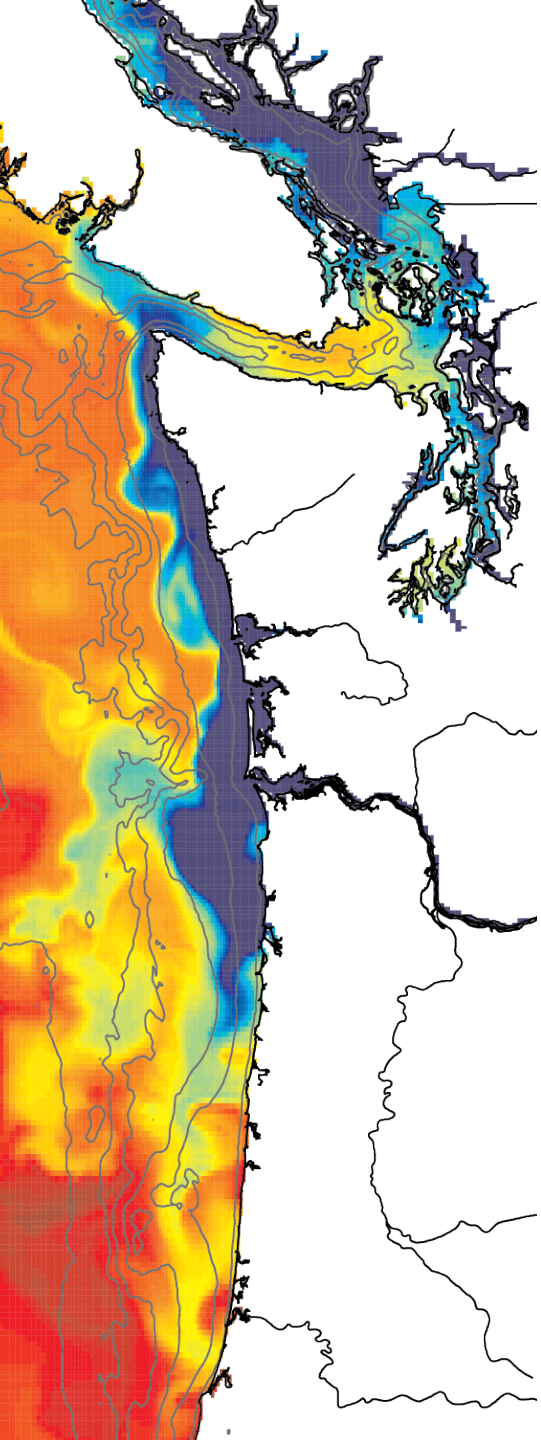
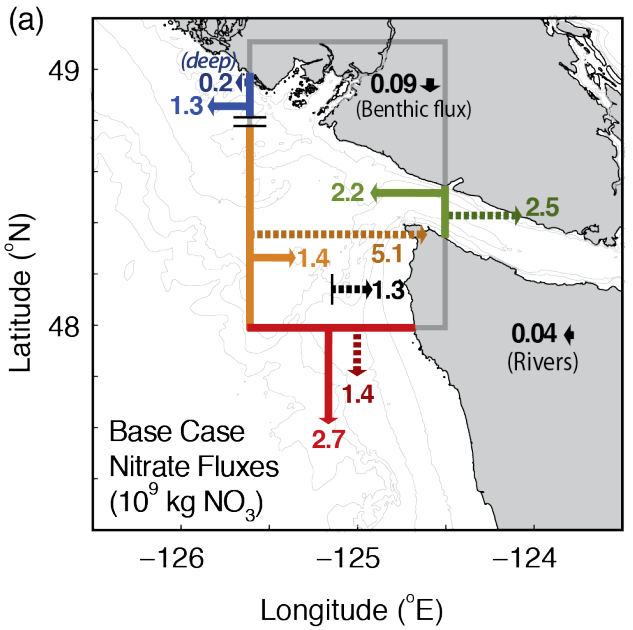


Coastal Pacific Northwest Productivity and the 2014-2015 Anomalies

(Kristen Davis, University of California, Irvine)

- Using a coupled physical-ecosystem model, Davis et. al (2014) showed that estuarine-enhanced upwelling of marine nutrients fuels a third of the primary productivity on the Washington shelf.



- How have the anomalous conditions in 2014-2015 (water column stratification, wind, precipitation) affected biological productivity in the Pacific Northwest?

- OOI data can help us to understand the anomalous conditions, create forcing files for the model, and assess model performance.

Stace Beaulieu (stace@whoi.edu)
Woods Hole Oceanographic Institution

How I plan to use OOI Coastal Observatory Data, wearing two hats:

As a biological oceanographer:

