



The Ocean is Our Classroom

Expanding Opportunities for Undergraduate Science Education

*Scott Glenn, Oscar Schofield,
Josh Kohut & Janice McDonnell
Rutgers University, New Brunswick, New Jersey, USA*



OOI EPE - MTS Oceans-10/17/2012
crowley@marine.rutgers.edu



NSF Ocean Observing Initiative



Five Integrated Transformational Components

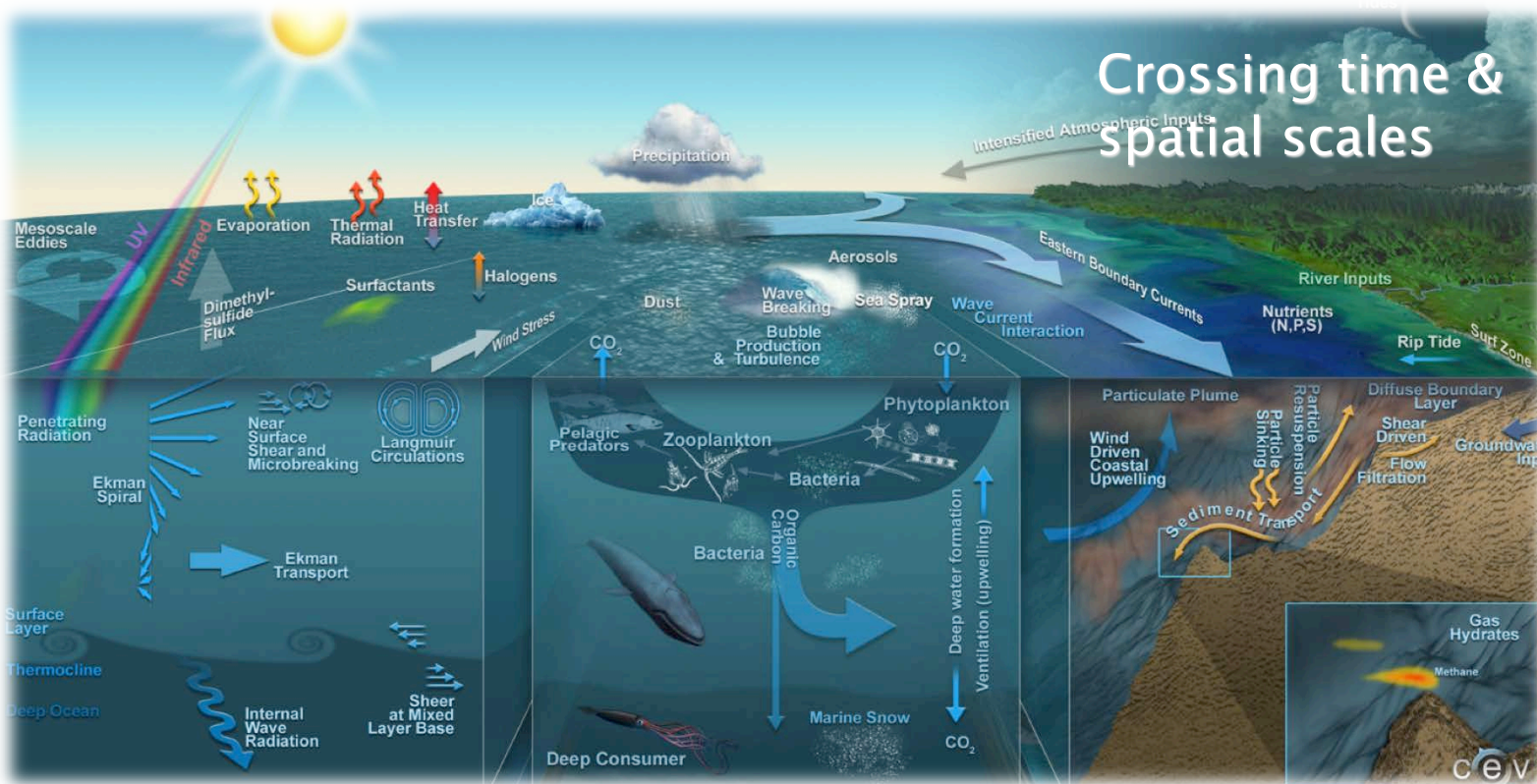
Marine Implementing Organizations:

