

# NOAA's National Ocean Service

## Fiscal Year 2012 Annual Report

Did you know that more than half of us live in coastal areas and almost 60 percent of our nation's economic production occurs in these areas? That 75 percent of U.S. imports arrived through our ports and the sum value of these goods is \$1.16 trillion? Or that the international trade in coastal and marine fisheries contributes \$70 billion annually to our nation's economy? Without question, the health of our coasts is connected to the health of our economy.

At NOAA's National Ocean Service, we translate science, tools, and services into action to address threats facing our ocean and coasts. In fiscal year 2012, we continued working toward healthy coasts and healthy economies.

- [Fiscal Year 2012 Highlights](#)
- [NOS at A Glance](#)
- [Office Accomplishments](#)
- [NOS in the Arctic](#)

## A Few Highlights from Fiscal Year 2012

**\$35 return for every \$1 invested.** According to an independent study, for every dollar American taxpayers spend on the National Geodetic Survey's Coastal Mapping Program, they receive more than \$35 in benefits. For example, authoritative boundaries can allow projects to move ahead more quickly, which saves money. And Emergency Response Imagery can reduce the disruption of economic activity and provide a foundation for reconstruction and restoration.

**208 counties.** That's the number of coastal counties benefiting just this year from NOAA-led coastal resource management learning opportunities available through the [Digital Coast website](#).

**3,500 square nautical miles.** That's the area of seafloor data collected by NOAA this past hydrographic survey season. The newly commissioned 124-foot, twin-hull *Ferdinand R. Hassler* joined the NOAA fleet this year and took part in this effort.

**1,900 people.** That's the number of people who visited the recently opened Sanctuary Exploration Center during its first two days of operation. Opened in July 2012, this state-of-the-art facility in Santa Cruz, Calif., is full of exhibits highlighting Monterey Bay National Marine Sanctuary's extraordinary natural and cultural resources.

**7,800 historical shoreline images.** That's how many historical U.S. shoreline topographic images are now available to the public through the [NOAA Historical Shoreline Survey Viewer](#), launched in 2012. Using these images, the public can see how the U.S. coastline has changed over time.

**140 teachers.** That's the number of educators in 40 states and the District of Columbia who participated in NOAA's Planet Stewards Education Project in 2012. The Project provides professional development opportunities for teachers and supports a collaborative online learning community to increase climate science knowledge and engage students in local stewardship projects.

**1,700 fish.** That's how many fish from four species the [Great Lakes Acoustic Telemetry Observation System](#) is tracking to answer fisheries management questions in the Great Lakes. This system is one example of how NOS and its partners are collaborating to establish a U.S. [Animal Telemetry Network](#) to support the ocean observations community.

**63 miles.** That's the length of the shoreline in Illinois. The state joined the Coastal Zone Management program this year. Even though the coastline is small, it represents the most densely populated and highly urbanized coastal area in the Great Lakes.

**5 months.** That's how long one of the largest harmful algal blooms lasted along the Texas coast this year. Harmful algal bloom forecasts for Texas, developed by the National Centers for Coastal Ocean Science, became an integral part of operations at the Center for Operational Oceanographic Products and Services just one year prior to the onset of this devastating bloom.

**\$500,000.** To date, that's how much funding NOAA and the National Park Service have secured, under the auspices of the Department of State U.S.-Chile Environmental Cooperation Agreement, to create two sister park agreements between U.S. and Chilean marine protected areas.

This information provides only a snapshot of what we've been up to in the last fiscal year. Get the full picture by browsing our office accomplishments.

## **NOS at a Glance**

With program and staff offices covering a broad range of topics, the diversity of expertise within the National Ocean Service is one of our greatest strengths. Bringing together scientists, natural resource managers, and other specialists, NOS is well equipped to support coastal communities, promote a robust economy, and protect coastal and marine ecosystems.

National Ocean Service offices include:

- Center for Operational Oceanographic Products and Services
- Integrated Ocean Observing System Program
- National Centers for Coastal Ocean Science
- National Geodetic Survey
- NOAA Coastal Services Center
- Office of Coast Survey
- Office of National Marine Sanctuaries
- Office of Ocean and Coastal Resource Management
- Office of Response and Restoration

## **NOS Leadership**

David Kennedy  
*Assistant Administrator*

Dr. Holly Bamford  
*Deputy Assistant Administrator*

David Holst  
*Chief of Staff*

Chris Cartwright  
*Chief Financial Officer*

## **Program Office Accomplishments**

View National Ocean Service program and staff office fiscal year 2012 highlights.

- [Center for Operational Oceanographic Products and Services](#)
- [Integrated Ocean Observing System Program](#)
- [International Program Office](#)
- [Management and Budget Office](#)
- [National Centers for Coastal Ocean Science](#)
- [National Geodetic Survey](#)
- [NOAA Coastal Services Center](#)
- [Office of Coast Survey](#)

- Office of National Marine Sanctuaries
- Office of Ocean and Coastal Resource Management
- Office of Response and Restoration

## NOS in the Arctic



Ice and open water in the Beaufort Sea north of Alaska.

