National Oceanographic Partnership Program

NAVY	EPA	OMB
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Report to the U.S. Congress on the National Oceanographic Partnership Program

March 2006

National Ocean Research Leadership Council

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Table of Contents

I. Executive Summary

Established in FY 1997, the National Oceanographic Partnership Program (NOPP) promotes the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean. The National Ocean Research Leadership Council (NORLC), now comprising leaders of fifteen Federal agencies, guides NOPP in identifying and carrying out partnerships among Federal agencies, industry, and other members of the ocean sciences community in support of those goals. In FY 2004, NOPP developed a new Ten-Year Strategic Plan with four goals: Achieve and Sustain an Integrated Ocean Observing System (IOOS); Promote Lifelong Ocean Education; Modernize Ocean Infrastructure and Enhance Technology Development; and Foster Interagency Partnerships to Increase and Apply Scientific Knowledge.

The overall fiscal investment in NOPP generally consists of two types of efforts. NOPP-Funded Activities are those that are either solicited or managed by NOPP and involve support from two or more agencies. Overall investment in NOPP-Funded Activities, which totaled $29 million in FY 2005, has increased significantly since the program's inception. In response to Broad Agency Announcements and Requests For Proposals from FY 1997 to FY 2005, NOPP has funded 107 projects, including 20 renewal projects. Of the total funds awarded during this period, approximately 56 percent, 26 percent and 18 percent were awarded to academia, government and industry (including non-governmental organizations/others), respectively.

In addition to NOPP-Funded Activities, individual agencies invest in NOPP-Related Activities, which are funded primarily by a single agency in response to plans produced by NOPP entities. Examples include several projects related to the development of IOOS, which is coordinated through a NOPP interagency office called Ocean.US.

NOPP highlights in FY 2005 and early FY 2006 include the funding of individual projects, as well as progress on broader planning efforts. Fourteen projects were funded in FY 2005 focusing on, for example, IOOS, biological and chemical sensor development, detection of fish and fish habitat, studies of deep sea chemosynthetic communities in the Gulf of Mexico, and the application of science and technology for resource management.

In terms of broader planning efforts, the Federal Oceanographic Facilities Committee (FOFC) is completing an integrated, cross-agency research fleet plan. Ocean.US, in collaboration with the Ocean.US Executive Committee (EXCOM), has completed and received approval on the *First IOOS Development Plan*.

The NOPP ocean governance structure is in the process of transitioning to the structure proposed in the U.S. Ocean Action Plan (OAP), the Administration's response to the report of the U.S. Commission on Ocean Policy (USCOP). The Ocean Research Advisory Panel has been renamed the Ocean Research and Resources Advisory Panel and its breadth of responsibilities and membership composition are changing accordingly. In FY 2006 it is anticipated that the NORLC will transition to the Interagency Committee on Ocean Science and Resource Management Integration, the Under/Assistant Secretary-level body established in the OAP. In addition, the main activities of the NOPP Interagency Working Group, FOFC, and the EXCOM are expected to become the topics of working groups of the National Science and Technology Council (NSTC) Joint Subcommittee on Ocean Science and Technology, which reports to the ICOSRMI in addition to its NSTC parent committees. This transition is intended to maintain the progress and responsibilities of NOPP and reduce parallel ocean governance structures.

II. Introduction

THE NOPP OCEAN GOVERNANCE STRUCTURE

The FY 1997 Defense Authorization Act (P.L. 104-201) directed the Secretary of the Navy to establish the National Oceanographic Partnership Program (NOPP). Supplemental legislation for appointments to the NOPP oversight body, the NORLC, and to the Ocean Research Advisory Panel is contained in Public Law 105-85, the FY 1998 Defense Authorization Act.

The Secretary of the Navy is charged in Subtitle E of Title II, Division A, Public Law 104-201 to establish a National Oceanographic Partnership Program to:

1) promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean; and

2) coordinate and strengthen oceanographic efforts in support of those goals by:
   a) identifying and carrying out partnerships among Federal agencies, academia, industry, and other members of the oceanographic scientific community in the areas of data, resources, education, and communication, and
   b) reporting annually to Congress on the Program.

NOPP Organization: The NOPP organizational chart is shown in Figure 1.

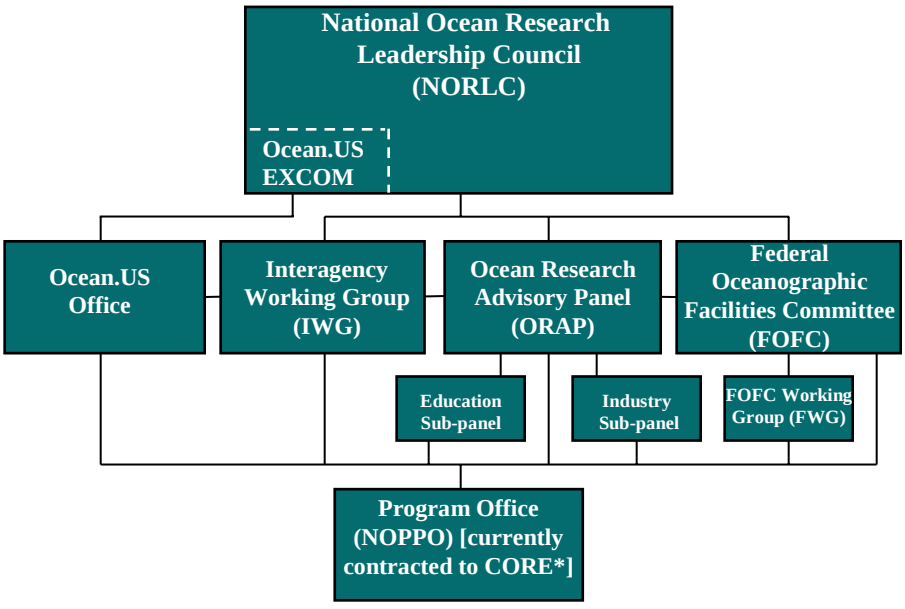

Figure 1. NOPP Organizational Chart.

The **National Ocean Research Leadership Council (NORLC)** is the decision-making body of NOPP. The Council confirms Program activities and funding opportunities and is composed of the heads of fifteen Federal agencies that are involved in conducting or funding ocean research and/or developing ocean research policy. The committee is scheduled to meet twice per year. The current list of members can be found in Appendix 1.

The **Ocean Research Advisory Panel (ORAP)** provides advice and scientific guidance to NOPP. It is composed of individuals from the National Academies, ocean industries, state governments, academia, and other organizations/communities as appropriate. The committee meets three times per year. The current list of members can be found in Appendix 2.

The **Interagency Working Group (IWG)** is the operational Federal body charged with organizing, directing or conducting most NOPP activities. It performs staffing functions assigned by, and on behalf of, the NORLC. Membership reflects that of the NORLC. The committee meets monthly and additionally as needed. The current list of members can be found in Appendix 3.

The **Federal Oceanographic Facilities Committee (FOFC)** advises the NORLC on policies, procedures, and plans relating to oceanographic facility use, upgrades, and investments. Membership is composed of Federal oceanographic facilities managers. The committee meets three times per year. The current list of members can be found in Appendix 4.

The **Federal Oceanographic Facilities Committee Working Group (FWG)** performs staffing functions assigned by, and on behalf of, the FOFC. Membership reflects that of the FOFC. The committee currently meets approximately 20 times per year. The current list of members can be found in Appendix 5.

The **Ocean.US Office** is the interagency office for integrated and sustained ocean observations, created by the NORLC to plan and coordinate development of an Integrated Ocean Observing System (IOOS) for the U.S. Its goal over the next decade is to integrate existing and planned elements to establish a sustained ocean observing system to meet common research and operational agency needs.

The **Ocean.US Executive Committee (EXCOM)** serves as the oversight body for the Ocean.US Office. Membership is composed of NOPP agencies that are both party to the Ocean.US Memorandum of Agreement and provide personnel or other resources to the Ocean.US Office. The committee meets monthly. The current list of members can be found in Appendix 6.

The **National Oceanographic Partnership Program Office (NOPPO)** was established by NOPP legislation to assist in the management of NOPP and provide daily administrative support. Using competitive procedures, a 5-year contract for the operation of the NOPPO was awarded by the Office of Naval Research (ONR) to the Consortium for Oceanographic Research and Education (CORE) on 14 July 1997. The NOPPO contract was re-competed in 2002 and was awarded by ONR to CORE on 5 February 2003.

THE OCEAN ACTION PLAN OCEAN GOVERNANCE STRUCTURE

In September of 2004, the U.S. Commission on Ocean Policy completed its report, "An Ocean Blueprint for the 21st Century." In December of 2004, the President submitted to Congress his formal response, the U.S. Ocean Action Plan, which proposes a new ocean governance structure to:

1. Coordinate the activities of executive departments and agencies regarding ocean-related matters in an integrated and effective manner to advance the environmental, economic, and security interests of present and future generations of Americans; and

2. Facilitate, as appropriate, coordination and consultation regarding ocean-related matters among Federal, State, Tribal, and local governments, the private sector, foreign governments, and international organizations.

Since January of 2005, the Administration has actively worked with Federal agencies to establish the new ocean governance structure and link existing groups with new entities. This new structure, to which the NOPP committees and their functions are transitioning, is shown in Figure 2. The OAP and its governance structure, as they currently exist, are included in this report to provide context for the transitions being planned and those currently taking place. More details can be found at: http://ocean.ceq.gov/.

The **Committee on Ocean Policy (COP)** advises the President and, as appropriate, agency heads on the establishment or implementation of policies concerning certain ocean-related matters. The membership comprises a subset of the President's Cabinet and other members as identified. The committee meets on an as-needed basis. The current list of members can be found in Appendix 7.

The **Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI)** incorporates the NORLC's current mandate within its broader mandate that includes ocean resource management. The NORLC may transition to ICOSRMI in FY 2006. The members consist of Under/Assistant Secretaries or their equivalents from the Executive branch agencies and departments of the COP. The committee meets every two months. The current list of members can be found in Appendix 8.

The **Global Environment Policy Coordinating Committee (PCC)** point of communication in the OAP structure is the **Subcommittee on Oceans Policy (Oceans Sub-PCC).** The Oceans Sub-PCC identifies international oceans issues of interest to the United States and creates issue-specific interagency working groups to identify U.S. interests and concerns and formulate U.S. policy. The Oceans Sub-PCC is chaired by the Department of State, with participation from a wide selection of agencies. The current list of member agencies can be found in Appendix 9.

The **Ocean Research and Resources Advisory Panel (ORRAP)** is called on in the OAP to provide independent advice and guidance to ICOSRMI through an expanded version of the panel that includes resource management. At its 3 November 2005 meeting, the ICOSRMI officially renamed the ORAP to the ORRAP and expanded the panel's scope of responsibilities to include, among other topics, the integration of science and technology into resource management. As with ORAP, membership is comprised of individuals from the National Academies, state

government, academia, and ocean industries, representing marine science, marine policy, and other related fields, which now specifically include resource management. The current list of members can be found in Appendix 2.

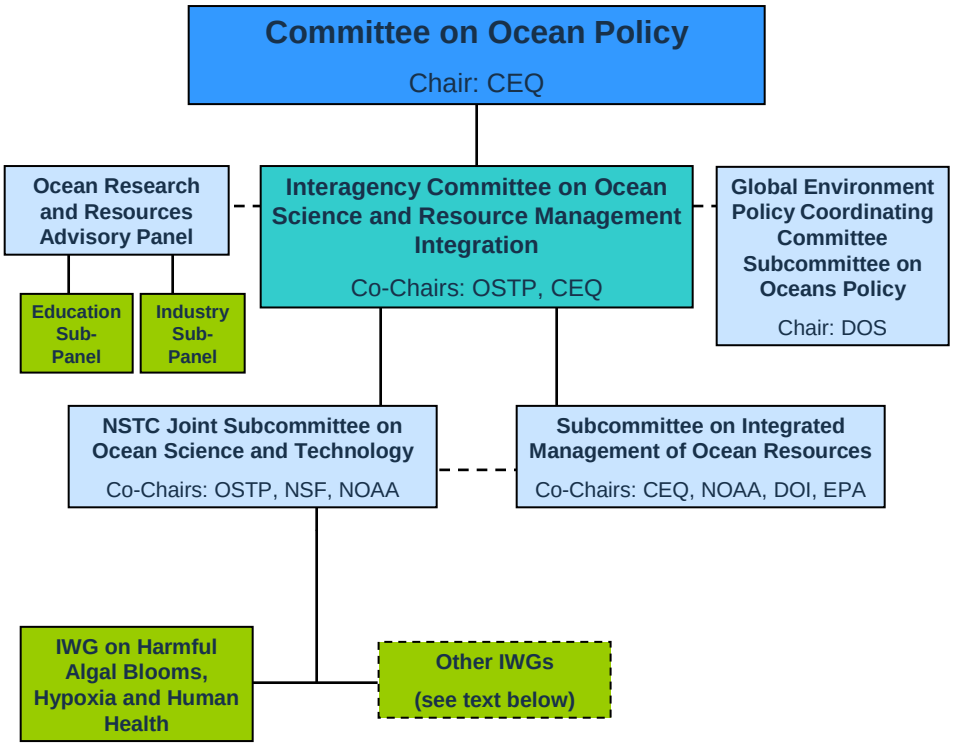

Figure 2. U.S. Ocean Action Plan ocean governance structure as it currently exists. Communications lines are dashed and reporting lines are solid.

The **Subcommittee on Integrated Management of Ocean Resources (SIMOR)** identifies and promotes opportunities among Federal agencies for collaboration and cooperation on the development and implementation of management strategies with the goal of cleaner, healthier, and more productive oceans, coasts, and Great Lakes. The committee consists of Deputy Assistant Secretaries or appropriate representatives from the Executive branch agencies and departments of the COP. The committee meets monthly. The current list of members can be found in Appendix 10.

The **National Science and Technology Council (NSTC) Joint Subcommittee on Ocean Science and Technology (JSOST)** identifies, promotes and facilitates ocean science, ocean technology and ocean policy priorities, opportunities and collaborations among Federal agencies at the national and international level. The committee consists of Deputy Assistant Secretaries or appropriate representatives from the Executive branch agencies and departments of the Committee on Ocean Policy. It reports to the NSTC Committee on Science, the NSTC

Committee on Earth and Natural Resources and ICOSRMI. The committee meets monthly. The current list of members can be found in Appendix 11.

The JSOST currently is considering the establishment of topic-specific working groups to enhance its effectiveness in addressing issues under its purview (Figure 2). These working groups are identified below. Meeting schedules vary but nominally are monthly.

- The **Interagency Working Group on Harmful Algal Blooms, Hypoxia and Human Health (IWG-4H)** – This group has been officially established. Its charter can be found in **Appendix 12.**

- The **Interagency Working Group on Facilities** – The establishment of this group has been approved by ICOSRMI. It is anticipated that FOFC will transition to this JSOST IWG. The JSOST is currently reviewing its draft charter.

- The JSOST/SIMOR **Joint Interagency Working Group on Ocean Education –** The establishment of this group has been approved by ICOSRMI. The group is currently drafting a charter and action plan for review by JSOST and SIMOR.

- The **Interagency Working Group on Ocean Partnerships –** It is anticipated that the NOPP IWG will transition to this JSOST IWG. The JSOST is currently reviewing its draft charter.

