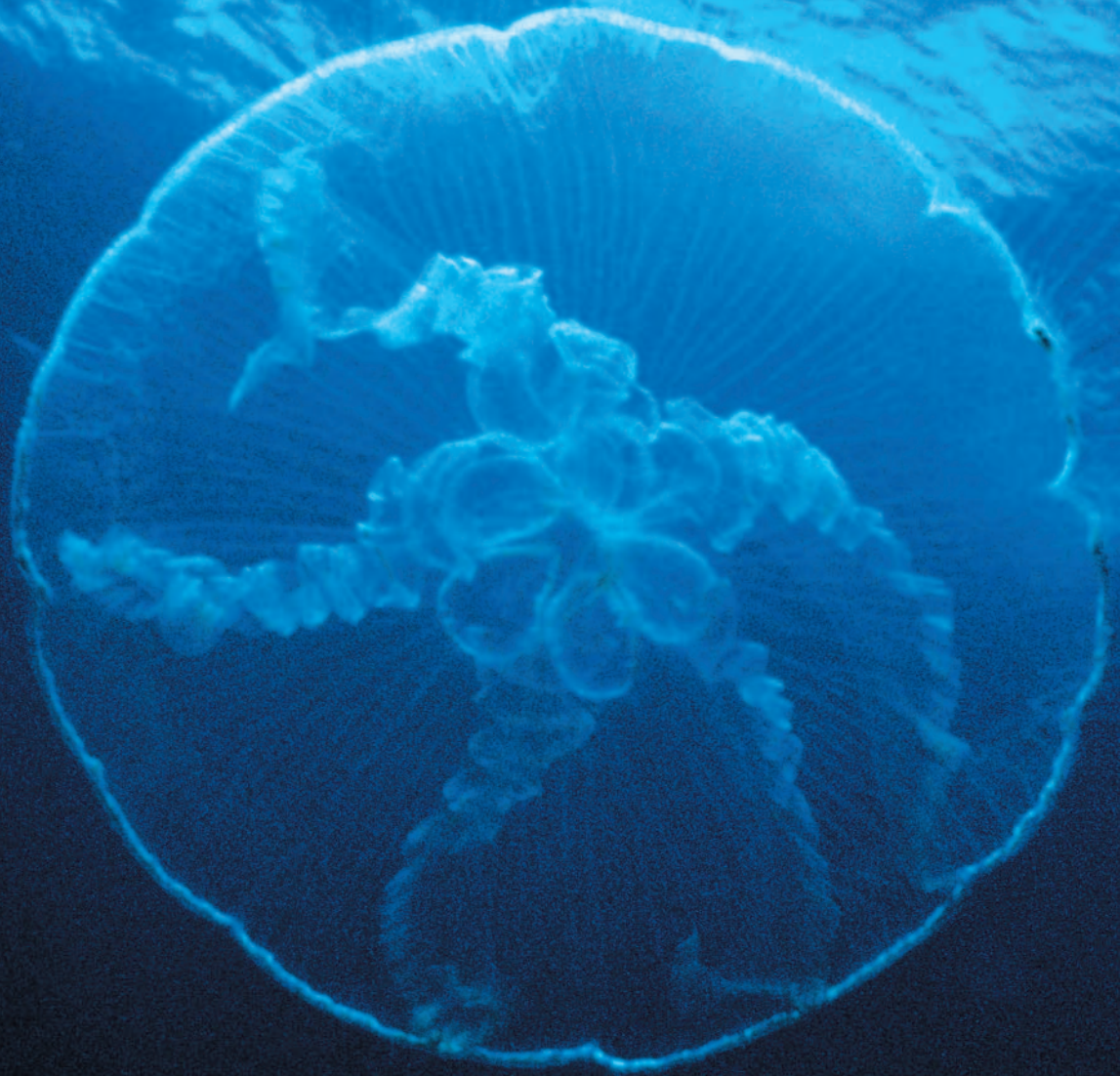


# Accomplishments 2003



**NOAA's National Ocean Service**  
Working for America's Coasts

# Message from the Assistant Administrator

I am delighted to present this NOS annual *Accomplishments Report* summarizing our progress and achievements of 2003. The dynamic and relevant nature of our accomplishments is reflected well in these pages. The reader will note the extraordinary diversity and universally high quality of the accomplishments—testimony to the experience, expertise, and professionalism of the NOS workforce. Truly, people are NOS' strength.

This is an exciting time to be the Assistant Administrator of NOS and to be a part of the larger ocean community. There are two commissions looking at overall ocean policy—Pew and the U.S. Commission on Ocean Policy. Their findings will likely result in a major overhaul of how we work on ocean and coastal issues in the United States. NOS is well positioned to address these new directions because of the strength of our programmatic diversity, our depth of talent, and our breadth of responsibilities, which are unparalleled inside or outside the government. How best to lead these diverse activities is my primary focus. To that end, we are in the process of defining our vision and want to share with you our “priority themes” for 2004. This vision is built upon our organization’s strength as expressed in this *Accomplishments Report*. Our vision is to be the global leader for integrated management of the oceans.

## Priority Themes

### People

People are the foundation of NOS' success. Therefore, NOS will continue to invest in training and career enhancement, offering opportunities for NOS staff to lead at all levels in the ocean community.

### Observations

NOS will be a global leader in designing and implementing an integrated ocean observing system. This includes incorporating both in situ and remotely sensed measurements, which provide valuable information for protecting and managing ocean and coastal resources.

### Modeling

NOS will be a global leader in applying existing models, and developing new ones, to forecast future ocean and coastal conditions to meet the needs of coastal managers and commercial and recreational users.

### Watersheds

NOS will be a global leader in applying a watershed approach to managing ocean and coastal resources, acknowledging that the ocean ecosystem is inclusive of white water, brown water, blue water, and the atmosphere.

### Partnerships

NOS will be a global leader in forging partnerships across all stakeholder sectors in the ocean community—including the government, academia, private sector, nongovernmental organizations, international partners, and private citizens—to maximize the impact of individual efforts and ensure that resource management decisions are made in an integrated manner.

### Technology

NOS will be a global leader in identifying and applying existing technologies, as well as supporting the development of new technologies, that will enhance our ability to understand ocean and coastal ecosystems and result in more effective management of these resources.