- ◆ 4 High Latitude Global Sites
- ◆ Regional Plate-scale Cable
- ◆ 2 Coastal Dynamics Arrays

Cyber Implementing Organizations:

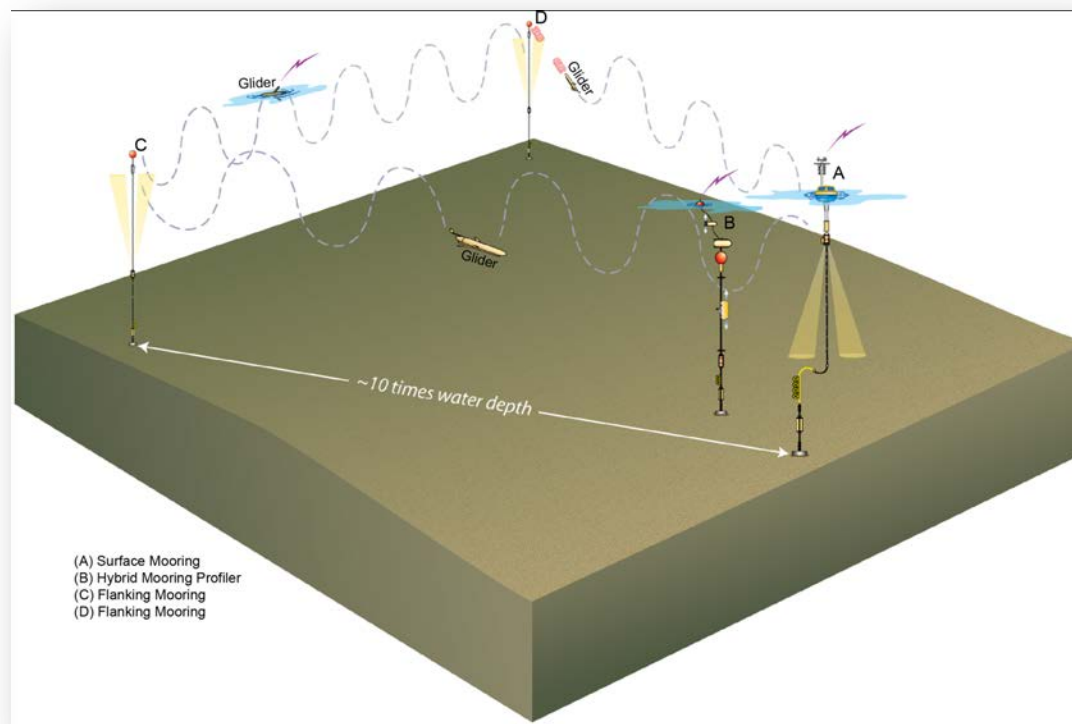
- ◆ Cyber-Space Data Delivery & Sensor Interactivity
- ◆ Education and Public Engagement