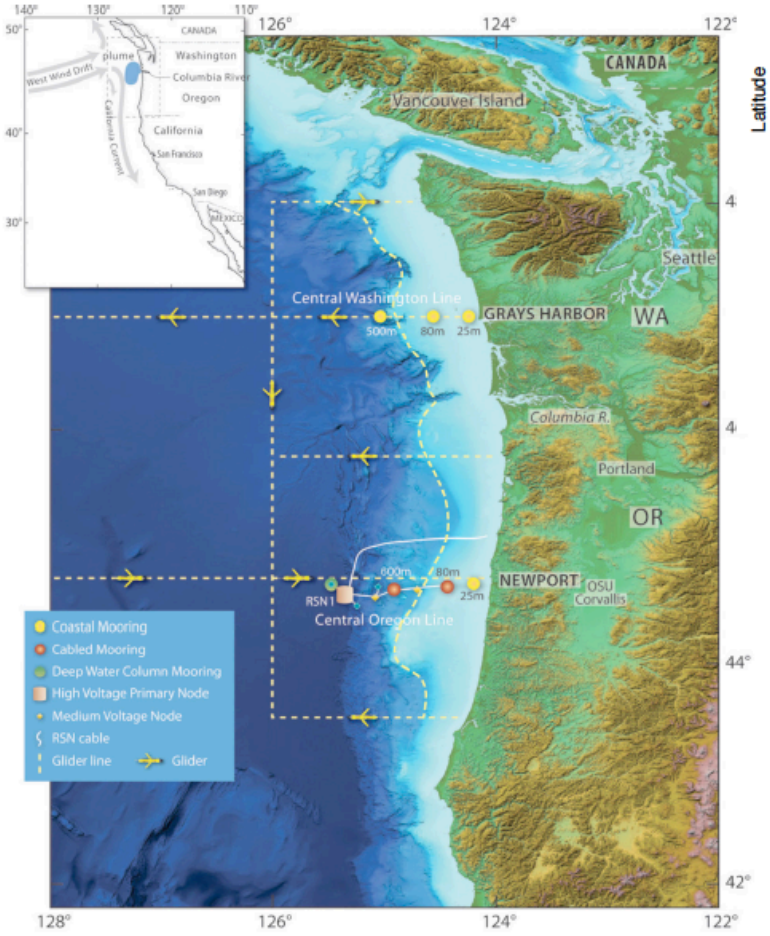
I am collaborating with biological oceanographers and computer scientists on an NSF CyberSEES project: *"A Computational and Analytic Laboratory for Modeling and Predicting Marine Biodiversity and Indicators of Sustainable Ecosystems."*

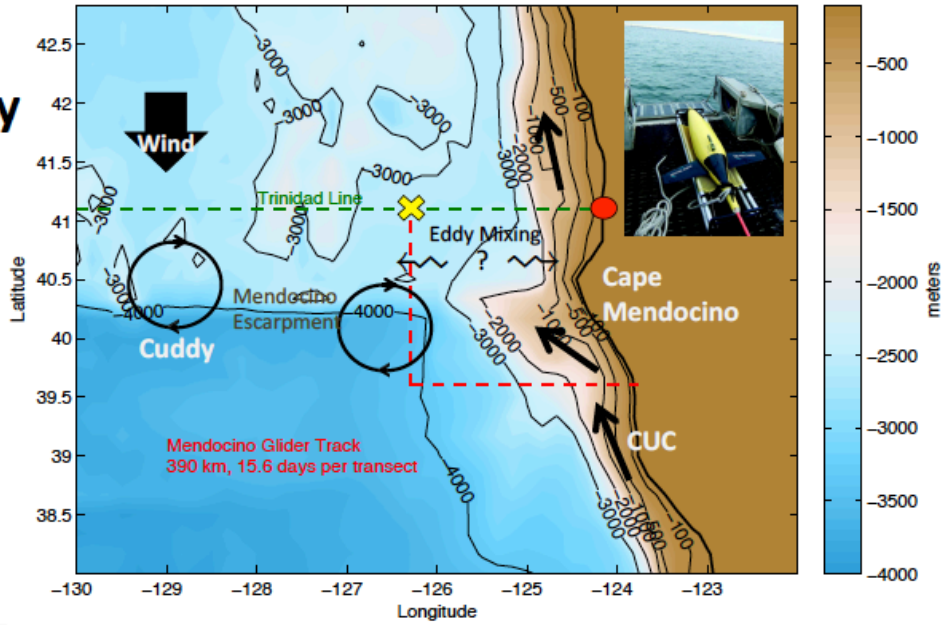
Our project is focusing on the Northeast U.S. Continental Shelf Large Marine Ecosystem.

As coordinator of WHOI's Ocean Informatics initiative:

I would like to help other WHOI scientists, staff, and students in learning how to access and utilize OOI data in their research.

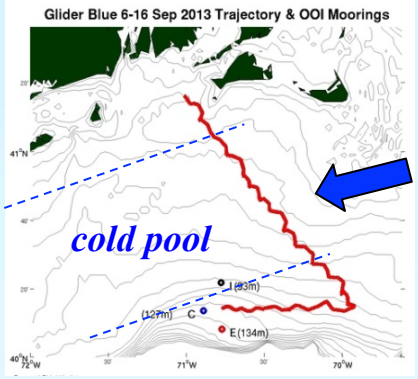
Stuart P. Bishop
North Carolina State University

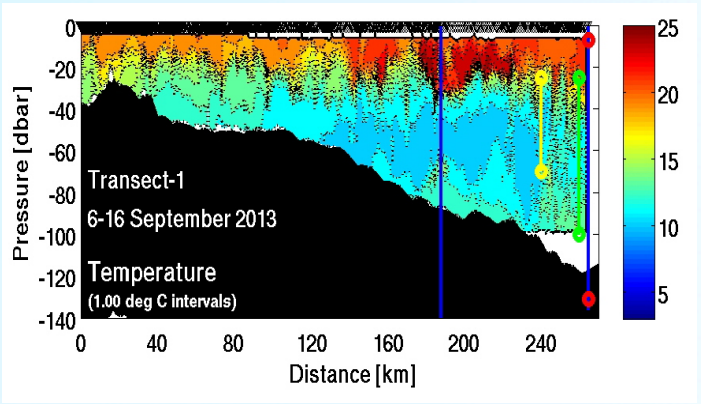




- **Endurance Array Interests:**
  - Temporal and along-shelf variability in California Undercurrent (CUC)
  - Cross-shelf fluxes of heat, salt, & dissolved oxygen (DO)
  - Close tracer budgets
  - Are there hot spots for cross-shelf exchange?
  - Comparison with cross-shelf transport at Cape Mendocino to the south

