

Ocean Observatories Initiative: Education & Public Engagement

Delivering Real Time Data for Transformative Learning in the Undergraduate Classroom

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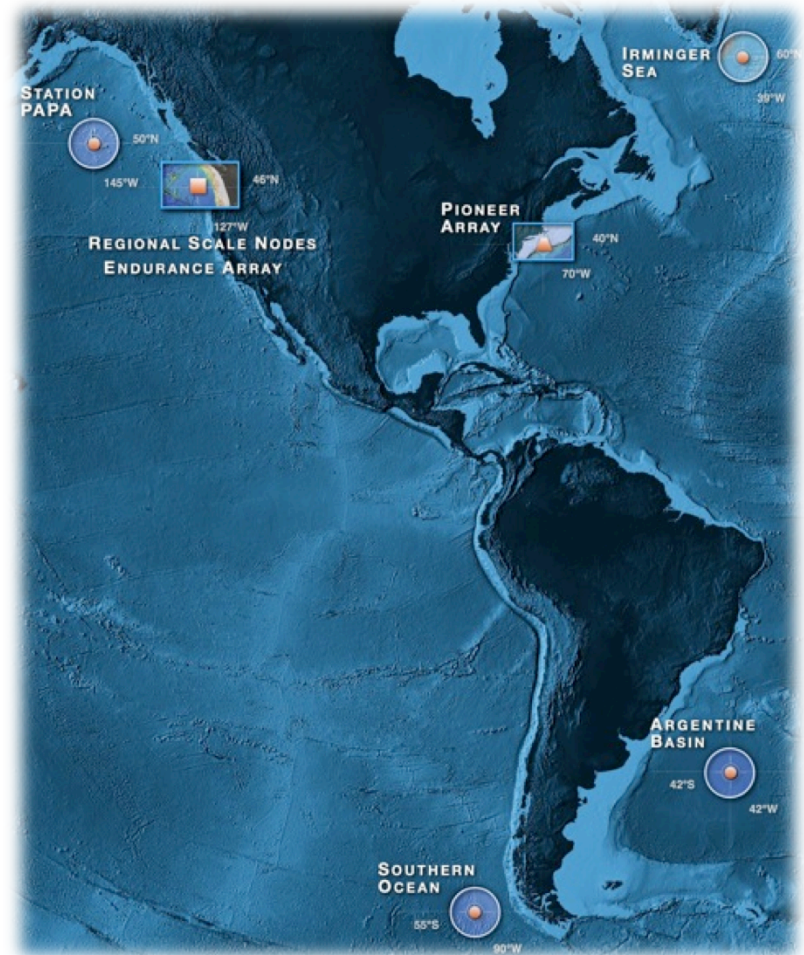
The University of Maine

Joe Wieclawek & Programmer Pool

Raytheon Web Solutions

Debi Kilb (UCSD), Allison Fundis (UW) & Craig Risien (OSU)

EPE Liaisons



Take Home Message



I WANT YOU
FOR OOI EPE

We are looking for early adopters from the undergraduate education community.

Help steer the course as we move forward.