**In fiscal year 2003, NOS invested nearly a half-billion dollars on navigational and coastal management activities. This money provides funds for our major budget activities, including:**

- **Navigation Services**—Overall, \$122 million was spent on navigation products and services, including hydrographic surveying; nautical charting (electronic, paper, and raster); real-time data about water levels, tides, currents; height modernization efforts; and the National Spatial Reference System. With the growth of the shipping industry and growing concerns about homeland security, these NOS products and services contribute to the efficiency and safety of our nation's ports and waterways.
- **Ocean Resources Conservation and Assessment**—\$161 million was spent on protecting and restoring coastal resources. From cleaning up marine spills to mapping coral reefs, these funds support efforts to protect and restore our coastal resources. Fiscal year 2003 money was also spent on research on threats to healthy ocean and coastal ecosystems such as harmful algal blooms and pfiesteria. NOS research, monitoring, and assessments play a major role in understanding what harms coastal ecosystems.
- **Ocean and Coastal Management**—\$141 million supported coastal states and territories in implementing Federal partnership programs that promote sustainable use of our nation's coastal areas, including the nation's 13 national marine sanctuaries. In addition, \$16 million in FY '03 funds was spent on a network of 26 estuarine areas established across the United States to promote environmental stewardship, education, and research.
- **Procurement, Acquisition, and Construction Projects**—\$70 million was spent on construction and acquisition projects associated with our National Marine Sanctuary (NMS) and National Estuarine Research Reserve System (NERRS). For our NMS program, this included funds for the Mariners' Museum, which will house the *USS Monitor* Center. In addition, \$37 million was spent on the Coastal and Estuarine Land Conservation Program (CELCP), which authorizes the acquisition of land in coastal areas.

I am delighted and honored to have the opportunity to take over the reins of NOS at this critical juncture. I look forward to an incredible year.

**Richard W. Spinrad, Ph.D.**

Assistant Administrator



## Navigation and Commerce

In the last five decades, the average size of ships has doubled and seagoing commerce has tripled. Half of the cargo transported through U.S. waters consists of hazardous materials. The National Ocean Service provides the nation with the information, tools, and services necessary for safe, efficient marine navigation. These include up-to-date paper and electronic nautical charts, shoreline surveys, and information on water levels, currents, and weather. NOS also maintains the National Spatial Reference System, a set of geographic coordinates that support land surveying, navigation, mapping, and the users of the Global Positioning System (GPS).

### Navigation Safer On The Great Lakes

Vessels that navigate the Great Lakes now have an additional measure of safety due to the availability of Global Positioning System (GPS) data from a newly established continuous operating reference system (CORS) at a water-level site located on Lake Huron at Harbor Beach, Michigan. In addition to GPS, the data-rich station is equipped with meteorological sensors and a water-temperature sensor. When combined with a network of other, similarly equipped CORS stations, the data relate water-level changes to shifts in the Earth's crust throughout the Great Lakes Region. The technology will improve forecasts of atmospheric and lake conditions by NOAA's Forecast Systems Laboratory and NOAA's Great Lakes Environmental Research Laboratory. NOS Lead Program Office: National Geodetic Survey.

### Contributing To Safe And Efficient Navigation In Delaware River And Bay

NOS' tenth Physical Oceanographic Real-Time System (PORTS®) station, part of a nationwide network, became fully operational in the Delaware River and Bay area. The new station is operated in partnership with the Maritime Exchange of Delaware River and Bay. Ensuring safe and efficient navigation, Delaware Bay PORTS® provides quality-controlled, real-time observation of water levels, currents, salinity, and such meteorological data as surface winds, air and water temperatures, and barometric pressures from 11 sites within the river and bay. The data are made available through interactive voice modem and Web sites. NOS Lead Office: Center for Operational Oceanographic Products and Services.

### New Water-Level Forecast System Operational In Port Of New York And New Jersey

NOS implemented the new Port of New York and New Jersey Operational Forecast System (NYOFS) to provide local mariners, port managers, and spill response teams with information on present conditions (nowcasts) and future conditions (forecasts) of water levels and currents in the area. Four times a day, 30-hour nowcasts and forecasts of water levels and currents are provided for many locations throughout the harbor. NYOFS is based on real-time water-level and wind observations from NOS' Physical Oceanographic Real-Time System (PORTS®), tidal information, and National Weather Service numerical models. Products from this system will allow U.S. port authorities and shippers to make better decisions about ship tonnage (based on available bottom clearances) and efficiency of vessel transit passage times without compromising safety. NOS Lead Office: Center for Operational Oceanographic Products and Services.



### Civil War-Era Historic Documents And Charts Restored

NOS helped preserve a set of Civil War-era documents and historic nautical charts that covered sailing directions. The set of documents, titled *Notes on the Coast of the United States*, was prepared under the direction of Superintendent A.D. Bache in 1861. Before the Civil War, Bache struggled to justify the charting program to an uninterested Congress. When the war began, Congress began to see the value and utility of coast surveys. Thus, the cartographers and topographers who developed the documents and charts played an integral part in American history. *Notes on the Coast of the United States* are now housed in the rare books section at the NOAA Library in Silver Spring, Maryland. NOS also plans to scan the documents and make them available online. NOS Lead Office: Office of Coast Survey.

### Making International Efforts To Increase Marine Navigation Safety

NOS worked with the International Hydrographic Organization (IHO) to help build regional capacity for hydrographic surveying and nautical chart production. The United States is working with the Meso-American-Caribbean Sea Hydrographic Commission, an arm of the IHO, to develop a pilot project demonstrating how hydrographic information can increase safety of marine navigation and protection of the marine environment in the Gulf of Honduras. NOS and its counterpart agency in the Mexican Navy also established a Cooperative Charting Committee to eliminate duplication of charting efforts in shared boundary waters. NOS Lead Office: Office of Coast Survey.

### New Customized Nautical Charts For Modern Navigators

Professional mariners and recreational boaters can now customize the nautical charts they receive from NOS. Mariners can remove the LORAN-C grid lines—an older, less commonly used method—from 260 charts. LORAN-C grid lines once helped determine a ship's position. With the advent of highly accurate and widely used Global Positioning System data, they are no longer the preferred method of navigation. Removing the LORAN-C grid lines permits mariners to see the remaining chart features more clearly. In addition, the new customization allows for such information as tide tables, course lines, VHR radio channels, and excerpts from *NOS Coast Pilots* to be added to the charts as needed. NOS Lead Office: Office of Coast Survey.

