



**Alaska Ocean Observing System: 2010 Request for Proposals
Data Management/Communication Services and User Product Development
May 12, 2010**

INTRODUCTION

The Alaska Ocean Observing System (AOOS) was established in 2004 by a consortium of partner agencies and research institutions as the regional association for integrating coastal and ocean observing activities in Alaska's three regions: Arctic, Bering Sea/Aleutians and Gulf of Alaska. AOOS is one of 11 regional associations that make up the regional component of the national Integrated Ocean Observing System (IOOS). AOOS supports a web portal for Alaska ocean and coastal data and information products. Additional information about AOOS can be found on the AOOS website, www.aoos.org and in Attachment A (Background), and for IOOS, at www.ioos.gov. All applicants should refer to www.aoos.org for a copy of proposal application materials. If you have questions, please contact the AOOS office by phone at (907) 644-6703, or by email to Molly McCammon (mccammon@aoos.org) or Darcy Dugan (dugan@aoos.org).

PROJECT SCOPE

Proposals are requested to provide web portal, data management, communication and user product services for AOOS for up to 5 years.

This RFP requests proposals for two sets of services. Proposers may bid on one or both of these components, separately or combined.

- I. Data Management and Communication Services** (up to \$400k per year for a 5 year period), see pp 3-6: provide data management support (including data ingestion, metadata, relational database development and maintenance) and communication services (web portal, data clearinghouse, coordination, and communication), building upon the hardware, software, query tools and products developed over the past five years, and following the national IOOS Program guidance.
- II. User Product Development Services** (up to \$150k per year for a 1-5 year period, with \$100k available in year 1), see pp 6-8: develop user-driven products and the associated interface and visualization tools that will be maintained by and interact with the data management system developed under component #1 above.

Funding availability: Funding is subject to annual appropriation, but is estimated to be approximately \$550,000 per year for all services combined, although additional funds could be available depending on federal appropriations and other funding sources. AOOS reserves the option to use some of the funding included for Data Management and Communication Services (I above) to employ in-house management and coordination, depending on the proposals received in response to this RFP. For the first year of funding, a total of \$500,000 is available with a starting date of August 1, 2010 from an existing NOAA cooperative agreement. A new 5-

year proposal for funding AOOS, which will include the Data Management and Communication Services and User Product Development, is due to NOAA October 1, 2010. Successful proposers are required to participate in the development and writing of that proposal.

Who may submit proposals? Any federal or state agency, university, research institution, NGO, or private industry may submit on one or both of these components, separately or combined.

Additional Materials: The following materials are provided as guidance for proposal development and are available on the AOOS website at www.aos.org:

- A brief history of AOOS and its funding (Attachment A)
- A description of the current status of the existing system and 2010 Work Plan as provided by the current Data Management Team at UAF (Attachment B)
- Information on hardware, software and products developed to date as provided by UAF (Attachment C)
- A description of the national IOOS standards and requirements with which AOOS must comply as part of the national IOOS: March 12 2010 NOAA IOOS Program Office White Paper: Guidance for Implementation of the Integrated Ocean Observing System (v1.0) (Attachment D)
- Results of a user survey conducted by the AOOS staff April 9-23, 2010 (Attachment E)
- Results of a review conducted on behalf of the UAF data team (Attachment F)
- Summary of Stakeholder Needs October 2007 – May 2010 (Attachment G)

In addition, past Data Management Advisory Committee minutes and documents, as well as AOOS board documents, are available on the AOOS website at www.aos.org.