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crowley@marine.rutgers.edu



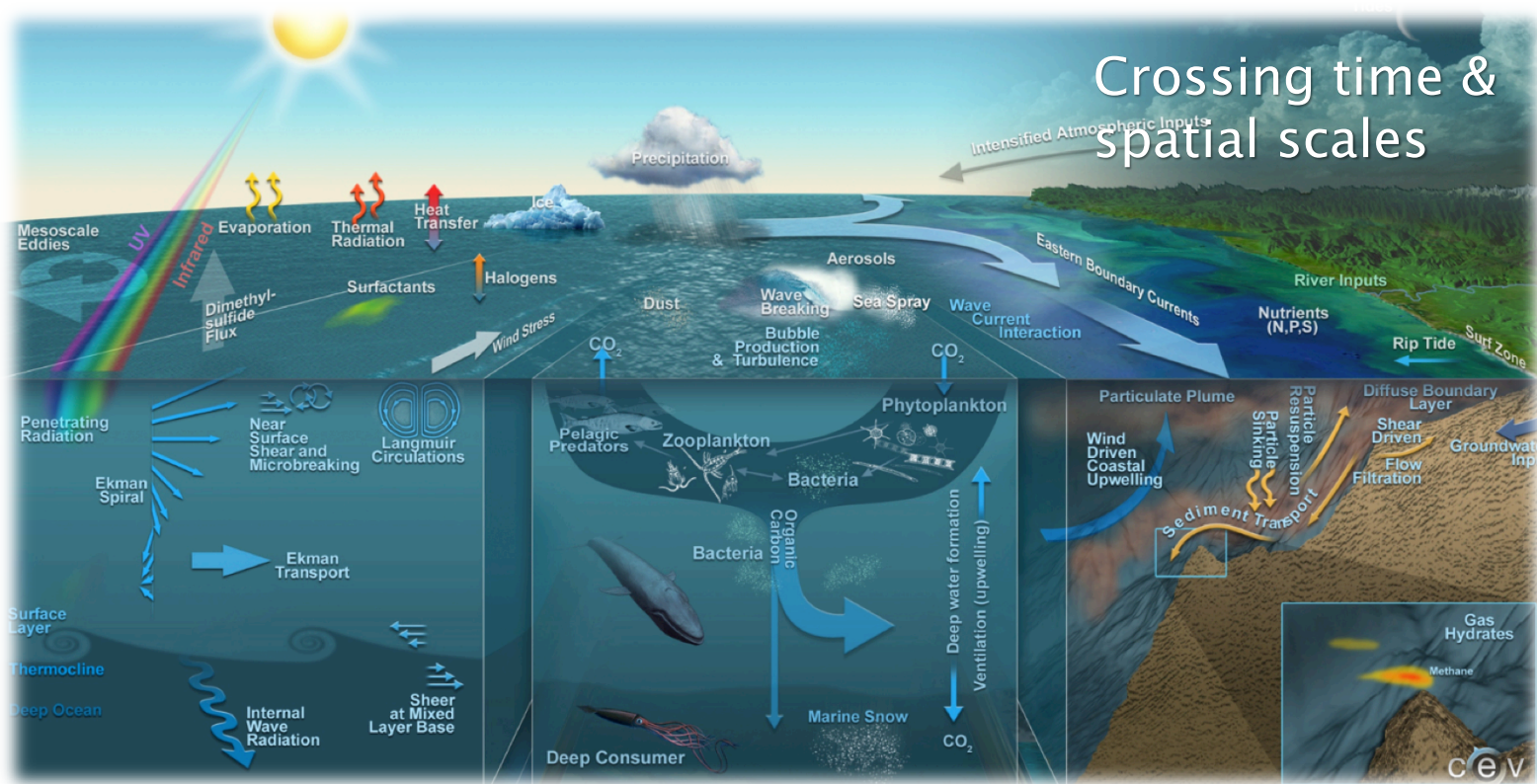
What is the OOI?



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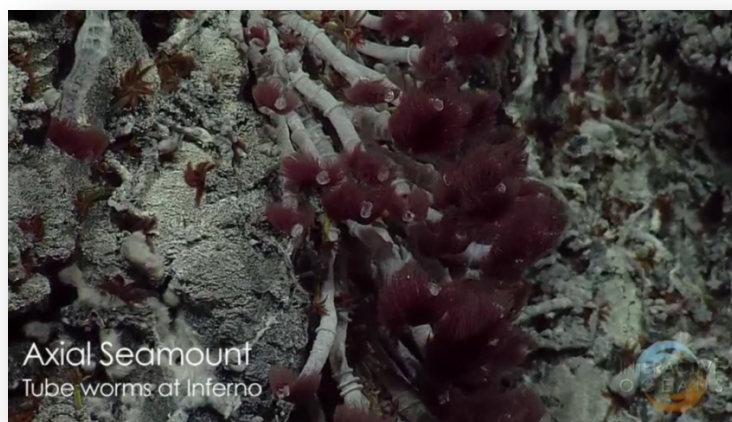
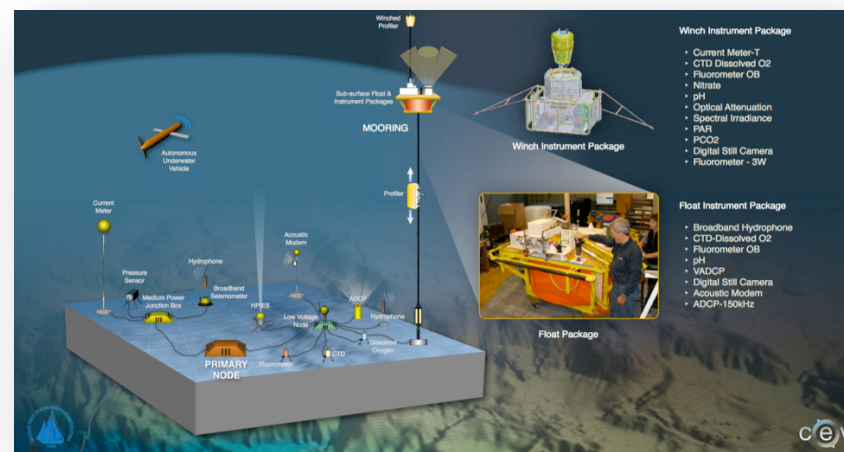
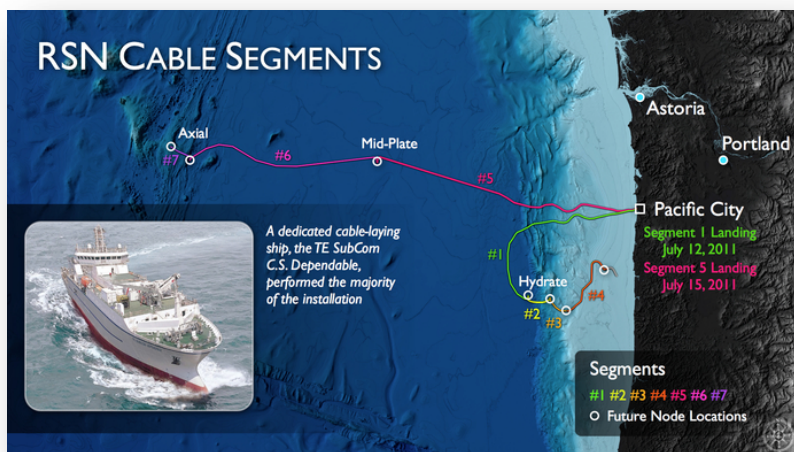