### Responding To U.S. Navy Requests For Homeland Security Hydrographic Surveys

NOS is responding to homeland security needs by providing the U.S. Navy with survey data on strategic transit routes. Such data are critical to ensure military mobility and safety along marine transportation routes. The data will also update nautical charts used by the maritime commerce community. NOS will continue to fulfill Navy requests as part of its long-term survey planning. NOS Lead Office: Office of Coast Survey.

## Habitat

Coastal areas are constantly changing because of both natural and human forces. Expanding coastal populations and development can threaten the health and survival of plants, animals, and habitats necessary for sustained economic and environmental vitality. The challenge for the National Ocean Service and its partners is to increase public understanding and awareness of coastal habitats and the threats to them in order to protect, enhance, and restore these critical areas. Coral reef destruction, harmful algal blooms, coastal “dead” zones, chemical contaminants, human population pressures, climate change, and other threats to marine life will continue to dominate NOS’ attention.

### Expanded Coral Reef Program Puts NOS Mapping Ahead Of Schedule

The mapping of coral reefs supports a foundation for a variety of reef conservation and management measures. In 2003, NOS expanded its National Coral Reef Monitoring Program to provide additional monitoring and assessments of reef conditions. NOS’ expanded program is based on partnerships with states, territories, and other Federal agencies. The program includes the collection, analysis, and reporting of long-term coral reef ecosystem monitoring data. During 2003, NOS completed enough coral reef mapping in the U.S. Pacific to bring the total area of mapped shallow U.S. coral reef ecosystems to 60 percent. That’s up from 10 percent in 2000, when the effort began, and puts NOS ahead of the schedule set by the U.S. Coral Reef Task Force to have all U.S. shallow-water coral reefs mapped by 2009. NOS Lead Offices: Office of Ocean and Coastal Resource Management, Office of Response and Restoration, National Centers for Coastal Ocean Science.

### DNA Detectives Help Keep Sea Turtles Off The Menu

All sea turtle species are endangered or threatened. Despite protection by U.S. and international law, sea turtles are poached for consumption and handicrafts. In 2003, NOS scientists developed a DNA-based method for identifying cooked and raw turtle meat, eggs, and trace evidence such as blood. The new method is a powerful new tool for sea turtle conservation and gives law enforcement the scientific muscle to prosecute poachers. Earlier species identification methods were only useful on fresh tissue and did not help cases in which eggs were seized or meat had already been cooked. NOS Lead Office: National Centers for Coastal Ocean Science.



### National Estuaries Day A Hit

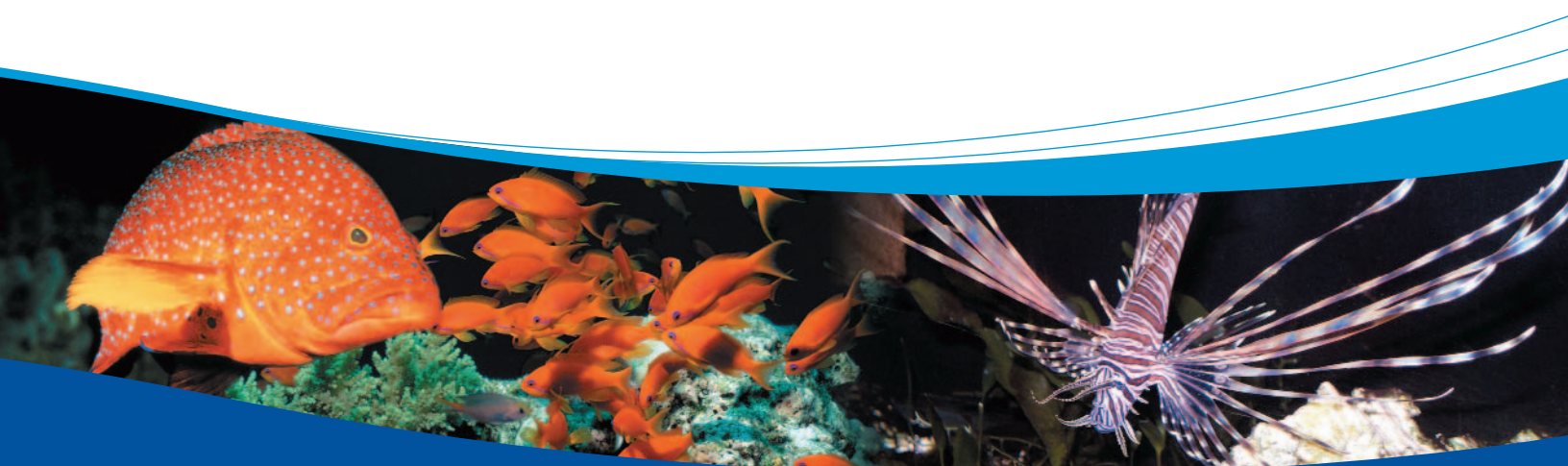
More than one million people celebrated National Estuaries Day and participated in “Estuary Live”, an interactive, Web-based field trip to an estuary. National Estuaries Day promotes the importance of estuaries and we should conserve and protect them. NOS partnered with the U.S. Environmental Protection Agency to produce “Estuary Live”, which featured eight estuaries across the nation and reached students of all ages. NOS Lead Office: National Estuarine Research Reserves.

### Part Of San Francisco Designated As Estuarine Research Reserve

NOS formally designated part of San Francisco Bay as a National Estuarine Research Reserve. The 26th such reserve, it encompasses 3,710 acres, including China Camp State Park and Rush Ranch Open Space Preserve. In the reserve, research, monitoring, and educational activities will be conducted in support of tidal marsh restoration. San Francisco Bay has lost nearly 97 percent of its historic tidal wetlands to development, but since 1999, about 11,420 acres of wetlands have been restored, and plans for restoring more are underway. The reserve will help management agencies and scientists direct research priorities and design scientific studies that address key restoration issues in the Bay Area. San Francisco State University’s Romberg Tiburon Center is overseeing the management of the reserve. Lead Office: National Estuarine Research Reserves.

### Sensitive Sea Areas Designated On Nautical Charts, Receive Protection

NOS worked with the International Maritime Organization to create nationally accepted and enforceable zones of protection for coral reefs. In these zones, corals will be protected from anchors, groundings, and collisions from large ships. Coral reefs within the Florida Keys National Marine Sanctuary will become the first in U.S. waters to receive this international protection and will be designated as a particularly sensitive sea area (PSSA)—one of only five such areas in the world. The Florida PSSA zone is featured on NOS nautical charts and will be on international charts as well. NOS Lead Offices: Office of Coast Survey, National Marine Sanctuary Program.





