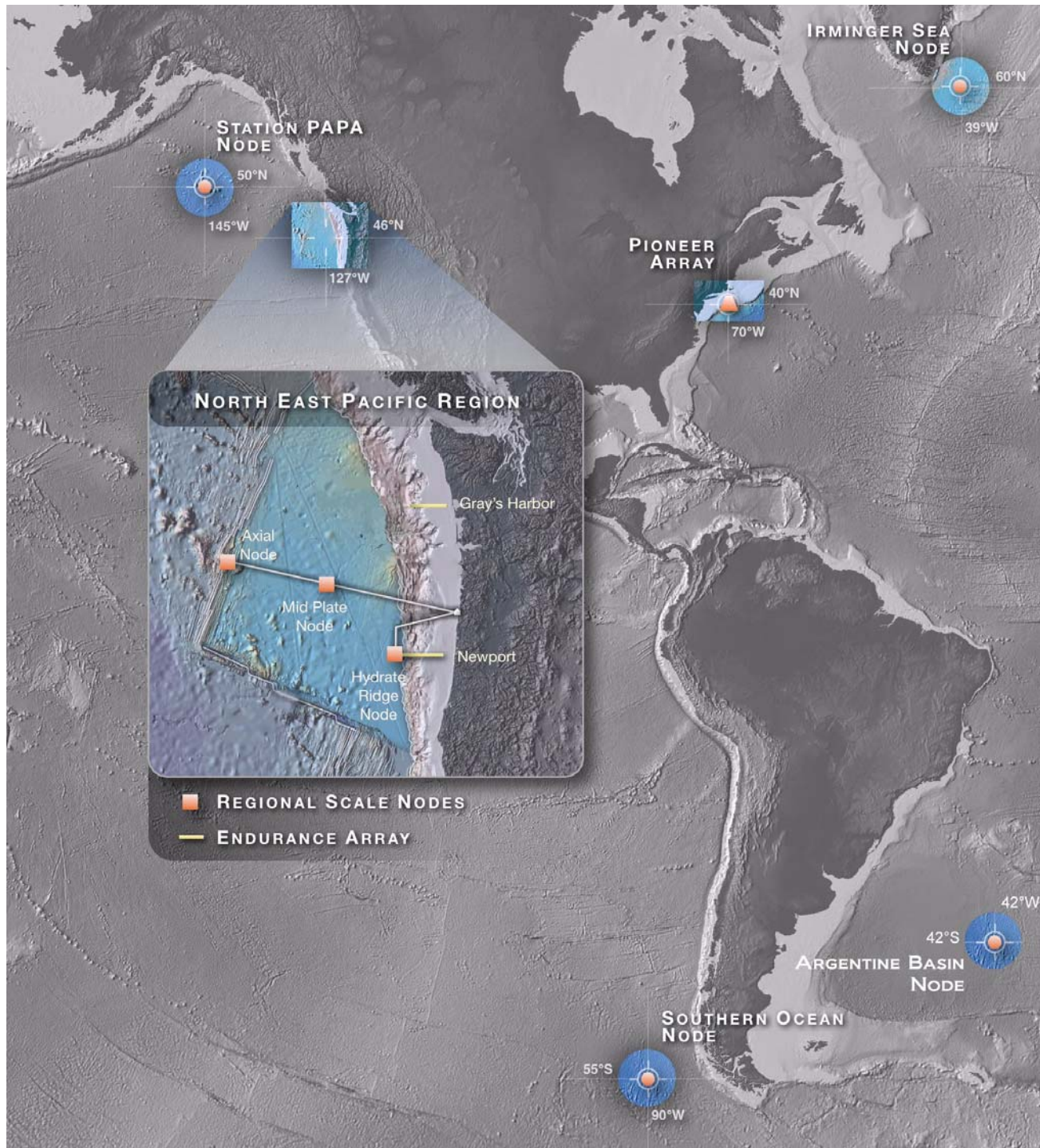


# Program Structure



# OOI Project Team

- Project Management: Consortium for Ocean Leadership
- Cyberinfrastructure: University of California - San Diego
- Coastal and Global-Scale:
  - Woods Hole Oceanographic Institution
  - Oregon State University
  - Scripps Institution of Oceanography
- Regional-Scale: University of Washington
- Education and Public Engagement: TBD