OOI: The Big Picture



- 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

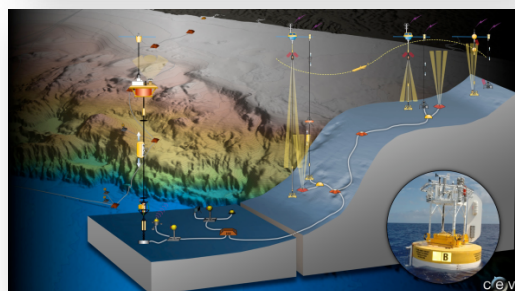
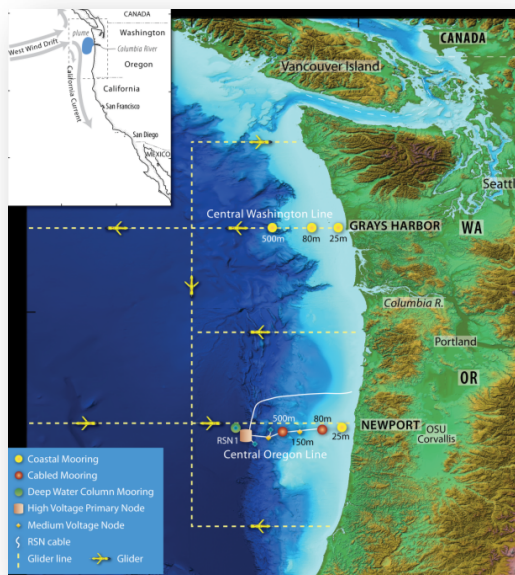
OOI Components: Regional Scale Node



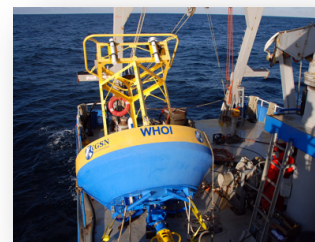
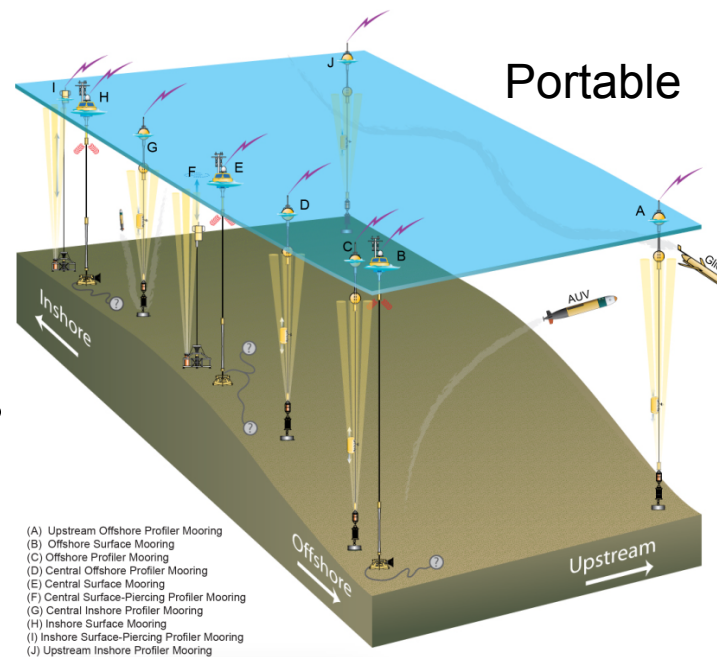
- Moorings
- Profilers
- HD Video
- Met Data

