

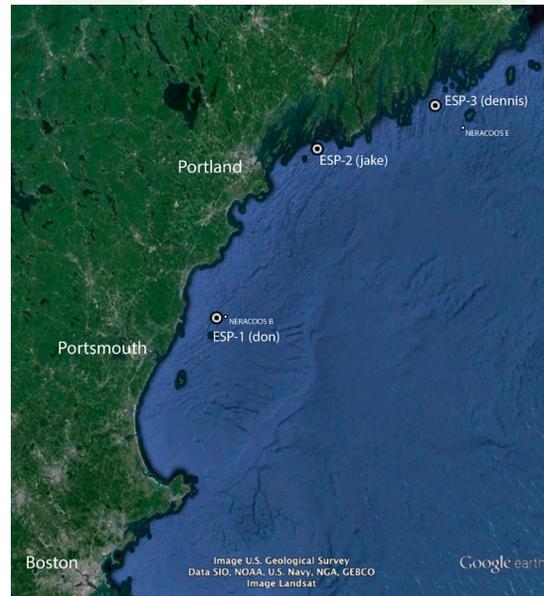
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Bruce Keafer/WHOI (2nd image)

NOAA & WHOI Forecast Algal Blooms in the Gulf of Maine

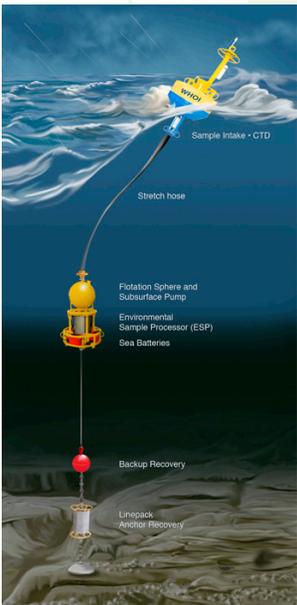
During the spring and summer of 2014, NOAA and academic researchers led by the Woods Hole Oceanographic Institution (WHOI) took a step closer to operational NOAA harmful algal bloom (HAB) forecasting in the Gulf of Maine. In the region, blooms of the toxic alga, *Alexandrium fundyense* (known commonly as New England red tide) pose a serious health risk and often disrupt valuable shellfish harvesting. Eating seafood tainted with algal toxins can sicken or even kill people. Delivering more timely and accurate HAB forecasts for the Gulf of Maine is part of a larger nationwide NOAA effort called 'ecological forecasting.'

NOAA and regional partners issue seasonal forecasts to help shellfish managers and industry prepare for the upcoming bloom season. In May, the team issued its 7th seasonal forecast, suggesting 2014 would be a modest harmful algal bloom season. This forecast was based in part on a fall map of the distribution of seed-like *Alexandrium* cysts in the sediments on the bottom of the Gulf. Taking a new approach to reduce the cost of annual cyst surveys, scientists on a NOAA research vessel measured cysts at a reduced number of locations, chosen based on data from nine, previous large-scale cyst maps from 2004 to 2012.

Another first was the deployment of robotic Environmental Sample Processor (ESP) sensors at three separate Gulf locations supported, in part, by NOAA's Integrated Ocean Observing System Program. From early May through June, the ESP array provided regular, near real-time offshore observations of blooms to scientists and managers through a list serve and the New England Paralytic Shellfish Poisoning (PSP) website. The team also produced and shared weekly updates projecting likely bloom movement based on predictive models. State partners provided information on shellfish toxicity. NOAA-funded bloom status updates and weekly predictions provided important information to more than 150 coastal resource and fisheries managers and supported decisions that kept people safe this summer.