OOI: Six Science Themes



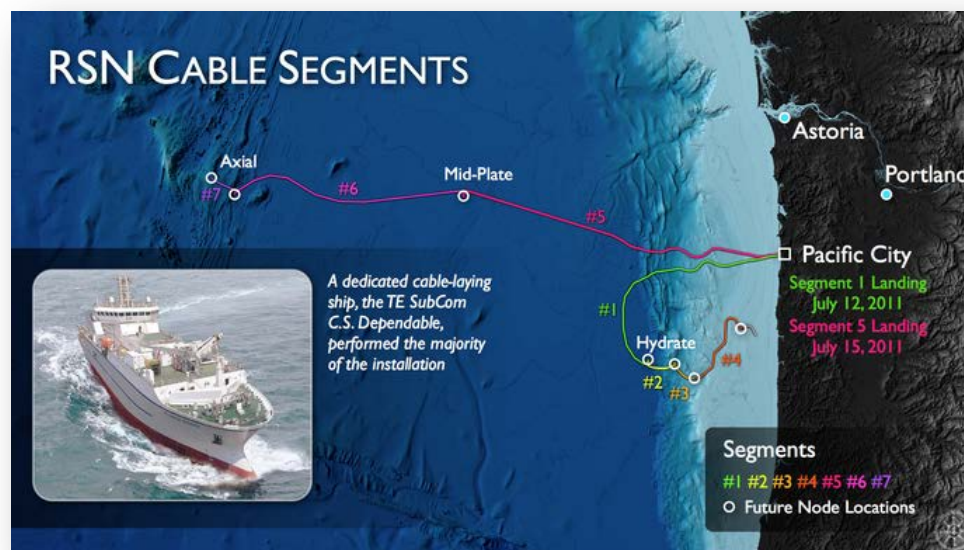
- Ocean-Atmosphere Exchange
- Climate Variability, Ocean Circulation, Ecosystems
- Turbulent Mixing and Biophysical Interactions
- Coastal Ocean Dynamics & Ecosystems
- Fluid-Rock Interactions & Sub-seafloor Biosphere
- Plate-scale Geodynamics

OOI Components: Global Component



- Four Global Sites
 - Central Mooring
 - Profiler
 - Gliders
 - Acoustics

OOI Components: Regional Component



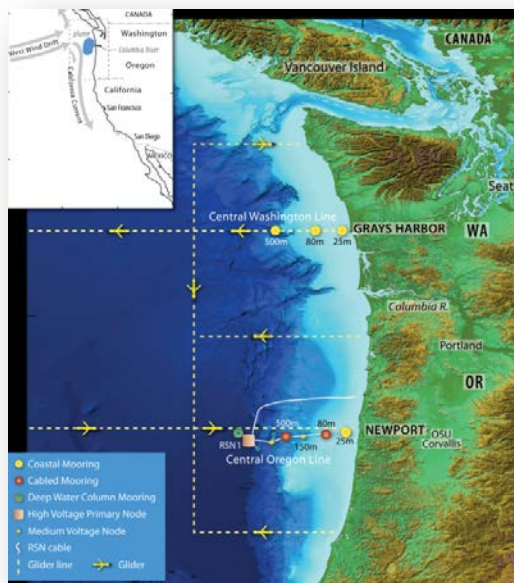
- One Regional Cabled Array
 - Moorings
 - Profilers
 - HD Video
 - Met Data



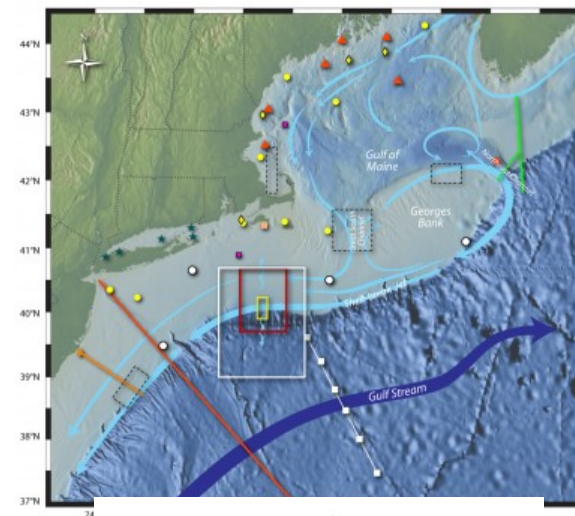
OOI Components: Coastal Component



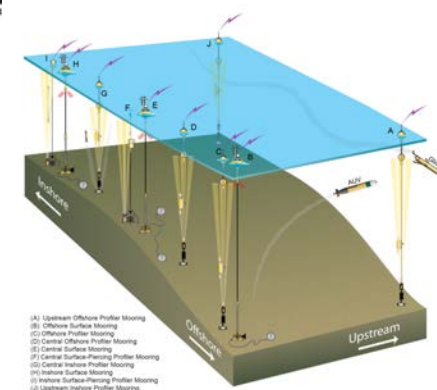
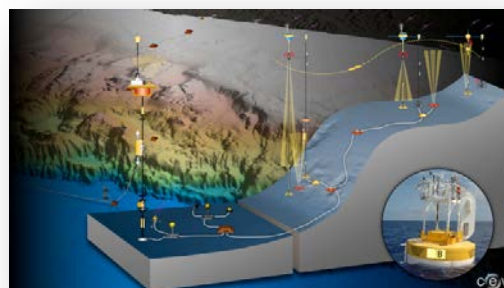
Endurance Array