The Arctic region is undergoing rapid change. Loss of sea ice and shifts in ecosystems are signs of a dramatic transformation. As sea ice abates, vessel traffic in the Arctic is on the rise. At the same time, changes in ecosystem functions may not be fully understood for years.

In Fiscal Year 2012, the National Ocean Service continued to work on many fronts to respond to these changes with activities such as the following:

- **Improving the Geospatial Framework in the Arctic.** NOS is working to improve the Alaska/Arctic geodetic framework to ensure greater positioning accuracy and precision for latitude, longitude, and height. This precision is particularly important for hydrographic surveying and shoreline mapping to produce nautical charts and other products necessary for safe maritime transportation. Over the last couple of years in support of this effort, NOS has collected over 347,000 square miles of gravity data across the Alaska/Arctic region, compiled approximately 390 miles of Arctic shoreline and 933 miles of Alaska shoreline, and added over 40 stations to the network of Continuously Operating Reference Stations.
- **Surveying and Mapping Arctic Waters.** NOS is surveying U.S. Arctic waters to update nautical charts for the safe economic use of the Arctic. Since 2007, NOS has acquired approximately 4,550 square nautical miles of Arctic hydrographic data using multibeam and vertical beam sonar. This includes surveys in Kotzebue Sound, Kuskokwim River, Nuchagak Bay, Krenitzin Islands, and reconnaissance bathymetry in the Bering, Chukchi, and Beaufort Seas. These data, collected primarily for safe navigation, also support other important applications, including oil spill response and trajectory modeling.

NOS is also collaborating with NOAA's Office of Atmospheric Research and Canada to conduct joint seafloor mapping missions of the Arctic extended continental shelf, mapping more than 600,000 square nautical miles of the seafloor since 2003. The natural resources on and under the seafloor over which the U.S. would claim sovereign rights are estimated to be worth \$1.2 trillion.

This year, the NOAA Ship *Fairweather* conducted a reconnaissance hydrographic survey mission in the Arctic to check sparse soundings along a 1,500-nautical-mile coastal corridor from Dutch Harbor, Alaska, to the Canadian border, providing valuable information needed to prioritize NOAA's future survey projects in the Arctic. The *Fairweather* also worked with NOAA's Alaska Fisheries Science Center to collect sonar data for studying fish stocks and their habitat, while acquiring water depths for updating nautical charts.
- **Providing Scientific Support.** NOS and its partners have developed an [Environmental Response Management Application \(ERMA®\) for the Arctic](#) region. Arctic ERMA® integrates and synthesizes data into a single interactive map, providing a quick visualization of a situation and improving communication and coordination among emergency responders and environmental resource managers. This Web tool brings together all of the available information needed for an effective emergency response in the

Arctic's distinctive conditions, such as the extent and concentration of sea ice, locations of ports and pipelines, and vulnerable environmental resources. Most recently, Arctic ERMA<sup>®</sup> was used by NOAA during a Chukchi Sea oil spill drill. The drill tested spill response and preparedness in advance of Chukchi and Beaufort Seas oil exploration activities in 2013. Over the past 30 years in Alaska, NOS has supported more than 200 spill responses and more than 100 spill trainings and drills.

In coordination with NOAA's Kasitsna Bay Laboratory near Seldovia, Alaska, NOS is also conducting environmental assessments and cold-water coastal ecosystems research that provide a baseline of environmental conditions in the region and help identify areas of special value and vulnerability to offshore petroleum development and coastal infrastructure.



NOAA scientists collecting ice core samples in the Beaufort Sea.

**Collecting and Delivering Ocean Data.** NOS is adding new tide monitoring stations and conducting new ocean current surveys in the region to support safe and efficient maritime commerce:

- NOS has done innovative research and development to collect water-level data in remote, cold climate regions where winter sea ice precludes traditional tide station installation. This effort yielded two specially designed water-level gauges mounted on the ocean bottom two miles off the coast of Barrow, Alaska. Data from these gauges have contributed to an improved vertical reference system for the region. NOS also recently added water-level stations in Pribilof Bay and Port Moller, bringing the total number of surface-based water-level stations to 35 for Alaska and the Arctic.
- Over the past decade, NOS has conducted several ocean current surveys in southeastern Alaska and the Aleutian Islands. These data have contributed to significant time corrections in tidal current tables,

leading to improved tide predictions for routes from Northern Asia to North America.

- NOS also supports the Alaska Ocean Observing System (AOOS), the U.S. Integrated Ocean Observing System's (IOOS) regional partner in Alaska. AOOS is working to increase ocean and coastal observations in the U.S. Arctic and make Arctic data more accessible and useful.