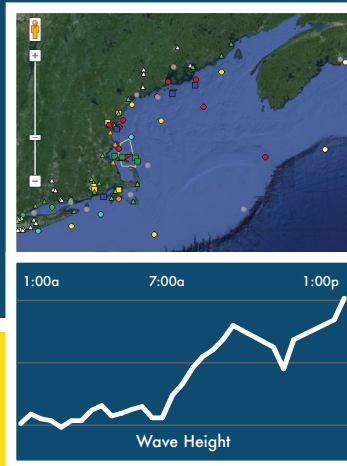


# ANNUAL IMPACT REPORT

## 2014



Our mission is to **PRODUCE, INTEGRATE** and **COMMUNICATE** high-quality information that helps ensure safety, economic and environmental resilience, and sustainable use of the coastal ocean.

## SYSTEM OPERATORS

**University of New Hampshire**  
Estuarine and coastal buoys

**University of Maine**  
Gulf of Maine buoy array,  
HF-radar and satellite products

**Gulf of Maine Research Institute**  
Data/website management  
and product development

**Bedford Institute of Oceanography**  
Wave forecasting, harmful algal bloom  
and nutrient monitoring

**University of Massachusetts Dartmouth**  
Ocean forecasting

**Woods Hole Oceanographic Institution**  
Harmful algal bloom sensors

**University of Rhode Island**  
Estuarine nutrient monitoring

**University of Connecticut**  
Long Island Sound buoy array

## SYSTEM SUPPORT

**Axiom Data Science**  
Data integration

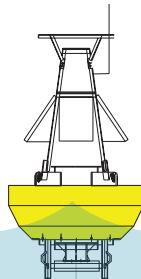
**Charybdis Group**  
Tide gauges

**RPS**  
Cloud-based ocean forecasting

**WET Labs**  
Nutrient sensors

Below: Approximate percentage of all publicly available, real-time and continuous ocean measurements in the region conducted by NERACOOOS.

**50%**  
of SURFACE  
MEASUREMENTS



**85%**  
of SUBSURFACE  
MEASUREMENTS

**100%**  
of SUBSURFACE  
MEASUREMENTS  
DEEPER THAN  
15 METERS

## LETTER FROM THE DIRECTOR

Dear Members, Partners, and Friends:

First off, let me thank you for your continued support and collaboration, without which we would not be where we are. The past year was an exciting time for NERACOOOS. After the celebration of our fifth anniversary and the continued growth of the organization, we decided to take a step back in 2014 to re-evaluate the organization's strategic priorities and values to ensure a solid foundation moving forward. We are very excited to announce the new NERACOOOS mission statement, which encompasses who we are:



*Our mission is to produce, integrate and communicate high quality information that helps ensure safety, economic and environmental resilience, and sustainable use of the coastal ocean.*

In this report, we share a few accomplishments from 2014 that highlight our efforts towards achieving this mission. I look forward to further increasing our impact in 2015, in part through two new awards — one to enhance coastal preparedness and response to storms and the other to develop the largest coastal nutrient observatory in North America. We will share quarterly updates on these projects throughout the year in our newsletter. Be sure to sign up if you have not done so already.

As always, please do not hesitate to contact me with any suggestions.

Sincerely,

J. Ru Morrison, Ph.D.  
Executive Director, NERACOOOS

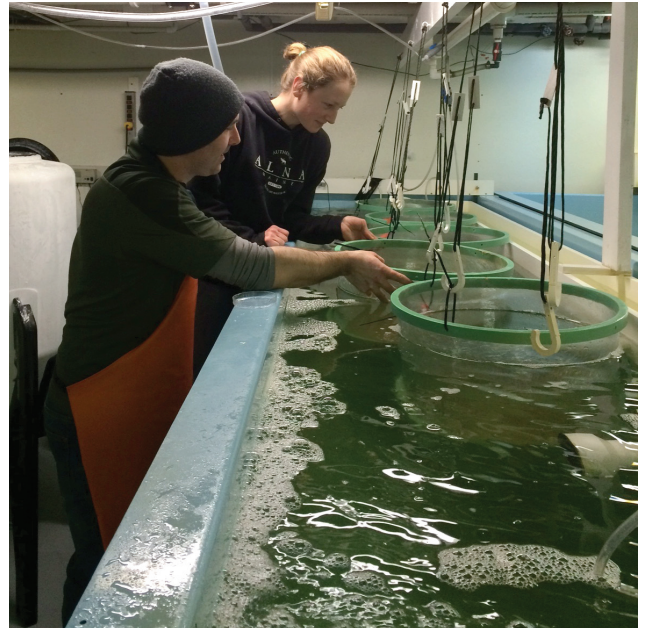
## IMPROVING SCIENCE, MONITORING AND PUBLIC UNDERSTANDING OF OCEAN ACIDIFICATION

