

IOOS® in Action: The Mid-Atlantic

Improving Lives and Livelihoods along our East Coast

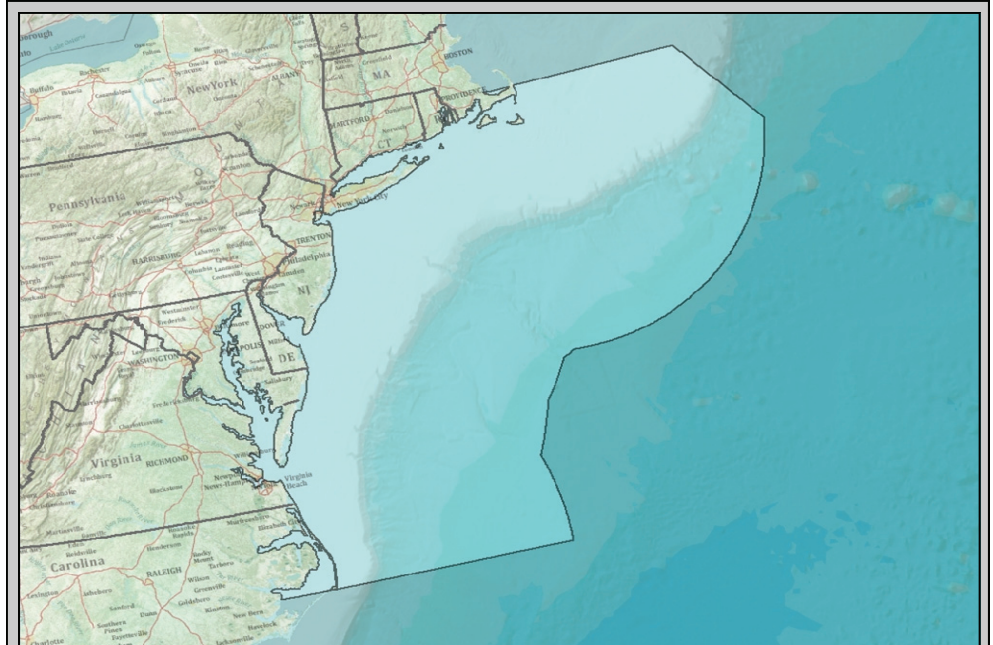
Overview:

Thousands of tools – from satellites above Earth to sensors below the water – continuously collect ocean and coastal data. The Integrated Ocean Observing System (IOOS) is expanding this network of data and making it easier to access and use.

The Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS) spans coastal states from Cape Cod to Cape Hatteras and includes estuaries and continental shelf waters within that coastal area.

This region focuses on:

- Maritime Safety—providing surface current data to improve search and rescue;
- Ecological Decision Support—providing ocean temperatures and habitat data to enhance fisheries management;
- Water Quality—providing data for monitoring the health of near-shore ecosystems and enhanced public safety;
- Coastal Inundation (flooding)—providing offshore conditions for local inundation forecasts to safeguard lives and property; and
- Offshore Energy—assisting in future development and maintenance of wind farms.



MARACOOS spans 10 states and the District of Columbia, from Cape Cod to Cape Hatteras, including estuaries and continental shelf waters, and serves 76 million people (~25% of U.S. population).

Helping Save Lives at Sea:

MARACOOS installed more than 30 high frequency radar systems between Massachusetts and North Carolina. This technology feeds surface current data into a 24-hour forecast of tides and currents.

Coast Guard search and rescue crews use this information to save lives at sea. These surface current maps help predict the probable path of lost people or property, thus reducing the search area and time it takes to find them. Navigators then use data on water elevation and depth, winds, currents and density from this region for safe transport of rescued passengers.

MARACOOS is the first region to officially transmit these data to the

Coast Guard, which concluded it could save 50 extra lives annually if other regions provided similar data. IOOS is now working to input surface current data into the nationwide system by 2012.

The region also played a critical role in response efforts after U.S. Airways Flight 1549 made an emergency landing in the Hudson River in January 2009. Real-time water conditions around the site and forecasted conditions helped emergency managers decide how to best rescue the plane’s crew and passengers. In the days after the crash, IOOS partners also provided around-the-clock, on-call assistance to various agencies to aid salvage operations, including lifting the plane out of the water.