Southern New England Bight (SNEB) COLD POOL …*W.S.Brown*

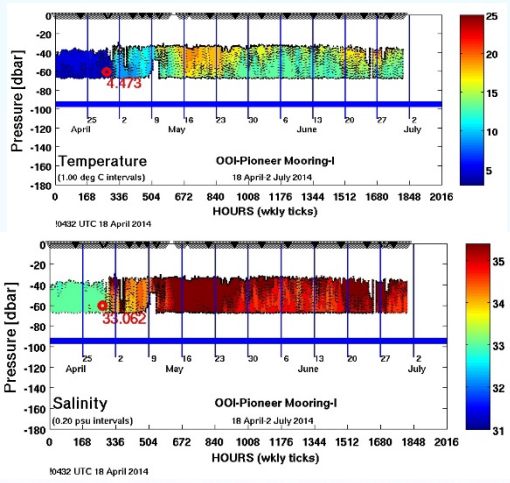




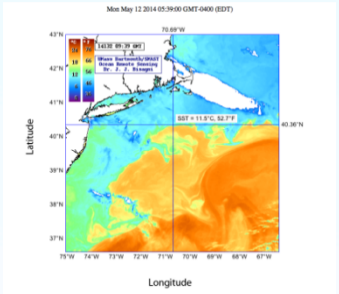
Remnant Winter Water ..isolated by spring stratification

….fed by *cold water* from up-shelf …but *when?* ..*where?*…& *how much?*

OOI Pioneer Array (OPA) Moorings & Glider Data will help to address ??? re "rates of COLD POOL growth & erosion"



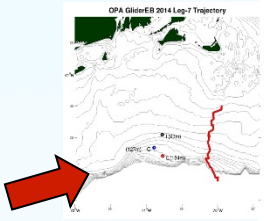
mooring-I 18 April–30 June 2014



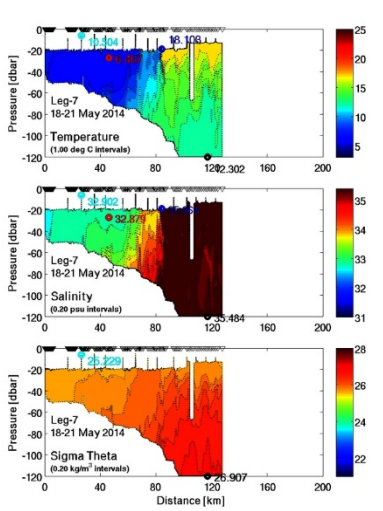
The ***May 2014*** **AVHRR SST image** documents the **passage of a warm core Gulf Stream ring** south of the OOI Pioneer Array (OPA)

The OPA ***18-21 May 2014*** **glider-EB**

north-to-south ***Leg-7***

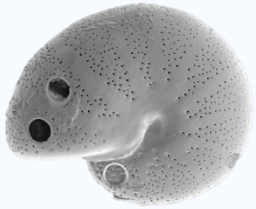
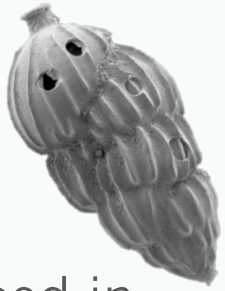


temperature, salinity & density anomaly



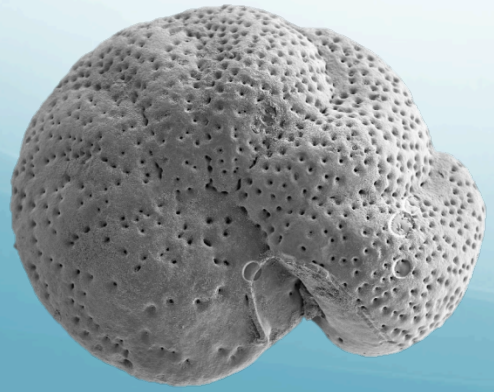
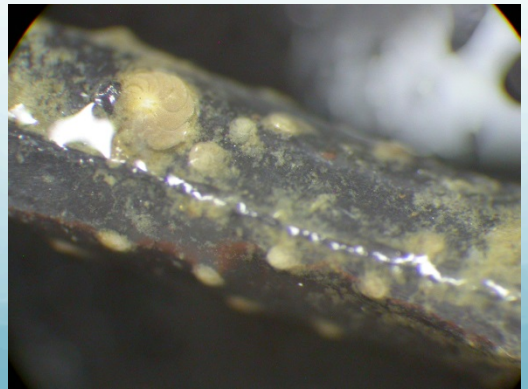
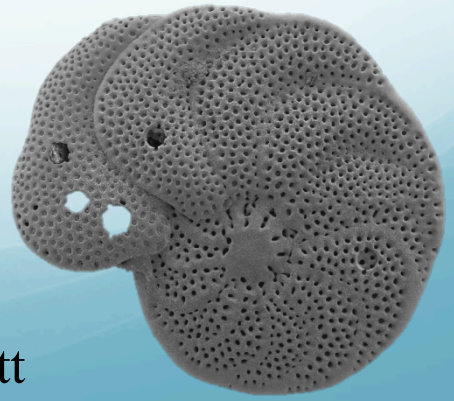
UMASS DARTMOUTH