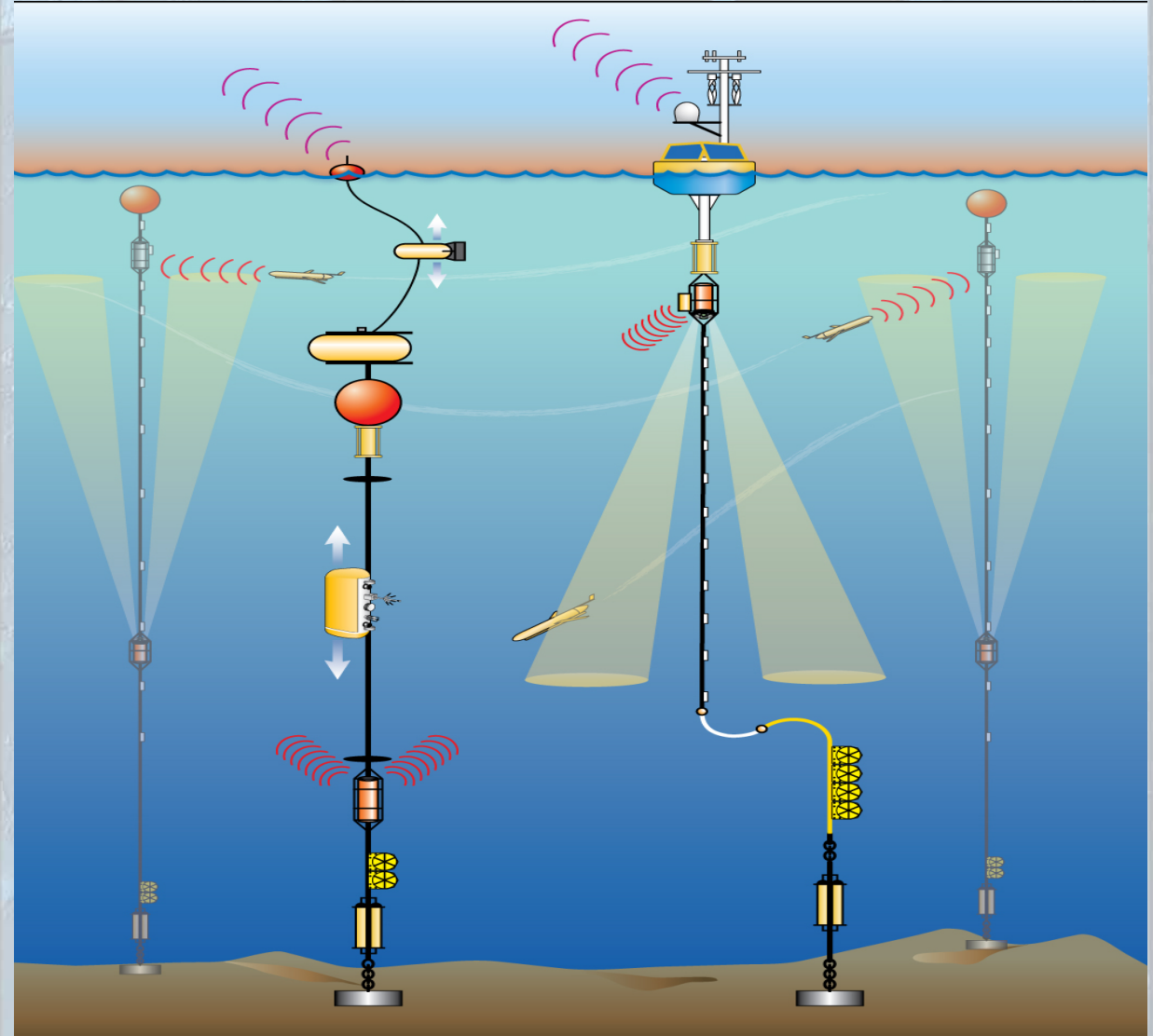


## 4 Global Sites

- High latitude locations
- Global ocean carbon cycling, ocean acidification
- Climate change, ocean circulation & mixing, ecosystems
- Air-sea interactions in high winds, severe storms

# Global Arrays

- Fixed and mobile assets
- Extended duration
- Surface to near bottom water column coverage
- Mesoscale footprint



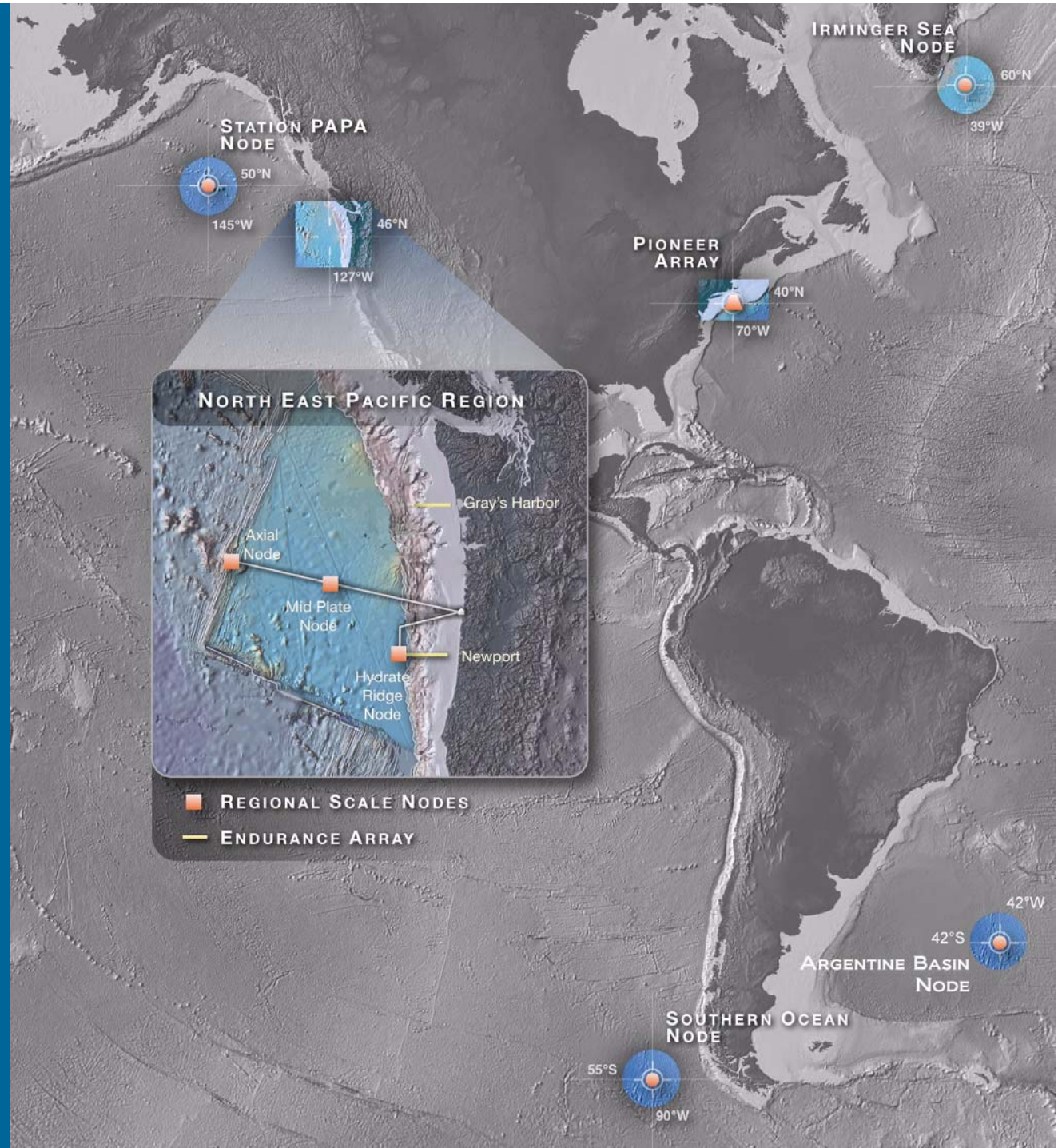
# Irminger Sea

Air-Sea Measurements  
bulk meteorology  
surface fluxes  
wave spectra  
CO<sub>2</sub> flux