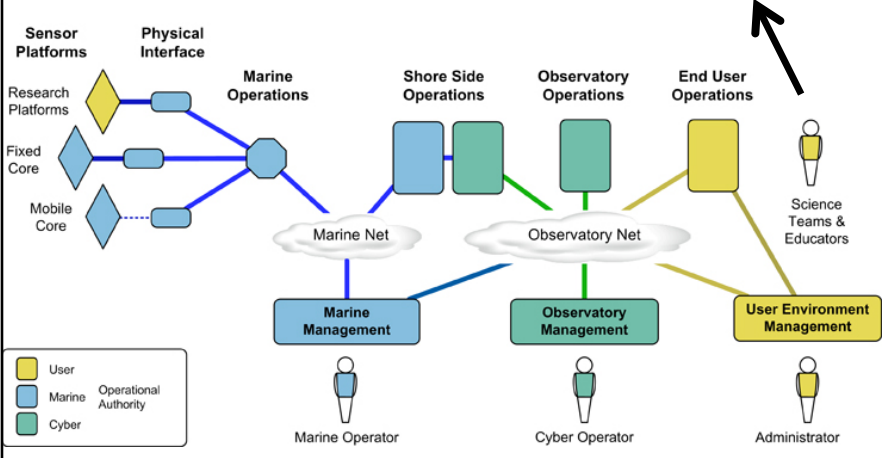
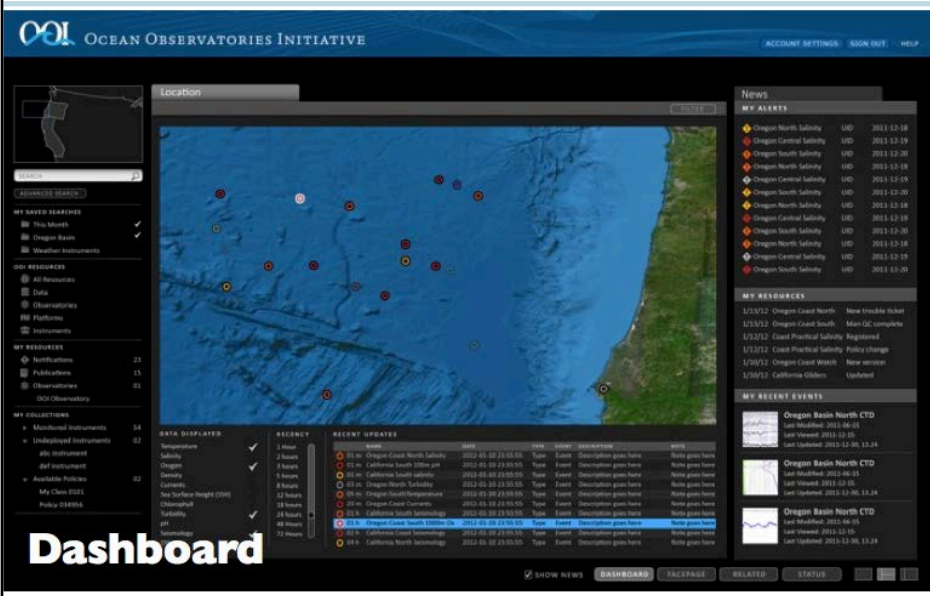
Pioneer Array



- Two Coastal Arrays
 - Endurance (West Coast)
 - Pioneer (East Coast)



OOI: Cyber Infrastructure Component



- Distribution Point
- Acquisition Point/ Engineering Center
- Global Array
- Regional Node
- Coastal Array
- Dedicated IOGE
- - - - - VPN over Internet