Biogeochemical Discoveries

- Water chemistry measured by OOI instruments
  - Can be used to evaluate biogeochemical proxies used in modern and past climate investigations
    - Calcifying microorganisms (e.g., foraminifera)

- Future seafloor experiments nearby OOI instruments
  - Can be used to develop and calibrate new geochemical and ecological proxies

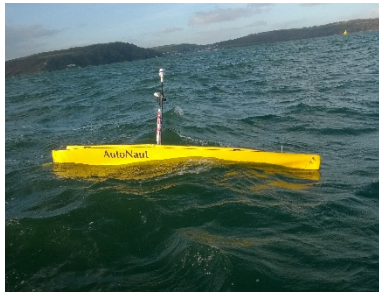
Burkett

Research Experience for Undergraduates:

Ocean Observing for Emerging Ocean Scientists

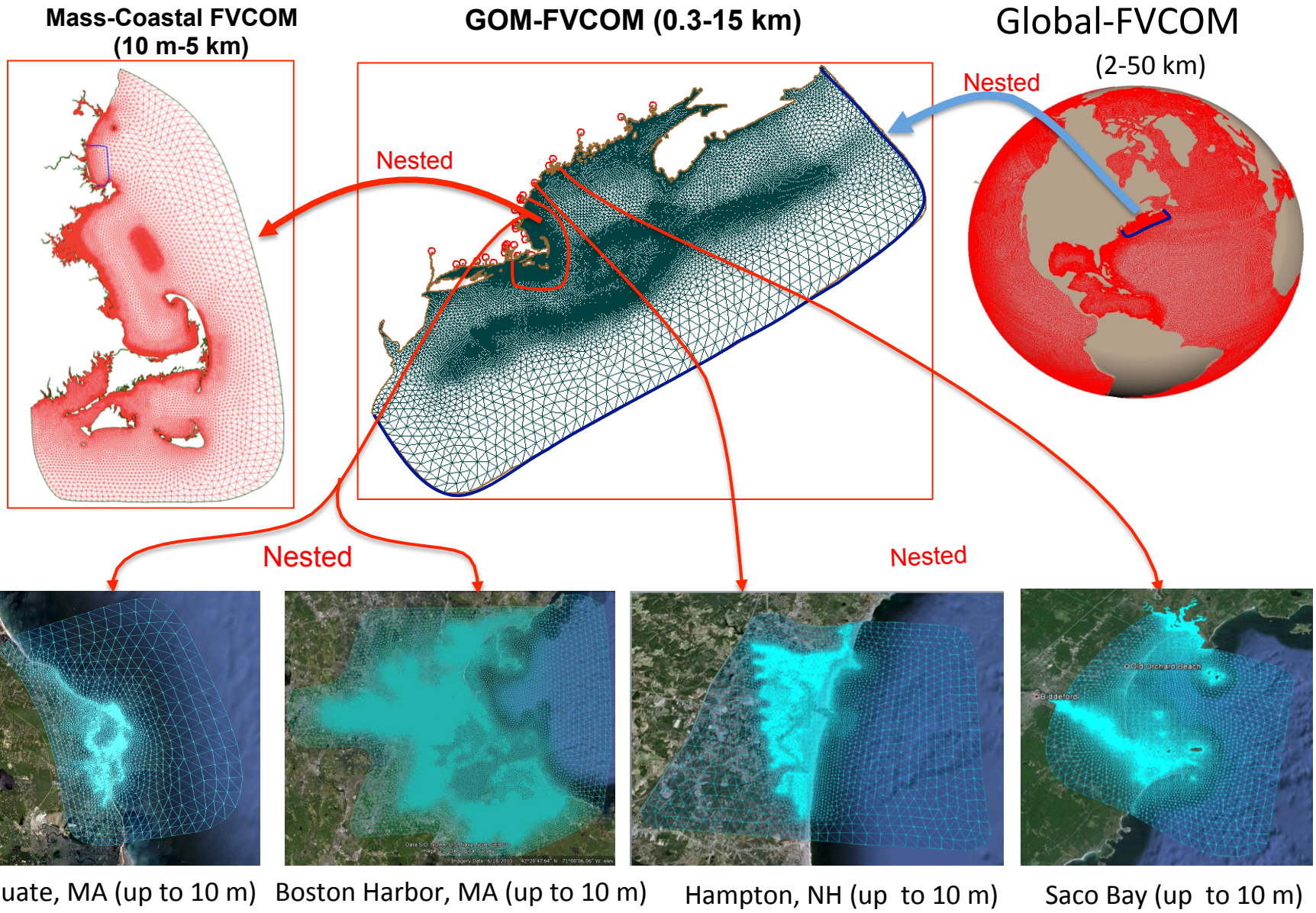
OOI data will be used in REU program at Texas A&M University in summers 2016, 2017 and 2018.



