FY2009: Regional Integrated Ocean Observing System Development

NOAA continued a merit-based funding process in 2009 to enhance regional coastal ocean observing systems (RCOOS) and achieve three long-term outcomes: establishing coordinated regional observing and data management infrastructures, developing applications and products for regional stakeholders, and crafting regional and national data management and communications protocols. In addition, regional associations received planning grant awards designed to assist them in stakeholder engagement, education and outreach, and long-range planning activities.

NORTHEAST ATLANTIC REGION

The Northeast Atlantic Region includes the coastal states from Maine to Connecticut. In 2009, implementation funds were provided to three recipients totaling $1,855,772. The 2009 Regional Association Planning Grant award to this region is $400,000.

Project Title:

Development of the Northeast Regional Coastal Ocean Observing System

Recipient/ Lead Principal Investigator:

Woods Hole Oceanographic Institution/ Dr. John Trowbridge (*jtrowbridge@whoi.edu*)

Cost:

Funded: FY 2007 (Year 1) - $1,200,000
FY 2008 (Year 2) - $1,200,000
FY 2009 (Year 3) - $1,324,787

Performance:

This project develops the Northeastern Regional Coastal Ocean Observing System. Regional user requirements identified inundation, harmful algal blooms, water quality, and living marine resources as specific concerns in the Northeastern Region. The project, as originally proposed in April 2007, had three goals: (1) operate a core of observing elements; (2) establish new observing capabilities for inundation, water quality, and harmful algal bloom, and (3) develop the design for the user-driven core observing system. In response to the reduced budget relative to the original funding request, the focus has been on continued operation of selected elements of the existing regional observing system, with a modest commitment to enhancement of observing capabilities.

Schedule:

1. Year 1
    - Complete development of the Northeast Coastal Ocean Forecast (NECOFS) model that features three core model components (mesoscale weather, waves, and coastal ocean) to provide forecast capacity for marine surface weather, ocean environment, and inundation.
    - Establish a steering team of educators and scientists to share ideas on education and outreach products
2. Years 1-3
    - Develop data management and communication systems

(over)

- In the Gulf of Maine, maintain five of 11 existing buoys, the University of New Hampshire's Coastal Ocean Observing Center (COOA) buoy in Great Bay; and one buoy in the Long Island Sound Coastal Ocean Observing System
- Maintain HF radar, operational circulation model, surface wave model, and satellite data analysis and dissemination for the Gulf of Maine
- Extend shipboard surveys associated with the Atlantic Zone Monitoring Program emphasizing nutrient measurements to five new stations

3. Year 2
   - Enhance HAB monitoring in the Bay of Fundy with the addition of extra stations and facilitation of sample analysis and compilation
   - Improve the NECOFS by adding the surface wave forecast and validating the accuracy of forecasts with direct comparison through field data

4. Years 2-3
   - Support existing moorings and buoys in Long Island Sound and Block Island Sound
   - Deploy nutrient sensors on existing buoys and moorings in the Gulf of Maine, Great Bay, Long Island Sound, and Block Island Sound; deploy an in-situ sensor for detecting the presence of harmful algal blooms on an existing platform; deliver products for inundation

5. Year 3
   - Implement data management and communication systems
   - Integrate Northeast Fisheries Science Center (NEFSC) data streams into the NERACOOS system
   - Develop education products based on real-time and historical data for water quality, harmful algal blooms, living marine resources, and coastal inundation

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Project Title:

Maximizing the Economic Return from Northeast Regional Association of Coastal Ocean Observing Systems (NERACOOS): Prioritized End User Needs and Tools for Tracking Use and Value of Observing System Information

Recipient/ Lead Principal Investigator:

Woods Hole Oceanographic Institution/ Dr. Hauke L. Kite-Powell (*hauke@whoi.edu*)

Cost:

Funded: FY 2007 (Year 1) - $156,181
FY 2008 (Year 2) - $110,150
FY 2009 (Year 3) - $158,785

Performance:

The purpose of this project is to: 1) work with prospective end-users of ocean observing system products in the Gulf of Maine/New England area to ensure that information generated by Northeast Regional Association of Coastal Ocean Observing Systems (NERACOOS) effectively addresses end-user needs; and (2) develop and implement a system to track the use of regional observing system information by end-users and document the economic value generated by this information. This will involve three main activities: 1) identify user priorities and information products to address inundation, harmful algal blooms, water quality, and living marine

resources management, 2) develop usage tracking and economic assessment tools, and 3) adapt the tools to be used by other regional ocean observing systems.

Schedule:

1. Year 1
   - Develop economic valuation models to estimate the value generated by NERACOOS information; design model and establish data requirements
   - Develop tools to track use of NERACOOS information by end users

2. Years 1-2
   - Conduct meetings for stakeholder user group assessment and feedback
   - Based on user needs, characterize products and coordinate with NERACOOS
   - Develop economic valuation model and baseline scenarios

3. Years 2-3
   - Develop training materials and provide training on tracking tools
   - Estimate the economic value generated by the use of NERACOOS information; conduct assessment of usage data and benefit
   - Collect and analyze data on the use of NERACOOS products
   - Provide final report and tools with documentation

Project Title:

A Northeast Benthic Observatory (NEBO) to Support Multi-Species Fisheries and Ecosystem Management

Recipient/ Lead Principal Investigator:

Woods Hole Oceanographic Institution/ Dr. Scott Gallager (*sgallager@whoi.edu*)

Cost:

Funded: FY 2007 (Year 1) - $569,506
FY 2008 (Year 2) - $372,200
FY 2009 (Year 3) - $372,200

Performance:

This project will collect and analyze spatially comprehensive high resolution seafloor imagery to quantify key taxa, benthic community structure, species diversity, seafloor habitat characteristics, and coincident water column properties with repeated measurements on time scales of weeks to years. Data collection will be at locations with high fisheries and conservation value, such as the western Gulf of Maine. Project objectives are to: 1) establish four locations to collect imagery where benthic community structure, the coupling between the water column and benthic community, and system change over time scales of days to years will be quantified; 2) develop tools for integration of fisheries relevant data to segment and classify epi-benthic targets and substrate, and to visualize the results in near real-time; and 3) establish metrics for quantifying change in benthic community structure, organism abundance and size distribution of a variety of taxa relative to substrate composition in relation to water column processes.

Schedule:

1. Year 1
   - Conduct sampling in four sentinel sites
   - Develop tools for automated image processing and classification

- Build statistical metrics for describing ecosystem change
- Co-register optical and acoustic data.
- Serve raw image data over web
- Integrate data on water column and benthic processes
- Define data products relevant to end users
- Begin extracting image information for development of data products

2. Years 2 - 3
   - Produce data products in near real-time during each survey and serve over web
   - Continue to collect field data at the four sentinel sites

3. Year 3
   - Compile and statistically analyze time series data products
   - Finalize data extraction protocols and process archived data
   - Develop automated segmentation code
   - Conduct societal impact modeling
   - Conduct automated image processing
   - Provide temporal/spatial context for events during study (e.g., storms, climate change)
   - Establish performance metrics and develop a cost-benefit model for the impact of NEBO on commercial fisheries

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