- The **Interagency Working Group on Ocean Observations –** It is anticipated that the functions of the NOPP Ocean.US EXCOM will become the responsibility of this JSOST IWG. The JSOST is currently considering a charter for this group.

- The **Interagency Working Group on Ocean and Coastal Mapping –** Discussion has been initiated regarding development of a charter and committee membership for this group.

In recent years, the operating tempo of the NOPP committees and activities has increased notably, as measured by an increased frequency of meetings held, decisions made, and reports delivered; expanded breadth and number of funding solicitations issued; and establishment of sub-panels on specialized topics. This model of interagency collaboration has proven to be an effective and efficient method of maximizing and enhancing Federal investments in ocean science, technology and education. The Ocean Action Plan's mandate and governance structure builds on and expands the NOPP model to apply the benefit of partnership efforts to a greater number of agencies and a greater number of ocean-related issues. The remainder of this report summarizes the NOPP Investment Strategy, the NOPP committees' activities and investments for FY 2005, and ongoing NOPP plans and activities for FY 2006.

III. NOPP Investment Strategy

In August 2004, the NORLC approved a new Ten-Year Strategic Plan for NOPP (www.nopp.org) outlining the NOPP Value Proposition and four NOPP Strategic Goals. The NOPP Value Proposition states: "NOPP adds significant integrative value to the individual oceanographic, ocean science, resource management and ocean education missions of the

Federal agencies and their partners, in common pursuit of the wise use of the oceans and maintenance of their health." The Goals, listed below, are based on the original NOPP investment areas as revised to reflect seven years of experience in an evolving political and scientific climate. Agency and ocean science community inputs, Congressional direction, scientific advice of the ORRAP, an increased understanding of NOPP's role beyond the missions of the individual agencies, and input from the USCOP are incorporated into these Goals. The Plan was also used to shape the development of the U.S. OAP.

Each of the four Goals has one accompanying "Critical Action" as a specific target for which action-partnerships can be formed and performance metrics can be developed and applied. The Critical Actions are the minimum acceptable progress for this Ten-Year Strategic Plan. The challenge for NOPP is the construction of interagency and inter-sector partnerships and support mechanisms to ensure that the Critical Actions for the Goals are completed within ten years.

The intention of the Strategic Plan is to provide a structure valid for ten years, during which time the NOPP partners can work to pursue, at a minimum, the Critical Actions. More actions will be added, implementation plans will be prepared, and metrics will be developed and tracked for each agreed action. This Strategic Plan will be updated periodically as needed, but it is intended to be generally valid for a decade. Plans to address the Critical Actions, and their associated metrics, will be documented separately from this Strategic Plan and are intended for annual assessment and update.

The following is an excerpt from the NOPP Ten-Year Strategic Plan:

NOPP GOALS...TO BE ACHIEVED WITHIN TEN YEARS

Goal 1. Achieve and sustain an Integrated Ocean Observing System (IOOS).

Purpose: Provide coastal and global ocean data and products for decision-makers, researchers, and other operational/practical purposes, in support of the four NOPP Strategic Objectives and the seven IOOS Objectives, namely:

> 1) Improve predictions of climate change and variability (weather) and their effects on coastal communities and the nation; 2) Improve the safety and efficiency of marine operations; 3) More effectively mitigate the effects of natural hazards; 4) Improve national and homeland security; 5) Reduce public health risks; 6) More effectively protect and restore healthy coastal marine ecosystems; and 7) Enable the sustained use of marine resources.

Critical Action: Through the interagency Ocean.US office, stabilize and integrate existing ocean observation programs to provide timely and sustained ocean data and data products with minimal gaps, affordable costs, and maximal utility.

Goal 2. Promote lifelong ocean education.

Purpose: Instill in the general public and governmental decision-makers the importance of wise stewardship of the ocean and the coastal zone, through the support of science education and communication.

Critical Action: Facilitate and support the use of ocean examples in the teaching of the National Research Council's National Science Education Standards.

Goal 3. Modernize ocean infrastructure and enhance technology development.

Purpose: Provide access to state-of-the-art tools, training, and facilities for effective and efficient utilization by national ocean programs, in support of the four NOPP Strategic Objectives.

Critical Action: Implement the Federal Oceanographic Facilities Committee (FOFC) fleet plan.

Goal 4. Foster interagency partnerships to increase and apply scientific knowledge.

Purpose: Enable and ensure multi-agency efforts in support of the four NOPP Strategic Objectives where such collaboration enhances efficiency or effectiveness, and/or reduces costs.

Critical Action: Narrow the gap between biological/chemical measurements and physical measurements in support of the science underlying ecosystem-based management.

With consensus agreement, additional goals or investment areas may be added.

IV. NOPP Investment Profile

Overall fiscal investment in NOPP has increased since its inception in 1997 and can best be described in terms of NOPP-Funded Activities and NOPP-Related Activities. NOPP-Funded Activities are those that are either solicited or managed by NOPP and involve support *from two or more* agencies. NOPP-Related Activities are those that are funded primarily *by a single agency* in response to plans produced by NOPP entities. Both types of activities have grown since NOPP's inception.

NOPP-FUNDED ACTIVITIES

Figure 3 shows the growth of NOPP-Funded Activities from 1997-2005, as well as the breakdown by subcategory for solicited projects and managed activities. In 2005, the total funding was $33M.

NOPP-Solicited Projects

NOPP-Solicited Projects are those funded as a direct result of a formal NOPP Broad Agency Announcement (BAA) or Request For Proposals (RFP). The funding level for solicited projects has grown from $12M in 1997 to $29M in 2005 (Figure 3). The cumulative investment from 1997-2005 is $180M. Through 2005, there have been 107 funded projects, including 20 renewal projects. On average, 12 new projects are started each year, with a typical duration of three years.

One of the primary functions of NOPP is to promote partnerships within the Federal government and between the Federal government and other members of the ocean sciences community, including academia, industry and non-governmental organizations. Figure 4 shows the annual distribution of funding for new awards across sectors within the ocean science community. On average, over the nine years, approximately 56 percent, 26 percent and 18 percent of the funds

have been awarded to academia, government and industry (including non-governmental organizations/others), respectively.

NOPP-Managed Activities

Current NOPP-Managed Activities include expenditures for the NOPP Office (see page 3), the Ocean.US office (see page 3), and the National Ocean Sciences Bowl (NOSB®, www.nosb.org). Past projects include the Ocean Information Technology Infrastructure initiative (http://www.geo-prose.com/oiti/), the Virtual Ocean Data System (http://www.po.gso.uri.edu/tracking/vodhub/vodhubhome.html), and the Year of the Ocean Drifters (http://www.coreocean.org/Dev2Go.web?id=221198). The funding level for managed activities has grown from $0.6M in 1997 to $3.5M in FY 2005 (Figure 3). The cumulative expenditure for these activities is $21M from 1997-2005.

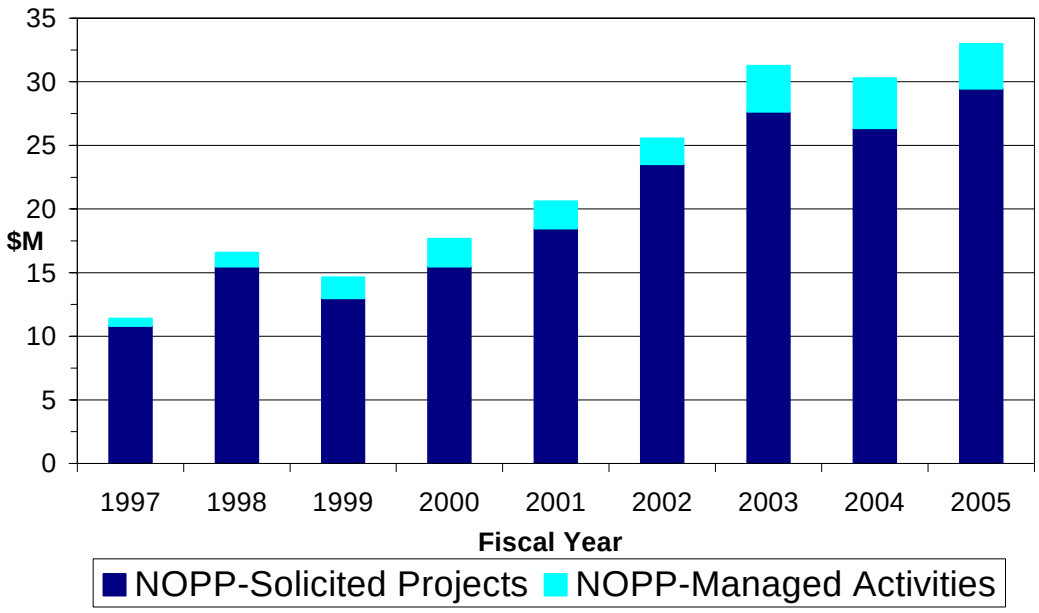

Figure 3. FY 1997-2005 investment in NOPP-Funded Activities, including both NOPP-Solicited Projects and NOPP-Managed Activities. Note that the dollar amounts shown are those spent each year; out-year commitments are not shown.

NOPP-RELATED ACTIVITIES

In addition to NOPP-Funded Activities, individual agencies invest in NOPP-Related Activities. Examples include new investments in activities overseen by NOPP entities such as Ocean.US and FOFC. These investments fulfill the broad cross-cutting oceanographic goals and partnerships embraced by NOPP, but they are primarily single agency expenditures.

V. Fiscal Year 2005 Activities

NOPP-FUNDED ACTIVITIES

NOPP-Solicited Projects

The NOPP agencies invested approximately $19M in new NOPP-Solicited projects in FY 2005 in response to three solicitations: BAAs in July 2004 and January 2005 and an RFP in March 2005. The solicitations employed a peer-review process to determine which proposals would be funded, and awards were approved by the IWG on behalf of the NORLC.

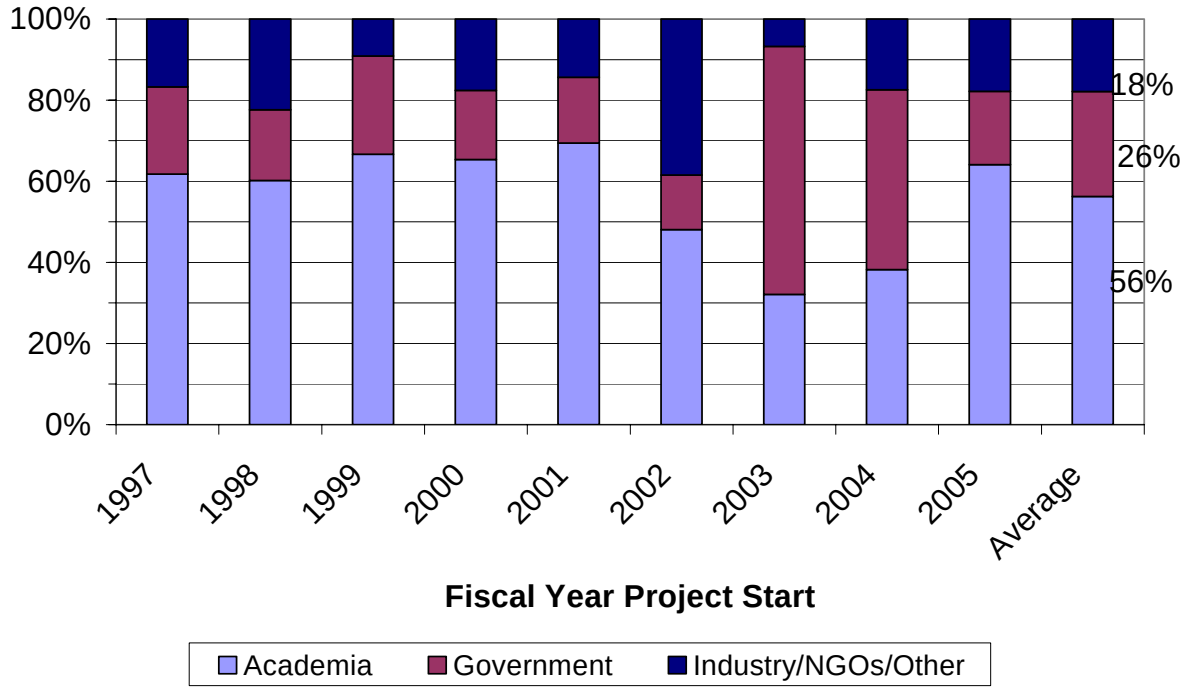

Figure 4. The distribution of annual NOPP funding for new solicited project awards by sector from 1997-2005 for academia, government, and industry (includes NGOs/others). The bar on the far right indicates the nine-year sector averages.

For the first FY 2005 NOPP solicitation, ONR issued a BAA on four topics: *Fusing Multi-Sensor Regional Scale Data to Monitor and Quantify Coastal Processes; Integration of Private and Public Data Sets in the Northern Gulf of Mexico; New Methods for Detection of Fish Populations or Mapping of Fish Habitat; and Sensors for Sustained Autonomous Measurement of Chemical or Biological Parameters in the Ocean*. Total funding awarded was $11M for nine awards. The solicitation is included as Appendix 13.1.

For the second FY 2005 NOPP solicitation, ONR issued a BAA focusing on *Assessment of Global Ocean Data Assimilation Experiment (GODAE) Boundary Conditions for Coastal Ocean Predictions*. Total funding awarded was $4M for three awards. The solicitation is included as Appendix 13.2.

The third FY 2005 NOPP solicitation was an RFP issued by the Minerals Management Service (MMS) that focused on *Investigations of Chemosynthetic Communities on the Lower Continental Slope of the Gulf of Mexico*. A single award was made for $4.6M for four years of effort. The solicitation is included as Appendix 13.3.

Two additional solicitations issued in September 2005 for funding in FY 2006 are included as Appendices 13.4 and 13.5. As activities planned for FY 2006, descriptions of these funding opportunities are provided below under section VI. Fiscal Year 2006 Activities and Plans.

In response to the three FY 2005 solicitations, 70 proposals were received and subjected to a competitive peer-review process. Overall, 14 projects were funded and approved by the IWG on behalf of the NORLC. The funded projects are listed below and project summaries are provided in Appendix 14.

NOPP GOAL 1. Implement a Sustained and Integrated Ocean Observing System (IOOS) for U.S. Global and Coastal Interests

Topic 1A. FUSING MULTI-SENSOR REGIONAL SCALE DATA TO MONITOR AND QUANTIFY COASTAL PROCESSES

High-level Data Fusion Software for SHOALS-1000TH
Lead PI: Dr. Grady Tuell, Optech International

NOPP GOAL 4. Collaborate to Strengthen U.S. Interagency Initiatives in Research and their Connections to Operations

Investigations of Chemosynthetic Communities on the Lower Continental Slope of the Gulf of Mexico
Lead PI: Dr. James Brooks, TDI-Brooks International, Inc.