Enhancing Maritime Safety:

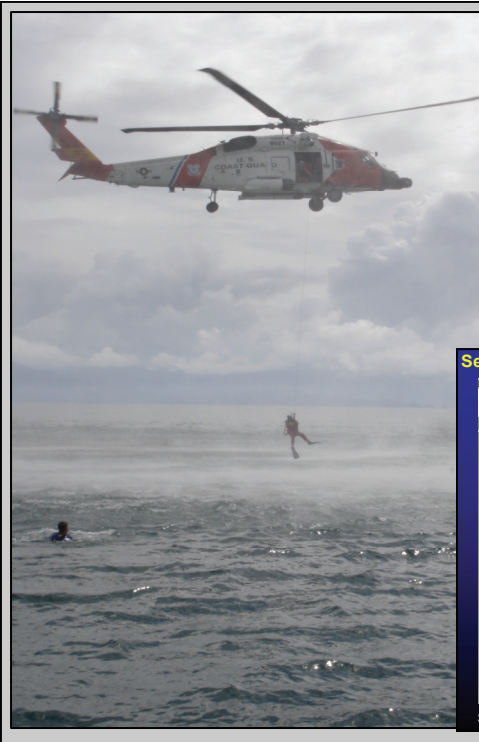
MARACOOS proved instrumental in replacing a weather buoy that runs around-the-clock off the New York Bight. This buoy collects and transmits meteorological data to the National Weather Service marine forecasters and their Ocean Prediction Center. The buoy also aids vessel navigation using New York and New Jersey ports and for large commercial fishery fleets that work Mid-Atlantic shelf waters.

Predicting Rip Currents:

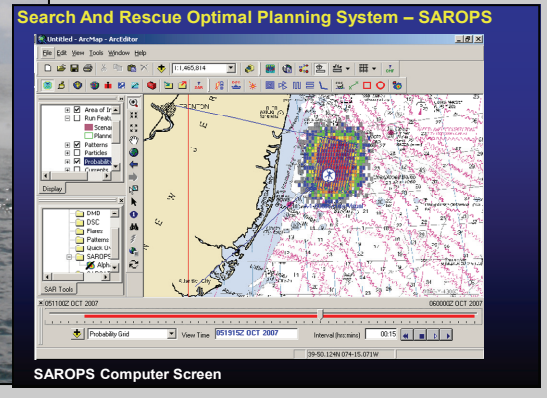
The National Weather Service ranks rip currents as the deadliest surf-related threat, claiming the lives of more than 100 people every year. MARACOOS is working to reduce the threat from rip currents through public education and outreach, as well as using coastal radar and model forecasts to enhance rip tide detection and prediction. The region is working to produce a daily surf zone advisory highlighting risk levels that will provide 24-hour warnings and real-time updates to alert lifeguards to changing conditions.

Preventing Business Losses:

MARACOOS data support creation and validation of regional weather forecasts critical for ocean-related businesses such as tourism, shipping and maritime trade, recreational fisheries and the insurance industry. Local, coastal businesses also rely on these forecasts. Scientists are developing a prediction system to provide emergency managers, planners, businesses, and households in the Chesapeake Bay area with more accurate, timely and reliable forecasts of storm-driven flooding associated with tropical cyclones and nor'easters. The system includes a decision-support tool used by emergency managers that is accurate to the city block at time intervals of one hour or less.



Mid-Atlantic data feed real-time waves and currents data to Coast Guard search and rescue crews. This results in short-term forecasts of sea surface conditions that affect the direction and speed at which objects will drift. Such information is critical in early stage search operations, when crews must quickly decide where survivors are likely to be. A 2010 study analyzing regional recreational boating estimated the reduced search could reap \$80 million annually. Photo: Art Allen, USCG



Water Quality and Public Health:

MARACOOS supported New York and New Jersey authorities after 8 million gallons of untreated sewage entered the Hudson River in July 2011. MARACOOS partner, The Stevens Institute of Technology, tracked the sewage and helped officials decide which beaches to close and when. State and city officials issued warnings and advisories to avoid consumption of fish caught in the plume and limit recreational activities that could mean contact with contaminated water. Officials also recommended alternative beaches to use, based on water quality modeling.

Supporting Commerce:

Ships transiting rivers, harbors and docks need accurate predictions of when currents will change. MARACOOS models use real-time weather and water observations to enhance data accuracy so vessel operators can plan accordingly, including a recent incident when MARACOOS models assisted New York pilots by accurately predicting a 14-inch water level drop that differed from other forecasts.

Preparing for Oil Spills:

In September 2010, the Coast Guard directed a multi-agency emergency drill in the New York-New Jersey Harbor to test spill preparedness in port waters. The Battalion Chief called MARACOOS high-resolution 48-hour predictions of surface currents for tracking and predicting where spills travel in and around the port "priceless".

For More Information:

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