Ocean acidification (OA) is a serious threat to shellfish, and New England's \$1.2 billion fishery. In 2014, NERACOOS took a lead in establishing the Northeast Coastal Acidification Network (NECAN). NECAN has synthesized the latest OA science in the region and is in the process of communicating this critical information to stakeholders who can implement adaptive responses to OA. NERACOOS was also instrumental in helping to expand monitoring of OA in Casco Bay and Long Island Sound.



“ To maintain predictable seed production in our oyster hatchery, we have to consider ocean acidification every time we change the water in our larval cultures. NECAN is playing a vital role by helping businesses like mine understand the risks we face and how to prepare for the future. ”

Bill Mook, Owner  
Mook Sea Farm



Staff from Mook Sea Farm monitoring juvenile oysters that will be sold throughout the Northeast and Mid-Atlantic.

“ This deployment is a critical step towards our long-term dream of having a network of instruments moored along the coast of the Gulf of Maine, routinely providing data on the distribution and abundance of HAB cells and toxins. The technology will greatly enhance management capabilities and protection of public health in the region. ”

Don Anderson, Project Lead and  
WHOI Senior Scientist



## NEW TECHNOLOGY FOR DETECTING AND PREDICTING RED TIDE EVENTS

A set of buoys with high-tech sensors for detecting harmful algal blooms – commonly called red tide – were stationed along the New England coast from May through July 2014. The buoys, developed and deployed by the Woods Hole Oceanographic Institution (WHOI), carried novel robotic instruments that detected and measured the organisms that cause red tide. The near real-time data delivered from these buoys provided key information about the locations of red tides and provided an early warning for coastal managers. The information will be combined with ocean measurements from NERACOOS buoys to improve predictive models of red tides in the Gulf of Maine.

Left: The new technology, shown here being deployed from the WHOI ship R/V *Tioga*, uses a robotic mechanism to carry out analyses, reducing the need for people to collect samples from ships and process them manually.

## STUDENTS CONNECT WITH THE OCEAN THROUGH DRIFTER BUILDING PROJECT

NERACOOS provides the opportunity for hundreds of students to learn about ocean currents through building and deploying their own ocean-going drifters. In May, NERACOOS co-sponsored a workshop with the Northeast Fisheries Science Center Drifter Program where more than

a dozen teachers learned how to build and track the drifters. These drifters are essential to improving search and rescue operations, understanding red tides, and studying other oceanographic phenomena.



Left: On the NERACOOS website, students tracked drifters that they had built and launched, enabling them to study ocean surface currents. Right: Wells High School in Maine was among the dozen schools participating in the drifter project.

## DELIVERING INFORMATION TO SUPPORT THE COAST GUARD

U.S. Coast Guard personnel regularly rely on NERACOOS data to improve the safety and effectiveness of their operations.