Topic 4A. NEW METHODS FOR DETECTION OF FISH POPULATIONS OR MAPPING OF FISH HABITAT

Understanding Apex Predator and Pelagic Fish Habitat Utilization in the California Current System by Integrating Animal Tracking with in situ Oceanographic Observations
Lead PI: Dr. Daniel Costa, University of California at Santa Cruz

Development of Mid-Frequency Multibeam Sonar for Fisheries Applications
Lead PI: Dr. John Horne, University of Washington

Continuous Monitoring of Fish Population and Behavior by Instantaneous Continental-Shelf-Scale Imaging with Ocean-Waveguide Acoustics
Lead PI: Dr. Nicholas Makris, Massachusetts Institute of Technology

Novel Acoustic Techniques to Measure Schooling in Pelagic Fish in the Context of an Operational Coastal Ocean Observatory
Lead PI: Dr. Kelly Benoit-Bird, Oregon State University

A Novel Technique to Detect Epipelagic Fish Populations and Map their Habitat
Lead PI: Dr. James Churnside, National Oceanic and Atmospheric Administration

Topic 4A. ASSESSMENT OF GLOBAL OCEAN DATA ASSIMILATION EXPERIMENT (GODAE) BOUNDARY CONDITIONS FOR COASTAL OCEAN PREDICTIONS

HYCOM Coastal Ocean Hindcasts and Predictions: Impact of Nesting in HYCOM GODAE Assimilative Hindcasts
Lead PI: Dr. George Halliwell, University of Miami

Boundary Conditions, Data Assimilation, and Predictability in Coastal Ocean Models
Lead PI: Dr. Roger Samelson, Oregon State University

Boundary Conditions, Data Assimilation, and Predictability in Coastal Ocean Models
Lead PI: Dr. Christopher Edwards, University of California at Santa Cruz

Topic 4B. SENSORS FOR SUSTAINED, AUTONOMOUS MEASUREMENT OF CHEMICAL OR BIOLOGICAL PARAMETERS IN THE OCEAN

Commercialization of Autonomous Sensor Systems for Quantifying pCO2 and Total Inorganic Carbon
Lead PI: Dr. Michael DeGrandpre, University of Montana

Development of Fluorescent Induction and Relaxation Systems for the Measurement of Biomass and Primary Productivity on Webb Sloccum Gliders
Lead PI: Dr. Oscar Schofield, Rutgers University

Transitioning Submersible Chemical Analyzer Technologies for Sustained, Autonomous Observations from Profiling Moorings, Gliders and other AUVs
Lead PI: Dr. Alfred Hanson, SubChem Systems, Inc.

Development of a Mass Spectrometer for Deployment on Moorings and Cabled Observatories for Long-Term Unattended Observation of Low-Molecular Weight Chemicals in the Water Column
Lead PI: Dr. Jean Whelan, Woods Hole Oceanographic Institution

NOPP-Managed Activities

FY 2005 marked the eighth year of the NOSB®, which has grown to encompass 25 sites, 400 high schools, and over 2000 students and their teacher/coaches. Two additional programs created to complement the NOSB®, the National Ocean Scholar Program and Coastal and Ocean Science Training (COAST) internship, are extending the NOSB® experience while creating opportunities for students to further their interest in ocean and coastal sciences. Additionally, NOSB® has implemented a diversity initiative to encourage ocean science interest in historically underrepresented populations and is now providing professional development opportunities for coaches and regional coordinators. For additional information on the NOSB® and other education projects, visit the NOPP web site at www.nopp.org or the NOSB® web site at www.nosb.org.

NOPP hosted NOSB® and NOPP exhibit booths at the American Geophysical Union (AGU) meeting in San Francisco in December 2004 and at the Oceans 2005 meeting of the Marine Technology Society (MTS) in Washington, DC in September 2005. NOSB® organized a demonstration competition round for the MTS meeting's Ocean Education luncheon. NOPP also hosted a program booth at the Capitol Hill Oceans Week in Washington, DC in June 2005.

NOPP-RELATED ACTIVITIES

In addition to the NOPP-Funded and NOPP-Managed Activities described above, individual agencies invested in NOPP-Related Activities during FY 2005. Significant examples of such investments included several projects related to the development of IOOS.

The National Oceanic and Atmospheric Administration (NOAA) provided approximately $25M in funding through its Coastal Observation Technology System (COTS) to further the development and implementation of IOOS. These COTS project grants, mostly as congressionally-directed awards, are contributing to the development of IOOS on a regional basis and are further described in Appendix 15. As part of an initial demonstration of data sharing and access capabilities of IOOS, COTS partners and recipients of ONR congressionally-directed ocean observing grants ($2.7M in FY 2005) continued collaborating on the development of a web-accessible data portal (available at www.openioos.org) that provides access to real-time and near real-time sea surface temperature, winds, and other data from satellites and buoys located in coastal waters of the continental U.S.

NATIONAL OCEAN RESEARCH LEADERSHIP COUNCIL

The NORLC met on 28 February 2005. Highlights included discussion of FY 2004 funded projects, potential new directions for NOPP research and ocean exploration, the status of the Ocean.US IOOS Development Plan, the new FOFC Fleet Plan, and NOPP's activities in light of the Administration's U.S. OAP prepared in response to the USCOP report. The minutes of all NORLC meetings are posted on the NOPP web site at http://www.nopp.org.

OCEAN RESEARCH ADVISORY PANEL

The ORAP met twice in FY 2005, on 5-6 January 2005 in Washington, DC and again 23-24 June 2005 in La Jolla, CA. During the January meeting, the panel discussed its future membership needs in response to the Administration's U.S. OAP. Revisions to the current ORAP charter were discussed, as well as the need to issue a formal call for nominations of new members and the subsequent selection process. Dr. Matt Gilligan was elected as Chair of the ORAP Education Sub-panel (ORAP.ED), and non-ORAP potential members for the sub-panel were identified. The panel also discussed the December 2004 tsunami in the Indian Ocean and the need for community education on tsunami warning signs, as well as increased observations for detection as part of the Global Earth Observing System of Systems (GEOSS). Committee briefings by Federal officials were held on oceans and human health (NOAA), the transition of projects from research to operations (NASA, NOAA, Alliance for Coastal Technologies), ocean exploration (NOAA, NSF, USGS, MMS), the U.S. Ocean Action Plan (OSTP, CEQ), pending ocean legislation (NOAA), and marine mammals research (Navy, NMFS, MMC, NSF, MMS). The

panel accepted the recommendations of its sponsored workshop on the Ocean Biogeographic Information System (OBIS) and brought them forward to the NORLC at its February 2005 meeting.

During the June 2005 meeting, the committee received updates and held discussions on the ocean governance structure under the Administration's U.S. OAP, OBIS and its connection to living marine resource management, IOOS, SIMOR, and the ORAP Ocean Education Strategy and NOPP Strategic Plan, including the ORAP Education Sub-panel. The panel also discussed ocean literacy, the NOSB®, and the formation of an ORAP Industry Sub-panel and its membership. The panel felt that an important step for ORAP was to attain membership on the JSOST and SIMOR and/or their working groups to better understand the direction of the committees and, subsequently, to better advise the ICOSRMI, as the expanded version of ORAP is tasked to do under the U.S. OAP. The panel also discussed its future membership composition and emphasized the need for those who can contribute to its new role in enhancing the integration of science and technology into resource management. In consideration of its expanded role under the OAP, the panel elected to conduct business as the Ocean Research and Resources Advisory Panel (ORRAP). The ORAP elected Dr. Ellen Prager to succeed Dr. Marcia McNutt as Chair. In addition, Dr. Steve Weisberg was elected ORAP Vice-Chair. Dr. Prager and Dr. Weisberg will serve one-year, renewable terms.

INTERAGENCY WORKING GROUP

The IWG met 14 times in FY 2005. In addition to supporting the NORLC and developing three solicitations, the IWG hosted a topical development workshop on *Monitoring and Measurement of the Ocean "Genome"* in March 2005 in Washington, DC. A central goal of the workshop was to identify both near-term and future research areas and strategies, including public-private partnerships to advance and apply the use of genome-enabled environmental biosensors.

FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE

The FOFC met three times in FY 2005, on 28 October 2004, 24 May 2005 and 16 September 2005. During FY 2005, FOFC focused on scoping and developing the first update of the fleet plan, *Charting the Future for the National Academic Research Fleet: A Long-Range Plan for Renewal*, released in December 2001. The updated plan, *The Federal Oceanographic Fleet Plan,* has been expanded to incorporate all federal oceanographic research and survey ships and provides a vision for fleet renewal as called for by the USCOP and the OAP. FOFC, via its Working Group, has summarized existing inventory, capabilities and future needs for research, survey and specialized oceanographic vessels for the period 2005-2025. Consultation with the University-National Ocean Laboratory System (UNOLS) regarding the portion of the plan for the renewal of the academic fleet occurred at the May and September FOFC meetings. ICOSRMI was briefed on the status of the plan revisions at its 7 July 2005 meeting, and an overview was presented to the National Academies Ocean Studies Board at its 13-15 July 2005 meeting. The plan will be presented to ICOSRMI after the first of the calendar year. FOFC also concluded activities related to selecting an optimal hull form to support multiple scientific mission requirements, choosing a conventional deep hull design over both a high speed vessel

and a Small Waterplane Area Twin Hull (SWATH) vessel, based on superior fulfillment of the ship mission requirements.

FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE WORKING GROUP

The FWG met approximately every three weeks in FY 2005 to identify, categorize, project, and summarize the existing and future Federal oceanographic fleet for the purpose of assisting the FOFC in developing the updated *The Federal Oceanographic Fleet Plan*.

OCEAN.US/INTEGRATED OCEAN OBSERVING SYSTEM

The IOOS is the marine-estuarine-Great Lakes component of the U.S. Integrated Earth Observing System (IEOS) and the U.S. contribution to the Global Ocean Observing System (GOOS). The IEOS is the U.S. contribution to GEOSS. A staff of thirteen full and part-time scientists and support staff are now assigned to the Ocean.US office from NOAA, NASA and Navy. To date, ten agencies have agreed to provide financial resources to support the office. Representatives of these agencies comprise an Executive Committee that provides oversight and guidance to the Office.

During FY 2005, Ocean.US emphasized four central thrusts: 1) IOOS development plans; 2) Data Management and Communications (DMAC); 3) education; and 4) Regional Association (RA) development and stakeholder engagement. The *First IOOS Development Plan* was submitted to the NORLC in February 2005 and transmitted to the ICOSRMI for approval at its 3 November 2005 meeting. The Second Annual IOOS Implementation Conference was held 3-5 May 2005 in Washington, DC and focused on developing an integrated multi-hazard warning system. Ocean.US has established an IOOS DMAC Steering Team drawn from government, industry, academia, public, and non-profit sectors to coordinate and oversee the evolution of DMAC standards. The DMAC Steering Team is supported by community-based expert teams, community engagement caucuses and working groups to ensure that the DMAC standards development process is conducted in an open, objective and balanced manner. The Ocean.US Education Initiative, launched in FY 2004, has become a component of the larger ocean education initiative currently being addressed by the Joint Task Force on Education of JSOST and SIMOR. The Ocean.US effort is linking IOOS development to networks of educators that use ocean data and information in meeting their education objectives, and it is enabling the creation of an ocean literate workforce to operate and maintain ocean observing systems and improve and use the information gathered by them. Ocean.US actively engaged user communities and stakeholders through a series of meetings with RAs (16-18 February 2005) and industry stakeholders via IOOS Industry Days (3 May 2005 in Washington, DC and 11 August 2005 in Seattle, WA). Regional Associations provide the primary framework for orchestrating the required collaboration within each IOOS region and are responsible for the design and coordinated operation of regional coastal ocean observing systems.

Federal Response to Recommendations from the 2nd IOOS Implementation Conference Washington, D.C., 3-5 May 2005

Representatives of Federal Agencies that are signatories to the MOA creating the Ocean.US Office (NOAA, Navy, NASA, NSF, EPA, USACE, USGS, MMS, USCG) considered recommendations for implementing a multi-hazard forecasting system for improved mitigation of the impacts of tropical storms, tsunamis and extra-tropical storms in general and for IOOS DMAC and Education in particular. As a body, the declaration below was agreed to.

"We appreciate the work of the participants in the Second Annual IOOS Implementation Conference to formulate a clear set of consensus priorities for FY 05-08 IOOS implementation. We view the priorities in the context of both maintaining current IOOS activities (including observing systems, data systems, and product generating-delivery systems) and improving IOOS capabilities consistent with the Annual IOOS Development Plan, *the* Strategic Action Plan for the U.S. Integrated Earth Observing System (IEOS), *and the* U.S. Ocean Action Plan.

(1) We acknowledge the U.S. IOOS as the ocean and coasts contribution to the Global Ocean Observing System (GOOS), the U.S. IEOS and the Global Earth Observing System of Systems (GEOSS).

(2) To facilitate implementation of the priorities given below, we recommend that agencies initiate discussions to establish an IOOS interagency programming mechanism as an important step toward facilitating implementation of the IOOS Development Plan.

(3) We reaffirm our 2004 support for the following priorities articulated in the First Annual IOOS Development Plan*:*

- *Develop Regional Associations (RAs) and the National Federation of Regional Federations;*
- *Implement the DMAC plan nationally and regionally; and*
- *Implement regional pilot projects.*

(4) We are committed to using the following consensus recommendations from the Second Annual IOOS Implementation Conference to guide the FY05 - FY08, Federal contribution (in terms of both supporting and operating) to IOOS Development, especially as related to coastal inundation resulting from storms, and tsunamis:

- *Implement the DMAC standards process as the first step toward facilitating data exchange and access within and among RAs and participating Federal Agencies;*
- *Support the completion of the ongoing Systems Engineering analysis as critical for the successful implementation of the IOOS; and*
- *Implement the recommendations for establishing an IOOS Education Network as prioritized by conferees at the Second Annual IOOS Implementation Conference through close coordination with the Joint JSOST-SIMOR Education Task Force, once it is established.*

Although participating Federal Agencies may focus on selected priorities and actions given above, the interagency consensus is to accept the priorities as a whole."

VI. Fiscal Year 2006 Activities and Plans

NOPP-FUNDED ACTIVITIES

FY 2006 anticipated agency contributions for NOPP-Funded Activities are indicated in Table 1.

Table 1. Anticipated Fiscal Year 2006 Agency Contributions to NOPP-Funded Activities by Investment Area. This includes Solicited Projects (projects solicited through NOPP BAAs and RFPs) and Managed Activities.

	NOAA	NAVY	NSF	NASA	MMS	DOE	EPA	USACE	USGS	DOS	USCG	OSTP	OMB	DARPA	DHS
NOPP-Solicited Projects	X	X	X	X	X	X	X	X	X						
NOPP-Managed Activities	X	X	X	X	X		X	X	X						
FY 2006 Anticipated Expenditures ($M)	10.7	6.8	2.4	4.0	0.2	*	*	0.3	0.1	0	0	0	0	0	0

*anticipated expenditures of less than $100K

NOPP-Solicited Projects

A BAA was issued in September 2005 for funding in FY 2006. Approximately $3.3M is expected to be available on the following two topics: 1) *Understand, Identify Gaps and Predict Changes in the Workforce for Ocean Sciences, Technology, and Operations* and 2) *An Open-Source Community Model for Coastal Sediment Transport.* The proposal review was conducted in April 2006; approximately two awards are anticipated. The solicitation is included as Appendix 13.4. An RFP was also issued in September 2005 for funding in 2006. Approximately $46M is expected to be available for *The Argo Project: Global Ocean Observations for Understanding and Prediction of Climate Variability*. The proposal review was conducted in February 2006; a single award is anticipated. The solicitation is included as Appendix 13.5.

