

NOAA's National Ocean Service

Positioning America for the Future

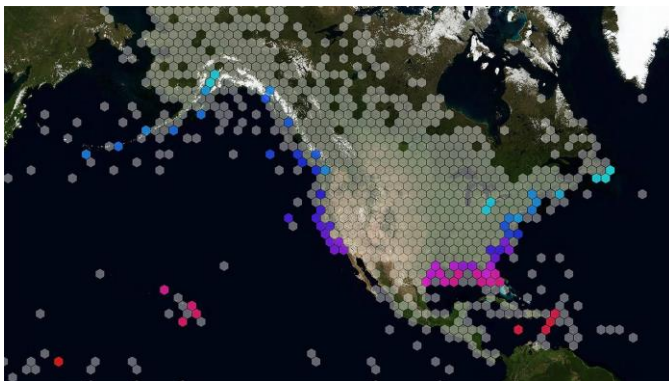
Almost 40 percent of the U.S. population lives and works in coastal shoreline counties and millions of tourists visit the coast each year. The economy of these counties contributes \$7.6 trillion to GDP and employs 53.6 million people.

Coastal communities face a variety of challenges, including port congestion, navigation hazards, beach erosion, habitat loss, algal blooms, pollution, recurrent flooding, and risk of catastrophic impacts from coastal storms and tsunamis.

NOAA's National Ocean Service (NOS) is the nation's coastal agency with expertise in science, technology, and management. NOS ensures these communities and their economies thrive, collaborating with partners to prepare America's coastal communities to address these challenges. Its budget supports work in three interrelated areas:

Navigation, Observations and Positioning

NOS promotes safe and efficient transportation and commerce, and is the nation's leading authority on hydrography, shoreline mapping, and nautical charts; water levels, tides, and currents; and geodetic positioning. NOS maintains the National Spatial Reference System, National Water Level Observation Network, and National Current Observation Program. NOS also maintains partnership programs and provides services through the U.S. Integrated Ocean Observing System, the Physical Oceanographic Real-time System, and the Continuously Operating Reference Station network.



A view of the U.S. Integrated Ocean Observing System's Environmental Sensor Map. This map displays real-time environmental data collected from over 31,000 stations throughout the world.



A diver collects data on the condition of coral reefs in the Mariana Islands.

Coastal Science and Assessment

NOS provides expert scientific support and services in response to oil and chemical spills and marine debris. Working with partners, NOS provides the Environmental Response Management Application (ERMA®), an online tool that integrates real-time data with mapping to coordinate emergency response to coastal disasters. NOS is also a leader in ecological forecasting, providing long-term monitoring, impact assessments, and risk analysis from threats such as Harmful Algal Blooms and hypoxia.

Ocean and Coastal Management

Through national marine sanctuaries, monuments, and marine protected areas, NOS manages ocean and Great Lakes waters, spanning coasts, special marine areas, and coral reefs. NOS also provides coastal planners with the skills, tools, and data needed to manage the nation's coastal resources and communities. This includes the online, interactive Digital Coast, which helps improve coastal decision making in both public and private sectors. NOS also works in partnership with states to promote coastal research, outreach, and education and to address management needs through coastal programs and national estuarine research reserves.



For more information, please visit the [NOS website \(https://oceanservice.noaa.gov\)](https://oceanservice.noaa.gov).





Recent Mission Highlights



NOS Helped Ports Reopen Following Hurricanes

NOAA rapidly updated nautical charts, protecting lives and property from any underwater dangers that might have entered waterways. Quick navigation response and mobile integrated survey teams allowed 26 ports to reopen more quickly by supporting the U.S. Coast Guard and port authorities. For example, the Port of Miami closure was limited to 3 days, and each additional day closed represented another \$113 million loss. Throughout the Caribbean, NOAA Ship *Thomas Jefferson* was responsible for opening 18 ports in as many days, ensuring mobility of essential relief supplies into heavily impacted areas across the region. Critical ports, such as Corpus Christi, Galveston, Houston, Miami, Key West, Tampa and San Juan provide lifelines to communities for essential products such as fuel, and serve as economic engines to the local communities.

Harmful Algal Bloom Forecast Facilitates Record Clam Harvest

A NOAA bulletin to inform communities and combat the impacts of harmful algal blooms (HABs) in the Pacific Northwest went operational this year, facilitating a record-setting clam harvest. The Pacific Northwest HAB bulletin forecasted that a future spike in algal toxins could necessitate closing the fishery for the remainder of the season. The bulletin gave Washington Department of Fish and Wildlife confidence to take the unprecedented step of increasing the bag limit on razor clams before toxin levels rose. The decision generated \$7M in local revenue in 11 days, as locals and tourists flocked to the beach to take advantage of the shorter season and higher limits. The HAB forecast is supported by data from the U.S. Integrated Ocean Observing System; the University of Washington's LiveOcean model; sampling by state and tribal groups; data from an Environmental Sample Processor; and other real-time observations. NOAA and its partners also provide HAB forecasts for Lake Erie, the Gulf of Maine, and the Gulf of Mexico.

New Operational Forecast System available in Gulf of Maine

For decades, mariners in the United States have depended on NOAA's Tide Tables for the best estimate of expected water levels and tidal currents. However, they cannot predict localized water level changes and variations in currents due to wind, atmospheric pressure, and river flow, which are often significant. As a result, Operational Forecast Systems (OFS) were established to provide water level, current, temperature, wind and salinity nowcasts and forecast guidance based on real-time observation data, meteorological forecasts, and astronomical predictions. In January 2018, NOAA launched the 14th OFS in the Gulf of Maine to provide users with 72-hour forecast guidance on water levels, currents, water temperature, and salinity. The Gulf of Maine models promote safe navigation by helping mariners better plan their transits and prevent accidents, while also supporting and enabling harmful algal bloom forecasts under development for this region.



National Oceanic and Atmospheric Administration

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