

SEMI-ANNUAL REPORT

REPORTING PERIOD 6/01/07-11/30/07

NOAA Award Number NA05NOS4731130

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

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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. It is estimated that the first products could be made available and delivered as soon as late 2008. 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.*
 - New members:
 - University of North Carolina Coastal Studies Institute
 - *Any changes in staff, points of contact, board of directors, or committee members.*
 - On July 18, 2007, Jeffrey Yapalater of the Freeport Tuna Club and Wayne Wittman of Public Service Electric & Gas Co. (PSE&G) were appointed to the MACOORA Board.
- **Planning and Implementation**
 - *Describe progress made towards the development of the business plan.*
 - In 2006, MACOORA engaged the services of former NOAA Administrator James Baker to help develop its business plan, using input from numerous stakeholder meetings and workshops. The latest draft was approved with comment at MACOORA's Annual Meeting in October 2007.
 - *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 development of an observing system design (RCOOS) made a quantum leap with the proposal submitted on April 17, 2007 and recommended for funding by NOAA (per NOAA CSC's June 15, 2007

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announcement). The proposal is a collaborative effort of 29 PI's. The PI's met following MACOORA's Annual Meeting on October 10, 2007 in Baltimore.

- *Progress toward regional data management*
 - MACOORA's MARCOOS operations PI's met on October 10, 2007 following the MACOORA Annual Meeting in Baltimore to implement its data management activity.
 - MACOORA participated in the NFRA Data Management workshop held in St. Petersburg, FL October 23-24, 2007
 - 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.
- **Stakeholder Engagement**
 - *Workshops held*
 - MACOORA held its Annual Meeting on October 9-10, 2007 in Baltimore, attended by over 100 participants.
 - MACOORA co-sponsored ERF 2007, the Estuarine Research Foundation's bi-annual conference, Providence, Rhode Island, November 2007.
 - *New partnerships*
 - MACOORA is participating in and providing limited financial support for a National Water Quality Monitoring Network Pilot Study for the Delaware Basin. The Pilot Study will help to refine the Network design through evaluation and selection of some environmental parameters, sampling protocols and details of measurements. It will conduct an inventory of ongoing or recently concluded monitoring projects or programs to identify gaps in existing data through comparison of on-going monitoring with the Network design. Results of the analyses conducted by the Pilot Study will improve estimates of the costs for improving data quality and filling data gaps. The primary Federal agencies participating in the Study are NOAA, USGS, and USEPA.
 - An October 2007 University of Puerto Rico-Mayaguez (UPRM)/Rutgers University experiment provided an opportunity to jumpstart collaborations between MACOORA and CaRA. Targeted interactions included the first autonomous underwater glider deployment in the Caribbean off La Parguera, Lajas, Puerto Rico on October 19, 2007, initial site surveys for the CaRA HF

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Radar network starting on the west coast of Puerto Rico, a high interest region for homeland security purposes, plans for the CaRA Operations Center, and discussions of lessons learned from the MACOORA experience of setting up a Regional Association. During the October 19-20, 2007 visit by MACOORA (Scott Glenn and Dave Chapman), Glider RU16 was deployed during a short boat trip from the UPRM field station in La Parguera. RU16 circled around the southwest corner of Puerto Rico and turned north into the Mona Passage between Puerto Rico and the Dominican Republic, transmitting temperature, salinity and optical data to shore through the Coastal Ocean Observation Lab at Rutgers University. Real-time data displays were used to plan shipboard operations during the R/V Bold cruise. The glider's success prompted the planning of a second coordinated glider deployment in March 2008. The successful CaRA-MARCOOS interactions will be presented by Scott Glenn at the CaRA meeting in San Juan on December 4.

**U.S. Integrated Ocean Observing System
Caribbean Regional Association-CaRA**

**First CaRA Glider Deployment
Lajas, Puerto Rico - October 19, 2007**

NOAA
NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

CaRA
CARIBBEAN REGIONAL ASSOCIATION

MACOORA
Mid-Atlantic Coastal Ocean Observing Regional Association

U.S. DEPARTMENT OF ENERGY

*UPRM - Jorge Corredor
& Julio Morell
Rutgers - Lee Kerkhof,
Bob Chant &
Scott Glenn
MACOORA -
Dave Chapman*

See also <http://vids.myspace.com/index.cfm?fuseaction=vids.individual&videoid=20633131>
for video of glider

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- *Web page development*
 - MACOORA is in the process of revamping its webpage. Implementation has been delayed pending the purchase and installation of a new server. See also **Part 5) Budget Analysis.**
- *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 will provide 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. Specifically, what will be developed is an interactive website that includes interactive community-building features such as a discussion forum, chat room, and whiteboard for idea exchange, as well as document posting and content publishing/editing features for collaboration.

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.

- MACOORA's IOOS implementation proposal was evaluated as an excellent proposal and was one of the highest ranked among Focus Area 1 (RCOOS) proposals, receiving a recommended level of funding of \$1,700,000 in the first year of the project. MACOORA's MARCOOS project team met following MACOORA's Annual Meeting October 9-10, 2007 in Baltimore, and continues to meet regularly by teleconference.
- Provide supplemental funding support for a December 4, 2007 sub-regional workshop, "*Building Relationships with CBOS,*" which will engage and inform Chesapeake Bay stakeholders about CBOS and the significance of ocean observing systems at a regional and local scale. CBOS will build credibility with a diverse group of users through a carefully developed, thematic agenda and an open exchange of ideas and information. The objective is to encourage new partnerships and facilitate the exploration of new pilot projects. Breakout sessions will be thematic and designed to encourage the generation of ideas for products, partnerships and pilot projects.
- Plan for a March 2008 Workshop on Coastal Managers' Needs for Coastal and Ocean Observations for Water Quality. Workshop Purpose: To have coastal managers identify the kinds of estuarine and coastal observations information products that would be of most use to them. Provide that information to the experts at MACOORA who can relate them to specific technologies for observations, data management and model development designed to deliver these products to help manage coastal water quality issues, including:
 - Managing beach closures
 - Managing shellfish beds
 - Monitoring harmful algae
 - Monitoring phytoplankton levels

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- Developing total maximum daily loads (TMDL)
- Identifying nonpoint sources of fecal coliform
- Assessing the impacts of hurricanes on coastal ocean properties

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.

- No changes 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.

- Following receipt of NOAA CSC's June 15, 2007 notice of intent to recommend funding for MACOORA's Phased Deployment and Operation of the Mid-Atlantic Regional Coastal Ocean Observing System (MARCOOS), MACOORA has made budget modifications to augment the MARCOOS project by "jump-starting" the Data Management and Communication (DMAC) and Website development with MACOORA organizing grant funds. This effort will augment the MARCOOS and be configured to merge seamlessly with that project.
- DMAC possibilities being considered include collaboration with SURA by engaging data providers & users through their data-integration work (www.oostethys.org), and collaborating with the OPeNDAP ==> OGC data access protocols (WCS,WFS) Gateway project.
- As noted in the MARCOOS proposal, the web site will 1) facilitate communications and collaboration among all MARCOOS investigators, 2) serve as the primary outreach platform for external audiences, and 3) deliver prototype products and solicit feedback from user groups. In year 1, the web coordinator will build the initial site and implement project management tools (i.e. wikis and forums) to coordinate the working groups. In years 2 & 3, prototype data visualization tools will be developed with the DMAC team.
- Budget adjustments and scoping changes were accomplished through NOAA.
- Financial reports are up to date.