OOI Components: Coastal Component

West Coast: Endurance Array

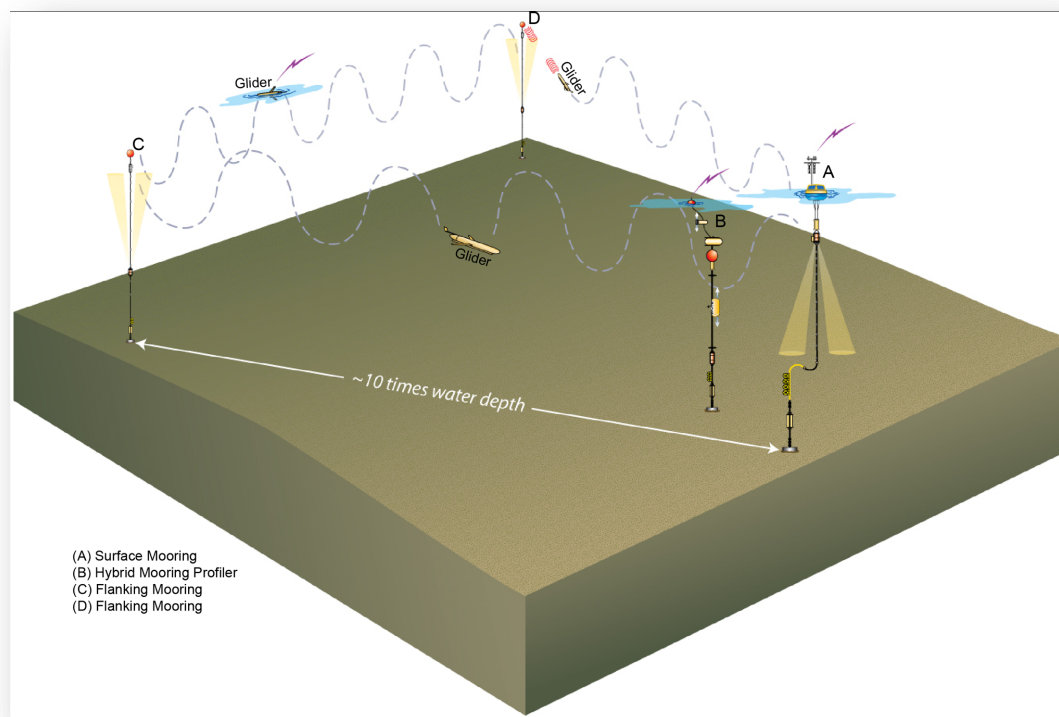


East Coast: Pioneer Array



- Glider AUVs
- REMUS AUVs
- Moorings
- Profilers
- Met Data

OOI Components: Global Component

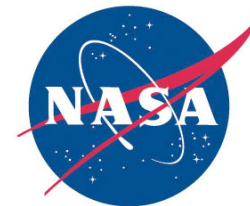
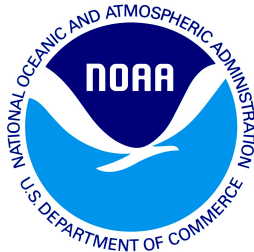


- Four Global Sites
 - Central Mooring
 - Profiler
 - Gliders
 - Acoustics

OOI Components: Outside data sources

The Cyberinfrastructure will allow for access to other data sources:

- **NOAA:**
 - **NDBC:** all buoy data (ocean & atmosphere)
 - **IOOS:** Gliders, HF-RADAR, Satellite data, moorings, meteorological, river discharge, drifters
 - **NWS:** meteorological data, model output
- **NASA:** Satellite



What is the EPE?



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EPE: System Goals

- EPE will construct software tools and a web-based social network to engage a wide range of education users. (*Our potential users.*)
- Enable educators to enhance their undergraduate education and engage the general public (informal) using real-time data provided by the OOI. (*Their target audiences*)
- Initial focus on undergrads, then informal