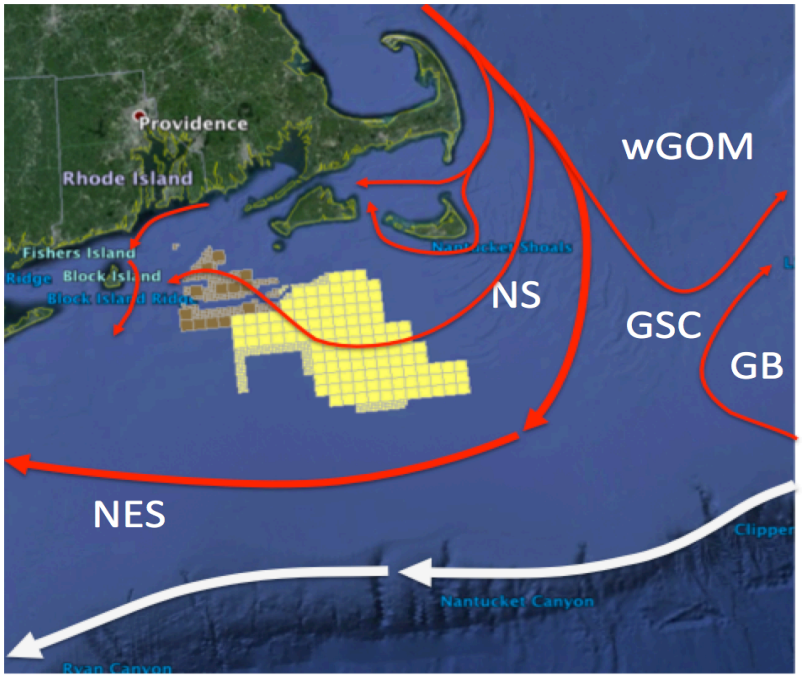


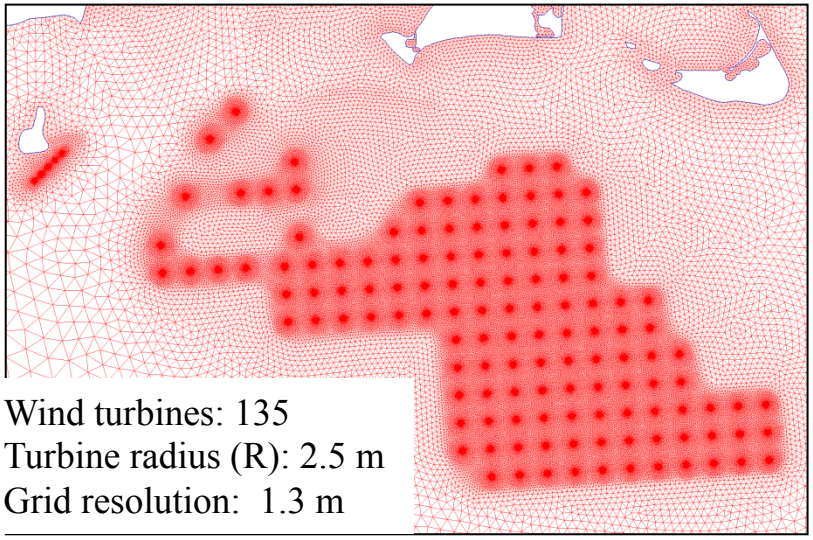

Northeast Coastal Ocean Forecast System (NECOFS)

Changsheng Chen (UMASS) and Robert C Beardsley (WHOI)