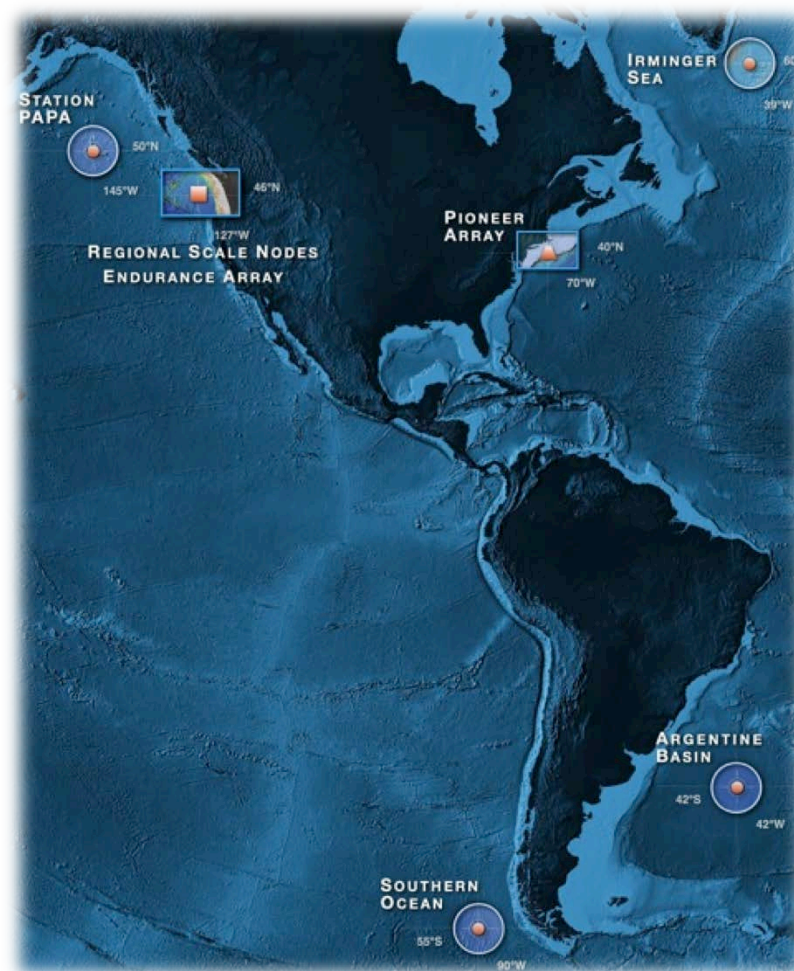
OOI: Education & Public Engagement Component

OOI EPE Team:

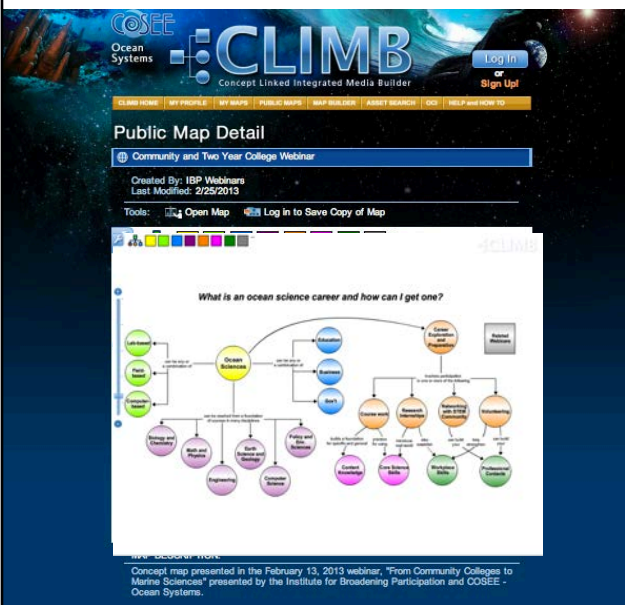
Scott Glenn (PI), Janice McDonnell, Sage Lichtenwalner, Mike Mills, Steve Levenson, and Mike Crowley
Rutgers University