### **New Coral Management Assistantship Program Launched**

The NOAA Coral Reef Conservation Program launched the new Coral Management Assistantship Program to help build the capacity of U.S. states and territories to manage coral reef ecosystems. The program placed coral management assistants on two-year assignments with management agencies in Puerto Rico, the U.S. Virgin Islands, Hawaii, American Samoa, and the Commonwealth of the Northern Mariana Islands. The inaugural group of assistants will work on coral reef-related issues such as overuse, education and outreach, and land-based pollution. NOS Lead Office: Coral Reef Conservation Program.

### **Public-Private Partnerships to Protect Coral Reefs**

The NOAA Coral Reef Conservation Program supported 26 projects to help protect and restore coral reefs through the Coral Reef Conservation Fund in 2003. The Fund is a partnership between NOAA and the National Fish and Wildlife Foundation (NFWF) to provide matching grants to build public-private partnerships for coral reef conservation. In 2003, projects supported a variety of activities, including restoring coral reefs and mangroves; engaging stakeholders through education and outreach; increasing monitoring, research, and training; and increasing effectiveness of coral reef protected areas. NOS Lead Office: Coral Reef Conservation Program.



### Coral Reef Conservation Grant Program

The NOAA Coral Reef Conservation Program completed its second successful year of the Coral Reef Conservation Grants Program. In 2003, more than \$4.9 million in grants were awarded under six theme areas: Coral Reef Ecosystem Research; State and Territory Coral Reef Management; International Coral Reef Conservation; Projects to Improve or Amend Coral Reef Fishery Management Plans; State and Territory Coral Reef Monitoring; and General Coral Reef Conservation. A report to Congress, *Progress Report: The Coral Reef Conservation Program*, provided an overview of the grant program since its establishment in 2002. NOS Lead Office: Coral Reef Conservation Program.

### Abandoned Vessel Survey Completed For Pacific Coral Reef Areas

The NOAA Coral Reef Conservation Program and the Office of Response and Restoration completed a survey of abandoned vessels in coral reef ecosystems of Guam, Saipan, Tinian, and Rota. Over the course of nine days, a four-person team surveyed 73 vessels: 40 tugs/barges, 15 sailboats, seven fishing vessels, five freighters, four landing vessels, one cabin cruiser, and one yacht. The vessels were photographed, accurately located, and surveyed for potential risk to the environment, public safety, and navigation. NOS Lead Office: Office of Response and Restoration.





## Coastal Communities

The coastal zone contains some of our nation's most economically valuable, ecologically diverse, and sensitive natural resources. Although this area covers only 17 percent of the U.S. landmass, almost half of the U.S. population lives along the coast, and most of our largest cities are located there. The pressures of increasing population, recreation, and development have fragmented spawning grounds, degraded water quality, and increased the vulnerability of communities to natural hazards. The National Ocean Service and its state and local partners must revitalize waterfronts and industrial sites, reduce damage from natural disasters, and promote new development that minimizes impacts on natural resources.

### Marine Protected Areas Federal Advisory Committee

The Marine Protected Areas (MPA) Federal Advisory Committee was established with 30 members who represent a broad stakeholder community, including scientists, academia, commercial and recreational fishermen, state and tribal resource managers, environmentalists, and other resource users. The Committee's responsibilities include providing recommendations to the Secretaries of the Departments of Commerce and the Interior on implementing Section 4 of MPA Executive Order 13158. Some recommendations may include advice and guidance regarding a national system of MPAs, MPA stewardship and effectiveness, and national and regional MPA coordination. NOS Lead Office: Marine Protected Areas Center.

### A Thousand Images Aid In North Carolina Storm Cleanup

When Hurricane Isabel slammed the North Carolina coast on September 19, 2003, it created a new inlet near Cape Hatteras Village. In the days following the Category 2 storm, NOS took aerial photographs of the changed coastline. NOS captured the shoreline alteration by mounting a digital camera, equipped with a built-in Global Positioning System, on the bottom of a NOAA Twin Otter aircraft. This allowed each image to be precisely referenced to latitude and longitude. The NOAA aircraft took approximately 1,000 images at the request of North Carolina's Emergency Management Agency and the Department of Natural Resources. The referenced images aided in cleanup and rebuilding operations. NOS Lead Office: National Geodetic Survey.

### Ecological Forecast Indicates Gulf "Dead Zone" Needs More Help

NOS' decade-long support of directed scientific studies of the Gulf of Mexico led to a scientifically based Action Plan in 2001. The plan specified the initial watershed nutrient reductions needed for a healthy Gulf. In 2003, NOS-supported scientists worked to improve ecological forecasting for the Gulf of Mexico that resulted in the first-ever forecast of the "dead zone" off the Louisiana and Texas coasts. The improved ecological forecast indicates that nutrient load reductions beyond those suggested by the 2001 Action Plan may be necessary. NOS Lead Office: National Centers for Coastal Ocean Science.



### **National Mapping Effort Completed For Great Lakes And Most Of The West Coast**

NOS efforts to create a national baseline of land cover data for the coastal United States are under way. Using a variety of devices, including satellite sensors, aircraft, and on-the-ground fieldwork, researchers create maps to assess urban growth and document landscape changes over large areas. Contracts with remote sensing firms in 2003 completed work for the Great Lakes region and most of the West Coast. In 2004, the focus will be on the Gulf of Mexico. In addition to the land cover maps, digital elevation data are being created for some areas. Adding subsequent years to the land cover baseline data will result in a comprehensive trend analysis of land use in the coastal zone, an invaluable tool for communities trying to balance the need to preserve natural resources and the desire to develop property. NOS Lead Office: Coastal Services Center.

### **Saving Lives With Weather Information**

NOS develops numerous tools and information vehicles to protect the public from hazardous weather. One of these tools is an improved flood forecasting system. By using a geographic information system (GIS), the public can now “see” a flood forecast in much the same way a weather forecast is presented. Another tool is the historical hurricane tracking system. This Web site allows users to pinpoint their geographic location of interest and learn the intensity and frequency of storms in their area over the last 100 years. Helping people learn about storms was also the goal behind the special weather series developed by NOS and the Weather Channel. Each of these tools helps the public understand how hazardous weather might affect individuals and their communities. NOS Lead Office: Coastal Services Center.

