

# Funding for Coastal Ocean Observing System

UMass Dartmouth Professor of Marine Science & Technology Dr. Wendell Brown has received a USD131,643 award from NOAA's Integrated Ocean Observing System office and the Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS) via Rutgers University to operate a pair of modern technologies to capture surface ocean current and deep ocean water property data. Over the next five years, one of the tasks of Brown and his Ocean Observation Laboratory (OCEANOL) team members, research associate Richard Arena and research assistant Kathryn Tremblay, is to maintain the five high-frequency radar sites in the Northeast sector of the MARACOOS region.

The data from Cape Cod, Nantucket, Martha's Vineyard, Block Island, and Long Island are being combined to produce hourly coastal ocean surface current maps out to about 100 miles over the extent of the region.

## Real-time Wave Speed and Direction Measurements

High-frequency radar systems can operate under any weather conditions and measure the speed and direction of ocean surface currents in near real-time. The captured data is used by the US Coast Guard to search for and retrieve disabled vessels or individuals stranded in the water.

The goal of the team is to provide data 90% of the time from this array of high-frequency radar ocean sites to the data aggregation centre at Rutgers University in New Brunswick, NJ. To do this the team must regularly inspect the sites, and respond to and repair site outages.

## Glider Used for Measurements

Brown's team will also prepare and operate one of the MARACOOS ocean gliders – the UMass Dartmouth-owned underwater robot named Blue (after the whale). Ocean gliders collect a variety of water property data (including temperature, salinity, oxygen and plankton-related chlorophyll) by traversing from the ocean surface to the bottom and then back again along pre-programmed routes.

UMass Dartmouth is one of several MARACOOS glider labs that deploy once or twice per year; each for generally weeks at a time. This past May, Brown deployed the UMass Dartmouth ocean glider that ran a triangular route south of New England.

## GPS Fix and Data Transmission

Gliders are typically programmed to surface every three hours at which time they obtain a GPS fix and transmit scientific and engineering data ashore via satellite to him and his team to process and do preliminary scientific analysis. Once retrieved, scientists are able to access a massive amount of ocean data that is collected by its sensors.

Brown recently retrieved glider Blue measurements to map the seasonally-evolving Mid-Atlantic cold pool – a near-bottom, shelf-wide swath of remnant winter water stretching from Cape Cod to Cape Hatteras. The cold pool is an important part of the regional fisheries habitat. This ocean glider data also aids researchers in climate monitoring, dye tracking, and ocean acidification sampling.