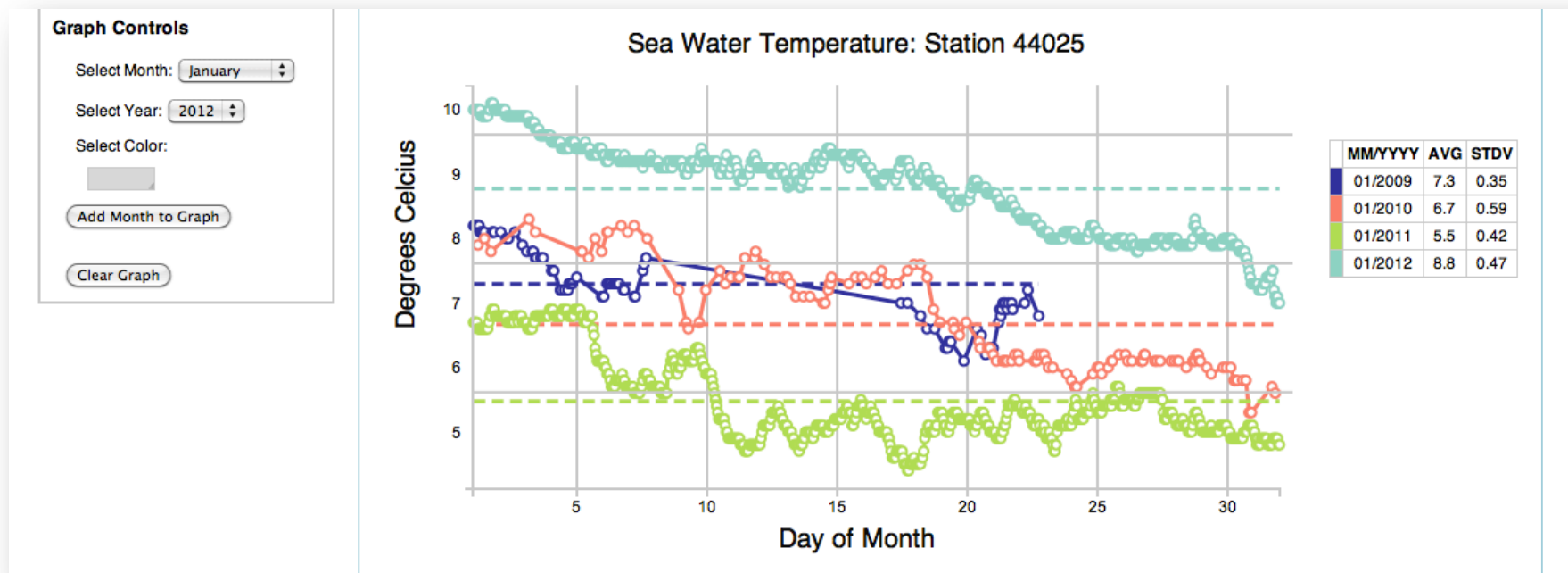


EPE: Building Six Tools

1. Provide educationally appropriate **visualizations** of science data.
2. Use **concept maps** to translate OOI science concepts into education materials.
3. Deliver the capability to collaboratively build/edit **online lesson/lab units**
4. Enable **virtual collaboration** and **sharing of materials (database)**.
5. Enable broader access to data and educational resources **(web services)**.

Educational Visualization Service

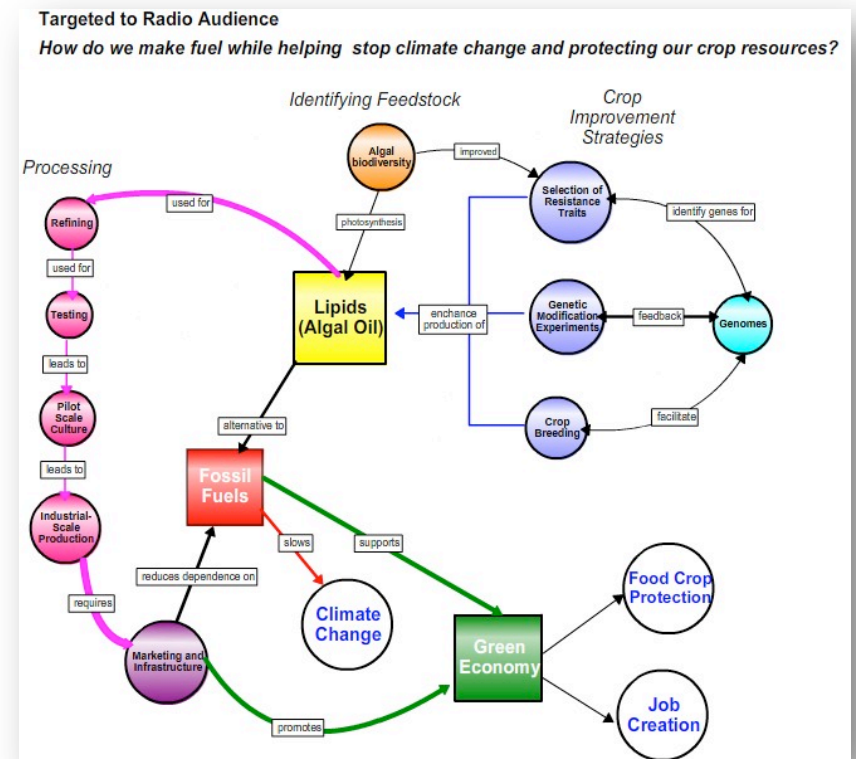
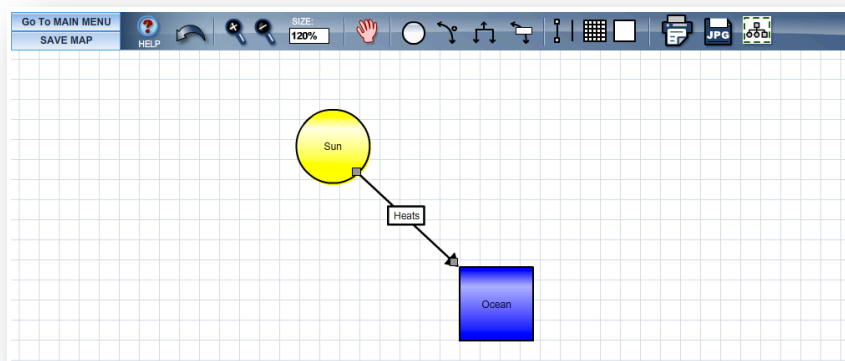
- Build visualization tools, customized viz builder & viz library
- Goal is to balance capability and usefulness