Deployment locations for the Environmental Sample Processors



A diagram of an Environmental Sample Processor, courtesy Paul Oberlander/WHOI

State and regional partners are seeing the value of this work this year. Maine officials requested and received direct access to data from the ESPs to aid in shellfish monitoring. New Hampshire resource managers used ESP data to help monitor algal bloom development when rough weather in May prevented

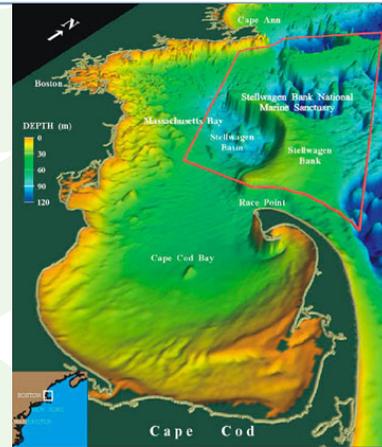
sampling of offshore sentinel mussels. Tracking ESP monitoring data alerted Massachusetts officials to rising *Alexandrium* cell levels, prompting a formal request for state funding of ship-based HAB monitoring in Massachusetts Bay.

The team is analyzing and comparing data from ESPs and from NOAA-funded ESP ground-truth cruises by a WHOI research vessel to the weekly model projections to assess sensor performance and improve the skill of future weekly forecasts. Preliminary comparisons are at the Gulf of Maine Weekly *Alexandrium* Forecast site.

Recovery of ESPs will allow the team to retrieve data from nutrient sensors co-located on the buoys. Nutrient data will provide key context to assess the accuracy of the 2014 Gulf of Maine HAB seasonal forecast and improve next year's predictions. A paralytic shellfish poisoning toxin sensor developed by NOAA's National Centers for Coastal Ocean Science (NCCOS) will also be recovered from one of the ESPs to evaluate its performance.

NCCOS is leading the expansion of operational HAB forecasting and piloting use of HAB sensors in regional observing systems by leveraging internal expertise and two NOAA-sponsored National HAB research funding programs: Prevention, Control, and Mitigation of Harmful Algal Blooms (PCM HAB) and Monitoring and Event Response of Harmful Algal Blooms (MER HAB). Additional support is being provided by NOAA's Office of Coast Survey and Center for Operational Oceanographic Products and Services. Other academic partners include the North Carolina State University (where the forecast system is currently being run), the University of Maine, and the Monterey Bay Aquarium Research Institute.

For more information about NCCOS programs relating to forecasting harmful algal blooms, contact Marc.Suddleson@noaa.gov.



Sea floor map of Stellwagen Bank National Marine Sanctuary, in the North Atlantic region.

Did You Know?

In June, NOAA announced that the American public can now nominate marine and Great Lakes areas as potential new national marine sanctuaries. There have been no new national marine sanctuary designations since 2000.

The National Marine Sanctuaries Act directs NOAA to identify, designate, and protect marine and Great Lakes areas of special national significance. The public's direct involvement in nominating new possible sanctuary sites will help NOAA in this mission, and support the administration's goals of ensuring healthy coastal communities and local economies.

A nomination will not, necessarily, lead to the designation of a new national marine sanctuary. However, the nomination process will result in an inventory of areas NOAA will consider. New sanctuaries will only be created after a nominated site has gone through a separate and lengthy environmental, legal and public review process.

The strongest nominations will provide a clear connection and focus on several criteria and considerations that are relevant to the goals and intent for the nominated area, with special emphasis placed on strong community-based support. More specific information about the new sanctuary nomination process can be found at www.nominate.noaa.gov; or contact NART member Paul Ticco at paul.ticco@noaa.gov.



Participants in the Wave Run-Up Workshop receive field training.

NART Supports Wave Run-Up Workshop

Wave run-up is a critical component to coastal flooding; battering waves contribute much of the damage to coastal structures during tropical and midlatitude cyclones. In 2013, New England National Weather Service (NWS) Weather Forecast Offices developed thirteen wave run-up test sites from Acadia National Park to north of Boston with NART's financial support. Local emergency managers assisted in locating sites vulnerable to overwash or inundation.

In order to expand these test sites to other locations in NOAA's North Atlantic region, NWS forecasters John Cannon and Tony Mignone led a Wave Run-Up Workshop in Taunton, Mass. on April 16-17. Participants from Virginia to Maine gathered in Taunton for both classroom and field training. An Environment Canada scientist from Newfoundland who is working on a similar project also attended. Participants learned how to set up test sites on the first day then received "hands on" training at two Mass. beaches on the second day. An emergency manager met them at one of the beaches to explain the significance of wave run-up damage to his community.