PARTNERSHIPS

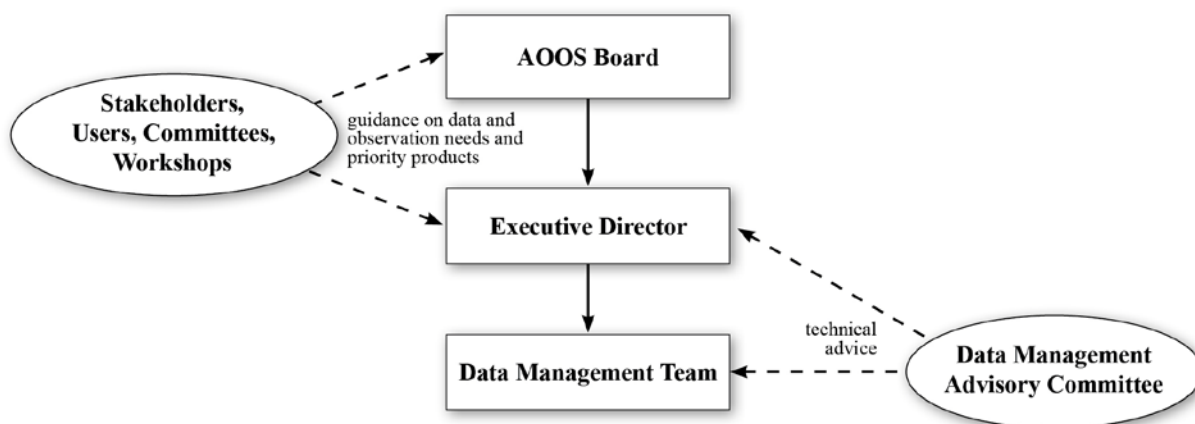
Applicants are strongly encouraged to form partnerships among federal and state agencies, universities and other research and monitoring programs. While this is not required, other programs may provide additional future opportunities for collaborations and sharing of data, tools and experiences. AOOS Board members and the Executive Director will work with the awardees to further develop these partnerships, which include:

- *Other IOOS Regional Associations*, in particular those in the Pacific: NANOOS (www.nanoos.org), CeNCOOS (www.cencoos.org), SCCOOS (www.sccoos.org), and PacIOOS (www.soest.hawaii.edu/pacioos/);
- *DOI Alaska Climate Science Center*, now in development through USGS in Anchorage;
- *NOAA Regional Climate Center*, with an Alaska center tentatively in the planning stages;
- *NSF Arctic Observing Network (AON)/Sustained Arctic Observing Network (SAON)*, with some data services for AON now provided through the Cooperative Arctic Data and Information Service (CADIS) at University of Colorado; and
- *North Pacific Research Board*, with data management services for longer-term integrated ecosystem projects.

AOOS DATA MANAGEMENT STRUCTURE

The selected Data Management and Communication Team(s) will report to and work with the AOOS Executive Director, and is an integral component of the overall AOOS program. An

external Data Management Advisory Committee (<http://www.aoot.org/about/committees.html>) provides advice to the Executive Director, AOOS Board and the Data Team. Other external committees are used as needed to provide additional advice on implementation and user needs.



AOOS Data Management System

As part of the national IOOS program, AOOS must also address IOOS-specific data management objectives and guiding principles as described in the NOAA IOOS Program Office White Paper (v1.0), March 12, 2010, titled “Guidance for Implementation of the Integrated Ocean Observing System (IOOS) Data Management and Communications (DMAC) Subsystem” (http://ioos.gov/library/dmac_implementation_2010.pdf).

SERVICES REQUESTED

I. DATA MANAGEMENT AND COMMUNICATION SERVICES

Proposers should demonstrate how, using the existing tools and products developed by AOOS to date and consistent with national IOOS Program guidelines, they will provide for a DMAC subsystem to:

- Deliver real-time, delayed-mode and historical data for in-situ and remotely-sensed physical, chemical and biological observations;
- Deliver model-generated outputs, including both nowcasts/forecasts and reanalysis, to AOOS (and IOOS) users; and
- Operate and maintain user products and tools as they are developed.

Additional information about the status of the current system and products and tools developed to date can be found in Attachments B & C or on the AOOS website.

Required System Components

Proposals for Data Management and Communication Services must include three components:

- A) Data Management, Planning and Coordination
- B) Web Portal Hosting and Support
- C) Data Subsystem Services

A. Data Management, Planning and Coordination

In addition to administering the system as described in Sections B and C below, successful proposers will be expected to provide the personnel and costs of travel to

- Participate in Alaska committees and teams (including the AOOS Data Management Advisory Committee, other AOOS committees and teams as determined by the Executive Director, and the joint State-Federal Data Integration Initiative) in order to facilitate data integration and interoperability within Alaska;
- Participate in national and cross-regional committees, workshops and teams in order to further the development of a coordinated approach to IOOS data management;
- Participate in international development of Arctic Observing Network (AON) and Sustained Arctic Observing Network (SAON) data management;
- Work closely with the AOOS office, other data management awardees if selected, and appropriate advisory committees to implement identified user products, tools and their web interfaces; develop product requirements; and beta test and refine products in order to increase their utility; and
- Provide reports as requested; develop detailed work plans with measurable timelines, deliverables, and performance metrics; and assist with development of funding proposals.