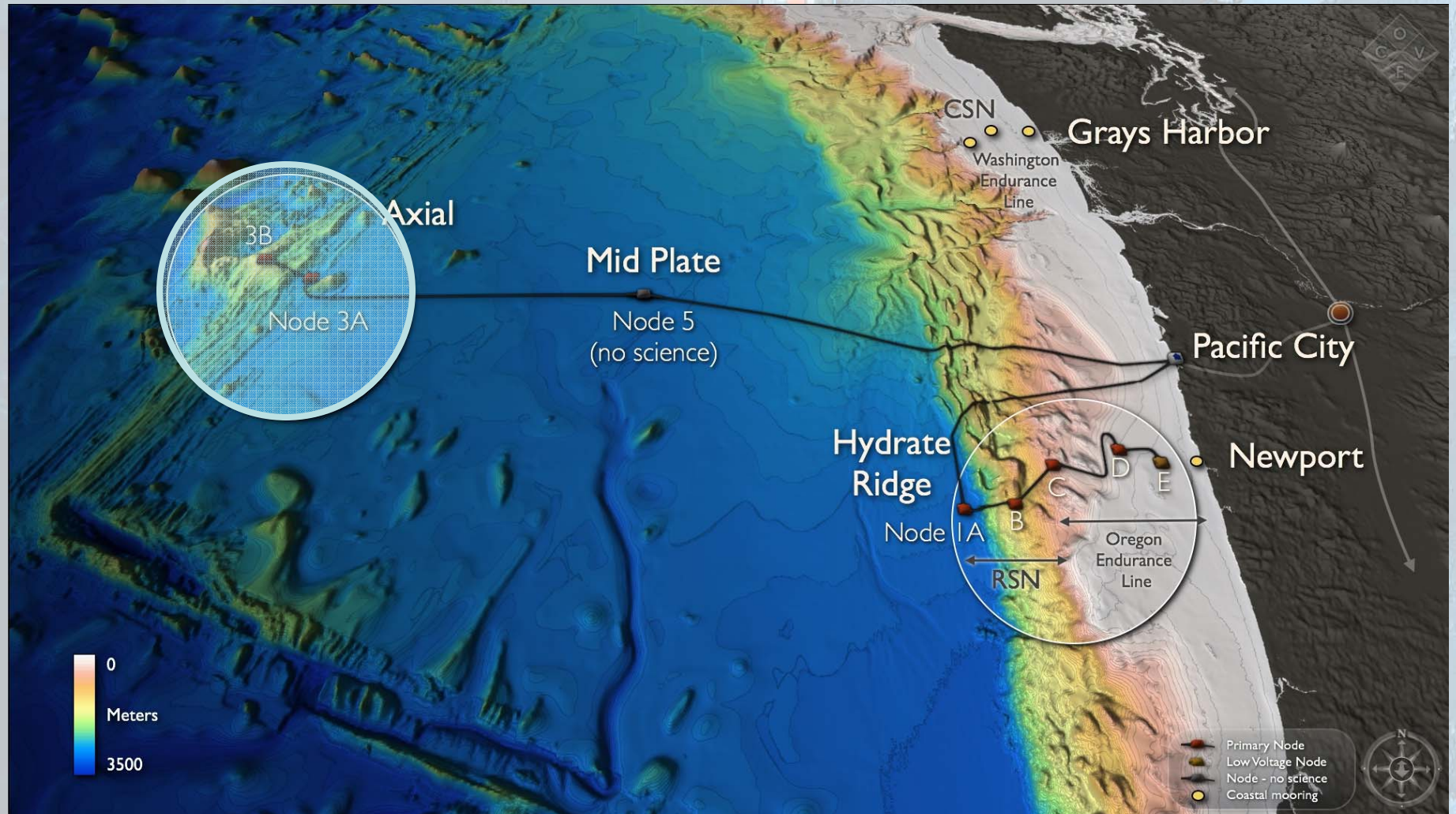
Water Column Measurements  
T, S, P  
mean currents,  
turbulent velocity  
DO, pCO<sub>2</sub>, pH, NO<sub>3</sub>  
optical attn, abs  
spectral irradiance, PAR  
chl-a, CDOM, backscatter