NOPP-Managed Activities

The finals of the 2006 NOSB® competition will be held in Pacific Grove, CA 13-15 May 2006. This will be the ninth year of the program. NOSB® exhibited at the Ocean Sciences meeting in Honolulu, HI in February 2006 and at the National Science Teachers Association national convention in Anaheim, CA in March 2006.

NOPP-RELATED ACTIVITIES

The agencies of the Ocean.US EXCOM will continue to support the office and activities of Ocean.US. NOAA will continue to help build regional observing system capacity by supporting the establishment of IOOS Regional Associations and providing FY 2006 support for 15 COTS projects. The FY 2006 funding level for COTS projects, via congressional earmarks, is approximately $24.9M and is all directed to specific projects. These projects are participating in the development of their Regional Associations and are creating observing system capacity that will coalesce into the regional observing system. NOAA will continue working with these entities and the other EXCOM agencies to foster greater communication and collaboration in the development of an organizational and data management infrastructure to support IOOS.

NATIONAL OCEAN RESEARCH LEADERSHIP COUNCIL

At the time of this writing, the NORLC had not met in FY 2006.

OCEAN RESEARCH AND RESOURCES ADVISORY PANEL

The ORAP, conducting business as the ORRAP, met on 27-28 October 2005 in Washington, DC. In addition, the ORRAP Education Sub-panel met immediately preceding the ORRAP. The panel welcomed new members and noted that several have resource management expertise. ORRAP received a briefing from JSOST on its Ocean Research Priorities Plan (ORPP), a report mandated by the OAP, and held discussions on how to best provide input to JSOST on draft versions. In anticipation of its expanded responsibilities in the area of ocean resource management, the panel met for the first time with SIMOR and discussed communication strategies and potential topics on which SIMOR desired advice. To better manage ORRAP work and communications as desired by ICOSRMI, an ORRAP Executive Committee was formed, comprised of the ORRAP Designated Federal Official, the ORRAP Chair and a Co-Chair from each of SIMOR and JSOST. The ORRAP discussed and noted the importance of the Federal-State Task Force established by SIMOR to provide ocean resource management input to the Ocean Research Priorities Plan and Implementation Strategy. The ORRAP received an update on the ORRAP Industry Sub-panel, which plans to hold its first meeting in early 2006, and on the Education Sub-panel, which will provide a draft report for review before the next ORRAP meeting. The Education Sub-panel meeting was reportedly very successful, and interaction with representatives of the JSOST Education task force proved beneficial. The ORRAP noted the importance and high value of NOPP partnership projects and agreed to recommend at the next ICOSRMI meeting that this component of NOPP continue and be strengthened. The panel also discussed desired changes to its charter and elected Ms. Debra Hernandez as a second Vice-Chair. The ORRAP met again on 17-18 January 2006 in Washington, DC to determine its

working agenda for the year and to provide feedback to the JSOST on the draft ORPP. Other near-term issues include participating in the Conference on Ocean Literacy, convening a meeting of the ORRAP Industry Sub-panel, and working to address the gap between science and decision making.

INTERAGENCY WORKING GROUP

The IWG will continue to meet monthly in FY 2006 in support of the NORLC and the goals of the NOPP Strategic Plan. Functions of the IWG are anticipated to transition to the JSOST IWG on Ocean Partnerships. Activities have therefore focused on preparations for this transition, as well as ocean education, preparation for receipt of proposals from solicitations, compiling annual research reports, developing the Annual Report to Congress for review by the NORLC / ICOSRMI, and generating topics for FY 2006 solicitations.

FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE

The FOFC will meet on 20 January 2006 to discuss the revisions to *The Federal Oceanographic Fleet Plan* and arrange for the report publication. The FOFC, in moving to the Administration's OAP ocean governance structure, is expected to transition to the JSOST IWG on Infrastructure. Over the next year, FOFC will revise its current NOPP charter and membership accordingly and begin discussion of Chair representation. As a follow-on to its plans and summaries regarding the Federal oceanographic aircraft fleet and the Federal oceanographic fleet, FOFC will continue to inventory and/or develop long-term plans for the Federal oceanographic research and operational facilities in the U.S.

FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE WORKING GROUP

The FWG will continue to meet every three to four weeks in FY 2006 in support of the FOFC. Activities will focus on the final stages of completing *The Federal Oceanographic Fleet Plan*.

OCEAN.US / INTEGRATED OCEAN OBSERVING SYSTEM

During FY 2006, Ocean.US will continue to focus effort and meetings on its four central thrusts: 1) IOOS development plans; 2) Data Management and Communications; 3) education and 4) Regional Association development and stakeholder engagement. Ocean.US has held IOOS Industry Days in Chicago, IL (21 October 2005) and Houston, TX (7 November 2005). In addition, Ocean.US will begin to establish certification criteria necessary for the Regional Associations to become "official" components of the IOOS. These criteria will define levels of readiness and maturity regarding, for example, technology, operational status, networking, and end-user applications. Ocean.US will also refine, validate and verify the budgetary requirements of a sound fiscal management plan. Dr. Mary Altalo succeeded Dr. Tom Malone as Director of Ocean.US, effective 1 January 2006.

VII. Fiscal Year 2007 Plans

Agency-specific budget requests for the FY 2007 Administration's Budget have recently been announced; therefore, precise funding levels and associated programmatic issues are not yet firmly established. The NOPP agencies anticipate contributions to NOPP to be comparable to that of FY 2006 and anticipate supporting NOPP's four Strategic Goals:

- Achieve and sustain an Integrated Ocean Observing System (IOOS);
- Promote lifelong ocean education;
- Modernize ocean infrastructure and enhance technology development;
- Foster interagency partnerships to increase and apply scientific knowledge.

It is anticipated that the four Goals will be addressed through the planned JSOST IWGs on Ocean Observations, Ocean Education, Facilities, and Ocean Partnerships, respectively.

NOAA will continue to utilize COTS funds to support the Ocean.US Office and development of regional observing system capacity.

VIII. Interagency Coordination Activities

The central tenet of NOPP is interagency partnership. The most recent activities are described in previous sections of this report. The solicitations funded in FY 2005 focused on the IOOS, science and technology development, and science and technology application to resource-related issues. In the near term, the primary thrust of NOPP will be to continue in these directions: development and implementation of IOOS, coordinated by the Ocean.US office; an increasing emphasis on partnership solicitations that facilitate the integration of science and technology with resource management; and ocean education. NOPP has been a central driver in ocean education with the early development of the ORAP Education Strategy, a key report that could serve as the basis of an implementation plan for increased coordination of ocean education activities among Federal agencies. In FY 2006, FOFC will complete *The Federal Oceanographic Fleet Plan* and submit it to the NORLC / ICOSRMI for approval.

As the NOPP governance structure continues to transition to the new ocean governance structure of the OAP, the expanded involvement of Federal agencies is expected to provide new opportunities for interagency coordination. It is anticipated that the results of the JSOST Ocean Research Priorities Plan and Implementation Strategy will be a component of partnership activities for the next decade.

Appendix 1. National Ocean Research Leadership Council (NORLC) List of Committee Members

National Oceanic and Atmospheric Administration (Chair)	VADM Conrad C. Lautenbacher, USN (Ret.), Administrator of NOAA/Under Secretary for Oceans and Atmosphere, U.S. Department of Commerce
Navy (Vice-Chair)	Dr. Donald Winter, Secretary of the Navy
National Science Foundation (Vice-Chair)	Dr. Arden Bement, Director
National Aeronautics and Space Administration	Dr. Michael Griffin, Administrator
Department of Energy	Under Secretary, TBD
Environmental Protection Agency	Mr. Stephen Johnson, Administrator
United States Coast Guard	ADM Thomas H. Collins, Commandant
United States Geological Survey	Dr. P. Patrick Leahy, Director (Acting)
United States Army Corps of Engineers	Mr. George S. Dunlop, Deputy Assistant Secretary of the Army (Civil Works) for Policy
Minerals Management Service	Ms. Rejane Burton, Director
Office of Management and Budget	Mr. Clay Johnson III, Director (Acting)
Department of State	Ms. Claudia McMurray, Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs
Office of Science and Technology Policy	Dr. John H. Marburger, III, Director
Defense Advanced Research Projects Agency	Dr. Anthony J. Tether, Director
Department of Homeland Security	Dr. Jeffrey W. Runge, Undersecretary for Science and Technology (Acting)

Appendix 2. Ocean Research and Resources Advisory Panel (ORRAP) List of Committee Members

Note: This group was renamed from the Ocean Research Advisory Panel (ORAP; see page 5). ORAP and ORRAP both comprise the same membership.

Earth2Ocean, Inc.	Dr. Ellen Prager (Chair)
Southern California Coastal Water Research Project Authority	Dr. Stephen Weisberg (Vice-Chair)
Hernandez and Company	Ms. Debra Hernandez (Vice-Chair)
Alfred P. Sloan Foundation	Mr. Jesse Ausubel
University of South Florida	Dr. Peter Betzer
Maritime Communication Services, Inc.	Dr. Andrew Clark
University of Miami	Dr. Robert Cowen
Savannah State University	Dr. Matthew Gilligan
University Corporation for Atmospheric Research	Dr. Philip Merilees (ret.)
Environet, Inc.	Mr. Joseph Pickard
Chair, Ocean Studies Board, NAS	Dr. Shirley Pomponi
Louisiana Universities Marine Consortium	Dr. Nancy Rabalais
Scripps Institution of Oceanography	Dr. Richard Seymour
University of Hawaii	Dr. Celia Smith
Science Applications International Corp.	Mr. Raymond Toll
Virginia Institute of Marine Science	Dr. L. Donelson Wright
Royal Caribbean Cruises Ltd.	CAPT William Wright

Appendix 3. Interagency Working Group (IWG) List of Committee Members

National Oceanic and Atmospheric Administration (Chair)	Dr. Margaret Davidson
United States Navy (Vice-Chair)	Dr. Melbourne Briscoe
National Science Foundation (Vice-Chair)	Mr. Larry Clark
National Aeronautics and Space Administration	Dr. Eric Lindstrom
Department of Energy	Dr. Jerry Elwood
Environmental Protection Agency	Dr. Barry Burgan
United States Coast Guard	Dr. Jonathon Berkson
United States Geological Survey	Dr. John Haines
United States Army Corps of Engineers	Mr. Charles Chesnutt
Minerals Management Service	Dr. James Kendall
Office of Management and Budget	Ms. Emily Woglom
Department of State	Ms. Elizabeth Tirpak
Office of Science and Technology Policy	Dr. Dan Walker
Defense Advanced Research Projects Agency	Ms. Khine Latt
Department of Homeland Security	CDR Joseph Vojvodich

Ex Officio Members	
Chair, EXCOM	Dr. Jack Kaye (NASA)
Chair, FOFC	Mr. Robert Winokur (Oceanographer of the Navy)
Director, Ocean.US	Dr. Mary Altalo

Appendix 4. Federal Oceanographic Facilities Committee (FOFC) List of Committee Members

Oceanographer of the Navy (Chair)	Mr. Robert Winokur
National Science Foundation	Dr. Margaret Leinen
Office of Naval Research	Dr. Frank Herr
National Oceanic and Atmospheric Administration	RADM Richard Behn
United States Coast Guard	CAPT Dennis Holland
Environmental Protection Agency	Mr. Kennard Potts
Minerals Management Service	Dr. Ronald Lai
Department of State	Ms. Margaret Hayes
United States Army Corps of Engineers	Mr. William Birkemeier
Department of Energy	Dr. Jerry Elwood
United States Geological Survey	Dr. John Haines
National Aeronautics and Space Administration	Dr. Paula Bontempi
DARPA Advanced Technology Office	Ms. Khine Latt

Appendix 5. FOFC Working Group (FWG) List of Committee Members

National Oceanic and Atmospheric Administration (Chair)	Ms. Elizabeth White
United States Coast Guard	Dr. Jonathan Berkson
National Aeronautics and Space Administration	Dr. Paula Bontempi
Oceanographer of the Navy	Mr. William Curry
National Science Foundation	Ms. Dolly Dieter
Office of Naval Research	Mr**.** John Freitag
Ocean.US	CAPT Bob Houtman, USN (Ret.)
Environmental Protection Agency	Mr**.** Chris Laabs
Oceanographer of the Navy	CDR Chris Moore
National Oceanic and Atmospheric Administration	Mr. James (Bill) O'Clock
National Science Foundation	Ms. Holly Smith
Department of State	Ms. Elizabeth Tirpak

Appendix 6a. Ocean.US Executive Committee (EXCOM) List of Committee Members

National Aeronautics and Space Administration (Chair)	Dr. Jack Kaye
United States Coast Guard	Dr. Jonathon Berkson
United States Army Corps of Engineers	Mr. William Birkemeier
United States Geological Survey	Dr. John Haines
Minerals Management Service	Dr. James Kendall
Environmental Protection Agency	Dr. Brian Melzian
National Oceanic and Atmospheric Administration	Dr. Richard Spinrad
Oceanographer of the Navy	Mr. Robert Winokur
National Science Foundation	Mr. Larry Clark
Department of Energy	Open

Appendix 6b. Ocean.US Memorandum of Agreement

National Oceanographic Partnership Program (NOPP)

MEMORANDUM OF AGREEMENT

For Establishing A

NOPP Interagency Ocean Observation Office

1. **BACKGROUND**. The statutory authority for the National Oceanographic Partnership Program (NOPP), with representatives from twelve (12) Federal agencies, its National Ocean Research Leadership Council (NORLC), and the Ocean Research Advisory Panel (ORAP) is contained in 10 USC 7901 et seq. In response to a Congressional request for "a plan to achieve a truly integrated ocean observing system," the report "Toward a U.S. Plan for an Integrated, Sustained Ocean Observing System" was prepared by a joint federal/non-federal Task Team. This led to a set of implementing recommendations in the report "An Integrated Ocean Observing System: A Strategy for Implementing the First Steps of a U.S. Plan" that was delivered in December 1999. On May 22, 2000, based on the ORAP Report implementation recommendations, the NORLC approved the establishment of an office having the charter to develop a national capability for integrating and sustaining ocean observations and predictions. The formation of this OCEAN.US office was jointly announced by the Chief of Naval Research, the Administrator of NOAA, and the President of the Consortium for Ocean Research and Education on May 25, 2000, at a joint hearing of the House Resources Subcommittee on Fisheries, Conservation, Wildlife, and Oceans and the Armed Services Subcommittee on Military Research and Development to examine the status of implementing the recommendations of the ORAP report.

   This interagency OCEAN.US Office has as its goal over the next decade to integrate existing and planned elements to establish a sustained ocean observing system to meet the common research and operational agency needs in the following areas:
   - Detecting and forecasting oceanic components of climate variability
   - Facilitating safe and efficient marine operations
   - Ensuring national security
   - Managing resources for sustainable use
   - Preserving and restoring healthy marine ecosystems
   - Mitigating natural hazards
   - Ensuring public health

2. **PURPOSE**. This Memorandum of Agreement (MOA) outlines the initial functions and responsibilities agreed to by the participating agencies to establish the interagency ocean observation office/organization known as the OCEAN.US Office. The Office will serve as the

national focal point for integrating ocean observing activities.