Short term weather and long term climate

Concept Mapper

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



Developed by U. Maine

Lab/Lesson Builder

- Online Lesson Units
- Collaboratively Editable
- EPE Resource Integration
- Content Templates

Earth Exploration Toolbook
Step-by-Step Guides for Investigating Earth System Data

Exploring Regional Differences in Climate Change

Teaching Notes

Case Study

Step-by-Step Instructions

Tools and Data

Going Further

Case Study: Are There Regional Differences in Climate Change?

The average annual temperature in the United States increased by almost 1 degree Fahrenheit (0.6 degrees Celsius) over the 20th century and precipitation increased by 5-10% nationally, largely the result of heavier downpours.¹ Scientists use computer models to describe our current weather patterns and to predict how our climate might change in the future. Two of the most widely used models each predict that the United States will become warmer over the next century, by roughly 5 to 9 degrees Fahrenheit (3 to 5 degrees Celsius).² These estimates exceed the projected global increase. These temperature changes are not uniform across the country, however. Some states will likely see dramatic increases in temperature, while other states will see only modest increases.

Similarly, precipitation forecasts vary from state to state. Some states may receive a significant increase in rainfall, while other states may experience little change in precipitation levels, or may even receive less precipitation than they do today. Heavier and more extreme precipitation events will likely occur more often, increasing the risk of flash flooding. Other regions of the country may experience more frequent droughts.

Climate changes can profoundly affect agricultural production within a state as well as other key sectors of the economy such as forestry and tourism. Agricultural productivity in some states may increase, for example, in response to higher carbon dioxide levels and a longer growing season. Warmer temperatures and higher precipitation levels could negatively affect human health, with impacts such as higher heat-related summer mortality, and a greater prevalence of vector-borne diseases from increased insect populations (like mosquitoes).

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Oceans Alive! > Lesson #2: What Kind of Water is in the Ocean?

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Lesson #2: What Kind of Water is in the Ocean?

Contributed By: Melissa Webber

Part of an Exemplary Resource

About Member Rating

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Introduction: Prior to beginning the lesson: (1) Cut out and laminate **Vocabulary Cards** for display in the classroom; (2) Photocopy **Venn Diagram** onto transparency paper for the overhead projector; (3) Photocopy **Venn Diagram** (1 per student); (3) Prepare a pitcher of salt water and a pitcher of fresh water.

Group Size: Whole Class

Learning Objectives:
Students will be able to:

- Understand that oceans are made up of salt water.
- Distinguish between salt water and fresh water.

Materials: **Vocabulary Cards** (see attachment), **Venn Diagram** (see attachment), small paper cups (2 per student), salt water, fresh water, overhead projector, large map of the world

e.g. Link lab studying regional temperature changes to lab studying biological productivity change, to a lab ...



Collaboration Portal

- Workgroup support
- User profiles
- Community Blogs
- User support
- Webinars/training

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Support

Knowledge Base
Have a question or looking for more information about a tool or resources? Try browsing our knowledge base! You can find answers to frequently asked questions, helpful tips, and any other information we thought might be useful.

Answers
Couldn't find an answer to your question in our knowledge base? Try asking your fellow hub members! Ask questions, post answers, or search for answered questions. You just may find answers to questions you didn't even know you had.

Report Problems
Report problems with our form and have your problem entered into our ticket tracking system. We guarantee a response! After submitting a report you can track its progress, even add comments or notes, and we will always notify you of any updates!

Popular FAQs

- Why do I need Java?
- Troubleshoot
- What do I need to run simulations?
- Why the math question?
- Earning points in the Questions & Answers forum

Latest Questions

- simulation does not give any result
Asked by Bin Wang @ 11:53 AM on 16 Apr 2011 + 0
- I want to ask about GAMMES program
Asked by Sean Khatib Alhaj @ 11:41 AM on 14 Apr 2011 + 0

Feedback
Have an idea for how we can improve? Feel we could be doing something better? Send us your suggestions and comments with our feedback form. We want to hear from you!