Annette deCharon & Carla Companion
The University of Maine

Joe Wieclawek & Programmer Pool
Raytheon Web Solutions

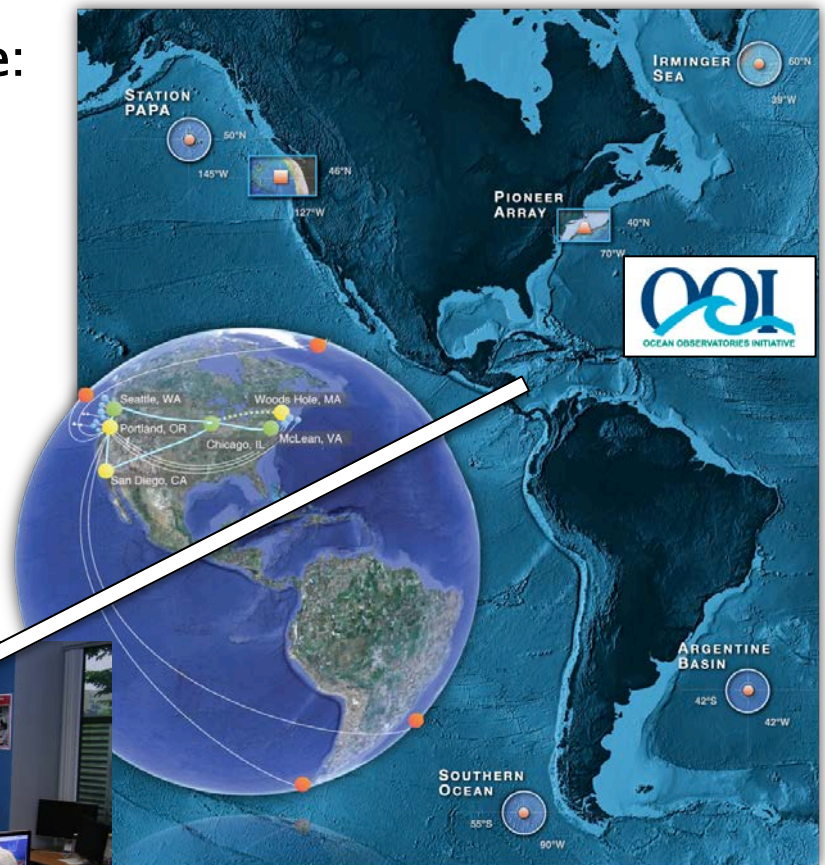


Education & Public Engagement (EPE)



Primary Audience:
Undergraduate
Educators &
their Students

Primary Purpose:
Broaden
Participation



EPE User Interfaces:

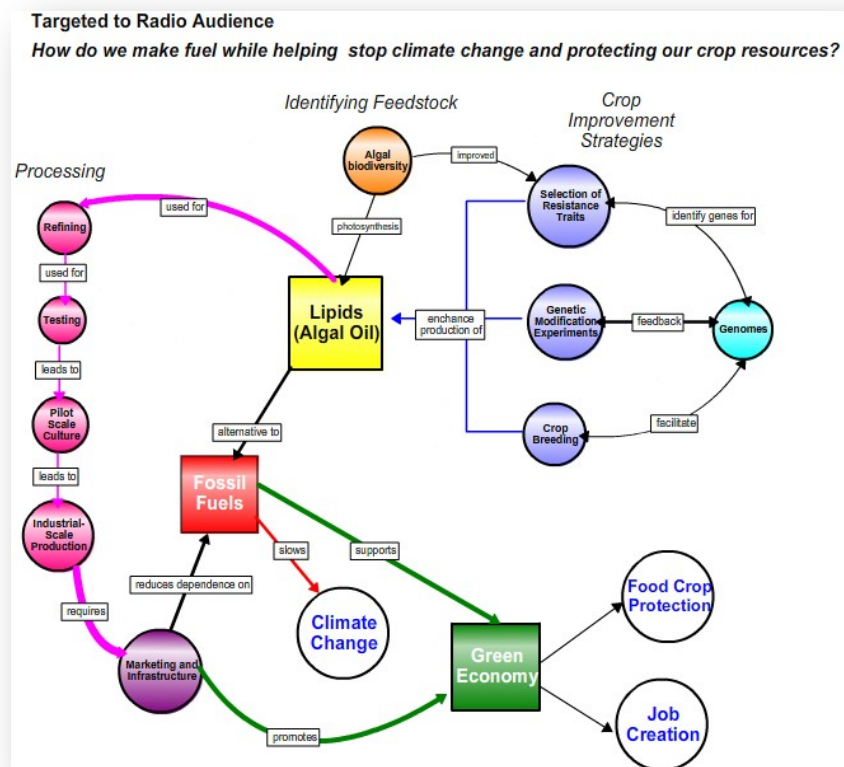
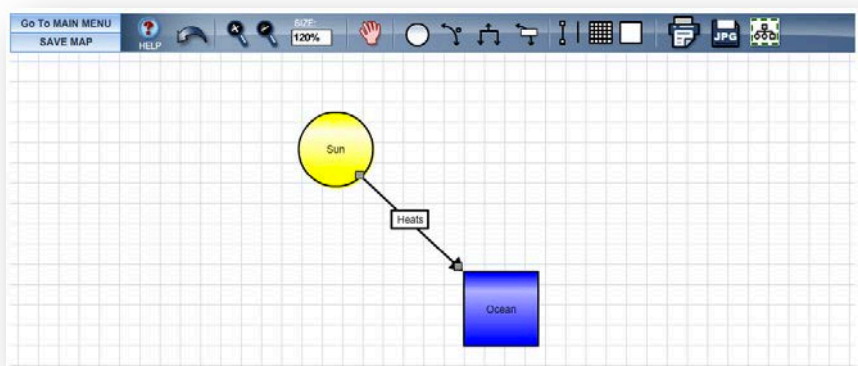
1. Concept Maps
2. Visualization Toolkit
3. Lab/Lesson Builder
4. Resource Database
5. Collaboration Portal



Contact: Mike Crowley
crowley@marine.rutgers.edu

Concept Mapper

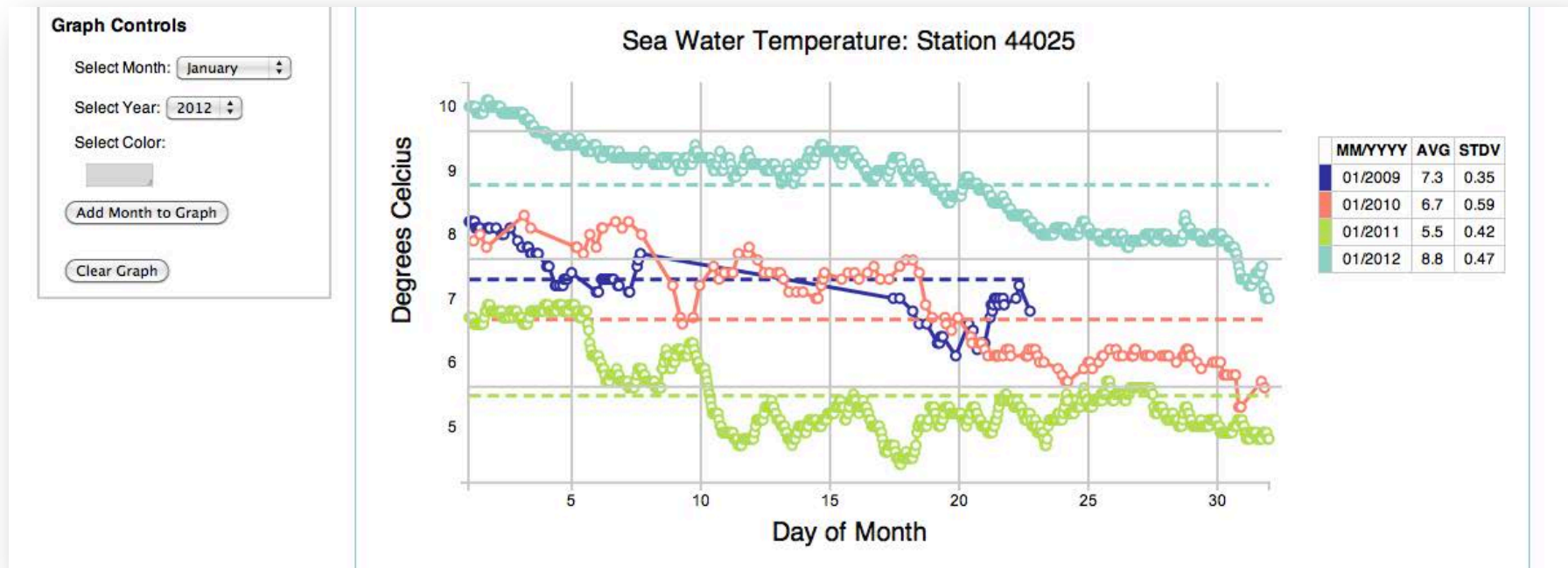
- Concept Map Builder & Viewer
- Concept and linking phrase suggestions
- Semantic based recommendations
- Embedded content resources



