

**Semi-annual Progress Report for  
Alaska Regional Observation System Coordination  
NOAA Award NA05NOS4731097  
June 1, 2006 – November 30, 2006**

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This report briefly describes activities carried out in support of developing the Alaska Ocean Observing System (AOOS) and follows the format provided by the NOAA Coastal Services Center and Ocean.US. With additional funding support (primarily from NOAA Award # NA05NOS4731078 ) AOOS has met or made substantial progress toward the goals, objectives and milestones in the grant application for NOAA Award NA05NOS4731097.

## **1.0 Project Summary**

AOOS is being planned and implemented through the collective efforts of a consortium of users including academia, federal and state agencies, non-governmental organizations, marine research entities, subsistence users, community representatives, and industry. The AOOS partners created an interim governance structure (with a Governance Committee) through a Memorandum of Agreement and established an AOOS Office with a Director co-located with the North Pacific Research Board in Anchorage. AOOS funds are managed by the Alaska SeaLife Center (dba the Seward Association for the Advancement of Marine Science). Since July 2003 AOOS staff and Governance Committee members have worked at a number of levels to further AOOS and the national Integrated Ocean Observing System (IOOS). This proposal builds on those efforts by working to achieve the following objectives:

- Objective 1. Assessing user needs, building a user network, and developing partnerships among users and data collectors and data managers.
- Objective 2. Developing a governance and administrative structure for a regional association that engages end users and coordinates with other observing efforts.
- Objective 3. Planning for and beginning implementation of a comprehensive integrated system that meets prioritized user needs.
- Objective 4. Developing a business/operations plan for the system to ensure that it will be cost-effective and sustainable.
- Objective 5. Establishing and sustaining a data management and communications subsystem.
- Objective 6. Developing education, outreach and public awareness components that will ensure the results are effectively applied to address the identified issues.

AOOS will initially represent the entire coastline and marine waters of Alaska. However, planning for the actual observing systems is being done based on separate regional observing systems for the three Large Marine Ecosystems (LME) of Alaska (Gulf of Alaska, Bering Sea/Aleutian Islands and Arctic), with AOOS providing some functions on a statewide basis.

Alaska has such a huge geographic scale and diversity of users that three separate entities will likely be essential for long-term success.

Developing and sustaining a program of this nature depends on sustained collaboration and coordination with a multitude of governmental (both state and federal) and non-governmental efforts and entails significant startup costs. Funding through this project is used to contribute to the costs of developing and sustaining the system: staff, office and related support costs, contractual support especially data management and website development, travel and meeting costs for AOOS staff and committee members, planning workshops, and pilot projects. Other funding and in-kind resources will continue to be provided by the key partners in this consortium.

## **2.0 Progress and Accomplishments**

### **2.1 Regional Association Organization Structure**

- The AOOS Governance Committee met on November 14, 2006 to review the draft AOOS Strategic Plan, hear briefings on various state, national and international activities, and discuss the status of AOOS implementation. The Committee meeting planned for December 2006 was delayed until January or February 2007 to allow more time to develop the draft AOOS Implementation Plans for the three Large Marine Ecosystems (LMEs).
- The AOOS Governance Committee has been operating under the terms of a very informal Memorandum of Agreement since spring 2004. A more formal MOA has been on hold for more than a year, pending resolution of the issue of having Federal participation on regional association boards (an issue that could be resolved with language in the proposed IOOS authorizing legislation). Some of the federal committee members are prepared to sign onto the more formal MOA even without legislation. In addition, the State of Alaska expressed concerns about the governance structure of AOOS. Although state officials have not formally specified what those concerns are, they appear to relate to the issue of having non-government (federal and state) representatives as voting members of the board and the need to clarify that AOOS does not make or recommend policy.
- The Governance Options Subcommittee met on July 25, 2006 to take a fresh look at the pending MOA and consider possible changes to address State concerns, federal participation, the evolution of AOOS, and other issues. The subcommittee agreed to some revisions to the MOA (primarily language clarifications), but deferred final approval of the MOA until the next Governance Committee meeting in hopes of some issues being clarified: e.g., state participation following election of a new governor with new department heads which might change state concerns, and potential passage of IOOS legislation and resolution of the federal participation issue.
- The Committee asked that other federal agencies (such as the Department of Homeland Security, FEMA and the Denali Commission) be briefed on AOOS and their participation on the committee sought. NWS Alaska director Laura Furgione (an AOOS Governance Committee member) and Molly McCammon met with Denali Commission co-chair George Cannelos September 6. Cannelos will be invited to the

next AOOS meeting and will be kept apprised of AOOS activities. Meetings with other agencies are pending.