B. Web Portal Hosting and Support

Proposers should have the capacity to and demonstrate how they will:

- Host and maintain the AOOS web portal at www.aos.org. The website is the primary public face for AOOS, as well as the primary entry point for the AOOS data system;
- Provide access to the user interface and visualization tools, data products, data query and access tools, decision-support tools, agency project tracking systems and databases, as well as IOOS Registry tools;
- Update the design of the entire site in order to improve clarity, ease of use, and the overall “look and feel.” This includes merging the two existing home pages (the informational web pages supported by the AOOS office in Anchorage and the data access web pages supported by the current data team at UAF) into one home page.

C. Data Subsystem Services

Proposers should have the capacity (including sufficient internet bandwidth) to demonstrate how they will maintain, build upon or modify the overall data system developed to date. Proposers must demonstrate how they would address these major functions:

1. **Data Ingestion and Warehousing:** The AOOS data system should provide data ingestion and warehousing services as a regional Data Assembly Center (DAC), which is likely in the future, to connect to a national DAC. Applicants should detail how they will work with other data providers (federal and state agencies, academic researchers, NGOs and private industry), especially through the Federal-State Data Integration Initiative, to help bring their databases and data up to national interoperability standards, and help make their systems more automated and IOOS-compatible. Depending on the user products to

be developed, and the priorities to be identified by AOOS staff and advisory committees, applicants will be expected to ingest and archive some data sets. AOOS staff and advisory committees are currently developing a process for prioritizing data acquisition, ingestion, and processing.

2. **Data Discovery and Access:** The primary entry point for the AOOS data system is the AOOS web portal at www.aoot.org. Data are accessible via IOOS web services, Data Catalog Explorer and the Alaska Marine Information System (AMIS). AMIS has been viewed as the primary search, query, preview and order tool, with a new version currently being beta tested and soon to be available. Regional data should be made available via the IOOS Registry when possible. In this section, applicants should focus on implementing or improving the existing -- or developing new -- data discovery and access tools, and linking data to other IOOS regions, AON and SAON, and key partners such as the National Data Buoy Center (NDBC) and the National Oceanographic Data Center (NODC). Cost-effective mechanisms for “exposing” data, as well as “delivering” data to users should be considered (e.g., subscription services, use of FTP sites, or advanced data explorer such as the National Park Service’s GIS Theme Manager, etc.).
3. **Data Transport:** The national IOOS program requires use of one or more web service protocols to perform data transport: SOS, WMS, WCS and DAP. AOOS is currently compliant with these protocols, and now uses a THREDDS server. The MyAOOS system has been developed to allow for custom requests. Proposals need to show how they will continue to provide data transport, and in addition, establish and maintain a system for tracking, prioritizing and responding to data requests. Policies for prioritization, especially among commercial and public users and potential charging of fees, should be developed in consultation with AOOS staff, the advisory committees and the board.
4. **Data Archiving and Storage:** The 2007 AOOS Data Management Plan required any dataset acquired by AOOS to be stored both at AOOS and archived at a national data center such as the National Ocean Data Center (NODC). As this has yet to be implemented, applicants should identify a process for developing a future plan to determine how and where data will be archived and stored.

5. **Other Issues Related to Data System Services:**

In addition to the functions detailed above, applicants should also be aware of the following:

Standards: AOOS participates in the national IOOS process for developing standards. The only defined standard that has been adopted by the national IOOS office is the one for data transport explained above, but others are under review.

Metadata: AOOS uses the CSGDM metadata standard, and will transition to the latest IOOS and international standards as they are developed. The data team should require the use of complete and accurate metadata by all entities providing data to AOOS. Metadata should also be published to one or more metadata warehouses.

Symbology: Where symbology (i.e., how GIS data is symbolized) is made available, the system should attempt to keep the symbology.

QA/QC: Resources are not provided in this RFP to QA/QC data. The data team should work with data providers to ensure data sent to AOOS is already of the highest quality. Appropriate disclaimer language should be included on the website. All metadata should comply with appropriate standards.

IT security: The proposer should provide a security plan that encompasses both cyber and physical security and is consistent with industry standards. Basic security protocols should be followed for safeguarding systems, software and data.