3. **AUTHORITY**. This interagency OCEAN.US Office is a functioning entity of, and established under the auspices of, the National Oceanographic Partnership Program, as established by the National Oceanographic Partnership Act (10 USC 7901 et seq). OCEAN.US functions or actions will not conflict with mission prerogatives or regulatory responsibilities of the participating agencies.

4. **DEFINITIONS**.

a. Observation and Prediction System. The integrated ocean observation system will be a heterogeneous, distributed system of linked elements, with organizational structures and interfaces developed where common good is identified (e.g., a federation) in the manner described by "An Integrated Ocean Observing System: A Strategy for Implementing the First Steps of a U.S. Plan." OCEAN.US will be the focal point for relating U.S. ocean observing system elements to the international Global Ocean Observing System. The primary purpose is to enhance broad user access to ocean knowledge, data, tools and products. In appropriate cases, the OCEAN.US Office will establish, fund, and provide for the operation of components of the observing system whose functionality cuts across the roles and interests of the individual participating agencies. Examples might include network links, master databases and indexes, or collaborative tools and services. The system, therefore, will be a virtual system, consisting of the physical links, servers, and other elements that contribute to the mission, regardless of their ownership or operational responsibility. The system will comprise four main activities:

- operational and routine ocean observations ("data access")
- long-term research observations ("observatories")
- technology development to support the OCEAN.US objectives ("tools"), and
- a web-based "commons" for access to models, algorithms, numerical techniques, etc. to foster improved predictions by the users.

The OCEAN.US Office will integrate and coordinate assigned elements within these four areas. Further, the Office will foster and integrate linkages among the many other agency and partner elements in these areas.

b. Functioning Bodies. The following bodies are established by this Agreement:

(1). NORLC OCEAN OBSERVATIONS EXECUTIVE COMMITTEE (EXCOM). The NORLC Ocean Observations EXCOM will be composed of the NOPP Agency heads (or their designees) for the Agencies that are both party to this Agreement and who provide personnel or resources to the OCEAN.US Office. The Chair of the NORLC will designate the Chair of the EXCOM. The Chair of the EXCOM will be from an Agency other than the Chair of the NORLC. With regard to the OCEAN.US Office, the EXCOM will provide policy guidance, ensure sustained Agency support, and approve implementing documents.

(2). OCEAN.US Office. The OCEAN.US Office will initially establish and have cognizance over the ocean observation federation - as defined above - and, as it evolves over time, other appropriate components of a more encompassing ocean observation and

prediction federation as defined by the EXCOM. It will initially have a Director and Deputy Director appointed by the EXCOM and will include other technical representatives from the EXCOM Agencies and a modest administrative/support staff, as appropriate. Other agencies and partners may be represented at appropriate times through the invitation of the EXCOM or the Office. The Office will function as an official Federal Government office via assignment of its staff from the NOPP Federal Agencies.

(3). Director of the OCEAN.US Office. The Director of the OCEAN.US Office will be selected by the EXCOM. The selection process will seek to achieve balance across the participating Agencies.

c. Project Categories. Elements of the system may be regarded as "NOPP-funded," "NOPP-coordinated," or "NOPP-related." Elements in the first two categories are to eventually become fully integrated elements of the ocean observation and prediction system by the signatories of this Agreement. NOPP-related elements, while not directly integrated, also can provide valuable data, information, tools or products of interest to the user community.

(1) NOPP-funded elements are a result of a NOPP solicitation and/or selection process, which is to say, approved by the NORLC and in accordance with overall NOPP objectives. These elements must adhere to the integrating conventions established by the OCEAN.US Office and approved by the NORLC/EXCOM. Once accepted as an element in this category, the sponsoring agency must notify the NORLC of its intent to withdraw.

(2) NOPP-coordinated elements are ongoing and new activities of one or more NOPP agencies and partners which are offered to the NORLC for integration with the observation system. These elements will adhere to the data access and documentation conventions of the Federation established by the OCEAN.US Office and approved by the NORLC EXCOM at the cost of the offering agency. Once accepted as an element in this category, the sponsoring agency must notify the NORLC of its intent to withdraw.

(3) NOPP-related elements are ongoing and new activities of agencies and/or adjunct partners (including, for instance, international partnering) which are offered to the NORLC for coordination with the integrated observation system activities.

5. **FUNCTIONS & RESPONSIBILITIES**. This undertaking requires active participation of the involved parties. Further, the Office is of substantive interest in its promotion of collaboration between agencies, in providing information useful for assisting agencies in the development of their budget submissions, and in ensuring compatibility and interoperability.

The EXCOM Agencies will support the OCEAN.US Office by (1) designating agency representative(s), as needed, and/or (2) providing adequate funding support to the Office. Costs for operating the Office intend to be shared among the Agency participants at levels commensurate with their involvement. Each Agency will be responsible for supporting its staff seconded to the

OCEAN.US Office. Transfer of funds or personnel for this effort will be made pursuant to other appropriate authorities, agreements or by amendment to this agreement.

The OCEAN.US Office will:

(1) Develop and maintain a document outlining the long-range vision of an integrated ocean observation and prediction federation. This document will serve as the conceptual foundation for the federation and will delineate the desired goal of a fully integrated and sustained ocean observation and prediction capability for the nation.

(2) Ensure integration of the elements of the observing system.

(3) Serve as the focal point to coordinate OCEAN.US observing system activities with the NOPP Interagency Working Group (IWG), the Ocean Research Advisory Panel (ORAP), and the Federal Oceanographic Facilities Council (FOFC) as well as other federal and non-federal partners, and with the international community.

(4) Report regularly to the EXCOM for guidance and the IWG for coordination. Provide an annual assessment of the observing system status, products and planned directions including results of external reviews, as appropriate.

(5) Recommend enhancements to existing systems, new projects, need for research and development, and identification of system components suitable to transition from research to operations.

(6) Carry out all other tasks as directed by the NORLC.

6. **DATA**. All NOPP agencies and affiliated partners will provide data required to support OCEAN.US operations, research, and education efforts in accordance with applicable laws, regulations, and policies of the participating agencies.

7. **REVIEWS.** An initial external review of the OCEAN.US program will be conducted after an appropriate startup period as determined by the EXCOM. Regular external reviews will take place periodically thereafter.

8. **PERIOD OF AND PARTIES TO THE AGREEMENT**. This MOA, and thus the establishment of the OCEAN.US Office, shall be effective upon signatures from four NORLC Agencies and is subject to availability of funds. It may be modified by mutual agreement of all the parties, usually by the addition of an Appendix or Annex. Signatory parties may terminate their participation with six (6) months formal notice to all other parties via the NORLC. All NOPP agencies are eligible to participate as active parties to this agreement by affixing a signature of the Agency to this MOA. Other governmental organizations and entities may be recognized as adjunct partners to this agreement by consideration and approval of the National Oceanographic Research Leadership Council (NORLC) upon receipt of a signed statement agreeing to the principles of the MOA, as appropriate to that partner.

10/12/00

Robert B. Pirie, Jr. Date
Under Secretary of the Navy
Acting

10/17/00

Dr. D. James Baker Date
Under Secretary of Commerce
for Oceans and Atmosphere

10/24/00

Dr. Rita Colwell Date
Director, National Science Foundation

29 January 2001

Dr. Ghassem Asrar Date
Associate Administrator for Earth Science,
National Aeronautics and
Space Administration

10/25/00

Mr. Walt Rosenbusch Date
Director
Minerals Management Service
Department of the Interior

2/1/01

Dr. Charles G. Groat Date
Director
U.S. Geological Survey
Department of Interior

3/19/01

Dr. Ari Patrinos Date
Associate Director for Biological
and Environmental Research
Office of Science
Department of Energy

06/28/01

Terry M. Cross Date
Rear Admiral, U.S. Coast Guard
Assistant Commandant for Operations

11/19/01

Hans A. Van Winkle Date
Major General, U.S. Army
Deputy Commander
U.S. Army Corps of Engineers

3/2/04

Dr. Paul Gilman Date
Science Advisor to the Agency
U.S. Environmental Protection Agency

Appendix 7. Committee on Ocean Policy (COP) List of Committee Members

Chairman of the Council on Environmental Quality (Chair)	Mr. James Connaughton
Department of State	Secretary Condoleezza Rice
Department of Defense	Secretary Donald Rumsfeld
Department of the Interior	Secretary Lynn Scarlett (Acting)
Department of Agriculture	Secretary Mike Johanns
Department of Health and Human Services	Secretary Michael Leavitt
Department of Commerce	Secretary Carlos Gutierrez
Department of Labor	Secretary Elaine Chao
Department of Transportation	Secretary Norman Mineta
Department of Energy	Secretary Samuel Bodman
Department of Homeland Security	Secretary Michael Chertoff
Department of Justice	Attorney General Alberto Gonzalez
Administrator of the Environmental Protection Agency	Mr. Stephen Johnson
Director of the Office of Management and Budget	Mr. Clay Johnson III (Acting)
Administrator of the National Aeronautics and Space Administration	Dr. Michael Griffin
Director of National Intelligence	Mr. John Negroponte
Director of the Office of Science and Technology Policy	Dr. John Marburger, III
Director of the National Science Foundation	Dr. Arden Bement
Chairman, Joint Chiefs of Staff	General Richard Myers
Assistant to the President for National Security Affairs	Mr. Stephen Hadley
Assistant to the President for Homeland Security	Ms. Frances Townsend
Assistant to the President for Domestic Policy	Mr. Claude Allen
Assistant to the President for Economic Policy	Mr. Allan Hubbard
Office of the Vice President	Representative, TBD

Appendix 8. Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI)

APPENDIX 8A. LIST OF COMMITTEE MEMBERS

Council on Environmental Quality (Co-Chair)	Mr. Brian Hannegan, Chief of Staff, CEQ
Office of Science and Technology Policy (Co-Chair)	Dr. Sharon Hays, Chief of Staff, OSTP
Department of Agriculture	Mr. Mark Rey, Under Secretary for Natural Resources and Environment *Plus One:* Mr. Merlyn Carlson, Deputy Assistant Secretary
Department of Commerce **National Oceanic and Atmospheric Administration**	VADM Conrad Lautenbacher, USN (Ret), Under Secretary for Oceans and Atmosphere
Department of Defense	Mr. B.J. Penn, Assistant Secretary of the Navy for Installations and Environment, Office of the Assistant Secretary of the Navy (Installations and Environment) *Plus One:* Dr. Frank Herr, Head, Ocean Battlespace Sensing Department
Joint Chiefs of Staff	RADM William D. Sullivan, USN, Vice Director for Strategic Plans and Policy, The Chairman of the Joint Chiefs of Staff *Plus One:* Mr. Robert Winokur, Technical Director, Office of the Oceanographer of the Navy
United States Army Corps of Engineers	Mr. John Paul Woodley, Jr., Principal Deputy, Assistant Secretary of the Army (Civil Works) *Plus One:* Mr. George Dunlop, Deputy Assistant Secretary of the Army
Department of Energy	Mr. David Garman, Assistant Secretary, Energy Efficiency and Renewable Energy *Plus One:* Mr. Philip Moore, Special Assistant, Office of Energy Efficiency and Renewable Energy
Department of Health and Human Services	Dr. David Schwartz, Director, National Institutes of Environmental Health

	Sciences
	Plus One: Dr. Allen Dearry, Associate Director
Department of Homeland Security	RADM R. Dennis Sirois, Assistant Commandant for Operations
	Plus One: CAPT Dennis Holland, Chief, Office of Aids to Navigation
Department of Interior	TBD, Assistant Secretary
	Plus One: Mr. Christopher Kearney, Deputy Assistant Secretary
Department of Justice	Ms. Kelly Johnson, Assistant Attorney General for Environment and Natural Resources Division (Acting)
	Plus One: Mr. Peter Oppenheimer, Attorney Advisor, Law and Policy Section, Environment and Natural Resources Division
Department of Labor	Ms. Veronica Stidvent, Assistant Secretary
Department of State	TBD, Assistant Secretary for Oceans and International Environmental and Scientific Affairs Bureau
	Plus One: Mr. David Balton, Deputy Assistant Secretary
Department of Transportation	Mr. Tyler Duvall, Assistant Secretary for Transportation Policy (Acting)
	Plus One: Ms. Camille Mittelholtz, Environmental Policies Team Leader
Environmental Protection Agency	Mr. Benjamin Grumbles, Assistant Administrator for Water
	Plus One: Mr. Anthony Moore, Senior Policy Advisor
National Aeronautics and Space Administration	Dr. Mary Cleave, Associate Administrator for Science Mission Directorate
	Plus One: TBD

National Science Foundation	Dr. Kathie Olsen, Deputy Director
	Plus One: Dr. Margaret Leinen, Assistant Director for Geosciences
Executive Office of the President	
Office of the Vice President	Mr. Dean McGrath, Deputy Chief of Staff to the Vice President
	Mr. Kevin O'Donovan, Assistant to the Vice President for Domestic Policy
Office of Management and Budget	Mr. Dave Anderson, Associate Director for Natural Resource Programs
	Plus One: Ms. Emily Woglom, Program Examiner
Council on Environmental Quality	Mr. Brian Hannegan, Chief of Staff
	Plus One: Dr. Gerhard Kuska, Associate Director for Environmental Policy (Acting)
Domestic Policy Council	Dr. Tevi Troy, Deputy Assistant to the President for Domestic Policy
National Economic Council	Ms. Lauren Allgood, Associate Director
National Security Council	Mr. Ruben Jeffrey, Special Assistant to the President and Senior Director
	Plus One: Mr. Ken Peel, Director for International Environment and Transportation Affairs
Homeland Security Council	Mr. Kenneth Rapuano, Deputy Assistant to the President for Homeland Security
	Plus One: Mr. Gary Rasicot, Director for Cargo and Port Security
Office of Science and Technology Policy	Dr. Sharon Hays, Chief of Staff
	Plus One: TBD
AFFILIATE MEMBERS	
Ocean Research and Resources Advisory Panel	Dr. Ellen Prager, Chair
	Dr. Melbourne Briscoe, Designated

	Federal Official
Joint Subcommittee on Ocean Science and Technology Co-Chairs	Dr. Margaret Leinen
	Dr. Richard Spinrad
	Dr. Teresa Fryberger, OSTP (Acting)
Subcommittee on Integrated Management of Ocean Resources Co-Chairs	Ms. Mary Glackin
	Mr. Christopher Kearney
	Dr. Gerhard Kuska
	Ms. Diane Regas

APPENDIX 8B. ICOSRMI WORK FUNCTIONS

1. Coordinate and integrate activities of ocean-related Federal agencies and provide incentives for meeting national goals;

2. Identify statutory and regulatory redundancies or omissions and develop strategies to resolve conflicts, fill gaps, and address new emerging ocean issues for national and regional benefits;

3. Guide the effective use of science in ocean policy and ensure the availability of data and information for decision making at national and regional levels;

4. Develop and support partnerships among government agencies and nongovernmental organizations, the private sector, academia, and the public;

5. Coordinate education and outreach efforts by Federal ocean and coastal agencies;

6. Periodically assess the state of the Nation's oceans and coasts to measure the achievement of national ocean goals;

7. Make recommendations to the Committee on Ocean Policy for developing and carrying out national ocean policy, including domestic implementation of international ocean agreements.