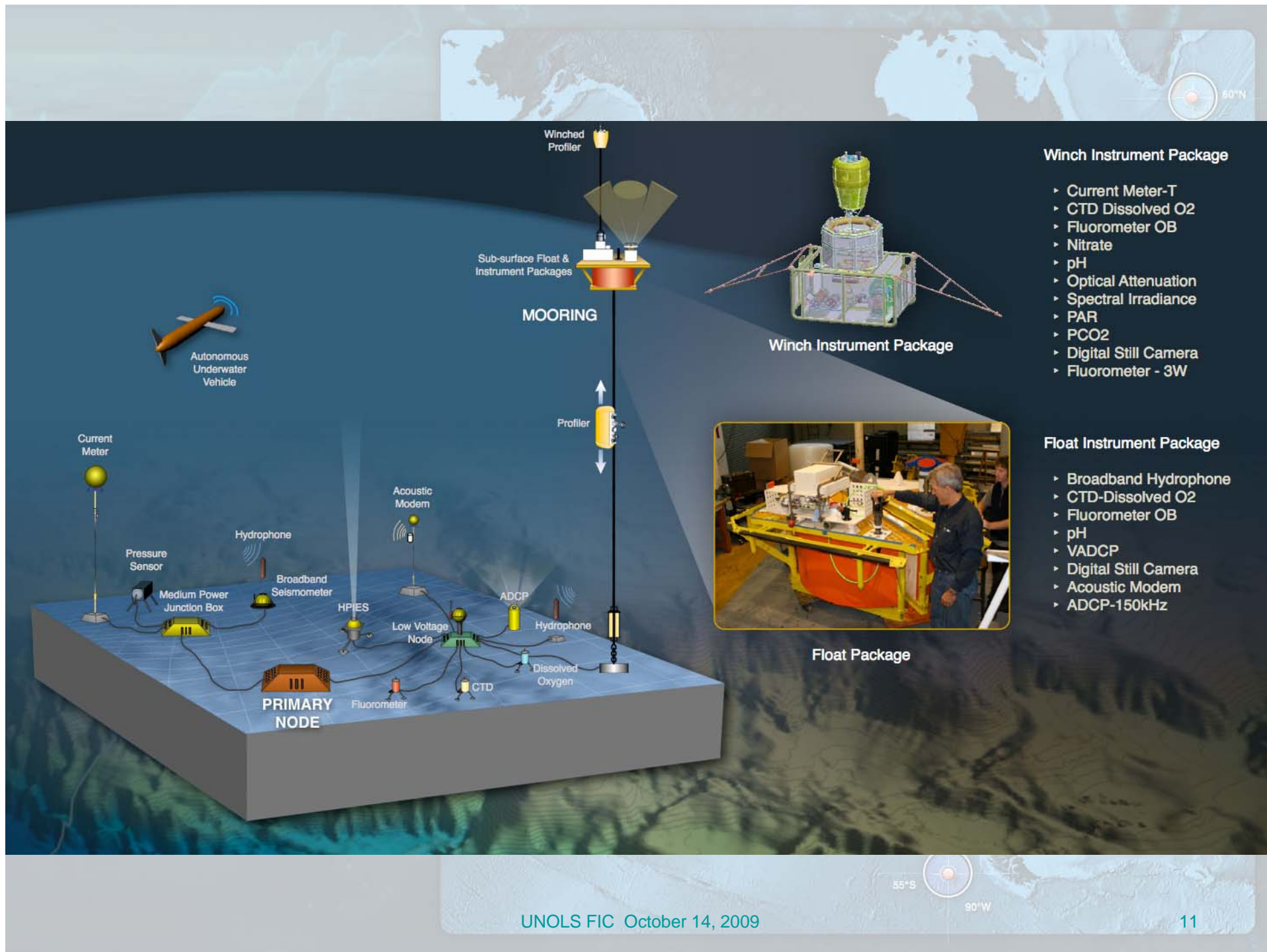
# Northeast Pacific Infrastructure

- Integrate global, regional, and coastal.
- Coastal to Ocean Basin
- Sea Surface to Seafloor
- Regional Scale –
  - ✓ 2 instrumented sites
  - ✓ Expansion capability
- Coastal Endurance –
  - ✓ 2 lines of moorings
  - ✓ connection to RSN cable
  - ✓ mobile assets



# Regional Scale Nodes







## Instruments

- Primary Node 3B
- Medium Voltage J-Box
- Broadband Seismometer
- Shortband Seismometer
- Thermistor Array
- Current Meter - Temp
- Camera 15/sec 4Mb
- Fluid - Microbial Sampler
- Temp-Chlorinity
- Mass Spectrometer
- Fluid Sampler - Temp
- Tilt-Pressure
- HD Camera
- pH - H<sub>2</sub>S-H<sub>2</sub>-Temp