- AOOS continues to actively participate in national IOOS planning efforts, including those of the National Federation of Regional Associations (NFRA). Molly McCammon was recently elected chair of NFRA and meets frequently with Ocean.US staff, IOOS federal agencies, and other regional associations to further the development of IOOS. These activities included planning and participation in the Regional IOOS Workshop in Chicago November 6-9, 2006; a presentation and discussion at the first Great Lakes Observing System board meeting June 19, 2006; and participation on the technical review team for the NOAA IOOS Design grant awards.
- McCammon continues to work with AOOS members and others to seek multiple and alternate sources of funding for AOOS, including the submission of numerous proposals to other funding agencies.
- There is no staff or other personnel changes, although Dr. Mark Johnson, the primary contact at the University of Alaska Fairbanks, has been on sabbatical since September 2006. Johnson has been in frequent email and phone contact and will return in February 2007.

## **2.2 Planning and Implementation**

### **2.2.1 Business/operations Plan**

- Components of the AOOS business/operations plan continue to be developed and are in various draft stages: DMAC, education & outreach, stakeholder involvement, integration of existing assets, and implementation plans for observing systems in Alaska's three major sub-regions: Arctic, Bering Sea/Aleutian Islands and Gulf of Alaska.
- Once the draft implementation plans for the three sub-regions are finalized in 2007, their costs will be developed and plans for long-term sustainability will be explored. Discussions have begun with the University of Alaska for assistance with an economic analysis of future activities.

### **2.2.2 Regional Coastal Ocean Observing System Priorities**

- The draft AOOS Strategic Plan was reviewed by the AOOS Governance Committee at its June 2006 meeting. Two issues raised through the comment process were highlighted: 1) the transition from research to operations and 2) integration and coordination of all the modeling groups, including the UAF group. Another revision of the draft Strategic Plan is underway and will be circulated along with the draft Implementation Plans and brought back to the board at its next meeting. The Strategic Plan describes a process for setting priorities for the regional observing systems.
- The Implementation Plans currently under development for the three Large Marine Ecosystems will highlight the priorities for each of those systems as well as the statewide functions.

