SEMI-ANNUAL REPORT

REPORTING PERIOD 6/01/08-11/30/08

NOAA Award Number NA05NOS4731130
[June 2005 – May 2009 Planning Grant]

Note: This is one of two parallel MACOORA Semi-Annual reports for the 6/01/08-11/30/08 reporting period:

- *This report addresses activities funded by and related to the carry-over of the original planning grant, NOAA Award Number NA05NOS4731130, which will close on May 31, 2009.*
- *The parallel report addresses activities funded by and related to the new three-year planning grant, NOAA Award Number NA08NOS4730295, which commenced June 1, 2008.*

1) Project Summary

Provide a brief (not to exceed one page) summary of the goals of the Regional Association development cooperative agreement to provide context for the progress and accomplishments.

Fifty-three percent of people in the US live in coastal counties and 50% of the GDP – more than $4 trillion - is generated there. As coastal population grows and development increases, more life and property is put in harm's way. Today, 70% of the repeat losses are in coastal areas, and 75% of FEMA compensation is due to coastal losses. The natural cycle of repeated storms and floods is now made worse by rising sea level due to global warming. Resilience in the face of natural hazards – particularly coastal inundation, but also including maritime safety, ecological impacts, and water quality – is critical to maintain the economic viability, ecosystem health, and quality of life in the coastal regions. To build resilience, coastal communities and businesses need accurate forecasts and information on the state of the environment. An integrated coastal observing system will provide critical services to all sectors of society.

The Middle Atlantic Coastal Ocean Observing Regional Association (MACOORA) is one of eleven Regional Associations within the U.S. Integrated Ocean Observing System (IOOS). The MACOORA footprint encompasses 9 states, 66 million people, four estuaries, one of which is the world's largest, and the world's largest navy base. MACOORA region ports accounted for 22% of all US port calls in 2005, amounting to 12,872 vessel calls, including 4,902 calls to the Port of New York/New Jersey alone. Further, MACOORA ports handled cargo worth over $259 billion in 2005 (over 23% of the total US waterborne commerce) including over $130 billion at the Port of New York/New Jersey alone. Through MACOORA, the ocean user community has identified four priority themes for regional ocean observing in the Mid-Atlantic:

1. Coastal Inundation – providing offshore conditions for local inundation forecasts
2. Maritime Safety – providing current maps to improve Search and Rescue
3. Ecological Decision Making – providing 3-D temperatures for fisheries issues
4. Water Quality – impact of circulation on beaches and low dissolved oxygen.

To fulfill these user needs, MACOORA has formed the Mid-Atlantic Regional Coastal Ocean Observing System (MARCOOS). MARCOOS will leverage an extensive array of existing observational, data management, and forecasting assets in the Mid-Atlantic Region to generate and disseminate nowcasts and forecasts of the coastal ocean extending from Cape Cod south to Cape Hatteras. Data and products will be distributed directly into operational decision making systems such as NOAA PORTS, the US Coast Guard Search and Rescue Optimal Planning System (USCG SAROPS) where they exist, through IOOS-compatible automated data servers for forecasting, and through a MARCOOS website for a wide range of users.

MACOORA will reach out with a marketing plan to a wide variety of customers who range from the federal, state, and local governments including emergency managers who want detailed forecasts down to the street scale, coastal managers who focus on region-wide ecosystems, industry, including the PORTS operators for efficiency and improved products, and the general public for quality of life. Although the initial financing is expected to come primarily from the federal government, some industry participation is hoped for in later years. With adequate financing, a backbone system could be in place in five years, and a full system in ten.

2) Progress and Accomplishments

This section should contain an update on the progress (activities and results) made during the semiannual period of performance that allows the reader to understand key accomplishments and progress toward milestones, objectives and goals. Activities and accomplishments for RA development awards may include the following:

- RA Organizational Structure
  - *Briefly describe any changes in the status of the Regional Association organization - e.g. achieving non-profit status, finalizing MOU, etc.*
    - MACOORA was incorporated as a not-for-profit 501(c)(3) corporation in December 2005. MACOORA subsequently applied to IRS for tax-free status and was granted same on January 19, 2007.
  - *Any changes in membership, such as new members or new types of membership.*
    - University of North Carolina, Coastal Studies Institute
    - Quantitative Environmental Analysis, LLC
    - Columbia University, Dept. of Earth & Environmental Engineering (replaced NY/NJ Clean Ocean And Shore Trust - COAST)
  - *Any changes in staff, points of contact, board of directors, or committee members.*
    - None to report. Note that at its October 22-23, 2008 Annual Meeting, MACOORA's membership unanimously re-elected At-Large Board members Carolyn Thoroughgood (Grant PI), Bill Boicourt (Co-PI), Scott Glenn (Co-PI), and Larry Atkinson (Co-PI), all unopposed.