- Ocean forecasts: Narrowing of search and rescue areas
- Wind observations: Inspection of aids to navigation
- Wave observations: Heavy weather training and vessel selection
- Air temperature: Prediction of icing on vessels



“ Not a day goes by where we don't use NERACOOS data. Without it we'd be sending our Coast Guard crews out uninformed and at greater risk. ”  
CAPT Brian Gilda, Sector Commander  
U.S. Coast Guard Sector Northern New England



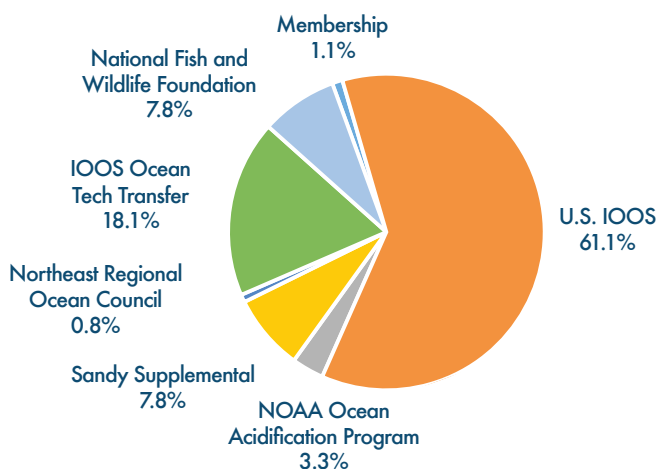
USCG crews conducting heavy-weather training off of Jonesport, Maine.

# 2014 FINANCIALS

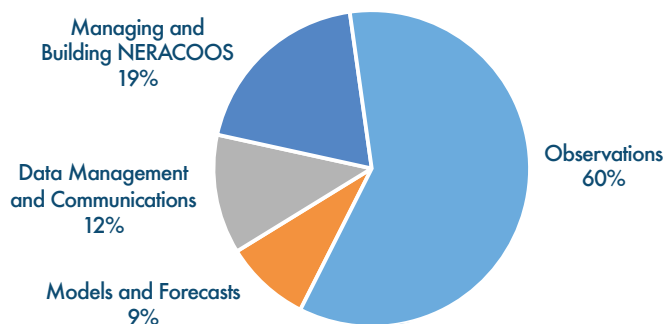
NERACOOS is funded primarily by NOAA through the U.S. IOOS Program. In 2014 NERACOOS successfully brought in additional funding from NOAA, DOI through the National Fish and Wildlife Foundation, and the IOOS Ocean Technology Transfer Program.



## REVENUES: \$3,312,993



## EXPENSES: \$3,312,993



The financial information above represents funding allocated in 2014 and how these funds were budgeted to be spent. The NERACOOS financial year ends September 30th and audited financials are available at [www.guidestar.org](http://www.guidestar.org).



NERACOOS is the Northeastern entity of the Integrated Ocean Observing System (U.S. IOOS), which is a federally authorized program and works with regional and federal partners to ensure compatible and consistent ocean and coastal data collection, management, and information products across the nation.



The IOOS Association is a non-profit organization formed by the Regional Associations (RAs) for Coastal and Ocean Observing in support of the U.S. IOOS. It works with the 11 RAs, the U.S. IOOS Program Office in NOAA, and other partners to address the nation's need for coastal observing and information.

## BOARD OF DIRECTORS

- Malcolm Spaulding** Emeritus, University of Rhode Island *President*
- Peter Smith** Emeritus, Bedford Institute of Oceanography *Vice President*
- Linda Mercer** Maine Department of Marine Resources *Treasurer*
- Anthony Kirinich** Woods Hole Oceanographic Institution *Secretary*
- Robert Araujo** Sikorsky Aircraft Corporation
- Nicole Bartlett** NOAA Northeast Fisheries Science Center *(Non-voting Member)*
- Curtis Bohlen** Casco Bay Estuary Partnership
- Bruce Carlisle** Massachusetts Office of Coastal Zone Management
- David Casoni** Massachusetts Lobstermen's Association
- Fei Chai** University of Maine
- Melville Coté** Environmental Protection Agency *(Non-voting Member)*
- Steven Couture** New Hampshire Department of Environmental Services
- Blaine Grimes** Gulf of Maine Research Institute
- Alfred Hanson** Emeritus, University of Rhode Island
- Steven Lohrenz** University of Massachusetts Dartmouth
- Matthew Lyman** Connecticut Dept. of Energy and Environmental Protection
- Justin Manley** Teledyne Technologies
- James O'Donnell** University of Connecticut
- Jonathan Pennock** University of New Hampshire
- Robert Stankelis** Narragansett Bay National Estuarine Research Reserve
- Michael Szemerda** Cooke Aquaculture, Inc.
- Christine Tilburg** Gulf of Maine Ecosystem Indicator Partnership
- Steven Withrow** Marine and Oceanographic Technology Network