As a result, new test sites are now being created in the Mid-Atlantic, and plans are underway to extend further south with a coast-wide meeting in Fiscal Year 2015. In the meantime, NOAA continues to evaluate wave run-up data during high-impact coastal storms to determine how to merge this project into the overall coastal flood inundation program. For more information contact Richard.Okulski@noaa.gov.

NOAA Place in the North Atlantic

James J. Howard Marine Sciences Laboratory @ Sandy Hook

The James J. Howard Marine Sciences Laboratory, located on the New Jersey shore at Sandy Hook, is a state-of-the-art marine research facility operated through a partnership between NOAA and the State of New Jersey. Federal research at the laboratory is conducted by NOAA's National Marine Fisheries Service.

The primary mission of the Howard Laboratory and the 40 NOAA staffers who work there is to conduct research in ecology, leading to a better understanding of both coastal and estuarine organisms and the effects of human activities on nearshore marine populations.

The lab's facilities include a seawater system that supports research in 11 seawater labs and a 32,000 gallon aquarium, with a focus on the feeding, reproduction, migration, and other life habits and behaviors of coastal marine species. The lab contains a library with an extensive collection of fisheries-related archives and journals and has a variety of research vessels.

Most of the NOAA staff at Sandy Hook are part of the Northeast Fisheries Science Center's Ecosystem Processes Division. The Chief of this Division is Dr. Thomas Noji. There are also staff onsite from the NOAA Office of Habitat Conservation and the NOAA Office of Response and Restoration. For more information about the Sandy Hook lab, visit nefsc.noaa.gov/nefsc/Sandy-Hook/



NOAA People in the North Atlantic Region

Tony Siebers, Ocean Prediction Center, National Weather Service

What are your duties and areas of responsibility?

I am the Chief of the Ocean Forecast Branch in the Ocean Prediction Center (OPC) for the National Weather Service. We monitor and forecast weather and sea conditions 24 hours per day, 365 days per year. OPC issues marine warnings including gale (34 kt), storm (50 kt) and hurricane force (64 kt) wind warnings. We also issue heavy freezing spray warnings and volcanic ashfall advisories. During 2013 OPC issued over 20,000 warnings for our forecast area (large parts of the Pacific and Atlantic oceans). Our offshore marine forecasts extend out 250 miles from the east and west coasts from about 30N to 67N. The high seas forecasts extend further out into the ocean.

What do you consider your most significant achievements as a NOAA employee?

I would highlight three things that I accomplished as part of a team of dedicated, talented and hardworking people:

- leading the “spin-up” a new Weather Forecast Office that started with a new building, new radar and new staff.
- helping the Ocean Prediction Center make the transition from text forecasts to gridded forecasts for offshore zones. Offshore forecasts for the Atlantic and Pacific are now done on a 5 km grid and this helped move OPC into the future of gridded data production.

- The thing I am the most proud of is helping to bring great people into the National Weather Service as a hiring official, or helping people advance their careers.

Do you have any achievements outside of NOAA that you would like to mention?

I have three adult children and have been married for over 40 years.

How does what you do impact the public and why is it important?

All of NWS is focused on the primary mission that is the protection of life and property. We realize that mariners are unique in the warning process because they are out in the elements and are vulnerable because they are slow moving and cannot take shelter. Warnings and forecasts are critical for marine safety.

What is your favorite part of your job that makes you feel most fulfilled?

Seeing people that I hired or work with succeed. Also, knowing that accurate forecasts and warnings helped save lives.

What is your favorite motto? And/or your favorite hobby?

My favorite motto is “The best time to get a 5 minute job done is right now.” Also, “The best time to change is when things are changing.” I love football, travel and hiking, especially in National Parks. One of my sons works for the National Park Service and I try to visit him at the numerous parks where he has worked. He always lines up some great hikes for us.



NART Background

The NART is one of eight regional teams created by NOAA's Regional Collaboration effort. It is composed of 17 members from five line offices and is currently led by Jason Tuell. Nicole Bartlett is the NART Regional Coordinator. For more information on team members and activities visit: http://www.regions.noaa.gov/north_atlantic