- Report a problem
- Share a success story
- Send us your suggestions

AGU Blogosphere A community of Earth and space science blogs

HOME BLOGS DISCUSSION ABOUT

FEATURED POSTS

Soufriere Hills Volcano: The Belham River Valley

Magma Cum Laude
It's snowing again, so in order to avoid being depressed by the weather, I brought 10 post-a few photos of the Belham River Valley on Montserrat. The Belham, which drains into the sea on the west side of Montserrat, channels both geyser-like flows and lahars from the Soufriere Hills lava dome. Prior to the eruption, the valley held a number of houses and the island's only golf course, but material from the eruption has since filled the valley bottom and made it unsafe to live too close. Volcanic and volcanoclastic processes are constantly reshaping the landscape them, and making it unsafe for before and after comparisons.

LATEST POSTS

70 MPH Winds Rake Midwest
Big lumps
Rockfalls and landslides from the February 2011 earthquake in Christchurch
New Tornado Outbreak Coming? This one is in the Midwest.
Some interesting weblinks about natural hazards

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FROM AGU:
AGU 2011 Fall Meeting

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COSEE Networked Ocean World Linking ocean scientists and educators in the real and virtual world

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Real-Time Data Education Group Admins Sage Lichtenwainer Log Out

Public Group active 2 weeks ago

Using real-time data from ocean observing systems we can connect the public to the ocean like never before. But making data usable and understandable is not easy. This workgroup connects data translators, scientists and educators interested in using real-time data in their classroom to figure out the best ways to visualize and interact with OOS data.

New Topic
Your email status is All Email (change)

Forum Members (39) Send Invites Email Options

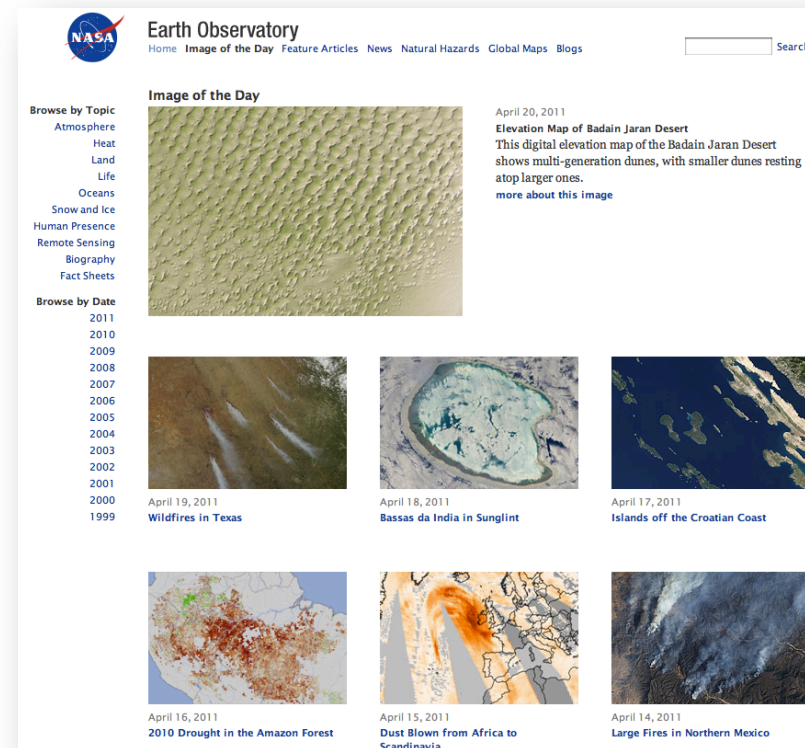
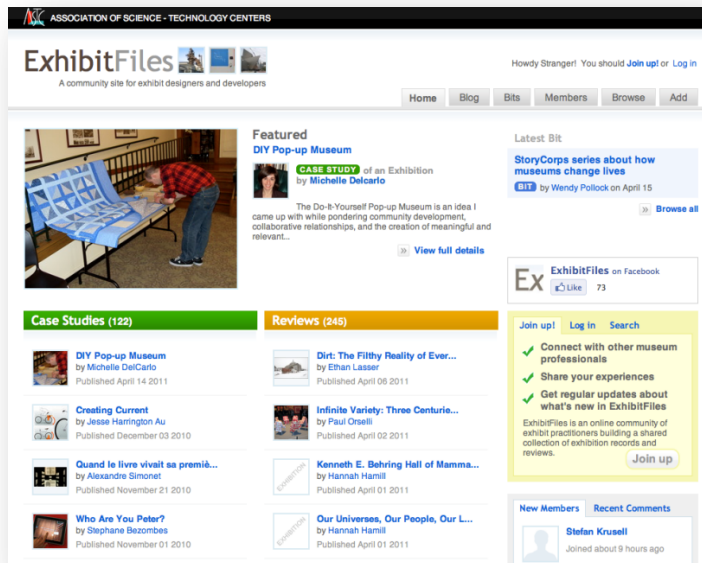
Latest Poster	Posts	Freshness	Email
Reyna	10	9 months, 4 weeks	Mute
Sage Lichtenwainer	3	9 months, 4 weeks	Mute
Sage Lichtenwainer	4	9 months, 4 weeks	Mute
George Matsumoto	2	10 months	Mute
Sage Lichtenwainer	2	11 months, 1 week	Mute