## Summit of Axial Seamount

3 km

1550 m

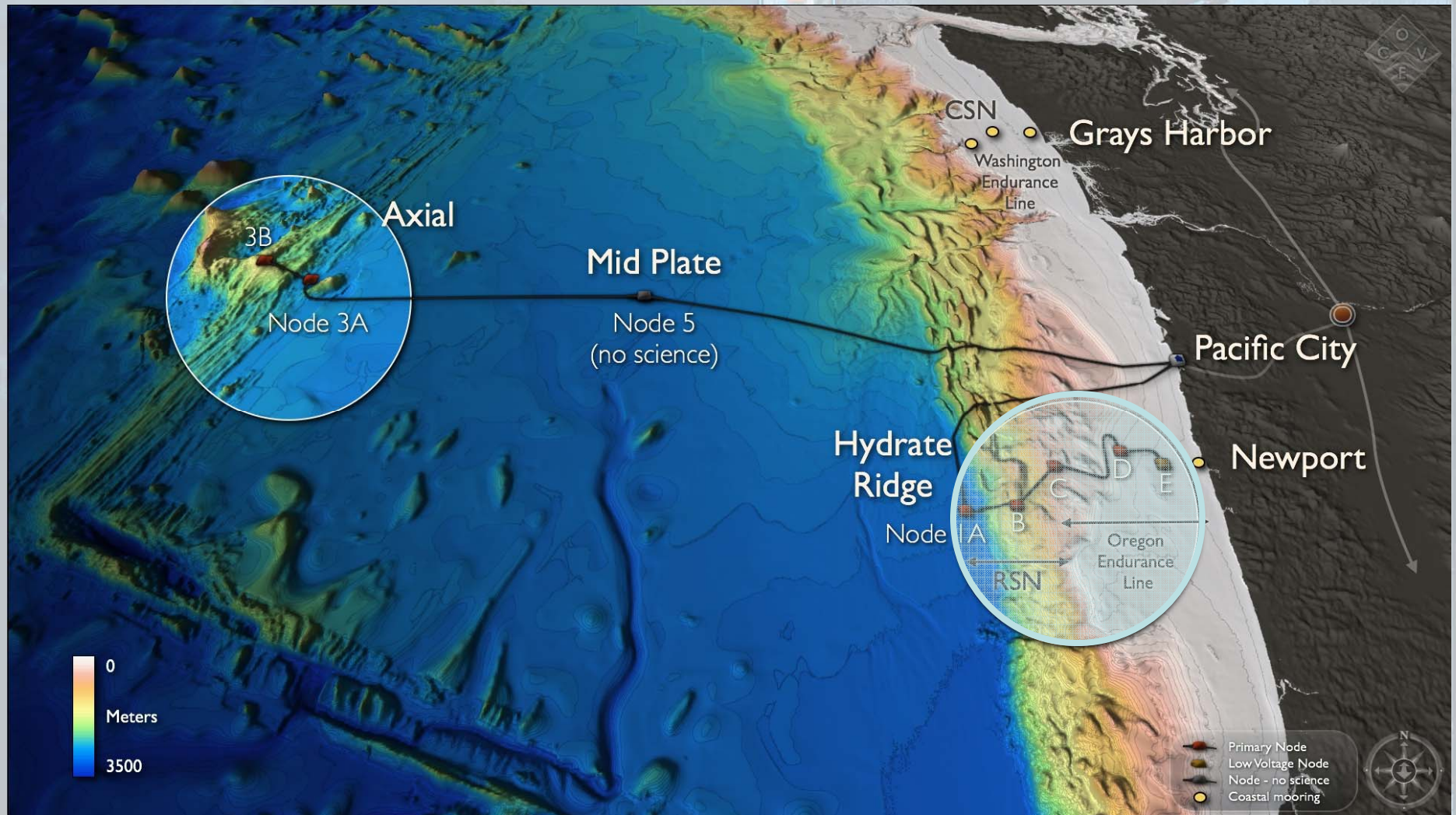
Node 3B

ASHES  
vent field

HD  
stereo












# Regional Scale Nodes

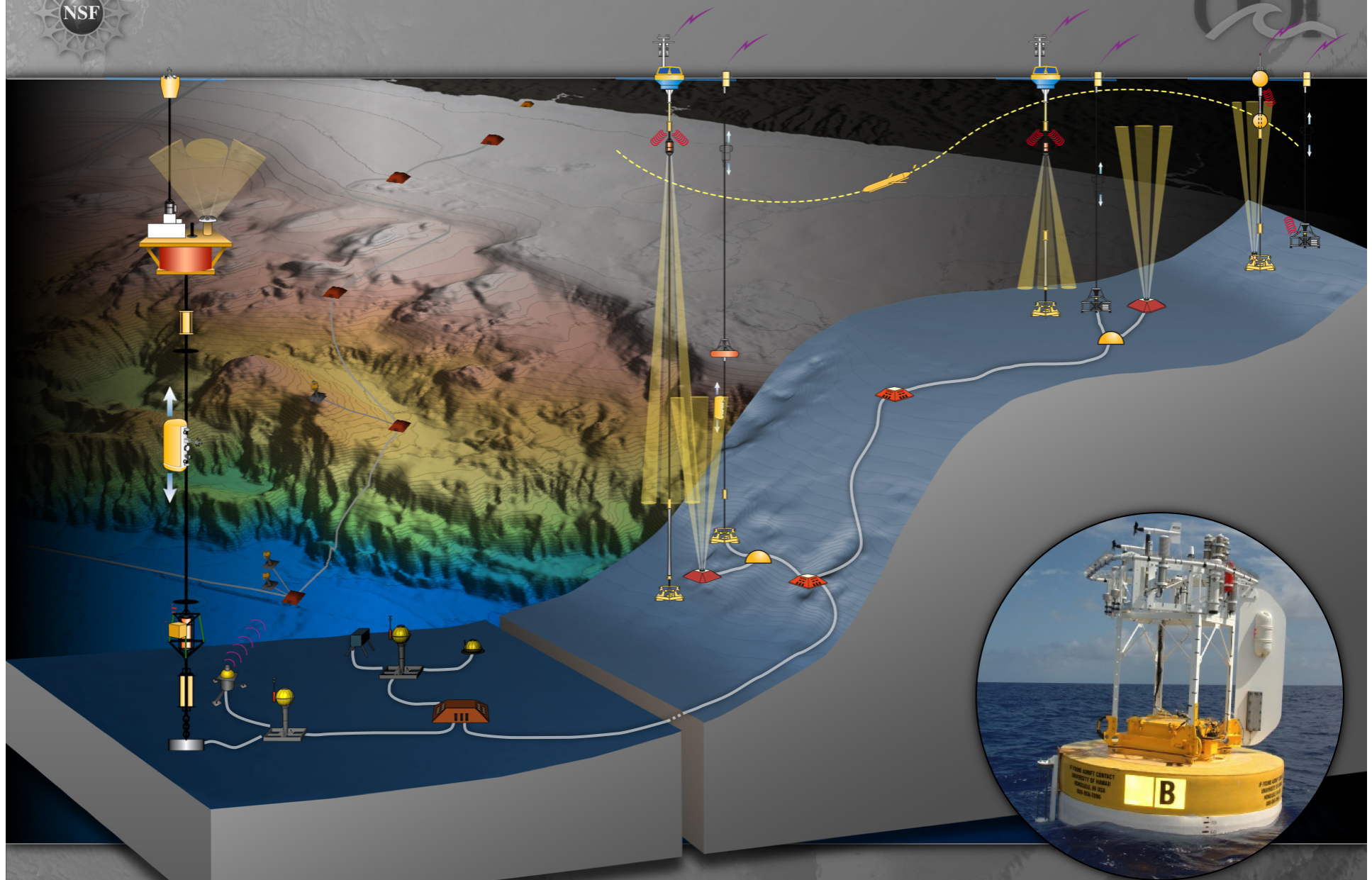




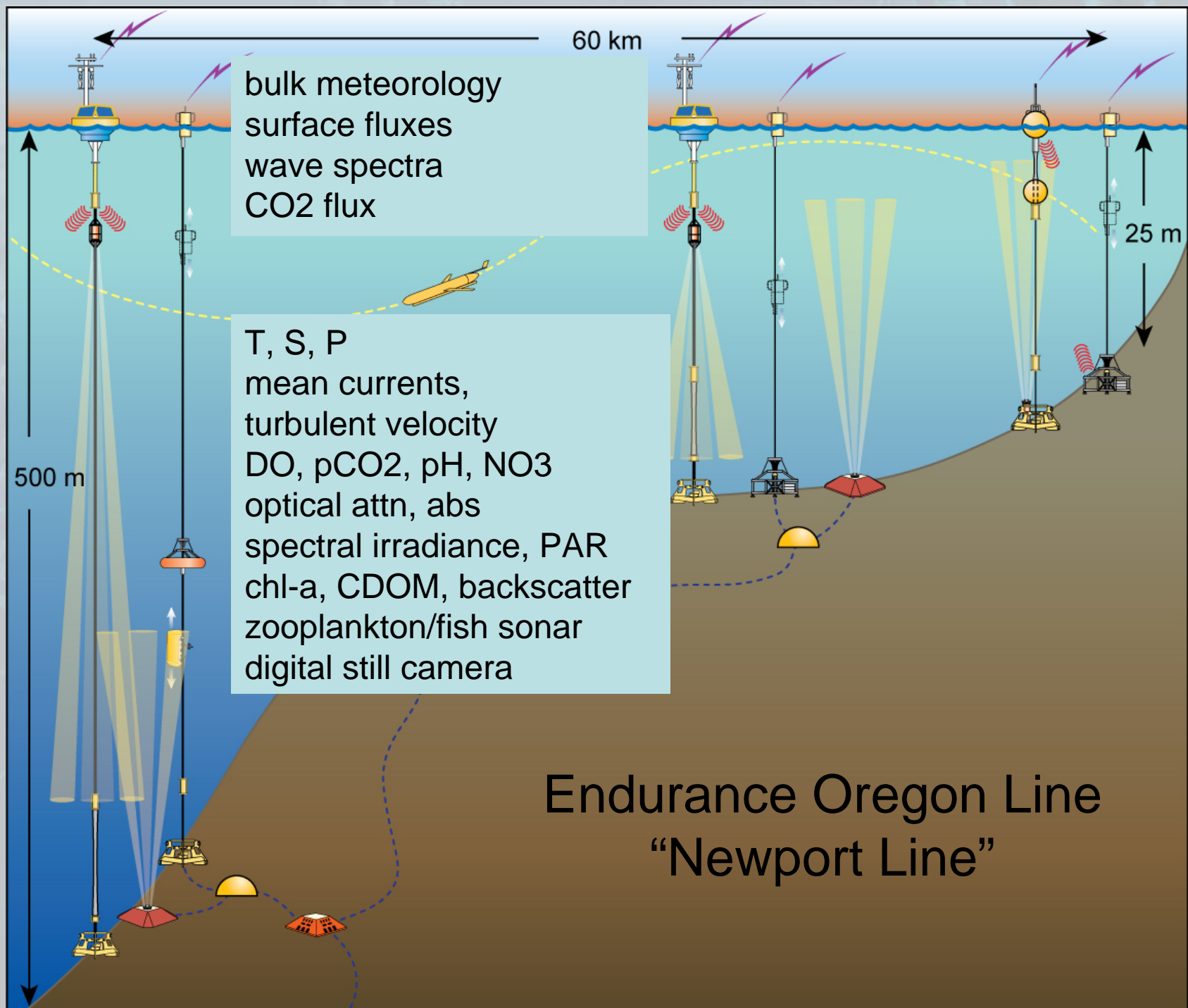
T, S, P  
mean currents,  
turbulent velocity  
DO, pCO<sub>2</sub>, pH, NO<sub>3</sub>  
optical attn, abs  
spectral irradiance, PAR  
chl-a, CDOM  
backscatter  
digital still camera  
hydrophone