### **2.2.3 Regional Coastal Ocean Observing System Activities – planning and designing a comprehensive system**

- **Statewide:** AOOS surveyed a variety of state, federal, and private sector users to identify coastal and ocean remote sensing needs in Alaska. The identified needs were used at the Coastal Remote Sensing Workshop sponsored by NOAA and NASA October 2-5, 2006. An intern during the summer 2006 researched and catalogued existing climate change research in Alaska. AOOS initiated a teleconference work session on August 15 between AOOS and the Pacific Ocean Observing System – a NOAA Fisheries effort to develop an ecosystem observing system for the California Coastal Current. Follow-up efforts are planned to develop a Pacific Basin Integrated Ecosystem Assessment.
- **Arctic:** A draft observing system plan is currently being developed and should be finished in spring 2007. The Barrow web cam and sea-ice radar have been installed and are operational. AOOS continues to participate in other agency activities relating to the Arctic which will complement development of an observing system. Other activities include:
  - Integration of sea ice products for Alaskans through Sea Ice Working Group chaired by AOOS and the Arctic Research Commission.
  - Proposal to the National Ocean Partnership Program to acquire sea-ice thickness measurements in response to the North Slope whaling captains' workshop.
  - Proposal to the National Ocean Partnership Program to acoustically monitor whales during Arctic migrations in response to the North Slope whaling captains' workshop.
  - Proposal to NASA to acquire radarsat S(AR) sea ice data in response to the North Slope whaling captains' workshop.
  - Participation and coordination with the state-federal North Slope Science Initiative.
- **Bering Sea/Aleutian Islands:** A draft observing system plan is currently being developed and should be finished in spring 2007. The moorings in Bering Strait and Amukta Pass have all been deployed. Other activities include:
  - Participation in an MMS sponsored workshop November 28-December 1, 2006 on research and monitoring needs for possible offshore oil and gas leasing in the North Aleutian Basin in the Bering Sea.
  - Participation in development of NPRB's proposed Bering Sea Integrated Ecosystem Research Program and NSF's BEST program.
  - Participation in an EPA proposal to contribute to developing a coastal climatology for communities affected by coastal erosion due to climate change impacts. Participation in a workshop in Dillingham September 6, 2006 sponsored by Alaska Sea Grant regarding coastal erosion.
  - Participation in a workshop June 21-22, 2006 hosted by the PRICIP project (joint Hawaii-Alaska) to develop a coastal climatology for Alaska.
  - Participation in the Aleutian Life Forum in Dutch Harbor in August 2006 with a focus on community-based monitoring.
- **Gulf of Alaska:** A draft observing system plan is currently being developed and should be finished in spring 2007. The focus continues on the Prince William Sound pilot project, as well as furthering the preliminary efforts in Cook Inlet, the outer Kenai Coast, Kodiak, and Southeast. Other activities include:
  - A major field trial in Prince William Sound in the planning stages with the objective of testing the utility of an observing system for oil spill response and

search and rescue. A planning meeting was held in Seattle October 11-12 2006 and external funds are being sought to support this exercise.

- After discussions with the AK National Weather Service Office, switching the RAMS atmospheric circulation model operated at the University of Alaska Anchorage to an operational WRF model which is undergoing rigorous validation using the new array of observation platforms.
- A meeting with a Canadian IOOS team June 23, 2006 to discuss potential collaborations.

#### **2.2.4 Data Management and Communications Subsystem**

- AOOS Data Management and Communications Committee met in Anchorage October 26-27, 2006. The goals for this meeting were to 1) update the committee on current AOOS and IOOS issues, particularly DMAC; 2) discuss AOOS Data Management System Design and provide feedback to the AOOS Data Manager; 3) discuss quality assurance and quality control (QA/QC) as it pertains to AOOS; 4) discuss agency contributions to and concerns about AOOS operations, particularly DMAC; and 5) as a component of the AOOS business/operations plan, discuss, develop and review the AOOS Data Management Plan (basic description of how AOOS addresses data issues and policies and insures compliancy with IOOS DMAC) that is scheduled for AOOS Governance Committee review. Four small working groups of AOOS DMAC Committee members and non-members were formed to deal with ongoing issues that could not be solved during the meeting and will report progress at the next DMAC Committee meeting.
- AOOS is now participating in the NOAA MADIS program. This enables us to get QA/QC'd data whereas we have been focused on collection of raw data.
- AOOS is producing pre-operational atmospheric forecasts four times a day using the Weather Research Forecasting (WRF) system. Model output is available for Southeast, Gulf of Alaska and Prince William Sound. A large Alaskan grid is produced by the Arctic Region Super Computer every 12 hours and covers the remaining coastal waters.
- The first five year plan for data management has been drafted and is being reviewed by the DMAC Committee before going to the AOOS board.

#### **2.3. Stakeholder and user needs identification and engagement**

- Formal and informal contacts continue to be made with potential AOOS users/stakeholders in order to identify user needs and interests in AOOS. These efforts however, continue to be scaled back because sufficient IOOS funding has still not been included in federal budgets to support significant regional observing systems. We continue to be in a period of “expectation management.” Our primary strategy continues to be looking for non-IOOS funds to start up programs while waiting for future IOOS funding.
- The following presentations and briefings were given during this reporting period:
  - Presentation to the North Pacific Research Board September 20, 2006.