Qualifications of Key Personnel

The AOOS data team must have a manager with strong leadership and collaboration skills in addition to data management and programming technical skills. The manager must be willing to travel frequently, and to work closely with the Executive Director and appropriate committees and working groups to ensure the system is meeting AOOS needs. The data team must show experience in working collaboratively and flexibly with other teams. Proposers should consider a variety of options, including the possibility of housing a staff person in the AOOS offices in Anchorage to provide the overall coordination and planning functions.

II. USER PRODUCT DEVELOPMENT SERVICES

While the team selected to provide Data Management and Communication Services (Section I above) is responsible for the development, maintenance and expansion of the AOOS web portal, database, data warehouse, and data query tools, the intent of this second part of the RFP is to solicit a team with capabilities and experience in developing data and information products and the associated visualizations and tools to meet stakeholder and user needs. This component of the data system needs to be closely coordinated with the main AOOS office.

The national IOOS program and its federal authorizing legislation put great weight on development of products to meet user needs at the regional level. Proposers are encouraged to participate in - or review the results of - the NFRA Product Developers Workshop to be held in Ann Arbor, MI May 17-19, 2010 (see www.usnfra.org).

The AOOS Executive Director and staff are responsible for facilitating activities to help inform identification and development of needed user products and data visualization tools in Alaska. Three workshops will be held by AOOS in May 2010 with a mix of users (agency managers and other stakeholder groups) and implementers (scientists, technical experts, local knowledge experts) who will help inform data management tasks. These workshops will focus on three key themes for future AOOS planning: coastal hazards (loss of sea ice, coastal erosion, sea level change, storms), marine operations (safe boating and shipping, search and rescue, oil spill response, offshore energy planning and siting), and ecosystems and climate trends (integrated ecosystem assessments, nearshore and cross-shelf climate trends, ocean acidification, water quality, and harmful algal blooms). The workshops will be a starting point for users and

implementers to identify key information and data products to be developed in regards to these issues with existing observations and models. They will also identify new observations, modeling gaps, and other needs to help guide development of the AOOS FY11-15 proposal and work plan, which is due on October 1, 2010.

Applicants should demonstrate capabilities and experience in:

- Developing user products and tools with appropriate feedback loops from potential users;
- End-to-end data product development process including beta testing, refinement and operations;
- Product marketing (to be done in cooperation with AOOS staff); and
- Willingness, flexibility and adaptability to respond to user feedback.

Products to be developed in Year 1

The AOOS website currently has multiple options for accessing datasets in the AOOS data warehouse. The priority product to be developed in Year 1 is a visualization tool with user-friendly interface designed to meet a majority of stakeholder needs for real-time and routinely acquired data in the Alaska region. Decisions on design, data to be ingested, and functionality must be made using a collaborative process involving a group of potential stakeholders and data users, AOOS staff and advisory committees, and others as appropriate. This interface should be visually appealing, user-friendly and efficient. The interface should cater both to members of the public who might be using the website for the first time, and to experienced users seeking specific raw data. The NANOOS Visualization System (www.nanoos.org/nvs) is an example of this type of interface.

The product should have a graphical element (e.g., a spatial map, such as Google Map or BING interface) that is prominently displayed on the AOOS web portal. It should display monitoring assets that are envisioned to be part of a long term ocean observing system in Alaska: those in the water providing real-time, near real-time and sustained, routinely collected data. It should also provide an automated system for retrieving easily accessible data, as well as quick access to data products and lists of additional data that are available or forthcoming. Graphics, maps, and other visualizations should be labeled, acronyms explained, and data and metadata displayed or linked. The system should be compatible with the primary web browsers – such as Internet Explorer, Firefox, and Safari.

Using this product, stakeholders should quickly and efficiently be able to find:

- Real-time, near-real time, or routinely collected data for the IOOS core variables
- Historic data for these variables (as prioritized by AOOS advisory committees and stakeholders)
- Forecasts and other outputs from weather and ocean models

The successful awardees will be expected to evaluate and implement available and evolving visualization tools/capabilities to provide the best possible solutions (i.e., seek to use existing capabilities before writing new software). Proposers are especially encouraged to evaluate other IOOS regional products, including those that may provide geographic linkages to the Alaska region. AOOS encourages proposers to use creativity while meeting these guidelines.