### **Providing International Forums For Coastal Resource Managers**

With more than 50 percent of the world’s population located on coastlines, coastal management is indeed a global affair. In 2003, NOS brought together coastal resource managers from around the world to share information, collect resources, and learn about new processes and technologies. One of these conferences was Coastal GeoTools ’03, where information about appropriate technologies for coastal management was the focus of discussions and demonstrations. Another important gathering was Coastal Zone ’03, the world’s largest conference for the coastal resource management community. Nearly 800 professionals from more than 25 countries attended. Other conferences this year focused on such topics as smart growth and coastal and ocean observing systems. NOS Lead Office: Coastal Services Center.

### **Improving State Laws And Policies On Docks And Piers**

While it may not make the headlines, the issue many coastal managers spend much of their time on is residential dock and pier management. NOS completed a comprehensive inventory of policies and laws regarding residential docks and piers for North Carolina, South Carolina, Georgia, and Florida. The resulting publication includes federal laws, state laws and regulations, permitting policies, and contact information for each of the states. Coastal states throughout the country use this information as they work to improve their dock and pier policies. NOS Lead Office: Coastal Services Center.

### **Resolving Conflicts Among Developers, Environmentalists, Local Officials, Property Owners**

Negotiating among the many competing demands for coastal resources is one of the most difficult tasks faced by state coastal resource management programs. In response to requests from state programs, NOS developed a “Public Issues and Conflict Management” training course, in which participants learn techniques that help them avoid or diffuse conflict in potentially contentious public meetings. The overall goal is to increase participants’ ability to design, conduct, and control meetings in public forums. This course is just one of many offered by NOS to the nation’s coastal managers. During the past year, 1,355 members of the coastal resource management community took advantage of these courses. NOS Lead Office: Coastal Services Center.

### **Bringing Coastal Resource Management To The People**

To increase NOS’ effectiveness, the organization is embarking upon an ambitious plan to regionalize some NOAA products and services. One of the best examples of this is the Pacific Services Center, which is located in Hawaii and serves all of the U.S. Pacific Islands. This year, the office worked with its constituents and partners to provide technical training, modernize geodetic controls, develop maps and other data products, and support the economic valuation of coastal resources. An equally important benefit of this work is the insight it provides NOAA as it looks for new ways to address the nation’s coastal issues. NOS Lead Office: Coastal Services Center.

### **Kicking Off A Coastal Training Program**

NOS held the first Coastal Training Program in the nation in Massachusetts. The program is a nationwide effort to provide support, training, and information to help coastal communities better manage their natural resources. The product of several years of careful research and planning among estuarine research reserve managers, the program improves on existing coastal training opportunities. The Massachusetts Coastal Training Program is a cooperative effort among the Waquoit Bay National Estuarine Research Reserve, the Massachusetts Office of Coastal Zone Management, and NOAA’s Woods Hole Oceanographic Institution Sea Grant Program. NOS Lead Office: Office of Ocean and Coastal Resource Management.

### **Coastal Information At Your Fingertips**

NOS released a new and improved version of a Web mapping portal, called nowCOAST, at <http://nowcoast.noaa.gov>. The Web site includes links to real-time information from meteorological, oceanographic, and river-observing networks. Users will also find links to NOAA’s model forecast guidance as well as weather and marine forecasts for major estuaries, seaports, Great Lakes, and coastal regions. The updated site also features links to 1,000 U.S. Geological Survey observing stations. NOS Lead Office: Office of Coast Survey.