- Planning and Implementation
  - *Describe progress made towards the development of the business plan.*
    - The latest draft was approved with comment at MACOORA's October 2007 Third Annual Meeting.
  - *Describe progress toward defining regional observing system priorities*
    - Through MACOORA, the ocean user community has identified four priority themes for regional ocean observing in the Mid-Atlantic:
      - Coastal Inundation – providing offshore conditions for local inundation forecasts
      - Maritime Safety – providing current maps to improve Search and Rescue
      - Ecological Decision Making – providing 3-D temperatures for fisheries issues

- Water Quality – impact of circulation on beaches and low dissolved oxygen.

- *Describe progress toward development of an observing system design for the region*
  - MACOORA's MARCOOS reported the following accomplishments as it enters its second year (October 1, 2008):
    - Existing observational capacities ($20 M/year) required prioritization - MARCOOS regional priorities were successfully set based on user input acquired by the Regional Association (MACOORA).
    - Over 20 existing subregional observing systems spanning 10 States & 111 Congressional Districts were successfully linked in a coordinated Regional Coastal Ocean Observing System (RCOOS).
    - MARCOOS Theme 1 – Coast Guard Search And Rescue (SAR) - provided additional activation energy for a growing National HF Radar Network.
    - MARCOOS Theme 2 – Fisheries - has generated support at the Large Marine Ecosystem Level with NOAA fisheries scientists, recreational and commercial fishers.
    - Demonstrated that new technologies chosen for regional-scale observations and forecasting are sustainable at typically available funding levels.
    - Established training & education programs for workforce development.
    - Demonstrated importance of DMAC, Education & Outreach and Economic Impact efforts.
    - Provided a sustained test bed to help attract other programs – DHS COE, DoD MURI, NSF OOI & COSEE-NOW, NWQMN Pilot, NOAA Fisheries, States.

- *Progress toward regional data management*
  - MACOORA is continuing its contribution to NOAA's Observation Registry with its Survey of Coastal Ocean Observing Efforts in The Mid-Atlantic Region: This project will result in series of Google Earth based maps showing the type, location and coverage of coastal ocean observation systems (terrestrial, space, and water based), all related modeling centers and data archives. Each Google Earth "push-pin" will be hyperlinked to the metadata describing the center or activity, data availability and contact information, as well as the actual map showing the precise spatial coverage of the device or data archive. The survey will be done at the COAST (NY/NJ Clean Ocean And Shore Trust) GIS Lab at Columbia University's Department of Earth and Environmental Engineering. It will be web-servable and available via the MACOORA website.

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- Stakeholder Engagement
  - *Workshops held*
    - MACOORA's Long Island Sound Sub-region held its stakeholder meeting in Stoney Brook, NY on July 21, 2008. The meeting addressed the following:
      - Overview of Data Gathering in Long Island Sound
        - Jim O'Donnell, Department of Marine Sciences, University of Connecticut
      - Overview of MACOORA, MARCOOS data and products
        - Andrew Voros, MACOORA
      - Weather Research Forecast (and other) Modeling and Ocean / Atmosphere Predictions
        - Jeffery Tongue, National Weather Service, NOAA
      - Ensemble Modeling and Outstanding Issues
        - Brian Colle, School of Marine and Atmospheric Sciences, Stony Brook University
      - Instrumenting Great South Bay and Data Assimilation, and General Discussion Topics
        - Bob Wilson: School of Marine and Atmospheric Sciences, Stony Brook University
      - Ecosystem-Based Management in NY State and MACOORA
        - David Conover, Dean, School of Marine and Atmospheric Sciences, Stony Brook University
      - Marine Application of Vertical Reference Datums (Local Sea Level)
        - Larry Swanson, School of Marine and Atmospheric Sciences, Stony Brook University
      - Sea Level Rise - IOOS Support in Climate Adaptation Planning
        - Ron Rozsa, Connecticut DEP, Office of LIS Programs
      - Biological Application of IOOS Technologies
        - John Manderson, National Marine Fisheries Service, NOAA
    - MACOORA's Massachusetts and Rhode Island Bays and Shelf (MARIBS) Sub-region held its stakeholder meeting in Fall River, MA on November 20-21, 2008. The meeting addressed the following:
      - RCOOS Capabilities
        - Observations
          - S. Glenn
        - Modeling
          - C. Chen
        - Model Info Products
          - Gangopadhyay
      - Fisheries-related Information Uses & Needs
        - Fisheries Modeling
          - Jon Hare