A separate web-based mapping product (using other funding) currently is being developed to track basic information (but no data at this time) about 2010 Chukchi and Beaufort Seas observing assets, including fixed in situ platforms, as well as transects for ship, AUV and aircraft surveys. The goal of this product is to provide the research community as well as the general public information (geo-location, dates to be deployed and retrieved, variables to be measured, point of contact) about the multiple research and monitoring efforts that are currently underway by government agencies, the academic community and private industry, and mostly in conjunction with proposed offshore oil and gas development. This product may eventually be combined with the product described above.

Proposals responding to only this section, if successful, are expected to work closely with the successful awardees for Section I to ensure access to datasets, operability, speed and ease of use. If awardees for Sections I and II are two different groups, each team must commit to working with the other team.

Products to be developed in Years 2-5

Future funding for additional products will depend on the success of the initial product development and be based on workshops and stakeholder input.

Coastal and Marine Spatial Planning

Nearly all the IOOS regions provide products and services related to Coastal and Marine Spatial Planning, a federal initiative intended to provide a framework for harmonizing the regulations of multiple federal and state agencies and minimizing use conflicts. These include maps and other products that integrate human use with characteristics of the marine environment. IOOS regions are one of the only sources of operational information about the dynamic nature of the water column, which can inform managers on how environmental conditions are changing and whether new management approaches are warranted. We anticipate that additional products to be developed include 3- and 4-d visualizations of state and federal waters off Alaska, with additional layers displaying human activities, bottom characteristics, and other information as appropriate.

Qualifications of Key Personnel

The AOOS product development team must have experience and advanced capabilities in developing user products and data visualization tools. The team must show experience in working collaboratively and flexibly with other teams.

PROPOSAL REQUIREMENTS AND PROCESS

The following requirements apply to applicants to Section I and II. Proposers applying to both sections can submit one all encompassing proposal but should specify this intent clearly.

1. Required Components

Proposals for Section I only should be 20 pages or less; for Section II only 10 pages or less; and for combined Section I and II, 30 pages or less. Please use 12 point font; and include:

- a) **Signed Cover Page** -- Names of applicant organization and principal/co-investigators, requested funds and other support, and a place for the signature of an official authorized to legally bind the submitting organization. (The cover page is not a numbered page and thus does not count towards the page limits.)
- b) **Contact Information** -- Please include names, affiliations, phone, email, and physical addresses for applicant, partners and collaborators. (This information does not count towards the page limits.)
- c) **Section** – Explain whether this proposal is responsive to Requested Services Section I, II or both.
- d) **Proposal Summary** – Provide a summary description of the overall proposal. Briefly describe its goals and objectives.
- e) **Technical Approach** – Provide a detailed description of the work to be performed including goals, methods, and appropriate technical details.
- f) **Management Approach and Personnel Qualifications** – Describe the management structure and responsibilities of key personnel. Describe the qualifications and past experience and successes with similar or relevant projects of key personnel. Describe how key personnel will coordinate and collaborate with other programs.
- g) **Deliverables and Timelines** – Proposers must demonstrate they can achieve an outcome and product within the requested award period. Provide a clear table, organized by semi-annual reporting period, detailing timelines, measurable milestones (accomplishments and deliverables), and performance metrics that will be used to track the program’s progress. Additional performance metrics and measurable currently under development by the IOOS Program office may be required. Do not assume that a no cost extension will be granted, since this is viewed as an “operational” program.

Additional materials not included in the page limit:

- h) **Budget Information and Narrative** – Budgets can be submitted in any type of spreadsheet/tabular format. Detailed budget narratives must be provided that match to the tabular budgets. All budget information should clearly separate costs by year and between the two RFP components (I) data management and communication services and (II) user product development services. The budget information should include a list of the personnel for each component of the project, including expertise, proposed tasks, and time commitment and labor costs. Indicate whether one contract is anticipated or multiple contracts.
- i) **Resumes** – Curriculum vitae of *two pages maximum* are required for all key personnel.
- j) **Past Experience** – For each key person in the proposal, provide at least 3 references of people that have knowledge of the proposer’s past experience. For the proposing institution or organization, provide 3 references that show the institution’s or organization’s relevant experience and capabilities.
- k) **Additional Materials** – Other supporting documents in addition to the above may be submitted but must not exceed 20 pages.