## MEMBERS

### Sustaining

- Cooke Aquaculture
- Massachusetts Water Resources Authority
- Northeastern University, Marine Science Center
- University of Connecticut, Marine Sciences
- University of Maine, School of Marine Sciences
- University of Massachusetts, Dartmouth
- University of New Hampshire, School of Marine Science and Ocean Engineering

### Supporting

- Bar Harbor Whale Watch
- Bigelow Laboratory for Ocean Sciences
- Gulf of Maine Research Institute
- Malcolm Spaulding
- Provincetown Center for Coastal Studies
- Seacoast Science Center
- Woods Hole Oceanographic Institution

### Associate

- Connecticut Department of Energy and Environmental Protection
- Casco Bay Estuary Partnership
- Melville Coté
- Fisheries and Oceans Canada
- Judith Pederson
- Maine Coastal Program
- Maine Department of Marine Resources
- Massachusetts Lobstermen's Association
- RPS
- St. Lawrence Global Observatory
- Waterview Consulting

## AFFILIATES

- Gulf of Maine Council on the Marine Environment
- Massachusetts Office of Coastal Zone Management
- Massachusetts Bays National Estuary Program
- Narragansett Bay National Research Reserve
- New Hampshire Department of Environmental Services
- U.S. Environmental Protection Agency

## STAFF

- J. Ru Morrison, Ph.D. *Executive Director*
- Cassie Szymiest *Program Manager*
- Tom Shyka *Communications Specialist*
- Jackie Ball *Administrative Assistant*

## CONTACT US

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- Email** [info@neracoos.org](mailto:info@neracoos.org)
- Web** [www.neracoos.org](http://www.neracoos.org)



NORTHEASTERN REGIONAL ASSOCIATION  
of COASTAL OCEAN OBSERVING SYSTEMS

“ Working to observe and preserve the ocean is a great responsibility. NERACOOS and its community-involvement efforts offer productive ways to engage in a dialogue about these issues.

**U.S. Senator Jeanne Shaheen (NH)**

## SELECTED 2014 HIGHS AND LOWS



**68.8 MPH**

Strongest wind gust. Buoy N (Northeast Channel). July 5.



**31.8 FEET**

Highest significant wave height. Buoy N (Northeast Channel). November 2.



**1,396 VISITORS**

Busiest day on the NERACOOS website. March 26.



**80.6°F**

Warmest water temperature. Buoy EXRX (Execution Rocks, Long Island Sound). August 29.



**87.3°F**

Warmest air temperature. Buoy EXRX (Execution Rocks, Long Island Sound). September 2.



**31.5°F**

Coldest water temperature. Buoy F (Penobscot Bay) at a depth of 3.3 feet. January 23.



**820 FEET**

Deepest sensor. Buoy M (Jordan Basin) temperature and salinity sensor.



**0.3°F**

Coldest air temperature. Buoy F (Penobscot Bay). January 4.



Sustaining members attended a trip aboard the R/V *Gulf Challenger* with the Board of Directors and congressional delegation staff to learn about NERACOOS's ocean acidification initiative.

## BECOME A MEMBER

Membership in NERACOOS is an important way to support your regional ocean observing system. Our members are a diverse mix of individuals and organizations interested in obtaining, using, and sustaining the best ocean and weather information in the Northeast.

Membership in NERACOOS can include the following benefits:

- ✓ Subscription to NERACOOS Observer
- ✓ Complimentary registration for Annual Meeting
- ✓ Consultations with NERACOOS staff
- ✓ Participation in the Sustaining Members Forum
- ✓ Opportunities to beta test new NERACOOS products

For more information and an application form, please visit:

**[WWW.NERACOOS.ORG/MEMBERSHIP](http://WWW.NERACOOS.ORG/MEMBERSHIP)**