Developed by U. Maine

Educational Visualization Service

- Build visualization tools, customized viz builder & viz library
- Goal is to balance capability and usefulness



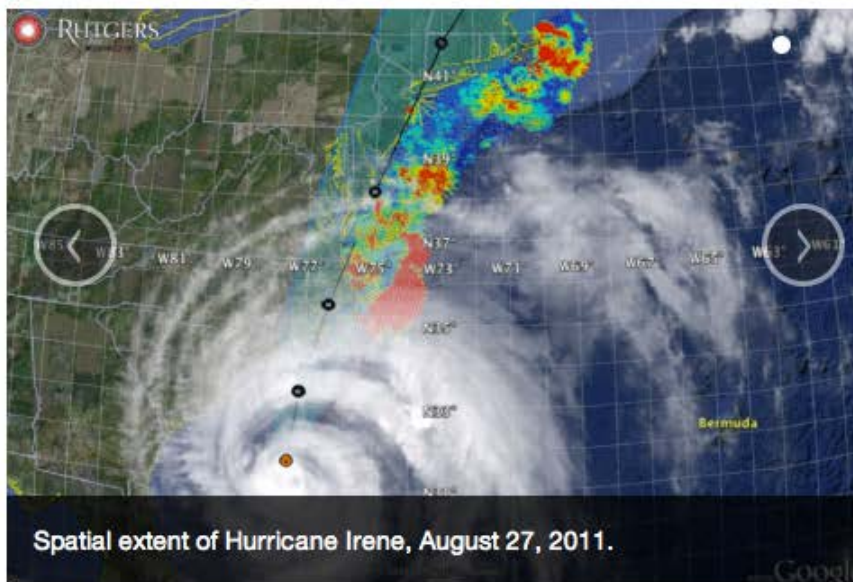
Example: Short term weather and long term climate

Hurricane Impacts on the Ocean Revised 6/5/13

[Introduction](#)
[Background](#)
[Challenge](#)
[Exploration ▾](#)
[Explanation](#)

Activity Introduction

Hurricanes are intense low-pressure weather systems that form in tropical waters. Hurricanes are classified by wind speeds in categories ranging from 1 with wind speeds of 74 mph to 5 with wind speeds in excess of 155 mph. Hurricanes are very powerful storms that can cause widespread damages to communities in their paths. The images on the right show satellite imagery of two hurricanes that recently struck the Northeast United States, Hurricane Irene in 2011, and Hurricane Sandy in 2012. Hurricane Irene occurred August while Hurricane Sandy occurred during the month of October. This difference in time of year and the differences and similarities between these two storms, has led some to wonder if there is a relationship between hurricanes and the ocean.

[Next >](#)


EPE Opportunities: Fall 2013/Winter 2014

- **Early Adopters wanted for Usability Testing**
(September 2013)
- **Criterion II – Broader Impacts**
- **Professional Development Workshops**
- **Evaluative Studies of How Students Learn with Data**



Join us 2013-2014



- Mike Crowley:
crowley@marine.rutgers.edu
848-932-3287
- Janice McDonnell:
Mcdonnell@marine.rutgers.edu
848-932-3285

www.oceanobservatories.org