Appendix 9. Global Environment Policy Coordinating Committee (PCC) Subcommittee on Oceans Policy (Oceans Sub-PCC) List of Agency Participants

Department of Agriculture

Department of Commerce (National Oceanic and Atmospheric Administration)

Department of Defense (United States Army, Office of the Secretary of Defense, United States Navy, Joint Chiefs of Staff, United States Army Corps of Engineers)

Department of Energy

Department of Health and Human Services (National Institutes of Health)

Department of Homeland Security (United States Coast Guard)

Department of the Interior (Minerals Management Service, United States Geological Survey)

Department of Justice

Department of State

Department of Transportation

Department of Treasury

Environmental Protection Agency

National Aeronautics and Space Administration

National Science Foundation

Marine Mammal Commission

United States Agency for International Development

Smithsonian Institution

United States Patent and Trademark Office

Executive Office of the President (Council of Economic Advisors, Office of Science and Technology Policy, Council on Environmental Quality, Office of Management and Budget, United States Trade Representative)

Appendix 10. Subcommittee on Integrated Management of Ocean Resources (SIMOR)

APPENDIX 10A. LIST OF COMMITTEE MEMBERS

Council on Environmental Quality (Co-Chair)	Dr. Gerhard Kuska
Department of Interior (Co-Chair)	Mr. Chris Kearney
Environmental Protection Agency (Co-Chair)	Ms. Diane Regas
National Oceanic and Atmospheric Administration (Co-Chair)	Ms. Mary Glackin
Department of Agriculture	Mr. Merlyn Carlson, Deputy Under Secretary for Conservation Ms. Courtenay McCormick *Plus One:* Mr. Charles Whitmore, Special Assistant/SP, NRCS
Department of Commerce **National Oceanic and Atmospheric Administration**	Ms. Mary Glackin, SIMOR Co-Chair, Assistant Administrator for Program, Planning & Integration Dr. Rebecca Lent, Director, Office of International Affairs, NOAA Fisheries Service
Department of Defense	Mr. Donald Schregardus, Deputy Assistant Secretary of the Navy (Environment) *Plus One:* RDML Mark Boensel, Office of the Chief of Naval Operations, Director, Operational Environmental Readiness and Planning Branch (N45)
Joint Chiefs of Staff	Mr. Robert Winokur, Technical Director, Office of the Oceanographer of the Navy *Plus One:* Commander John C. Kauffman, Head, Law of the Sea / Maritime Environmental Law Department DoD Representative for Ocean Policy Affairs (REPOPA)
United States Army Corps of Engineers	TBD, Assistant for Water Resources Legislation Office of the Assistant Secretary of the Army (Civil Works)

	Plus One: Ms. Beverley B. Getzen, Chief, Office of Environmental Policy
	Ms. Joan Pope, Engineer Research and Development Center
Department of Energy	Mr. Carmen Difiglio, Director, Office of Electricity Policy Analysis
	Plus One: Mr. Mitch Baer, CCM, Senior Policy Analyst, Policy and International Affairs
Department of Health and Human Services **United States Food and Drug Administration**	Dr. George Hoskin, Center for Food Safety and Applied Nutrition
	Plus One: Ms. Laina Bush, Senior Food and Drug Policy Analyst, Health and Human Services Head Quarters
Department of Homeland Security	CAPT Lorne Thomas, USCG, Office Chief, Operating and Environmental Standards
	Plus One: CDR Eric Giese, Chief of Fisheries Enforcement
	LCDR Chris Barrows, Asssistant Chief of Fisheries Enforcement
Department of Interior	Mr. Chris Kearney, SIMOR Co-Chair, Deputy Assistant Secretary for Policy and International Affairs
United States Fish and Wildlife Service	Mr. Hannibal Bolton, Chief, Division of Fish and Wildlife Management and Habitat Restoration
	Plus One: Mr. Tom Busiahn, Chief, Branch of Fish and Wildlife Management Assistance
United States Geological Survey	Dr. Suzette Kimball, Regional Director, Eastern Region
	Plus One: Dr. John Haines, Program Coordinator, Coastal & Marine Geology Program
Minerals Management Service	Dr. James Kendall, Chief Scientist

Department of Justice **Environment and Natural Resources Division**	Mr. Peter H. Oppenheimer, Law and Policy Section, Environment and Natural Resources Division
	Plus One: Ms. Karen Wardzinski, Law and Policy Section, Environment and Natural Resources Division
	Mr. William Gibbons-Fly, Director, Office of Marine Conservation
Department of Labor	Mr. Brad Mantel, Office of the Assistant Secretary for Policy
Department of State	Mr. David Balton, Deputy Assistant Secretary, Oceans and Fisheries
	Plus One: Ms. Margaret Hayes, Director, Office of Oceans Affairs
Department of Transportation	Mr. George Schoener, Deputy Assistant Secretary for Transportation Policy
	Plus One: Ms. Linda Lawson, Director, Office of Safety Energy and Environment
	Ms. Camille Mittelholz, Environmental Policies Team Leader
Environmental Protection Agency	Ms. Diane Regas, Director, Office of Wetlands, Oceans, and Watersheds
	Ms. Suzanne Schwartz, Director, Oceans and Coastal Protection Division
	Plus One: Mr. Anthony Moore, Senior Policy Advisor
National Aeronautics and Space Administration	Dr. Paula Bontempi, Ocean Biology and Biogeochemistry Program Scientist
	Plus One: Mr. Lawrence Friedl, Applications Program Manager
National Science Foundation	Mr. Larry Clark, Division Director, Division of Ocean Sciences
	Plus One: Ms. Roxanne Nikolaus, Staff Associate, Division of Ocean Sciences
Executive Office of the President	

Office of the Vice President	Mr. Kevin O'Donovan, Assistant to the Vice President for Domestic Policy
Office of Management and Budget	Ms. Emily Woglom, Program Examiner
Council on Environmental Quality	Dr. Gerhard Kuska, Associate Director for Environmental Policy (Acting)
Domestic Policy Council	Ms. Annie Holand, Special Assistant
National Economic Council	No representative
National Security Council	Mr. Ken Peel, Director for International Environment and Transportation Affairs
Homeland Security Council	Mr. Gary Rasicot, Director for Cargo and Port Security
Office of Science and Technology Policy	Dr. Dan Walker, Senior Policy Analyst for Oceans and Climate
Ex Officio Members	Dr. Richard Spinrad, JSOST Co-Chair, National Oceanic and Atmospheric Administration
	Dr. Margaret Leinen, JSOST Co-Chair, National Science Foundation
	Dr. Teresa Fryberger, JSOST Co-Chair (Acting), Office of Science and Technology Policy

APPENDIX 10B. SIMOR WORK FUNCTIONS

1. Facilitate and coordinate the work of existing ocean and coastal interagency groups focused on the management of living and nonliving marine resources;

2. Recommend the creation of new topical task forces as needed;

3. Coordinate with government-wide environmental and natural resource efforts that have important ocean components;

4. Identify opportunities for improvements in the application of science for ecosystem-based management of ocean resources;

5. Identify priority research needs that can enhance management capabilities;

6. Facilitate use of ocean science and technology, including ocean observations, in the implementation of ocean and coastal management and policies;

7. Recommend assessments and analyses of Federal ocean resource management initiatives;

8. Identify opportunities and articulate priorities for enhancing ocean education, outreach, and capacity building;

9. Identify opportunities for the promotion of international collaboration in ocean resource management.

Appendix 11. National Science and Technology Council (NSTC) Joint Subcommittee on Ocean Science and Technology (JSOST)

APPENDIX 11A. LIST OF COMMITTEE MEMBERS

National Oceanic and Atmospheric Administration (Co-Chair)	Dr. Richard Spinrad
National Science Foundation (Co-Chair)	Dr. Margaret Leinen
Office of Science and Technology Policy (Co-Chair)	Dr. Teresa Fryberger (Acting)
Department of Agriculture	Dr. Louie Tupas, National Program Leader for Global Change and Climate
	Dr. Meryl Broussard, National Program Leader for Aquaculture and Animal Section
Department of Commerce **National Oceanic and Atmospheric Administration**	Dr. Richard Spinrad, Assistant Administrator for Ocean Services and Coastal Zone Management
	Dr. Marie Colton, Technical Director, National Ocean Service
	Dr. Steve Murawski, Director of Scientific Programs and Chief Science Advisor
Department of Defense **United States Army Corps of Engineers**	Mr. Charles Chesnutt, Institute for Water Resources
	Ms. Joan Pope, Engineering Research and Development Center
Department of Defense **Office of Naval Research**	Dr. Frank Herr, Head, Ocean Battlespace Sensing Department
	Dr. Melbourne Briscoe, Director for Processes and Prediction Division
Department of Energy	Dr. Ari Patrinos, Director for Office of Biological and Environmental Research
	Dr. Jerry Elwood, Director for Climate Change Research Division
Department of Health and Human Services **Center for Disease Control and Prevention**	Dr. Mike McGeehin, Division of Environmental Hazards and Health Effects

	Dr. G. David Williamson, Division of Environmental Hazards and Health Effects
	Dr. Lorrie Backer, Division of Environmental Hazards and Health Effects
Department of Health and Human Services **United States Food and Drug Administration**	Dr. George Hoskin, Director, Division of Science and Applied Technology
Department of Health and Human Services **National Institutes of Health**	Dr. Allen Dearry, National Institute of Environmental Health Sciences
Department of Homeland Security **United States Coast Guard**	Dr. Jonathan Berkson, Marine Science Advisor
Department of the Interior **Minerals Management Service**	Dr. James Kendall, Chief Scientist
Department of the Interior **United States Geological Survey**	Dr. John Haines, Coordinator for Coastal and Marine Geology Program
Department of Justice	Mr. Peter Oppenheimer, Attorney Advisor, Environmental and Natural Resources Division
Department of State	Mr. David Balton, Deputy Assistant Secretary for Oceans
	Ms. Liz Tirpak, Foreign Affairs Office for Ocean Science Policy
Department of Transportation **Maritime Administration**	Mr. Kevin Krick, Senior Advisor for Maritime Policy
	Mr. Alex Landsburg, Coordinator of Research and Development
Department of Transportation **Arctic Research Commission**	Dr. Garrett Brass, Executive Director
Environmental Protection Agency	Dr. George Gray, Assistant Administrator, Office of Research and Development
	Dr. Steven Hedtke, Associate Director for Ecology, National Health and Environmental Effects Laboratory
Executive Office of the President **Council on Environmental Quality**	Dr. Gerhard Kuska, Associate Director for Environmental Policy (Acting)

Executive Office of the President Domestic Policy Council	Ms. Annie Holand, Special Assistant
Executive Office of the President Office of Management and Budget	Ms. Emily Woglom, Program Examiner
	Ms. Kimberly Miller, Program Examiner
Executive Office of the President Office of Science and Technology Policy	Dr. Teresa Fryberger (Acting), Assistant Director for Environment
Joint Chiefs of Staff	Mr. Robert Winokur, Technical Director, Oceanographer of the Navy
	Commander John Kauffman, Head, Law of the Sea/Maritime Environmental Law Department, International and Operation Law Division
National Aeronautics and Space Administration	Dr. Jack Kaye, Director, Earth-Sun Division, Research and Analysis Program
	Dr. Eric Lindstrom, Earth-Sun Division, Oceanography Program Scientist
National Science Foundation	Dr. Margaret Leinen, Assistant Director for Geosciences
	Mr. Larry Clark, Director, Division of Ocean Sciences
Marine Mammal Commission	Dr. Tim Ragen, Director of Science Programs
Smithsonian Institution	Dr. Leonard Hirsch, Senior Policy Advisor
National Oceanographic Partnership Program (NOPP)	Dr. Melbourne Briscoe, IWG Vice-Chair
	Mr. Larry Clark, IWG Vice-Chair
Ocean Research and Resources Advisory Panel (ORRAP)	Dr. Ellen Prager, Chair
	Dr. Stephen Weisberg, Vice-Chair
	Ms. Debra Hernandez, Vice-Chair
Subcommittee on Integrated Management of Ocean Resources (SIMOR)	Ms. Mary Glackin, Co-Chair, NOAA

	Mr. Chris Kearney, Co-Chair, DOI
	Dr. Gerhard Kuska, Co-Chair, CEQ
	Ms. Diane Regas, Co-Chair, EPA
Subcommittee on Oceans Policy of the Global Environment Policy Coordinating Committee (Oceans Sub-PCC)	Mr. David Balton, Chair, DOS
JSOST Interagency Working Group on Ocean Education	Dr. Elizabeth Rom, Chair, NSF
JSOST Interagency Working Group on Harmful Algal Blooms, Hypoxia and Human Health (IWG-4H)	Dr. Paul Sandifer, Co-Chair, NOAA
	Dr. Lorrie Backer, Co-Chair, CDC

APPENDIX 11B. JSOST WORK FUNCTIONS

1. Identify national ocean science and technology priorities;
2. Facilitate coordination of disciplinary and interdisciplinary ocean research, ocean technology and infrastructure development, and national ocean observation programs;
3. Facilitate expansion of knowledge about the oceans and their interactions with other components of the Earth system, including the atmosphere, land, and living resources, and about the relationship between oceans and society;
4. Facilitate the application of knowledge for prediction and forecasting of ocean phenomena;
5. Provide advice on science and technology for ecosystem-based management and stewardship of resources;
6. Facilitate use of ocean science and technology in the development of coastal and marine policies;
7. Recommend scientific and technical assessments and analyses of Federal ocean science and technology initiatives;
8. Identify opportunities and articulate priorities for enhancing ocean education, outreach, and capacity building;
9. Identify opportunities for the promotion of international collaboration in ocean science and technology;
10. Facilitate efficient transition of research to operations.

Appendix 12. JSOST Interagency Working Group on Harmful Algal Blooms, Hypoxia, and Human Health (IWG-4H) List of Committee Members

Department of Health and Human Services Center for Disease Control and Prevention (Co-Chair)	Dr. Lorrie Backer
National Oceanic and Atmospheric Administration (Co-Chair)	Dr. Paul Sandifer
National Oceanic and Atmospheric Administration	Ms. Juli Trtanj
Department of Health and Human Services United States Food and Drug Administration	Dr. Sherwood Hall
Department of Health and Human Services National Institutes of Health	Dr. Allen Dearry
National Aeronautics and Space Administration	Dr. Paula Bontempi
United States Geological Survey	Mr. Herbert T. Buxton
National Science Foundation	Dr. David Garrison
Marine Mammal Commission	Dr. Tim Ragen
National Oceanic and Atmospheric Administration	Dr. Teri Rowles
National Oceanic and Atmospheric Administration	Dr. Usha Varanasi
Environmental Protection Agency	Dr. Barbara T. Walton
National Oceanic and Atmospheric Administration	Dr. Robert Magnien

Appendix 13. National Oceanographic Partnership Program Broad Agency Announcements (BAA) and Requests for Proposals (RFP)

13.1 FY 2005 ONR BROAD AGENCY ANNOUNCEMENT (BAA) #04-022 FOR THE NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2). A formal Request for Proposals (RFP), solicitation, and/or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR, and its partner agencies in the National Oceanographic Partnership Program (NOPP), reserve the right to select for award all, some, or none of the proposals in response to this announcement. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

I. GENERAL INFORMATION

1. Agency Name -

Office of Naval Research,
Ballston Center, Tower One
800 N. Quincy Street
Arlington, VA 22217-5660

2. Research Opportunity Title –

National Oceanographic Partnership Program (NOPP)

3. Program Name -

N/A

4. Research Opportunity Number -

ONR BAA 04-022

5. Response Date -

Full Proposals: 14 October 2004, 4:00PM (Washington D.C. Local Time)

6. Research Opportunity Description -

On behalf of the National Oceanographic Partnership Program (NOPP), the Office of Naval Research (ONR) solicits research proposals meeting the goal and purpose of the Partnership Program outlined in Title II, subtitle E, of Public Law 104-201. Any NOPP member agency may fund research in response to this solicitation.