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Educational Resource Database

- Supports content storage for Tools
- Collects user supplied content
- Index of EPE user generated tools, education-ready OOI datasets, & visualization tools



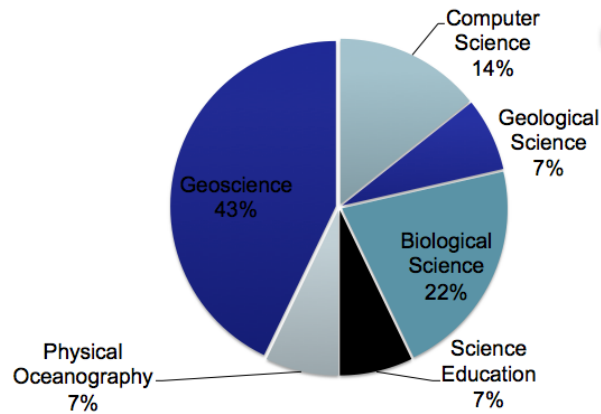
EPE Demonstrations: Fall/Winter 2014

- **Undergraduate Education:** Range of undergraduate classrooms, community college, online, 101.
- **Informal Audiences:** TBD. Tools for the undergraduate may not be appropriate for informal audiences.

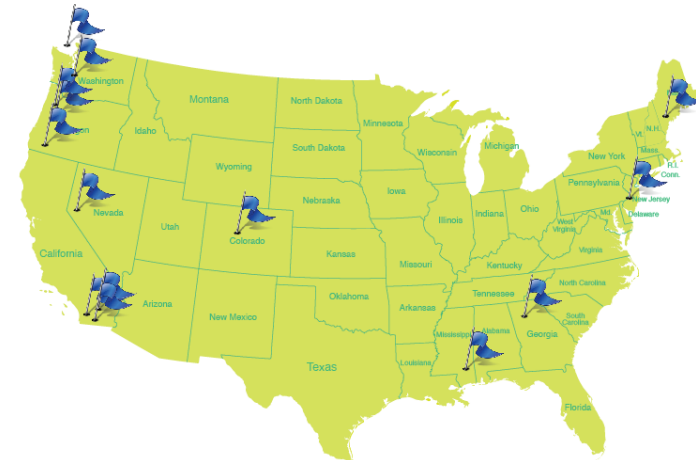


We have just begun: Front End Evaluation

Front End Evaluation Demographics

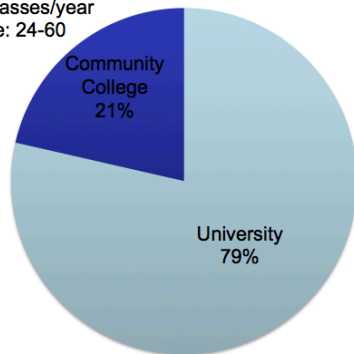


See Janice McDonnell's poster this afternoon



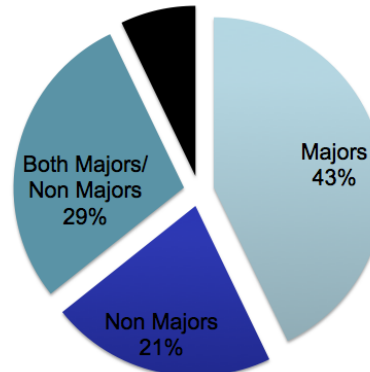
Location of Partner Institution

Teach 4-10 classes/year
Class size: 24-60

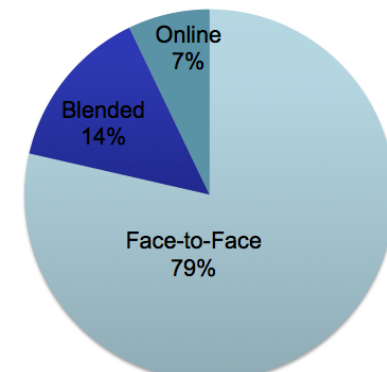


Community College vs. University Professors

Teach 0-6 classes/year
Class size: 6-250



Majors & Non Majors



Teaching Context of Study Participants

Final Note



**I WANT YOU
FOR OOI EPE**

- Mike Crowley:
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- Janice McDonnell:
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848-932-3285
Poster Session this afternoon

www.oceanobservatories.org

Visit the OOI at booth 59, part of the
Consortium for Ocean Leadership