### Instruments

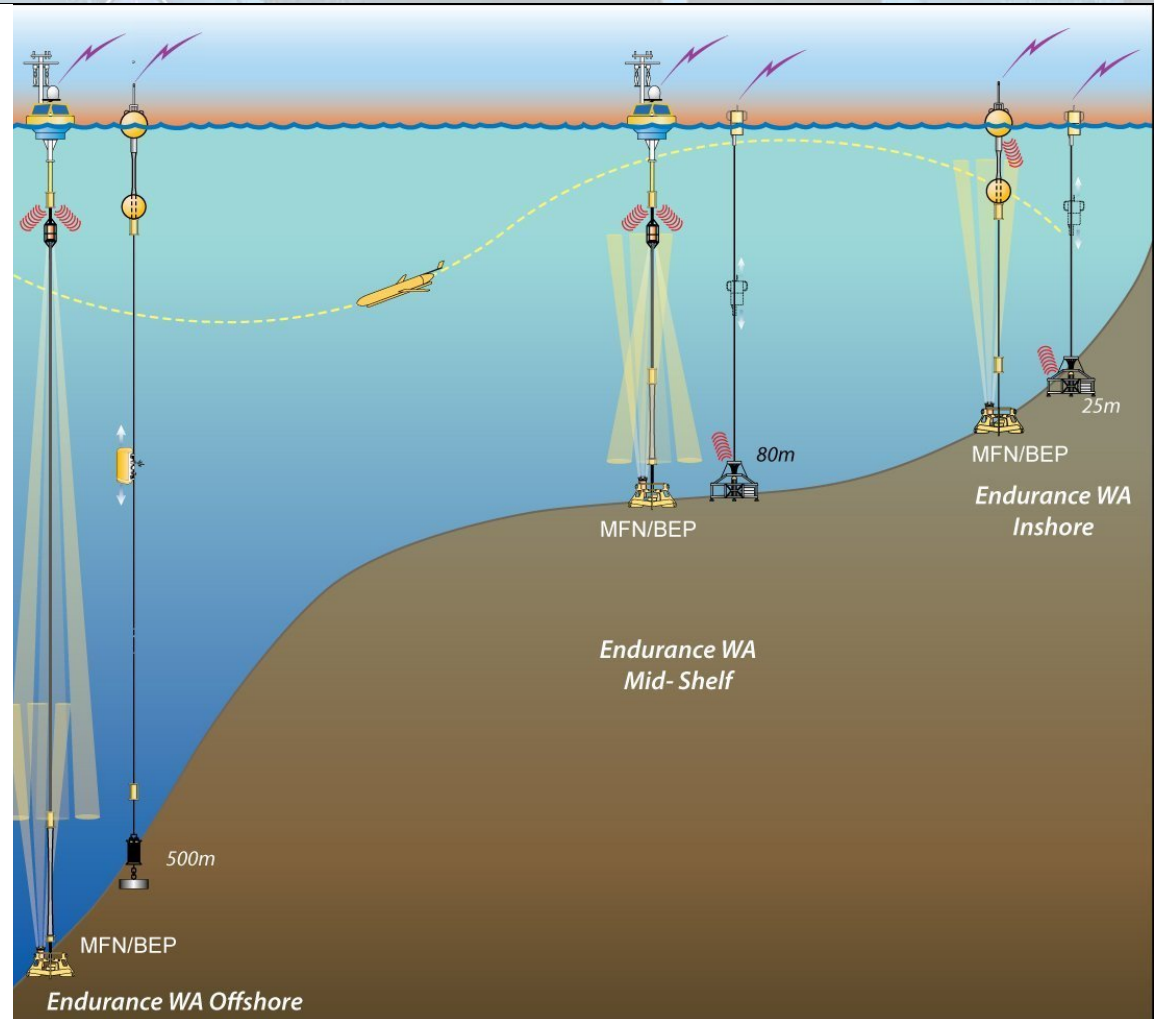
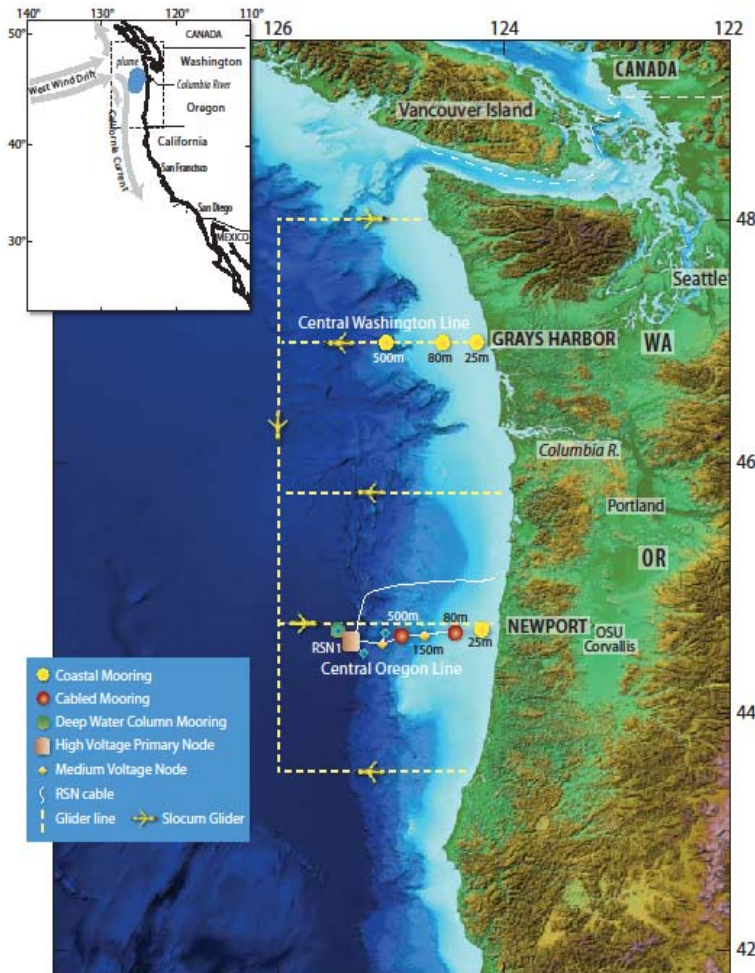
-  Short Period Seismometer
-  Broadband Seismometer
-  ADCP
-  Current Meter - Temp
-  Pressure Sensor
-  Chemical Flow Sensor - Temp
-  Mass Spectrometer
-  Fluid Sampler - Temp
-  Ethernet Camera and Strobe