- Presentation to the Arctic Research Commission June 29, 2006.
  - Presentation to the AK Association of Harbormasters and Port Administrators October 24-25, 2006.
  - Briefing to World Wildlife Fund staff August 29, 2006.
  - Presentation to Alaska Sea Grant Program Assessment Team review September 10, 2006.
  - Presentation to national Hydrographic Services Review Panel August 15, 2006. Organized and chaired Alaska stakeholders' panel.
  - Presentation at Dillingham coastal erosion workshop September 6, 2006.
  - Discussions with state of Alaska coastal management program and permitting office directors and the Alaska Ocean Policy Coordinator in Juneau, November 21-22, 2006.
  - Frequent discussions with Marine Exchange of Alaska regarding potential collaborations.
  - Organized conference calls and discussions among potential collaborators on an Ocean Tracking Network proposal (related to POST project).
- AOOS sponsored, along with the Arctic Research Commission several teleconference meetings of a newly formed Alaska Sea Ice Working Group on June 23, July 13 and November 16, 2006. The WG has developed a directory of existing sea ice products that is now available on the AOOS website. The next step is to develop a brochure describing the most usable products for the public. The WG will meet again in May 2007 once decisions on sea ice proposals that are being considered by several different funding sources have been made.

### **2.3.1. Education, outreach and public awareness activities**

- The AOOS website continues to be updated with new data sets and information products, including:
  - \*collection of 2004 Prince William Sound data for tabletop rerun of atmospheric and oceanographic models in preparation for the 2007 PWS Field Experiment;
  - \* pre-operational WRF forecasts for coastal waters from the Data Catalog Explorer system at AOOS. From the Bering to the Arctic, forecasts are available every 12 hours. From the Bering to the Southeast, forecasts are available every 6 hours. A modified ship icing forecast is available for all these areas.
  - \* MODIS Aqua Chlorophyll and SST should be available shortly. Final details on processing need to be completed.
  - \* NOAA MADIS data. This is a QA/QC'd dataset that includes all the NWS and NDBC buoys. A 15km grid of this information is produced every hour that includes Alaska and coastal waters. This information includes a very restricted dataset which is composed of data obtained via commercial aircraft.
  - \* Continuing preparation for QA/QC work, AOOS is collecting climatological datasets from NCDC. In addition to just displaying current conditions, we will have the ability to display extremes and departures from normal.
  - \* Prudhoe Bay HF Radar has been relocated to Cook Inlet. HF Radar information for Cook Inlet is now available.

- Molly McCammon is taking the lead in organizing a proposal to submit to NSF for an Alaskan COSEE (Centers for Ocean Sciences Education Excellence). This has involved numerous teleconferences and planning sessions with potential partners.
- McCammon participated in the Ocean Research and Resources Advisory Panel meetings in Washington in June and October 2006 and has been officially named to that panel.
- AOOS hosted the Joint Scientific and Technical Ocean Steering Team at a public meeting in Anchorage August 23, 2006 on the proposed national Ocean Research Priorities Plan.

### **3.0 Scope of Work (Plans for the next year)**

#### **3.1. Stakeholder/user needs identification and engagement new**

- Continue with approach to three Alaska regions and sub-regions based on Large Marine Ecosystem (LME) concept.
- Reassess the makeup of the AOOS Governance Committee and development of stakeholder advisory committees to ensure adequate stakeholder representation and communication.
- Work with MMS, federal and state regulatory agencies, and oil and gas industry on plans relating to offshore oil and gas development in the Bering, Beaufort, and Chukchi Seas.
- Develop sea ice products for the Sea Ice Working Group and newly developed RISA. Organize meeting of all sea ice researchers in late spring or early fall 2007.
- Work with UAF remote sensing group on developing products for Alaska users.
- Collaborate with various stakeholders on an Alaska COSEE proposal.
- Work with Alaska Sea Grant to further user product development from Prince William Sound pilot project.
- Continue to participate in coastal erosion and coastal climatology planning efforts with the National Weather Service, NOAA climate office, and others.
- Collaborate with North Pacific Research Board in meetings in Bering Sea coastal villages.