- Ecosystem-based Fisheries Management
  - Mike Fogarty
- Commercial Fisheries
  - Jarrett Drake
- Recreational Fisheries
  - Jeff Yapalater
- MARCOOS Fisheries Information Survey
  - W. Brown

- Definition of a suite of useful data and information products that can derive from existing and future "ocean observing" assets

- *New partnerships*
  - N/A
- *Web page development*
- MACOORA has revamped its webpage and will continue to address the optimization of its website as a primary function.
- *Education connections and products*
- Development of a Web-based Community Center and its Application to the MARCOOS Fishing User Community: The Centers for Ocean Sciences Education Excellence – Networked Ocean World (COSEE-NOW) Community Center provided an online collaborative work/exchange space where Ocean Observing System (OOS) scientists and Education and Public Outreach (EPO) professionals can interact with each other, as well as with other COSEE-NOW audiences. As part of this process, on August 21-22, 2008, COSEE NOW and the Freeport Tuna Club collaborated with a consultant, Cia Romano from Interface Guru, to conduct website usability testing with a group of tuna anglers to better understand how ocean observatory data related to their fishing needs can be communicated via Web-based visualization displays such as maps, charts and other data sources. This work was done to support the mission of MACOORA and COSEE NOW to learn: 1) to use the results of the test to improve visualization and navigation of data displays for MACOORA member institutions and 2) learn the fundamentals of website usability testing. COSEE NOW recommends the following for MACOORA and other regional associations attempting to serve the recreational fishing community (offshore tuna anglers in particular):
  - Provide detailed SST imagery
  - Provide links to other relevant data sources on web interface
  - Develop new data displays and tutorials to explain their use
  - Improve data legends and displays

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3) Scope of Work

Briefly outline the priorities for the next funding period and describe any current or anticipated changes to the statement of work or in meeting objectives (due to problems encountered, improved approach, etc.). Note that a change or addition of work elements not contained in the original application may require a request to NOAA to approve the change or addition. Describe any issues that hamper progress as proposed.

- As part of the carry-over of the original planning grant, MACOORA implemented a no-cost contract extension to better accommodate the timing of project activities including the following:
  - Develop a Web-based Community Center and its Application to the MARCOOS Fishing User Community (Rutgers University sub-contract) – Completed; further described above under Item 2, *Education connections and products.*
  - Survey Coastal Ocean Observing Efforts in The Mid-Atlantic Region (Columbia University sub-contract) - Further described above under Item 2 above, *Progress toward regional data management*.
  - Conduct Sub-regional stakeholder meetings – Current year Planning Grant funds were set aside to support stakeholder meetings for the remaining sub-regions as follows:
    - Long Island Sound – Completed July 21, 2008 in Stony Brook, NY.
    - Delaware Bay – Completed as part of MACOORA's Water Quality Monitoring Managers' Needs Assessment Workshop for Estuarine, Coastal, and Ocean Observations, conducted in Philadelphia, PA on March 11-12, 2008.
    - Massachusetts and Rhode Island Bays and Shelf - Completed November 19-20, 2008 in Fall River, MA.
  - Conduct Regional strategy meeting – Accomplished as the central theme of MACOORA's Annual Meeting held October 22-23, 2008 in Fall River, MA

4) Leadership Personnel

Include any changes in key scientific or management personnel, especially that effects the scope of the work as proposed. Note that a change in the Principle Investigator requires NOAA approval.

- None to report.

5) Budget Analysis

Include a brief commentary on actual budget expenditures in relation to anticipated budget expenditures. The purpose of this is to help us anticipate if budget modifications will be needed for the award. Also, please check to be sure that financial reports are up to date and report that information here.

- MACOORA implemented a no-cost contract extension to better accommodate the timing of project activities. See Item 3, *Scope of Work* (above) for status.
- Financial reports are up to date.