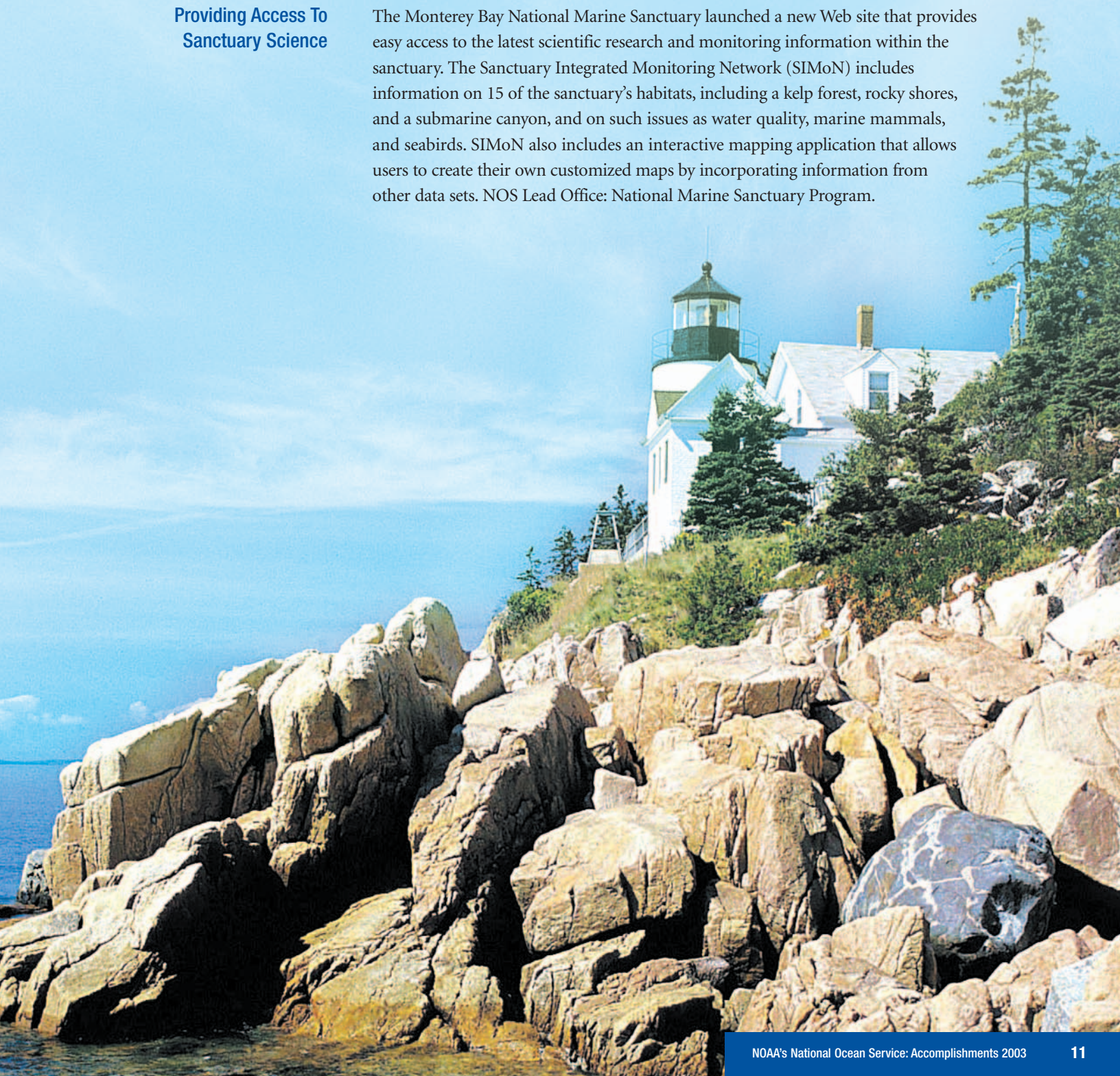


### **Making Great Progress In Multicultural Ocean Science Education**

A California-based marine conservation effort serving Hispanic and Latino students, teachers, and families living near the Monterey Bay National Marine Sanctuary made exceptional strides. The Multicultural Education for Resource Issues Threatening Oceans (MERITO) program reached more than 5,500 Spanish-speaking citizens in Monterey County and participated in nine multicultural events that drew more than 100,000 people. The program also developed and field-tested middle-school curricula focusing on watershed and ocean protection and secured funding for 25 Hispanic-serving teachers of marine resource issues. In addition, MERITO introduced bilingual, in-the-field experiences and ocean conservation issues to more than 180 Hispanic community members. NOS Lead Office: National Marine Sanctuary Program.

### **Providing Access To Sanctuary Science**

The Monterey Bay National Marine Sanctuary launched a new Web site that provides easy access to the latest scientific research and monitoring information within the sanctuary. The Sanctuary Integrated Monitoring Network (SIMoN) includes information on 15 of the sanctuary's habitats, including a kelp forest, rocky shores, and a submarine canyon, and on such issues as water quality, marine mammals, and seabirds. SIMoN also includes an interactive mapping application that allows users to create their own customized maps by incorporating information from other data sets. NOS Lead Office: National Marine Sanctuary Program.



# Coastal Hazards

Storms batter the coast with high winds, huge waves, and storm surges that threaten human communities and natural habitats. The National Ocean Service finds innovative ways to provide information, tools, and techniques that reduce communities' vulnerability to storms, tsunamis, harmful algal blooms, fish kills, marine mammal strandings, and other coastal hazards. As an example, NOS, NOAA's National Weather Service, and other federal and state partners are studying the Earth's climate to improve storm prediction and warning systems. NOS also establishes coastal preparedness plans, educates the public about coastal hazards, and develops tools such as geographic information systems (GIS) to help communities plan for and respond to coastal hazards.

## North Atlantic Potentially New HAB Hotbed

Several species of whales were found dead in open waters off Massachusetts near Georges Bank. Tissue and fluid samples were collected by NOAA Fisheries Marine Mammal Stranding Network and analyzed by NOS' Biotoxins Analytical Response Team. The NOS team identified certain microscopic plants and confirmed high levels of the neurotoxin domoic acid in the tissue samples. Because this was the first documentation of domoic acid in the northeastern United States, the range of harmful algal blooms (HABs) may exceed current estimates. NOS Lead Office: National Centers for Coastal Ocean Science.

## Harmful Algal Blooms At The Mercy Of New NOS Technologies

NOS-supported scientists deployed newly developed optical detection technology on autonomous underwater vehicles (AUVs) to detect harmful algal blooms, including the organism responsible for red tides off Florida's coast. The pairing of technologies demonstrated that AUVs equipped with optical instrumentats can detect and track HABs, map blooms in three dimensions, and monitor the surrounding environment. The AUVs are controlled from land or ship while data are transmitted by satellite to scientists at distant locations. This is the latest in a series of innovative HAB detection technologies being developed through the NOS-led interagency Ecology and Oceanography of Harmful Algal Blooms Program. NOS Lead Office: National Centers for Coastal Ocean Science.

## Winged Robots Could Be Sentinels For HAB Monitoring Duty

NOS used winged underwater vehicles off Florida's coast to help forecast and monitor toxic blooms of the reddish plankton, *karenia brevis*. Red tides from this organism can last up to 18 months and affect thousands of residents and tourists through exposure to toxic aerosols and contaminated shellfish. The winged robots glide through the water to gather temperature, salinity, and plankton data at very high resolutions. The data is then combined with information from ships and satellites to alert coastal communities of impending bloom events. NOS Lead Office: National Centers for Coastal Ocean Science.

## Providing Scientific Support To Oil And Hazardous Material Spill Responders

NOS responded to 136 marine events, including oil and chemical spills, search and rescue efforts, and other emergencies in 2003. As the federal agency responsible for providing scientific support during such events, NOS is among the first on the scene at a spill. NOS scientists immediately begin providing critical information about the movement of the spilled material. NOS evaluates response options and dangers to coastal resources and communities, then makes recommendations to the federal, state, and local agencies responsible for cleanup operations. Also in 2003, at the request of the Spanish government, NOS sent a team of scientists to assist in the response to the oil spill from the T/V *Prestige* off the coast of Spain. NOS Lead Office: Office of Response and Restoration.



### Chalk Up Another Cooperative Assessment For NOS At Chalk Point

Three years ago, a pipeline in the Washington, D.C., area spilled 140,000 gallons of oil into the Patuxent River at the Pepco Chalk Point Generation Facility in Aquasco, Maryland. NOS determined that the oil spill caused numerous natural resource and human-use injuries, including damage to 76 acres of wetlands, the loss of 5,432 pounds of fish and shellfish, the death of 143 birds, and the loss of Patuxent recreational areas. NOS secured a cooperative settlement with Pepco, in which the company paid \$2.7 million to fund restoration projects, such as creating tidal marshes, enhancing shoreline beaches, acquiring and restoring nesting habitat of the ruddy duck, creating an oyster reef sanctuary, and increasing recreational opportunities. NOS Lead Office: Office of Response and Restoration.