2. Proposal Submission

Please provide two hard copies of all proposal materials with all the appropriate original signatures and one electronic copy (in pdf form by email) to Molly McCammon **by 4 pm June 25, 2010** at the AOOS office at 1007 W. Third Ave, Anchorage AK, 99501 and to

mccammon@aoos.org. All proposals must use the proposed format outlined in this RFP. Bidders must disclose any relevant conflicts of interest and/or pending lawsuits.

3. Proposal Confidentiality

All proposals will be kept confidential until the final award is determined. At that time, the funded proposal(s) (without salary information) will be made public.

If a proposal is submitted, but not funded, only the following information may be released to the public: proposal title, names of principal and co-investigators, funding amount requested, duration, and the proposal summary.

4. Evaluation Criteria

- a) **Soundness of Approach:** (50%) This assesses whether the approach is technically sound, whether the methods are appropriate, and whether there are clear project goals and objectives consistent with the objectives stated above. Reviewers will consider the following questions: Does the proposer have deliverables that are clearly identified, measurable, connected to timelines, and designed to meet goals and objectives? Are the conceptual framework, design, methods, and approaches adequately developed, well integrated, and appropriate to the aims of the project? Does the applicant acknowledge potential problem areas and consider alternative approaches?
- b) **Qualifications and Past Experience of Applicants and Partners:** (30%) This ascertains whether the applicant possesses the necessary education and skills, experience, training, facilities, and administrative resources to accomplish the stated goals. Does the entity's working environment contribute to the probability of success? Do the proposed activities employ useful collaborative arrangements? Do the applicants have the technical programming skills, as well as strong project management skills, and the flexibility and willingness to work with a variety of users?
- c) **Project Costs:** (10%) The Budget is evaluated to determine if costs are reasonable, allowable and necessary, and if they are realistic and commensurate with the project needs and time-frame. Does the proposal effectively describe expenditure of funds for the first year (which are guaranteed) and lay out a path for years 2-5 (which is subject to future appropriations but has a high probability of success)?
- d) **Project Management:** (10%) How will the overall data team be managed? How is the team structured to accomplish its goals? Who is responsible to whom?

5. Review Process

Proposals will be reviewed by an expert panel comprised of representatives from academia, private research institutions, and government agencies. AOOS Conflict of Interest policies (to be adopted by AOOS Board May 11, 2010) will be followed in selection of panel members and review of the proposals. The panel will rate the proposals as described above and place them in a relative rank order. The review panel may decide to give the final top group of applicants the opportunity for an interview and presentation in person as part of an opportunity to complete a "best and final" offer and help clarify any outstanding questions.

The review panel will make funding recommendations to the AOOS Executive Director and AOOS Board. The AOOS Board will make final funding decisions based on the criteria detailed

above, the panel and Executive Director recommendations, and, in addition, may consider other factors such as:

- a) Balance/distribution of funds between the two components of the RFP
- b) Applicant's prior award performance
- c) Partnerships and/or participation of targeted groups
- d) Adequacy of information necessary to make a decision

6. Funding Award(s)

It is expected that funding will be awarded as a subgrant agreement(s) in July 2010 with a start date of August 1, 2010. Funding for future years will be contingent on satisfactory review of the previous year's work and approval by the AOOS Executive Director of the work plan and deliverables for the future/continuing year contract. Review will be necessary before an annual report is due as a decision must be made before the end of the grant year.

Subgrant provisions will be available at the pre-award bidder's conference. Recipient organizations must have a DUNS number (<http://fedgov.dnb.com/webform>) and be registered in the Central Contractor Registration (CCR) system (www.ccr.gov) before any award can be made. Recipient organizations required by OMB Circular A-133 to have a single or program-specific audit will be required to submit a copy of their most recent single or program-specific audit for review before any award is made.

7. Ownership and Intellectual Property

All equipment, hardware, software code and products purchased and/or developed as a result of this award belong to the Alaska Ocean Observing System.

8. Timeline

Funding for this project will become available August 1, 2010

Proposed proposal timeline (subject to change)

May 12	RFP release date
May 20	Submission of written questions on RFP to Molly McCammon by 5 pm; answers will be posted on website
May 27	Pre-bid meeting in Anchorage and by teleconference, 9 am AK time. This is an opportunity for potential applicants to discuss the RFP and subgrant provisions in detail.
June 25, 4 pm	Proposals due
July 6-7	Review panel meets in Anchorage
July 12-16	AOOS Board meets
July 15-30	Award negotiations
August 1	Award begins

CONTACT INFORMATION

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