Up to $11.8M over three years may be available for this solicitation, subject to appropriation and final approval by the National Ocean Research Leadership Council (NORLC). Additionally, non-Federal

institutions have expressed to the government that they have similar research interests and goals as expressed under this BAA (see Topic 4A below) and may potentially provide up to $3M in separately funded non-Federal projects.

Team efforts are required among at least two of the following three sectors:

- academia,
- industry (including Non-Governmental Organizations - NGOs), and
- government (including State and Local)

Background:

In previous years, the following six Topic Areas have formed the basis of the NOPP Investment Portfolio:

A. Operational/Routine Observations (including pilots, testbeds, etc.),
B. Research "Observatories" (long-term experiments and data series, etc.),
C. Observational Technique Development (sensors, platforms, communications),
D. "Commons" for Ocean Information ("hubs" and "nodes", etc.),
E. Outreach/Education/Communications.
M. Marine Mammals

These investment areas are more fully described at www.nopp.org where examples of ongoing NOPP efforts are also listed.

This year, Fiscal Year 2005, the investment areas have been realigned to more closely reflect the evolution of NOPP's interests, as expressed by the National Ocean Research Leadership Council (NORLC) and the advice of the Ocean Research Advisory Panel (ORAP).

These new Topic Areas are intended to be the stable investment thrusts for NOPP for some years to come. They are predicated on two NOPP strategic niches: (a) the benefits of partnering on common needs, and (b) sharing the responsibility for those items that might otherwise get left undone but which are needed by all.

Topic 1: IOOS

Implement a sustained and integrated ocean observing system (IOOS) for U.S. global and coastal interests. Provide coastal and global ocean data and products for decision-makers, researchers, and for operational/practical purposes, in general support of the four NOPP Strategic Objectives

Topic 2: Education and Outreach

Increase student and public awareness, knowledge, and understanding of the oceans. Raise the consciousness of the general public and governmental decision makers to the importance of wise stewardship of the ocean and the coastal zone, through the support of science education and communication.

Topic 3: Infrastructure

Modernize the nation's oceanographic infrastructure (excluding construction). Provide access to state-of-the-art tools, training, and facilities for effective and efficient utilization by national ocean programs, in support of the four NOPP Objectives.

Topic 4: Collaboration

Collaborate to strengthen U.S. interagency initiatives in research and their connections to operations. Ensure multi-agency efforts where such collaboration enhances efficiency or effectiveness, and/or reduces costs, in support of the four NOPP Objectives.

- **Not all NOPP solicitations will seek proposals in all four investment areas.**

- **This FY05 announcement seeks only proposals for new projects under:**

  Topic 1: IOOS
  Topic 4: Collaboration

- **Subsequent announcements may call for proposals under any of the NOPP topics, including renewals of existing efforts. Renewal/expansion proposals for existing NOPP projects are not being solicited at this time.**

Topic 1. IOOS

In this solicitation, NOPP seeks proposals for activities related to data fusion in the coastal zone, as described in the DMAC documents at http://dmac.ocean.us/dacsc/imp_plan.jsp.

1A: Fusing multi-sensor regional scale data to monitor and quantify coastal processes.

Produce IDL-based algorithms that fuse data from different sensors to produce coastal physical and/or environmental monitoring maps and information for use in GIS. This requires integration of data from single-purpose sensors to combine and pull out information not available from the sensors by themselves. To accomplish this requires fusion at different levels and digging into the fundamental physics involved; resolving issues with differing sampling specifications and geometries, and development of visualization techniques and products that are useful to the coastal engineer, scientist, and coastal decision maker. Airtime, up to 10 hours annually for special flights, plus available data from routine coastal flights, will be available that includes use of a SHOALS 1000TH system (topo/bathy/digital imagery/hyperspectral) with room for additional sensors on the aircraft.

Up to $600,000.00 will be available over a three year period to support efforts under Topic 1A. The government anticipates supporting one (1) three-year project, at a level of approximately $200K per year. Offerors should also include two one-year options at a funding level of approximately $200k per year.

1B: Integration of private and public data sets in the northern Gulf of Mexico

Develop an IOOS compliant pilot effort to demonstrate innovative techniques to integrate privately collected data sets with publicly available data sets within the northern Gulf of Mexico. The northern Gulf of Mexico is specified in order to take advantage of ongoing initiatives such as the US Army Corps of Engineers Gulf of Mexico Regional Sediment Management Program, NOAA Coastal Storms Initiative, the MMS G-WIS, EPA Gulf of Mexico program, and other cooperative programs in the region. At

present, data sharing between these programs, if done at all, requires complicated steps of data discovery and conversion which can result in confusion about where and in what format the original data reside.

Sources of data may include NOAA, ACOE, USGS, EPA, MMS, US Navy, Gulf Coast State governments, academic institutes etc. At least one product outcome should be "an integrated assessment of meteorological impacts on infrastructure and coastal resources within the northern Gulf of Mexico". Possible techniques might include web and/or GIS-based mapmaking and engineering/scientific computations using distributed datasets.

Techniques must be consistent with national standards such as FGDC and OGC compliant as well as be general and easily applicable elsewhere.

Up to $600,000.00 will be available over a three year period to support efforts under Topic 1B. The government anticipates supporting one (1), three-year project, at a level of approximately $200K per year. Offerors should also include two one-year options at a funding level of approximately $200k per year.

Topic 4: Collaboration

4A: New Methods for Detection of Fish Populations or Mapping of Fish Habitat

The focus of this topic will be on the exploration of living marine fish and their habitats within the coastal ocean and EEZ related to the Census of Marine Life (CoML – http://www.coml.org/coml.htm), and the development of novel sensors, techniques or technologies that will facilitate this exploration. In particular, proposals are solicited to develop, test and utilize in the field novel sensors, techniques or technologies (e.g., acoustics, AUV's) to: (1) detect, enumerate and identify fish populations and assemblages, possibly including the impacts of behavior on detection, identification and enumeration, or (2) map and characterize habitat directly related to living fish populations.

Included under this solicitation is the use of lower frequency acoustics (from 100's Hz – 20 kHz), contrasting results obtained using lower frequency techniques with those using more established techniques for measurement (e.g., net and trawl, higher frequency acoustics), and development of models and signal-processing algorithms critical to interpretation of lower frequency acoustic measurements. Also included under this solicitation is the development, testing and use of advanced acoustical or optical mapping techniques that might significantly improve capabilities for mapping and quantifying fish habitat in the coastal ocean.

Proposals must specifically address any permitting, permission and environmental compliance issues related to use of any technique to be applied in the field. Proposals that focus on fish populations should explicitly address the limits of taxonomic resolution inherent to the techniques proposed.

Although not an explicit requirement, proposals are especially encouraged that include field efforts that will contribute to current or developing CoML projects focused on ocean exploration, fish, their habitats or taxonomy. For details see Field Projects described at http://www.coml.org/coml.htm or see Plan for Implementation of the U.S. CoML Program at http://www.coreocean.org/Dev2Go.web?id=258305&rnd=29690.

Up to $7M will be available over a three year period to support efforts under Topic 4A. Although funding levels of individual projects may vary, the government anticipates supporting approximately 4 three-year projects, each at a level of approximately $500K per year. (Note that the number and size of anticipated awards would imply a maximum of $6M being available over a three year period. However, the number of awards and the annual funding level are approximations and the $7M figure was inserted intentionally.)

Additionally, other non-Federal institutions have expressed to the government that they have similar research interests and goals as expressed under Topic 4A and potentially may fund two additional 3-year projects at a level of $500K per year. The highest evaluated unsuccessful offerors under this topic will be referred to these institutions as a possible source of funding.

> **Topic 4B**: Sensors for Sustained, Autonomous Measurement of Chemical or Biological Parameters in the Ocean

Plans for implementing ocean observatory systems such as the IOOS (e.g., http://www.ocean.us/) and the Ocean Research Interactive Observatory Networks (ORION) (http://www.nopp.org/Dev2Go.web?Anchor=orion_home_page&rnd=28286), and operational observing systems like Argo (http://www-argo.ucsd.edu/), have the potential to greatly expand our understanding of the breadth and complexity of oceanic dynamics, its spatial and temporal variability, and the interactions among marine physical, optical and biogeochemical processes. Currently, most of the sensors capable of the sustained, stable, autonomous operation required for incorporation into these observing systems measure physical or optical properties of the ocean. Our understanding of ocean dynamics and complexity, and our capacity to monitor and detect anthropogenic change in the oceans, would be greatly enhanced by the inclusion of a broader suite of sensors in these systems capable of measuring chemical or biological properties of the ocean.

The focus of this topic will be to support the transition of chemical or biological sensors that have demonstrated a capability for sustained and accurate, stable, autonomous operation in the ocean toward a commercially viable status. That is, we are seeking to move candidate sensors away from the status of operability only by a small research team of experts confined to one (or a few) labs toward a status where the sensor can be proved capable of being produced and sold commercially to a larger population of technically capable scientists or engineers. By "sustained" operation we refer to stable measurement (with *in situ* recalibration or minimal drift from calibration) over periods of weeks to many months. By "stable" and "autonomous" operation we refer to a capability for sustained measurement, independent of human intervention, on fixed moorings, Autonomous Underwater Vehicles (AUV's), gliders, profiling moorings or floats.

Proposals should describe demonstrated capabilities of the candidate sensor, and discuss the projected path to commercial viability. Proposals should explicitly address the limits of taxonomic or chemical resolution inherent to the sensor proposed. That is, the specificity in detection of biological (e.g., pigment class, biological taxon or species) or chemical (e.g., chemical ion, compound or class of compound) parameter should be addressed, as should the value of that specificity (or breadth). Proposals should also address stability of the *in situ* measurement and sensor calibration.

Because the intent is to demonstrate potential for commercial viability of the sensor proposals including a commercial partner are especially encouraged.

Up to $3.6M will be available over a three year period to support efforts under Topic 4B. Although funding levels of individual projects may vary, the government anticipates supporting approximately 4 three-year projects, each at a level of approximately $300K per year.

7. Point(s) of Contact -

Questions of a technical nature shall be directed to the cognizant Technical Point of Contact, as specified below:

Science and Technology Point of Contact:

Dr. James Eckman
NOPP Team Leader
OAS Processes and Prediction S&T Division
ONR 322
Office of Naval Research
Ballston Center Tower One, Room 407-1
800 N. Quincy St.
Arlington, VA 22217-5660
Tel: 703-696-4590
Fax: 703-696-3390, ATTN: NOPP BAA
Email: NOPP@onr.navy.mil

Questions of a business nature shall be directed to the cognizant Contract Specialist, as specified below:

Business Point of Contact:

Mr. Brian Glance
Senior Contracting Officer
Placement Two Branch
ONR 252
Office of Naval Research
Ballston Center Tower One, Room 720
800 N. Quincy St.
Arlington, VA 22217-5660
Tel: (703) 696-2596
Fax: (703) 696-0993, ATTN: NOPP BAA
Email: glanceb@onr.navy.mil

8. Instrument Type(s) -

It is anticipated that awards will be in the form of grants. However, the Government reserves the right to award cooperative agreements, contracts, or other transaction agreements to appropriate parties, should the situation warrant use of an instrument other than a grant. It is preferred that one institution act as the lead institution for each project and that a single award be issued to the lead institution who would then issue sub-awards to the other non-Federal participants. Should a project include a request for funding to a Federal entity, funds to that entity will be provided through a separate Economy Act Order.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers -

12.300

10. Catalog of Federal Domestic Assistance (CFDA) Titles -

DOD Basic and Applied Scientific Research

11. Other Information -

N/A

II. AWARD INFORMATION

*Total Amount of Funding Available: Up to $11.8 M over three years, subject to appropriation(s) and final approval by the National Ocean Research Leadership Council (NORLC).

*Anticipated Number of Awards: 6-11

*Anticipated Award Types: Grants are anticipated.

*Anticipated Range of Individual Award Amounts: $200K-$500K annually

*Previous Year(s) Average Individual Award Amounts: N/A

*Anticipated Period of Performance for Awards: 1-3 years (plus options if applicable)

III. ELIGIBILITY INFORMATION

This solicitation is open to all responsible sources.

Historically Black Colleges and Universities and Minority Institutions, as determined by the Secretary of Education to meet requirements of 34 CFR Section 608.2 and 10 U.S.C. Paragraph 2323(a)(1)(C), are particularly encouraged to participate.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process -

Proposals must be submitted electronically by 4:00 p.m. Washington Local Time on 14 October 2004; see details below. One institution should act as the lead institution for each project and submit the proposal covering all participants.

2. Content and Format of Full Proposals -

The Proposals submitted under this BAA should be unclassified. The Proposal submissions will be protected from unauthorized disclosure in accordance with FAR 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information.

Full Proposal Format – Volume 1 - Technical and Volume 2 - Cost Proposal

- Paper Size – 8.5 x 11 inch paper
- Margins – 1" inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – The Technical Proposal (Volume 1) is limited to no more than 15 pages. The cover page, table of contents, severable statement of work for proposed Federal entities (if applicable), list of references and resumes are excluded from the page limitations. Full Proposals exceeding the page limit specified for Volume 1 may not be evaluated. The Cost Proposal (Volume 2) has no page limitation.
- Copies –one electronic copy in .PDF format, submitted by the primary offeror/lead institution (including all supporting documents from all partners and subcontrators), as described below.

Full Proposal Content

VOLUME 1: TECHNICAL PROPOSAL should be one document including efforts proposed by all participants on the project.

- **Cover Page:** This should include the words "Technical Proposal" and the following:

  1) BAA number;
  2) Title of Proposal;
  3) Identity of prime Offeror/Lead Institution and complete list of proposed project participants;
  4) Technical contact (name, address, phone/fax, electronic mail address)
  5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
  6) Duration of effort (differentiate basic effort and options)
  7) Signatures of Principal Investigator and required institutional official(s)

- **Table of Contents**

- **Project Summary/Abstract**

- **Statement of Work:** A Statement of Work (SOW) clearly detailing the scope and objectives of the effort and the technical approach. Include a detailed listing of the technical tasks/subtasks organized by year. Should a particular project include a funding request for the participation of a Federal entity, the proposal should include a separate, severable SOW describing only that work which is to be performed by the Federal entity. A separate SOW should be included for each Federal entity requesting funding. Severable SOW's should be included as an appendix to the Technical Proposal. These appendices related to the participation of Federal entities, if any, will not count against the page limitations set forth above.

- **Project Schedule and Milestones:** A summary of the schedule of events and milestones.

- **Assertion of Data Rights:** Offerors asserting Data Rights should do so in accordance with DFARS 252.227-7013 Rights in Technical Data – Noncommercial Items (NOV 1995). Offerors should include a summary of any proprietary rights to pre-existing results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototype. Any data rights asserted in other parts of the proposal that would impact the rights in this section must be cross-referenced. If there are proprietary rights, the Offeror must explain how these affect its ability to deliver research data, subsystems and toolkits for integration. Additionally, Offerors must explain how the program goals are achievable in light of these proprietary limitations. If there are no claims of proprietary rights in preexisting data, this section shall consist of a statement to that effect.