Ocean Observatories Initiative

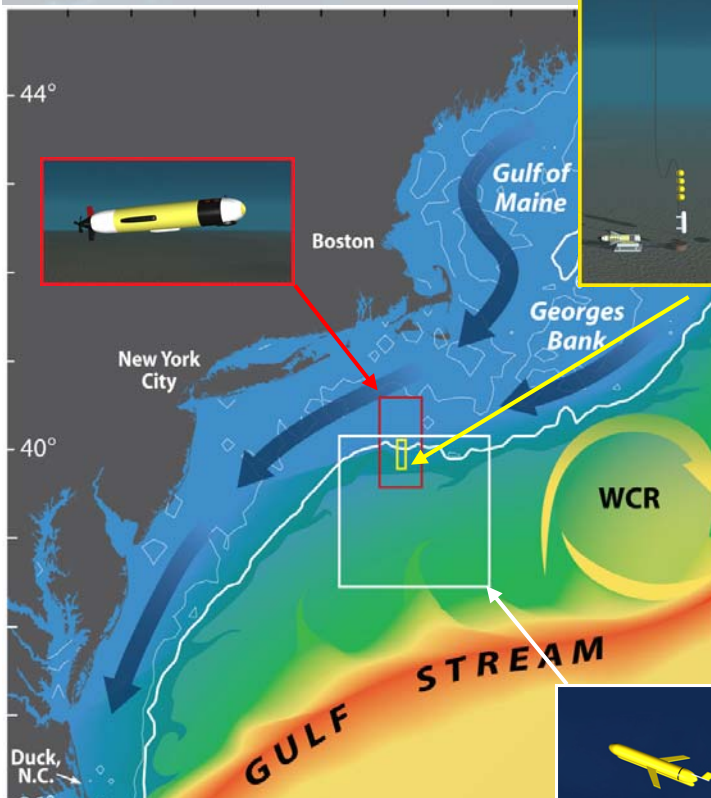
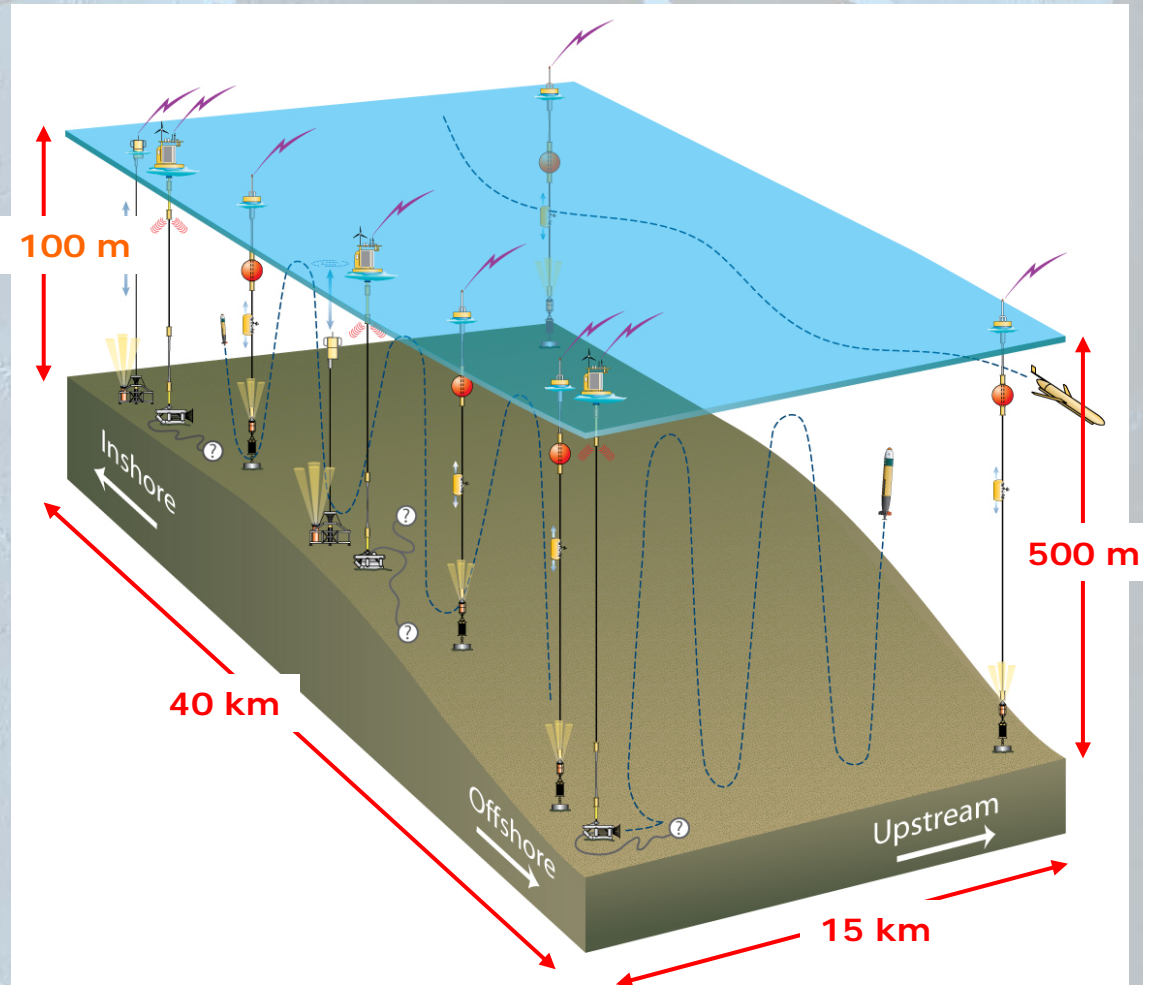


