IOOS = NOAA Program Office + 11 Regional Associations + 17 Federal Agencies
Leading-Edge Observing Technology

The U.S. Integrated Ocean Observing System (IOOS) uses advanced technologies to deliver federally certified ocean and Great Lakes data to the people who work and recreate on our waters. In addition to collecting data and making them publicly accessible online in real-time, IOOS develops value-added information tools for decision-support and serves as a repository for valuable long-term data.

HIGH-FREQUENCY RADAR

IOOS operates the nation’s only network of land-based high-frequency (HF) radars to provide continuous, real-time mapping of the speed and direction of surface currents in coastal waters. The U.S. Coast Guard uses the data to save more lives by reducing the size of search areas.

GLIDERS

Giders are underwater robots that relay information about subsurface conditions. Cost-effective, safe, and flexible, they are revolutionizing ocean observing. The U.S. Navy estimates that gliders obtain data at one one-hundredth the cost of ship-collected data.

MOORINGS

Moorings, also known as buoys, are used to deploy sensors both at the water surface and at incremental depths underwater to measure conditions such as temperature, wave height, currents, pollution, acidification, and wind speed. IOOS strategically deploys moorings in coastal waters to maximize the use of continuous data. These data are used by many, including boaters, fishermen, scientists, and others.

OTHER OBSERVING TECHNOLOGIES

Along with HF radar, moorings, and gliders, IOOS uses a wide range of other technologies such as satellites, shore stations, and sensors mounted on ferries. By integrating multiple technologies, IOOS collects a comprehensive set of critical data.
Every day, people rely on IOOS data and information products. Across the coastal waters and Great Lakes, fishermen, shipping companies, aquaculture businesses, weather forecasters, public utilities, tourism operators, search-and-rescue teams, and countless others use IOOS information to make informed decisions. IOOS is a national system that tailors products to the unique characteristics of each region.

Here are just a few examples:

**Storm Forecasting & Preparedness**
- State and local governments use IOOS data and tools to prepare for and respond to storm damage and coastal flooding.
- IOOS moorings and gliders provide data needed for weather models to forecast hurricane intensity with greater accuracy.
- IOOS helps make research models operational to enhance forecasts of storm-related flooding to aid planning and response.

**Ship Safety & Cost Savings**
- In partnership with NOAA and the U.S. Army Corps of Engineers, IOOS supports the Precision Navigation System for oil tankers transiting into the Port of Long Beach. The system helps port authorities determine if conditions will allow deep-draft ships to enter. It enables vessels to reduce lightering, saving $10 million annually.

**Fisheries & Protected Species**
- IOOS collaborates with federal fisheries biologists and researchers to collect and apply acoustic telemetry and passive acoustics data to monitor fish.
- Acoustic sensors on gliders and moorings detect North Atlantic right whales, Atlantic sturgeon, and other protected species.
- IOOS supports online portals that integrate data from animal tagging programs nationwide, ensuring quality and accessibility.

**Aquaculture & Ocean Acidification**
- IOOS works with shellfish farmers to monitor ocean acidification (OA) in real-time, enabling them to adapt their operations.
- In partnership with NOAA’s OA program, IOOS supports regional coastal acidification networks that work with scientists, industry, managers, and others to understand impacts, identify research and monitoring needs, and build awareness.

**Harmful Algal Bloom Detection**
- Harmful algae blooms are highly variable and require a regional approach for timely and reliable forecasting and detection. IOOS Regional Associations collaborate with partners to deploy sensors, provide ready access to data, and develop forecasts and decision-support tools.

**Fishing**
- Fishermen use IOOS data and online tools to assess sea conditions and plan their daily operations.
- Avoiding rough seas reduces fishing vessel fuel costs, improves trip efficiency, and increases safety for vessels and crew.

**Safety & National Security**
- The U.S. Coast Guard’s Search and Rescue Optimal Planning System uses wind and current data from IOOS short-term prediction systems and IOOS high-frequency radars to better focus search efforts, increasing the success of rescues.
- IOOS provides decision-support tools that protect national security assets during extreme weather. Naval Station Norfolk uses IOOS data to inform decisions to stay in port during extreme storms, saving taxpayer money.

**Tourism**
- Local tourism businesses use observations and multi-day forecasts from IOOS to plan for boat excursions and to minimize harm from beach pollution and strong riptides.

**Sea Level Rise**
- IOOS regional sea level rise tools allow coastal planners and other users to see potential impacts, assess economic vulnerabilities, and develop mitigation plans.

[www.ioos.noaa.gov](http://www.ioos.noaa.gov)
Delivery of Coastal Information for Users

The U.S. Integrated Ocean Observing System (IOOS), with its national network of eleven regions, works with stakeholders to identify regional needs and use the infrastructure of the national IOOS system to reach solutions. By collaborating with seventeen federal agencies, IOOS leverages partnerships to maximize the use of resources to deliver timely and relevant information.

Certified for Meeting National Data Standards
All eleven IOOS Regional Associations (see map on front) are now certified for meeting rigorous national standards for governance and data management. Certification demonstrates that the data served by the Regional Associations are of the same high quality as those served by the federal government.

As a career naval officer and former head of NOAA, I know firsthand the importance of timely, quality information about the coastal environment. IOOS is filling critical gaps and providing valuable information to those who need it.

Vice Admiral Conrad Lautenbacher (Ret.)