### NOS At Buzzards Bay Oil Spill

On April 27, 2003, the *Bouchard Barge 120* spilled nearly 100,000 gallons of oil after hitting an obstacle in Buzzards Bay, Massachusetts. NOS was among the first responders, providing the U.S. Coast Guard with information on spill trajectory, potential impacts to the shoreline, cleanup strategies, and chemical analysis. It also provided information about basic oil spill science for public outreach purposes. NOS worked with the Commonwealth of Massachusetts on fishery closures, endangered species issues, and natural resource damage assessments to identify and restore injured resources. Trustees have identified potential oil spill impacts to shoreline habitat, birds and wildlife, and recreational uses, and they are implementing studies to determine the full extent of injuries. This work will take three years to complete. Once the full extent of injuries is known, trustees will begin restoration projects. NOS Lead Office: Office of Response and Restoration.

### Advance Preparations Helped When Hurricanes Hit

NOAA's Coastal Storms Initiative is a nationwide effort to reduce the impact of storms on coastal communities. This initiative helps local, state, and Federal organizations work together to use coastal observing systems data to develop new and improved storm-related tools, data, information, forecast models, and training opportunities. The pilot effort in Florida proved valuable after Tropical Storm Edouard. Increased numbers of tide and water-level gauges, combined with bathymetry and a new river circulation model, improved weather and on-shore flooding predictions. A risk and vulnerability tool helped emergency managers identify potentially risky areas in advance of the storm, and a three-dimensional storm-surge animation helped people see and better understand the projected water levels. NOS Lead Office: Coastal Services Center.

### Automated Groundwater Nutrient Analyzer Developed

A new tool developed with funds from the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), a partnership between NOAA and the University of New Hampshire, will help managers measure the nutrients that end up in groundwater and, eventually, in coastal waters and estuaries. These nutrients come from fertilized agricultural fields, animal feedlots, and residential lawns. The new tool is an easy-to-operate, automated seepage meter that provides high-resolution, time-series data. The tool also helps managers obtain data on nutrient flow from groundwater and on the factors that affect nutrient flow, such as tides, weather, and season. Knowing when and under what circumstances groundwater discharge is at its highest will help managers better estimate the amount and timing of nutrients entering estuaries. CICEET supports research in nearly all of NOS' 26 estuarine research reserves. NOS Lead office: National Estuarine Research Reserves.

### New NOAA Product for Monitoring And Tracking Sea Level Changes

NOS made available via the Web a new product to disseminate the latest information on nationwide sea-level variations and trends. Sea Levels Online graphically provides long-term trends and monthly variations of average sea level for 117 coastal water-level stations. The data on trends are based on at least 25 years of water-level observations taken by the NOS tide gauge network. Coastal managers, engineering firms, and researchers can use the data when designing coastal monitoring strategies and determining how to respond to sea-level rise and climate-related events. The information will be especially useful to those who live along the Pacific Coast, where El Niño can lead to higher-than-normal monthly average water levels and increase the risk of coastal flooding. NOS Lead office: Center for Operational Oceanographic Products and Services.





## Organization and Culture

The National Ocean Service promotes the evolution of a corporate culture that is science-based, service-oriented, and responsive and adaptive to change. To make progress in any of its programmatic areas of responsibility, NOS must have a strong, effective workforce and organization, and new ways to reach its customers and constituents. NOS promotes educational opportunities for its current and future workforce and strives to break down institutional barriers to progress.

### NOS Celebrates Historic Lewis and Clark Survey Work

NOS joined more than a dozen other Federal agencies in the nationwide celebration of the Lewis and Clark Expedition. During the next three years, NOS will set a series of commemorative geodetic survey markers at signature sites along the Lewis and Clark National Historic Trail. In addition to their commemorative value, the geodetic marks serve as a link to highly accurate positioning via the Global Positioning System. NOS Lead Office: National Geodetic Survey.

### NOS On Cutting Edge Of Homeland Security

During 2003, the NOAA Citation aircraft collected LIDAR (Light Detection and Ranging) data sets for 12 major cities. These data sets allow for three-dimensional modeling of cityscapes for a variety of homeland security needs. Using this technology, and in cooperation with the U.S. Army and the National Mapping and Imagery Agency, NOS can respond to any threat against homeland security within six hours, a capability that did not exist before September 11, 2001. NOS Lead Program Office: National Geodetic Survey.

### Working To Find The USS *Alligator*, The Navy's First Submarine

NOS brought together the U.S. Navy's Office of Naval Research, noted historians, maritime archaeologists, ocean explorers, researchers, and others to begin the process of finding the USS *Alligator*, the Navy's first submarine. The *Alligator* sank off the coast of North Carolina during the Civil War in 1863. Symposium participants worked to fill large gaps in the history of the 47-foot sub and discussed how and where it might be found. NOS also unveiled copies of the only known blueprints of the *Alligator*, found and obtained by NOS this year. NOS Lead Office: National Marine Sanctuary Program.





### **New Emphasis On The Nation's Maritime Heritage Resources**

NOS placed new emphasis on conserving the nation's maritime heritage by launching the Maritime Heritage Program, which will coordinate and direct maritime heritage activities throughout the nation's 13 marine sanctuaries. Recent noteworthy maritime heritage activities include raising the USS *Monitor's* gun turret and conducting expeditions in the Channel Islands, Monterey Bay, Stellwagen Bank, and Thunder Bay National Marine Sanctuaries to search for shipwrecks. In addition, NOS inaugurated MARINER, a national database of maritime heritage resources. In addition, a groundbreaking ceremony was held at The Mariners' Museum in Newport News, Virginia, to commemorate the building of NOAA's Maritime Archaeology Center. The center will direct the Maritime Heritage Program and serve as a clearinghouse for all of NOAA's maritime heritage information. NOS Lead Office: National Marine Sanctuary Program.

### **Continuing A Partnership With The Popular JASON Project**

The JASON Project has provided teachers and students with opportunities to explore underwater wonders since 1986. The brainchild of scientist and oceanographer Dr. Robert Ballard, the JASON Project reaches 1.5 million students and 34,000 teachers every year. This year, the JASON Project took its participants on a voyage of discovery through NOS' Channel Islands National Marine Sanctuary and along the California coastline. NOS provided underwater divers and dive technology experts, conducted hands-on activities to support JASON, and co-hosted two lectures given by Robert Ballard. NOS is working with JASON to develop science content for Texas Instruments' handheld educational technology tools used by students and teachers across the nation. NOS Lead Office: National Marine Sanctuary Program.

# NOAA National Ocean Service at a Glance

We value your interest, questions, and comments.  
Please feel free to contact us.