# Endurance Washington “Grays Harbor” Line



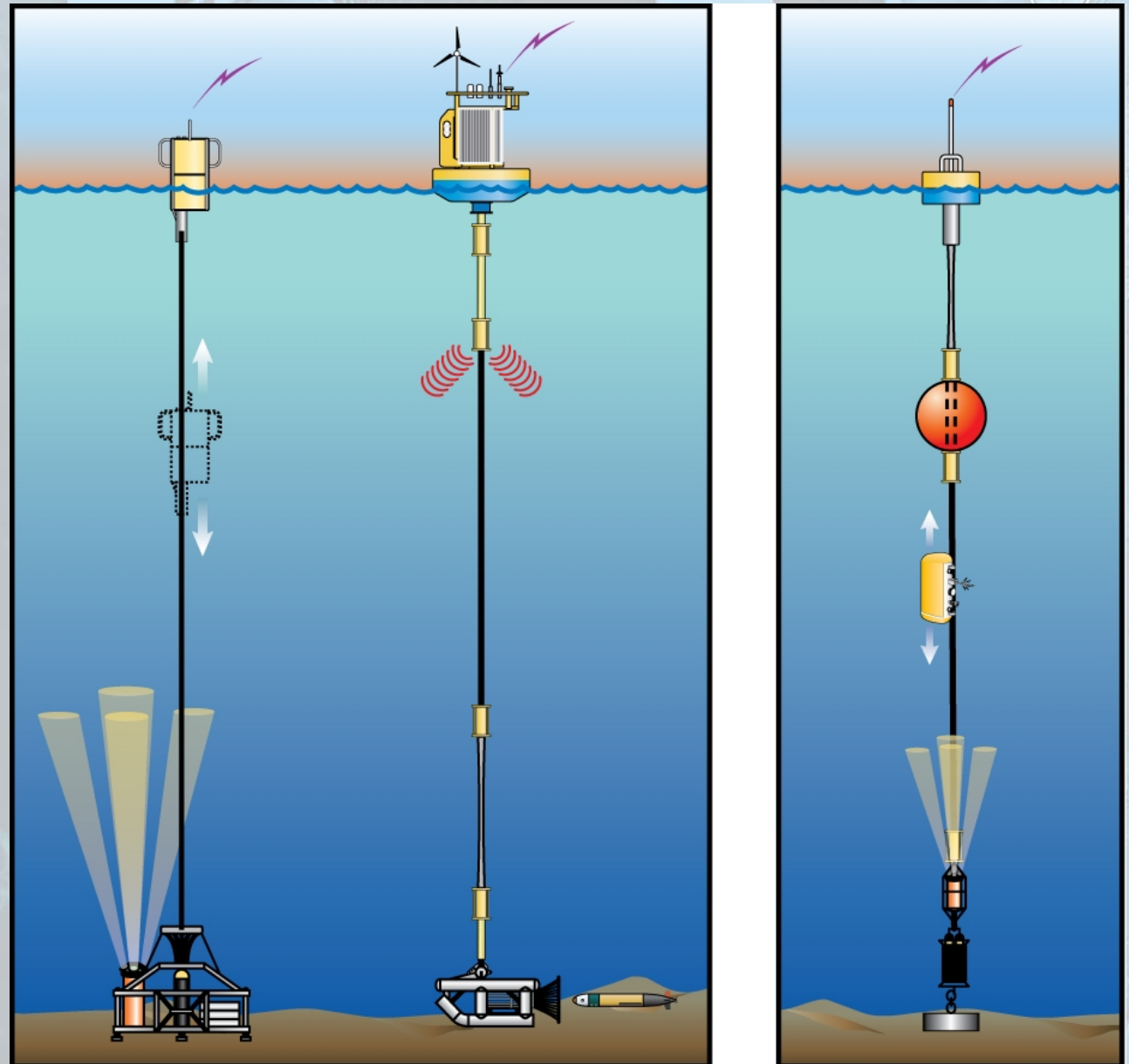
# Pioneer Array

- Closely spaced array
- Process resolving
- Fixed and mobile assets
- Reconfigurable
- Movable



# Pioneer Mooring Design

- Full water column sampling
- High resolution spatial coverage
- Multi-function nodes
- AUV docks



## OOI Estimated Days at Sea - October 2009 Update

Infrastructure	Vessel Class	Days at Sea by year								
		2010	2011	2012	2013	2014	2015	2016	2017	
		Construction					Operations			
<b>Atlantic</b>										
Pioneer Array	Intermediate				18	18	18	18	18	
Pioneer Array	< 80 ft.			4	12	12	12	12	12	
Irminger Sea	Global				28	28	28	28	28	
Argentine Basin	Global				24	24	24	24	24	
<b>Pacific</b>										
Regional Scale Nodes	Global+ROV	28			64	59	40	40	40	
Station Papa	Global			0	22	22	22	22	22	
Southern Ocean	Global					24	24	24	24	
Endurance Array	Global+ROV		0	0	0	5	5	5	5	
Endurance Array	Global					8	8	8	8	
Endurance Array	Intermediate	5	1	9	0	30	22	22	22	
Endurance Array	< 80 ft.					54	54	54	54	
Global testing	Intermediate	3								
	Global	3								
Total by vessel class										
UNOLS	Global	3	0	0	74	106	106	106	106	
	Global+ROV	28	0	0	64	64	45	45	45	
	Intermediate	8	1	9	18	48	40	40	40	
	< 80 ft.	0	0	4	12	66	66	66	66	

# Upcoming Events

- Community Science Workshops:
  - November 11-12, Baltimore, MD
  - Spring 2010, TBD location
- Fall AGU Town Hall Meeting (Dec 2009)
- 2010 Ocean Sciences (Feb 2010)
  - Session IT46 *New Discoveries Enabled by Sustained Ocean Observing Systems*  
Abstracts due October 15
  - Town Hall / Booth
- <http://ooi.oceanleadership.org>