

Coastal Observation Technology System Project Summary – 2003

Project Name/Title: A Regional Association Project to Observe Ocean Climate in the Gulf of Maine in Support of Marine Resource Management: A Sentinel Buoy in the Northeast Channel with Predictive Tools for Shrimp Stocks and Marine Mammals

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Recipient Institution: Gulf of Maine Ocean Observing System (GoMOOS)

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Brief Project Summary: The Gulf of Maine Ocean Observing System (GoMOOS) has three fundamental and interconnected goals in carrying out this project:

1. To create a new suite of information products supporting fisheries management and adaptive management practices in the Gulf of Maine;
2. To augment existing ocean observing activities—GoMOOS buoys and NOAA National Marine Fisheries Service (NMFS) surveys—with a critically located climate sentinel buoy in the Northeast Channel; and
3. To implement a real-time distributed information network that will leverage and coordinate existing ocean observing activities at GoMOOS and NOAA NMFS.

GoMOOS will accomplish these goals by extending its existing partnerships to include scientists at National Marine Fisheries Service Northeast Fisheries Science Center, University of New Hampshire, and Cornell University. The information network will apply new OpenGIS Consortium (OGC)-compliant Web protocols to extend spatial coverage of new products from the Gulf of Maine to Cape Hatteras.

Marine resource managers in the Gulf of Maine, and the fishermen whose livelihoods they affect, stand to benefit from the coordinated ocean observing, information product development, and distributed data and information management activities proposed in this project.

This project will also serve the IOOS community by demonstrating a coordinated data-exchange activity that can be implemented in other regions and will demonstrate the power of geographic information systems (GIS) in creating useful information products.

Accomplishments to Date:

- GoMOOS successfully deployed a deep-water mooring in the North East Channel in June 2004 and has been relaying hourly information to the public, free-of-charge, through the GoMOOS Web site.
- Dr. Jeffrey Runge at the University of New Hampshire is working with Dr. Ann Richards at the North East Fisheries Science Center to identify environmental factors relating to shrimp recruitment, including a search of historical data. To date he has compiled an extensive record of monthly temperature and wind series data by depth for the past 20 to 30 years and historical shrimp data from NMFS in the Gulf of Maine and from the Canadian Department of Fisheries and Oceans on the Gulf of St. Lawrence.
- Dr. Andrew Pershing at Cornell University is analyzing data to modify models to predict slope water type from the North Atlantic Oscillation, *Calanus* sp. abundance from slope water, and the Northern Right Whale calving from *Calanus* to use data from the Northeast Channel mooring. He is completing a reanalysis of his original models using four more years of data. His preliminary findings indicate that his original conclusions are holding up. They are now engaged in an analysis of historical data from mooring location to recalibrate the models to the new data source.
- GoMOOS is now hosting the Gulf of Maine Ocean Data Partnership to bring together the data providers in the region to resolve the technical and institutional issues related to the dynamic sharing of data. Dr. David Mountain of NMFS is the president of the partnership, and GoMOOS is supporting the development of a work plan to help resolve issues such as serving data outside agency firewalls. The GoMOOS staff has been working closely with staff members at NMFS on this issue.
- The North East Channel buoy data are now reporting hourly on the GoMOOS Web site. Additional data products on the Web site are anticipated once the analysis of the correlation between the North Atlantic Oscillation and its affect on slope water, shrimp, *Calanus*, and right whales is complete.

Current Year Objectives:

- Northeast Channel Sentinel Buoy Deployment
- Information-Product Development
 - Develop predictive indices relevant to fisheries management from existing research projects
 - Develop algorithms to compute predictive indices or reasonable proxies, from buoy data
 - Incorporate the predictive algorithms into the data management system
 - Develop “the story” that will go along with the data and information
 - Integrate these products into the Shrimp Project and other aspects of the Web site
- Distributed Data Management and Visualization
 - Augment the OPeNDAP data sharing capacity at Northeast Fisheries Science Center
 - Develop hydrographic data products into GIS Format
 - Implement an OpenGIS-compliant data serving capacity
 - Implement the data-aggregation and visualization capability at GoMOOS

Partners: University of Maine, University of New Hampshire, Cornell University, and NOAA National Marine Fisheries Service.