## National Oceanic and Atmospheric Administration

National Ocean Service	<a href="http://www.nos.noaa.gov">www.nos.noaa.gov</a>
1305 East-West Highway	Public Affairs (301) 713-3066
Silver Spring, Maryland 20910	External Affairs (301) 713-3060
(301) 713-3074	

**NOAA Coastal Services Center**  
(843) 740-1200  
[www.csc.noaa.gov](http://www.csc.noaa.gov)

State coastal resource management programs don't always have the information, tools, technical capacity, or expertise needed to fulfill their mandates. Answering this need is the role of the NOAA Coastal Services Center. Remote sensing, geographic information systems (GISs), information integration and sharing, hazards mitigation, habitat characterization, training, and coastal observing systems represent the Center's primary areas of expertise. The Center's efforts in these areas have involved hundreds of projects, including a helpful inventory of state dock and pier policies, satellite data sets to document and predict coastal growth trends, and information to help communities protect themselves from coastal storms. This assistance gives coastal managers the tools they need to effectively manage and protect the nation's coastal communities.

**Center for Operational  
Oceanographic Products  
and Services**  
(301) 713-2981  
[www.co-ops.nos.noaa.gov](http://www.co-ops.nos.noaa.gov)

The Center for Operational Oceanographic Products and Services provides water-level and current information for U.S. coastal regions and the Great Lakes. The Center offers one-stop shopping for near real-time water-level and tide data at 175 different sites across the United States, and distributes historical data for water levels, coastal currents, and other information. In addition, its Physical Oceanographic Real-Time System (PORTS®) supports safe and cost-efficient navigation by providing accurate, real-time environmental information required to avoid grounding and collisions. PORTS also provide coastal managers with wetlands restoration information, tsunami and storm-surge measurements, and other data.

**National Centers for Coastal  
Ocean Science**  
(301) 713-3020  
[www.nccos.noaa.gov](http://www.nccos.noaa.gov)

Coastal stewardship means solving today's problems while planning for the future. Scientists at the National Centers for Coastal Ocean Science study, monitor, and assess natural and human impacts on coastal ecosystems—giving our nation the information and, ultimately, the understanding needed to be better coastal stewards. In addition to the Centers based in Silver Spring, MD, there are facilities in Charleston, South Carolina; Beaufort, North Carolina; Oxford, Maryland; and Kasitsna Bay, Alaska.



**Office of Coast Survey**  
(301) 713-2770  
<http://chartmaker.ncd.noaa.gov>

Navigating ships and boats safely in and out of ports and along our coasts requires accurate nautical charts. In many of our busiest waterways, unknown rocks, wrecks, and obstructions wait below the surface to be “discovered” by unfortunate mariners. The Office of Coast Survey provides a wide range of navigational products to help vessels move safely through U.S. waters.

**National Geodetic Survey**  
(301) 713-3242  
[www.ngs.noaa.gov](http://www.ngs.noaa.gov)

The National Geodetic Survey (NGS) defines and manages the National Spatial Reference System, the nationwide framework of latitude, longitude, and elevation. NGS surveys promote safe navigation and enhanced economics by delineating the national shoreline and locating features needed to construct nautical charts. NGS also identifies obstructions and aids to air navigation at the nation’s airports, supporting security and preparedness.

**Office of Ocean and Coastal  
Resource Management**  
(301) 713-3155  
[www.ocrm.nos.noaa.gov](http://www.ocrm.nos.noaa.gov)

Managing our nation’s 95,000 miles of coastline is a daunting task. The Office of Ocean and Coastal Resource Management provides the national policy leadership and conflict resolution necessary to maintain our nation’s valuable coastal resources. Additionally, it is responsible for administering the Coastal Zone Management Act and assisting individual states in managing the U.S. system of national estuarine research reserves. In cooperation with the U.S. Department of the Interior, NOAA established the National Marine Protected Areas Center to provide science, technology, training, and information for the planning, management, and evaluation of the nation’s system of marine protected areas.

**Office of Response  
and Restoration**  
(301) 713-2989  
[www.response.restoration.noaa.gov](http://www.response.restoration.noaa.gov)

The Office of Response and Restoration (OR&R) is the focal point for NOS spill preparedness and response, hazardous waste site investigation, environmental damage assessment, and coastal ecosystem restoration programs. OR&R tackles environmental threats from catastrophic emergencies, such as oil and chemical spills, chronic toxic releases from Superfund waste sites, and vessel grounding in marine sanctuaries. It helps emergency planners create software and other tools to respond to hazardous materials accidents and resolve contamination problems; finds remedies for environmental damage; assesses injury to coastal resources from releases of oil and hazardous materials; and pursues restoration from those responsible for the harm.

**Staff Office for  
International Programs**  
(301) 713-3078  
[www.nos.noaa.gov/ipo](http://www.nos.noaa.gov/ipo)

Recognizing that the challenges to our nation’s coastal environment are global problems, too, the Staff Office for International Programs builds partnerships with other countries to share information and lessons learned in coastal management.

**National Marine  
Sanctuary Program**  
(301) 713-3125  
[www.sanctuaries.noaa.gov](http://www.sanctuaries.noaa.gov)

Marine sanctuaries, or underwater parks, form a network of protected areas that are environmentally and culturally important to our nation. They provide habitat for creatures and plants of the sea and serve as living laboratories to study coastal and ocean environments. Currently, 13 marine sanctuaries and one coral reef ecosystem reserve comprise the national system.

**Management and  
Budget Office**  
(301) 713-3056  
[www.nos.noaa.gov](http://www.nos.noaa.gov)

The Management and Budget Office provides leadership in procurement, budget, strategic planning, policy development, communications, human resources, information technology, safety and security, and other administrative and management areas. This office also provides guidance and development for technical and scientific special projects.



**U.S. Secretary of Commerce**  
Donald L. Evans

**Under Secretary of Commerce for Oceans and  
Atmosphere and Administrator, National Oceanic  
and Atmospheric Administration—NOAA**

Conrad C. Lautenbacher, Jr.  
Vice Admiral, U.S. Navy (Ret.)

**Assistant Administrator for Ocean Services  
and Coastal Zone Management,  
NOAA National Ocean Service**

Richard W. Spinrad, Ph.D.

[www.nos.noaa.gov](http://www.nos.noaa.gov)

External Affairs (301) 713-3060

Public Affairs/Media Relations (301) 713-3066

**National Ocean Service**

1305 East West Highway

SSMC 4, 13314

Silver Spring, Maryland 20910