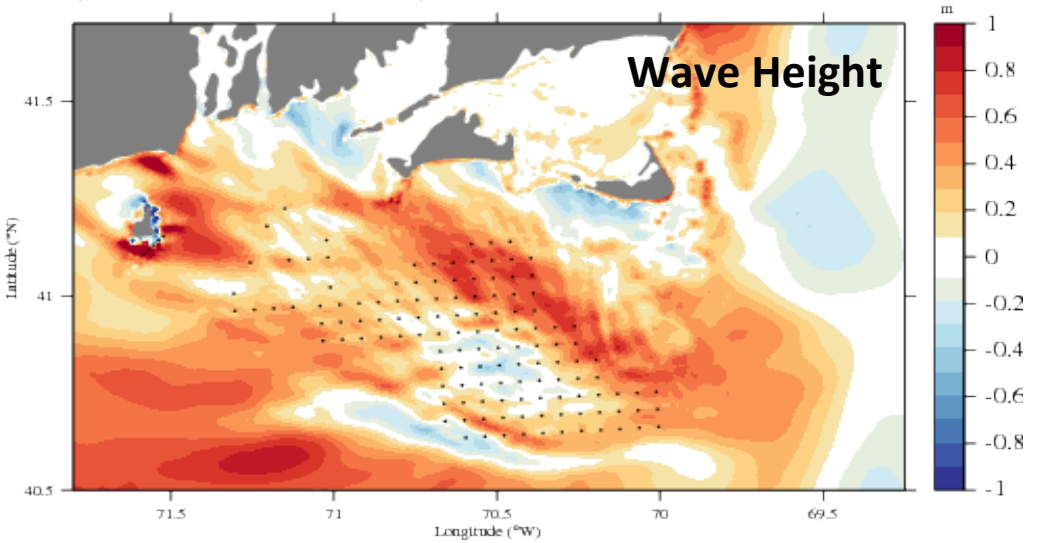
Offshore Wind Farms

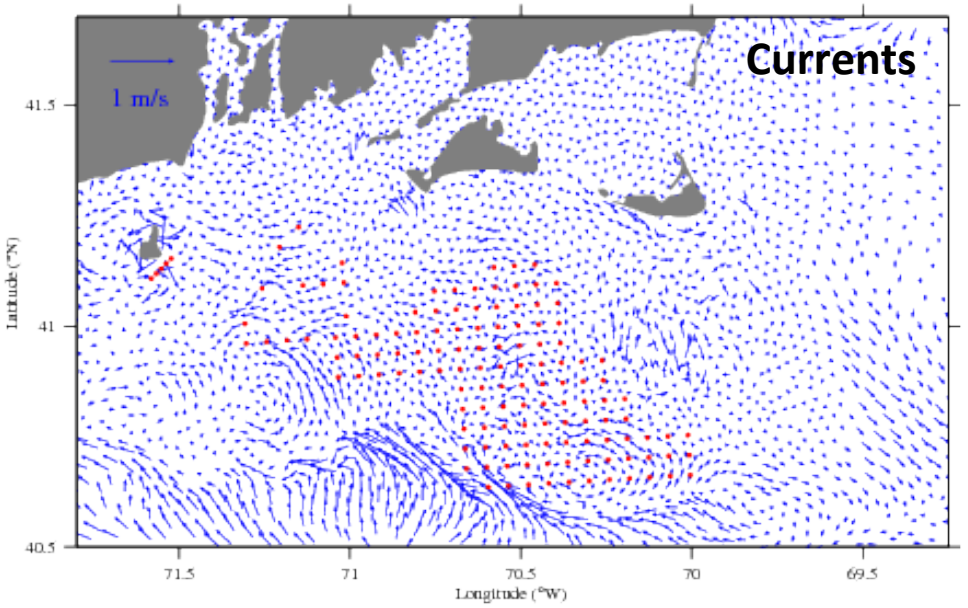




Wind turbines: 135
Turbine radius (R): 2.5 m
Grid resolution: 1.3 m

Difference with and without turbines (February 1978 Nor'easter Storm)





Some thoughts on using Pioneer Array

1. Science

Frontal Dynamics:

- Variability of the shelfbreak front and jet (frontal zone gliders)
- Variability of the secondary circulation (gliders, AUVs)

Coastal Environment:

- Heat/salt balance, interannual variability (surface and profiler moorings)
- Spatiotemporal characteristics of the productivity and biomass at the shelf break (surface and profiler moorings, gliders, AUVs)

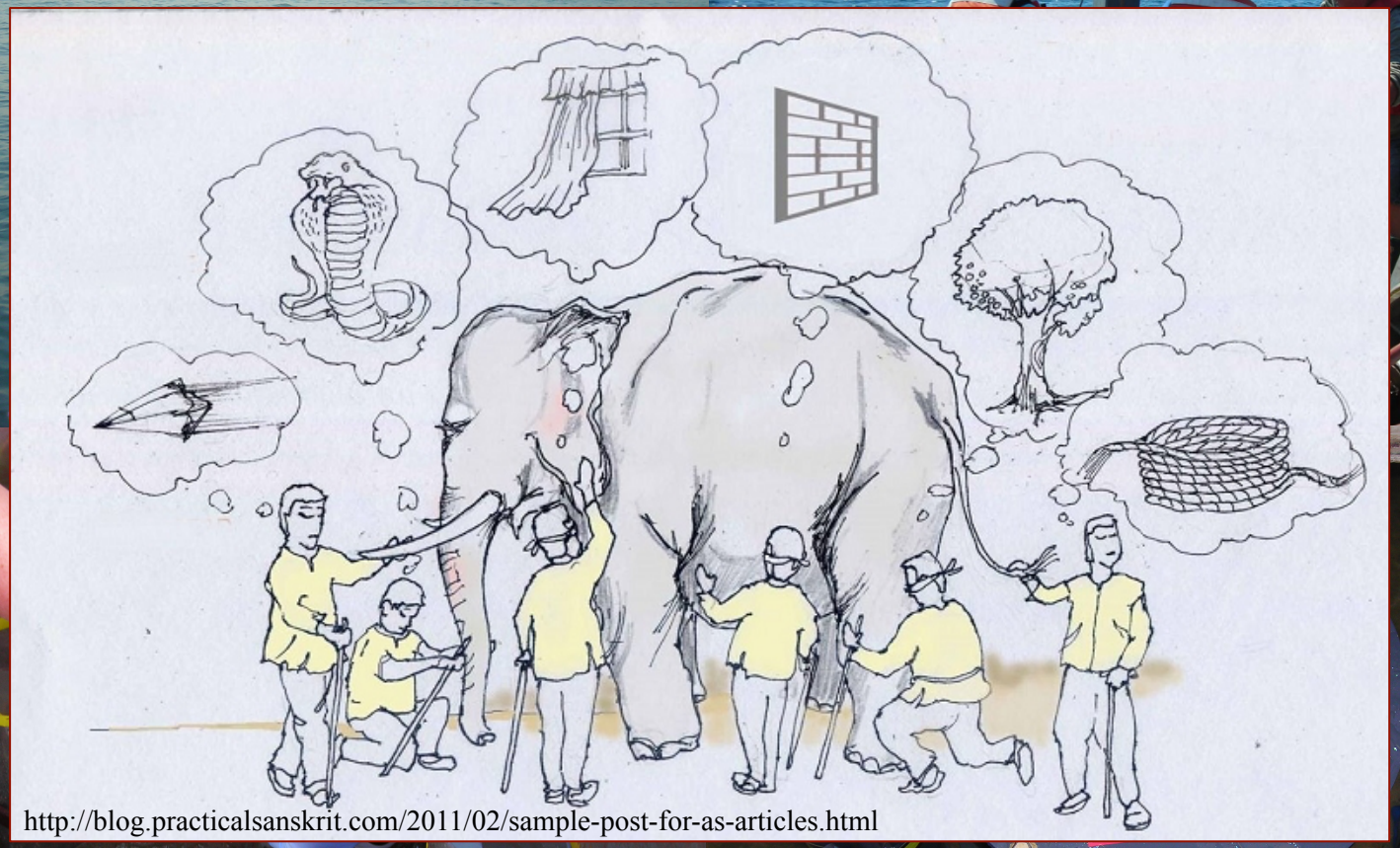
Shelf-Slope Exchange:

- Impingement of warm core rings on the shelf (gliders + AUVs)

2. Methodology

Data ←→ Model

Ke Chen



http://blog.practicalsanskrit.com/2011/02/sample-post-for-as-articles.html

Robinson W. (Wally) Fulweiler • Boston University
Department of Earth and Environment • Department of Biology

EVAN M. GRAY

UNIVERSITY of NEW HAMPSHIRE

Ocean Engineering Master's Student at University of New Hampshire

Project Engineer at NAVSEA - Deep Submergence Systems Program Office; Portsmouth Naval Shipyard

Research Interest:

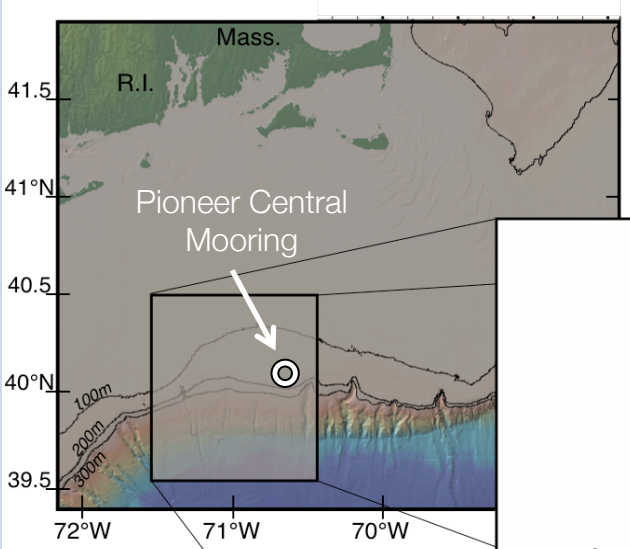
- Develop instrumentation to improve ocean observation systems.
- Leverage cooperative data collection and networked infrastructure in Gulf of Maine region to support model development.
- Support cooperative sampling efforts to increase coverage resolution.
- I will utilize the OOI data in the continued development of my research.

OOI Data Uses - PNNL

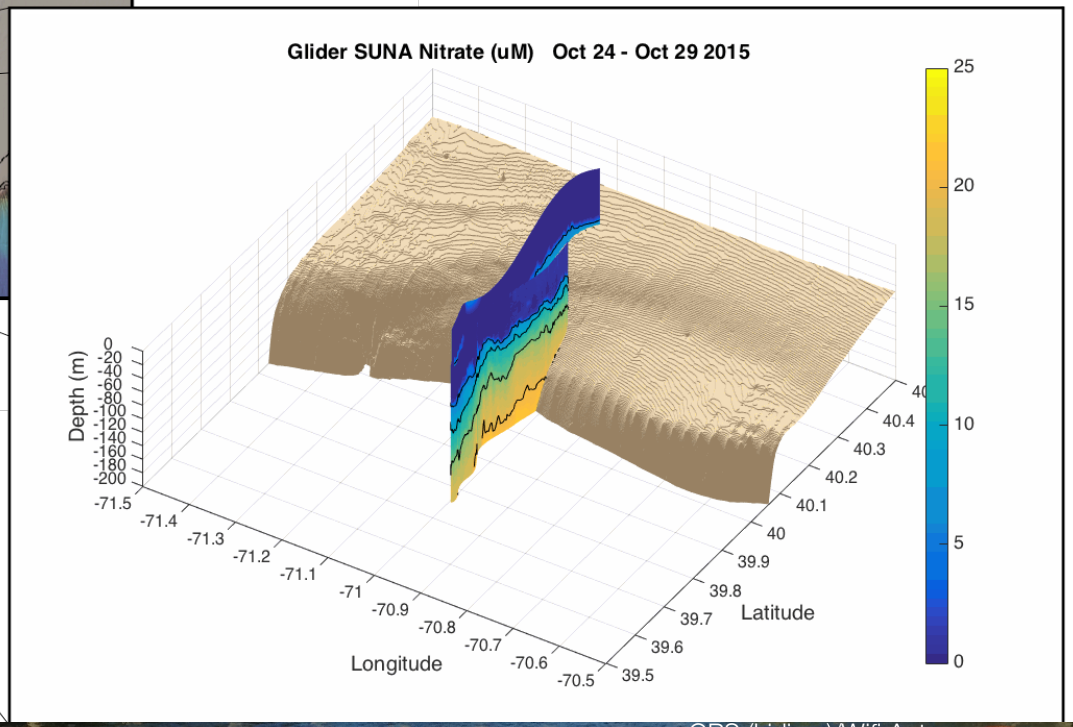
Pacific Northwest
NATIONAL LABORATORY
Proudly Operated by Battelle Since 1965