#### **3.2. Governance and administrative structure**

- Meet with new state commissioners, once appointed, to brief them on AOOS and determine their interests re: participation.
- Complete revisions to new MOA. Have signed by multiple federal, state, private, academic, tribal partners.
- Develop set of operating procedures for AOOS board and committees to use.
- Consider need for 501 (c) (3) corporation, and if so, conduct legal work.
- Consider approach to stakeholder/user committees based on LMEs along with committee mission and terms of reference.

#### **3.3. Business/operations plan**

- All of the components described above (Governance, DMAC, education & outreach, stakeholder engagement, and coastal observing system activities) are in progress. The AOOS business/operations plan will integrate these efforts.
- A draft plan is expected to be released for review and comment in early 2007.

### **3.4. DMAC activities**

- DMAC has three FTEs plus a partial satellite and HF Radar manager. A part time student is working through older datasets and associated metadata. Two additional positions will address acquisition of fisheries data and develop the Alaska Marine Information System (a joint initiative with the North Pacific Research Board) and work on DMAC issues at the national level.
- Final AOOS DMAC five-year plan should be available in January 2007.
- The DMAC Committee will meet again in late spring 2007 following the next AOOS Governance Committee meeting.
- DMAC staff will continue to participate in the IOOS DMAC expert teams on Metadata and Data Archive, with the grass roots group OOSTech, and with NOAA CSC with data cataloging and/or data transport lab work.
- DMAC staff will continue data management collaboration with AEFF, NMFS, PMEL and ArcOD for continued integration of datasets between AOOS and agencies.

### **3.5. Education, outreach and public awareness activities**

- Re-evaluate hiring of education coordinator to begin implementation of education plan. Consider use of contracts for specific projects.
- Continue to work with Alaska Sea Grant Marine Advisory Program to develop outreach & public awareness plan, as part of AOOS business/implementation plan.
- Continue development of Alaska COSEE proposal.
- Continue website development including development of a PWS 2007 Field Experiment data portal; re-design of home pages and user features; updated versions of existing applications such as Mapserv; integration of “wet” data with Alaska coastal biological habitat assessments using Shorezone; expanded forecasts; improved QA/QC; streamlined data archiving; and re-evaluation of running of Live Access Server.

### **3.6. Regional Coastal Ocean Observing System Implementation Activities**

- Statewide: Strategic plan has been revised per AOOS Governance Committee and other feedback. It will go out for additional review in spring 2007 with the three draft subregional or RCOOS implementation plans now under development. The primary focus of AOOS continues to be development of its DMAC sub-system.
- Arctic RCOOS: AOOS is collaborating with a number of IPY efforts, including NSF’s new Arctic Observing Network and a proposed Arctic GOOS. A potential collaboration with the oil industry for observing related to offshore oil and gas exploration is under discussion. Several collaborative proposals are pending final funding decisions.
- Bering Sea/Aleutian Islands RCOOS: Continue to participate with NOAA, NPRB, USGS, and NSF on BSAI integrated research plans and proposals. Meet with state-federal Marine Ecosystem Forum to determine information needs for Aleutian ecosystem

management pilot project. Work with the Bristol Bay and Norton Sound CDQ groups on future workshops on needs for coastal ocean observing in these areas

- Gulf of Alaska RCOOS: Continue work on draft implementation plan for greater Gulf of Alaska with a workshop in February 2007 focusing on climate and ecosystem considerations. Continue with pilot efforts in PWS, including follow-up to stakeholder/user and biological component workshop. Develop collaborations to begin implementing a Cook Inlet observing system plan. Begin Southeast and Kodiak/Shelikof plan.

#### **4.0 Leadership Personnel**

There are no changes in key scientific or management personnel.

#### **5.0 Budget Analysis**

All financial reports are up to date and have been submitted on time, although our financial officer notes that she has been receiving requests for "delinquent" financial reports from NOAA GMD since June (and most recently in December). In each case, all had been submitted and in some cases, already resubmitted.

Dr. Carl Schoch continues to provide in-house scientific advice and consultation on a contractual basis, particularly for the Gulf of Alaska LME and statewide programs. Discussions are underway with the University of Alaska for a contract to provide socio-economic analyses for the business plan in 2007. Funds for implementation of the education plan will be spent in 2007.