- The Marine Sciences Laboratory is investigating setting up a long-term near-shore coastal monitoring network
- Relate the information from the Endurance Observatory to observations within the Strait of Juan de Fuca
- Compare environmental fluctuations, such as temperature, salinity and levels of CO_2
- See how long-term changes are reflected at different scales
- Learn from OOI experience and ensure data formats and data handling methods are compatible

W. Haskell and N. Nidzieko
University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE
HORN POINT LABORATORY

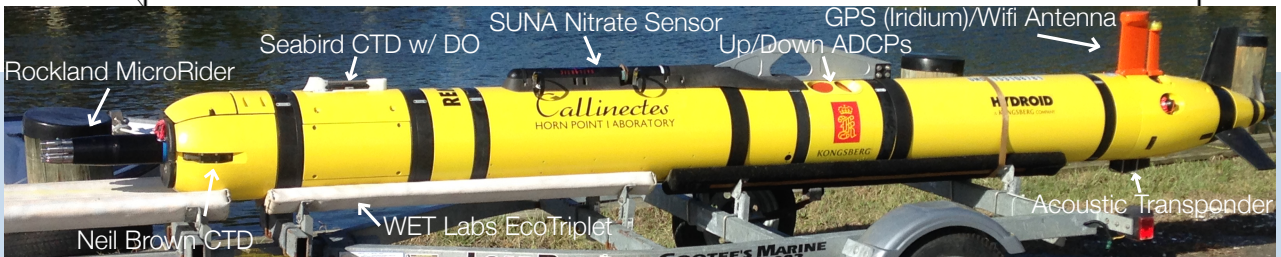


-Turbulent mixing via tide/topography interaction at the shelf break near the Pioneer Array
-Microstructure and nutrient distributions measured by Remus 600 (below) and Slocum glider



Isolines:
5, 10, 15, and 20 uM

Slocum Glider data
(D. Nicholson, *pers. com.*)



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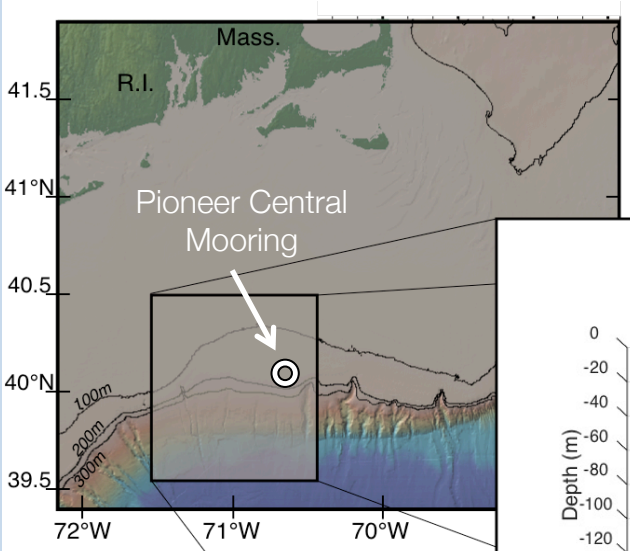

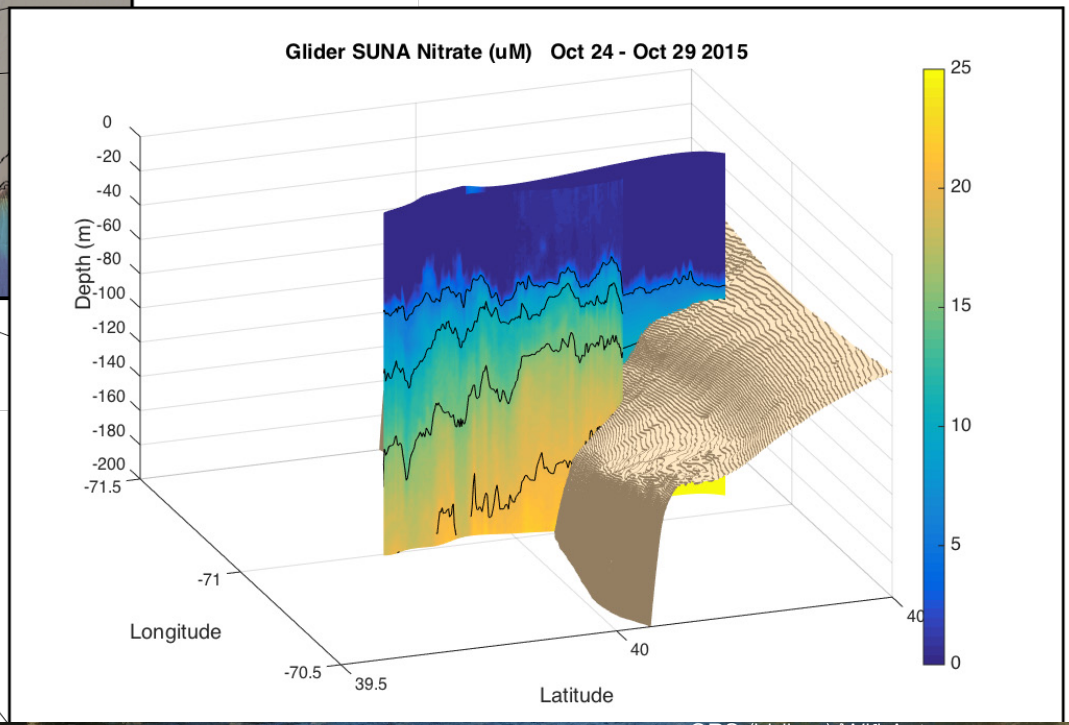

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