NOTE: The default data policy in NOPP is full, open, and immediate disclosure of all data taken under NOPP sponsorship. Waivers and exceptions should be requested in the proposal and may be granted by the cognizant Program Officer.

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization, use of personnel; project/function/subcontractor relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment, Hardware, Software, Information required, by version and/or configuration.

- **List of References:** Provide source of each reference cited in the proposal. No specific format required.

- **Curriculum Vitae:** Resumes or CV's of no more than two pages should be included for the Principal Investigator and each major co-investigator.

- **Ship Use:** Funding estimates for any ship-time must be specifically included in the proposal, and the budget should include full ship costs and clearly specify the size and type of vessels proposed for use. Ships of opportunity are encouraged. Proposers should include ship time requests on either the former NSF Form 831 (Ship time Request Form) or preferably the University / National Oceanographic Laboratory System (UNOLS) on-line request form available at: http://www.gso.uri.edu/unols/ship/shiptime.html.

VOLUME 2: COST PROPOSAL (one document including a summary budget for the entire project and individual budgets for all participants)

The Cost Proposal shall consist of a cover page, table listing partners and funds requested by partner and year, and certification pages. Cost information should be organized into two parts. Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar or Gov't fiscal year and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work.

Projects which include participation by a Federal entity should include a separate budget detailing the Federal entity's proposed costs in the full partnership proposal. Federal entities will be funded separately via an Economy Act Order.

Options must be separately priced and presented in the same detail as the base effort.

- **Cover Page:** The words "Cost Proposal" should appear on the cover page in addition to the following information:

  - BAA number
  - Title of Proposal
  - Identity of prime Offeror and complete list of subcontractors, if applicable
  - Technical contact (name, address, phone/fax, electronic mail address)
  - Administrative/business contact (name, address, phone/fax, electronic mail address) and
  - Duration of effort (separately identify basic effort and any proposed options)
  - Signatures of Principal Investigator and required institutional officials

- **Table of Partners and Costs:** The cost proposal should lead with a table summarizing by fiscal year and for each academic institution, business, not-forprofit agency, and government agency requesting funds: the Principal Investigator(s), the name of the institution and its nature, and funds requested for each fiscal year of the proposed effort. Information is required in the following example format:

TABLE OF PARTNERSHIPS:

Principal Investigator(s)*	**Institution***	**FY05 funds Requested**	**FY06 funds Requested**	**FY07 funds Requested**	*…Additional years as required*
R. Johnson (lead PI)	Random University (Academic)	$125,314	$127,216	$131,614	
J. Jones & S. Smith	Vandaley Industries (Business)	$110,615	$37,212	$64,312	
T. Wilson	NOAA Laboratory for Oceans (Government)	$57,612	$61,214	$50,000	
L. Simmons	The Ocean Mammal Conservancy (Non-profit)	$25,000	$25,000	$0	
T. Ritter	DEQ of Texas (State Gov)	$10,000	$10,000	$10,000	
TOTALS:		*$318,541*	*$250,642*	*$245,926*	

*Participant names are fictitious and were used simply for illustrative purposes.

- **Certification package**: Proposals should be accompanied by a completed certification package which can be accessed on the ONR Home Page at Contracts & Grants. Offerors should use the certification for grant proposals and proposals for cooperative agreements or other transaction agreements (other than for prototypes), the certification package is entitled, "Certifications for Grants and Agreements."

Certification Packages from the primary offeror must be signed by an authorized institutional official and included in the .PDF file containing the Cost Proposal.

Part 1: Detailed breakdown of all costs by cost category by calendar or Gov't fiscal year:

- Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (Must show base amount and rate)
- Travel – Number of trips, destination, duration, etc.

- Subcontract – A cost proposal as detailed as the Offeror's cost proposal will be required to be submitted by the subcontractor. The subcontractor's cost proposal can be provided in a sealed envelope with the Offeror's cost proposal or will be requested from the subcontractor at a later date

- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate

- Materials should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.)

- Other Directs Costs, particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the contractor/recipient. (Justifications must be provided when Government funding for such items is sought). Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.).

Part 2: Cost breakdown by task/sub-task using the same task numbers in the Statement of Work.

3. Significant Dates and Times –

Anticipated Schedule of Events

Event	Date (MM/DD/YEAR)	Time (Washington, DC Local Time)
Full Proposals Due Date	10/14/2004	4:00 p.m.
Notification of Selection for Award	12/17/2004 *	
Award (start date)	02/01/2005 *	

* These dates are estimates as of the date of this announcement.

4. Submission of Late Proposals –

Electronic submission of proposals is required, as described below. Any proposal, modification, or revision, that is received at the designated Government office after the exact time specified for receipt of proposals is "late" and will not be considered unless it is received before selection of awards is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition and

(a) If it was transmitted through an electronic commerce method authorized by the announcement, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or

(b) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of proposals and was under the Government's control prior to the time set for receipt of proposals; or

(c) It was the only proposal received.

However, a late modification of an otherwise timely and successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

If an emergency or unanticipated event interrupts normal Government processes so that electronic versions of proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposals will be deemed to be extend to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

5. Address for the Submission of Full Proposals –

Because of potential delays and/or damage in mailing or shipment of hard copy submissions, electronic submissions of Full Proposals are required. Electronic submissions of full proposals must be in PDF format. No more than two files (Technical and Cost Proposal documents, containing all information described above) can be submitted as part of any single partnership proposal. Offerors are strongly encouraged to name the file(s) in a manner that identifies it by lead PI, PI's institution, and Topic to which proposal is submitted. Example file names are:

Johnson.RandomUniversity.Tech-proposal.NOPP-Topic-4A.pdf
Johnson.RandomUniversity.Cost-proposal.NOPP-Topic-4A.pdf

Electronic proposal submissions must be directed to the National Oceanographic Partnership Program no later than 4:00 pm Washington D.C. Local Time on 14 October 2004 via secure web-based file transfer at http://onroutside.onr.navy.mil/aspprocessor/nopp322.

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Evaluations of the proposals will be performed using the following selection criteria listed in the descending order of importance:

- Relevance of the proposed research to NOPP objectives;
- Overall scientific and technical merits of the proposal;
- Level of support of critical research objectives or operational goals such as data accessibility, education and communication;
- Quality of proposed partnerships including the degree of broad participation within the oceanographic community and demonstration of significant partnering among at least two of the following parties: (i) academia, (ii) industry (or not-for-profit organization), and (iii) government (federal, state, local) and extent resources are shared among partners;
- The offeror's capabilities, related experience, and facilities or unique combinations of these that are critical to the proposal objectives;

- . The partnership members' long-term commitment to the proposed objectives;
- . The qualifications and experience of the proposed principal investigator and key personnel;
- Socio-economic merits of the proposal

2. Evaluation Panel -

All proposals will be subject to mail and/or panel review by peers, which may include non-governmental reviewers under non-disclosure agreements. All reviewers will adhere to confidentiality and conflict of interest standards. A synopsis of the NOPP review process can be found at http://www.nopp.org/.

The final distribution of awards will depend on quality of proposals, programmatic balance, NOPP priorities and availability of funds.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements –

- CCR - Successful Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at http://www.onr.navy.mil/02/ccr.htm.

- Certifications – Proposals should be accompanied by a completed certification package as described in Section IV.2

2. Annual Reporting -

All funded NOPP efforts must submit an Annual Report for use in the mandatory annual Spring NOPP Report to Congress. The NOPP Program Office will call for these each winter.

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities

Offerors should provide all necessary facilities required to complete the proposed project. However, should an offeror request that the government furnish property the offeror must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

2. Use of Animals and Human Subjects in Research

If animals are to be utilized in the research effort proposed, the Offeror must complete a DoD Animal Use Protocol with supporting documentation (copies of AAALAC accreditation and /or NIH assurance, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) prior to award. Similarly, for any proposal that involves the experimental use of human subjects, the offeror must obtain approval from the Offeror's committee for protection of human subjects (normally referred to as an Institutional Review Board, (IRB)). The Offeror must also provide NIH (OHRP/DHHS) documentation of a Federal Wide Assurance that covers the proposed human subjects study. If the Offeror does not have a Federal Wide Assurance, a DoD Single Project Assurance for that work must be completed prior to award. Please see http://www.onr.navy.mil/02/howto.htm for further information.

3. Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S & T and DT & E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts, grants, and assistance instruments may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at http://www.hpcmo.hpc.mil/.

13.2 FY 2005 ONR BROAD AGENCY ANNOUNCEMENT (BAA) #05-009 FOR THE NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2). A formal Request for Proposals (RFP), solicitation, and/or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR, and its partner agencies in the National Oceanographic Partnership Program (NOPP), reserve the right to select for award all, some, or none of the proposals in response to this announcement. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

I. GENERAL INFORMATION

1. Agency Name -

Office of Naval Research,
Ballston Center, Tower One
800 N. Quincy Street
Arlington, VA 22217-5660

2. Research Opportunity Title –

National Oceanographic Partnership Program (NOPP)

3. Program Name -

N/A

4. Research Opportunity Number -

ONR BAA 05-009

5. Response Date -

Full Proposals: 31 March 2005, 4:00PM (Washington D.C. Local Time)

6. Research Opportunity Description -

On behalf of the National Oceanographic Partnership Program (NOPP), the Office of Naval Research (ONR) solicits research proposals meeting the goal and purpose of the Partnership Program outlined in Title II, subtitle E, of Public Law 104-201. Any NOPP member agency may fund research in response to this solicitation.

Up to $6M over three years may be available for this solicitation, subject to appropriation and final approval by the National Ocean Research Leadership Council (NORLC). Team efforts are required among at least two of the following three sectors:

- academia,

• industry (including Non-Governmental Organizations - NGOs), and
• government (including State and Local)

Background:

Topic Areas of long-term investment by NOPP are predicated on two NOPP strategic niches: (a) the benefits of partnering on common needs, and (b) sharing the responsibility for those items that might otherwise get left undone but which are needed by all.

Topic 1: IOOS

Implement a sustained and integrated ocean observing system (IOOS) for U.S. global and coastal interests. Provide coastal and global ocean data and products for decision-makers, researchers, and for operational/practical purposes, in general support of the four NOPP Strategic Objectives

Topic 2: Education and Outreach

Increase student and public awareness, knowledge, and understanding of the oceans. Raise the consciousness of the general public and governmental decision makers to the importance of wise stewardship of the ocean and the coastal zone, through the support of science education and communication.

Topic 3: Infrastructure

Modernize the nation's oceanographic infrastructure (excluding construction). Provide access to state-of-the-art tools, training, and facilities for effective and efficient utilization by national ocean programs, in support of the four NOPP Objectives.

Topic 4: Collaboration

Collaborate to strengthen U.S. interagency initiatives in research and their connections to operations. Ensure multi-agency efforts where such collaboration enhances efficiency or effectiveness, and/or reduces costs, in support of the four NOPP Objectives.

• Not all NOPP solicitations will seek proposals in all four investment areas.

• This FY05 announcement seeks only proposals for new projects under:

Topic 4: Collaboration

• Subsequent announcements may call for proposals under any of the NOPP topics, including renewals of existing efforts. Renewal/expansion proposals for existing NOPP projects are not being solicited at this time.

Topic 4: Collaboration

4A: **Assessment of Global Ocean Data Assimilation Experiment (GODAE) Boundary Conditions for Coastal Ocean Predictions**

In this solicitation, NOPP seeks proposals for activities that assess the usefulness of products generated by GODAE, when used in conjunction with satellite observations of the coastal ocean, in predicting the

coastal ocean environment. Information on the GODAE project and products can be found at the GODAE home page (http://www.usgodae.org).

The primary focus for this effort will be to determine the impact of open ocean boundary conditions provided by the GODAE global and basin models on the numerical solutions of coastal ocean models. An assessment of the current capability of numerical models to simulate and predict the coastal environment using only forcing at the boundaries and assimilation of satellite observations is desired. Priority will be given to groups which have both ongoing coastal modeling activities and observational capabilities already in place. Coastal Ocean Observing Systems (COOSs) that are currently funded to observe and model a coastal area are encouraged to respond. Proposals should address the impact of GODAE boundary conditions and satellite remote sensing observations on the accuracy of predictions of the coastal ocean (for both hindcasts and forecasts), with validation provided via the existing *in situ* observational systems. Sensitivity studies that compare the impact of various techniques for forcing regional models at the open boundaries are encouraged. Additionally, proposals that include methods to determine those *in situ* coastal observations that might eventually be the most useful to future assimilation systems are desired.

To accomplish these tasks it may be necessary to investigate sources of variability in the coastal zone by examining the impacts of boundary conditions, initial conditions, and local ocean physics on the predictability of the coastal environment. As the importance of local dynamics may vary in different coastal systems due to dissimilar geometry, bathymetry, and forcing, funded proposals may be chosen such that coasts in different geographical regions can be explored.

Proposals must include a mechanism through which appropriate feedback will be provided to developers of the GODAE system concerning the suitability of GODAE products in addressing the needs of coastal ocean models and forecasts. Collaborations between costal ocean modelers and the large-scale GODAE modelers are strongly encouraged.

Up to $6M will be available over a three year period to support efforts under Topic 4A. The government anticipates supporting up to five (5) regionally-distributed three-year projects, at a level of approximately $400K per year.

7. Point(s) of Contact -

Questions of a technical nature shall be directed to the cognizant Technical Point of Contact, as specified below:

Science and Technology Point of Contact:

Dr. Scott Harper
Physical Oceanography Program
OAS Processes and Prediction S&T Division
ONR 322
Office of Naval Research
Ballston Center Tower One, Room 407-1
800 N. Quincy St.
Arlington, VA 22217-5660
Tel: 703-696-4721
Fax: 703-696-3390, ATTN: NOPP BAA
Email: harpers@onr.navy.mil

Questions of a business nature shall be directed to the cognizant Contract Specialist, as specified below:

Business Point of Contact:

Ms. Ellen Simonoff
Senior Contracting Specialist
Placement Two Branch
ONR 252
Office of Naval Research
Ballston Center Tower One, Room 720
800 N. Quincy St.
Arlington, VA 22217-5660
Tel: (703) 696-0157
Fax: (703) 696-0993, ATTN: NOPP BAA
Email: simonoe@onr.navy.mil

8. Instrument Type(s) -

It is anticipated that awards will be in the form of grants. However, the Government reserves the right to award cooperative agreements, contracts, or other transaction agreements to appropriate parties, should the situation warrant use of an instrument other than a grant. It is preferred that one institution act as the lead institution for each project and that a single award be issued to the lead institution who would then issue sub-awards to the other non-Federal participants. Should a project include a request for funding to a Federal entity, funds to that entity will be provided through a separate Economy Act Order.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers -

12.300

10. Catalog of Federal Domestic Assistance (CFDA) Titles -

DOD Basic and Applied Scientific Research

11. Other Information -

N/A

II. AWARD INFORMATION

*Total Amount of Funding Available: Up to $6.0 M over three years, subject to appropriation(s) and final approval by the National Ocean Research Leadership Council (NORLC).

*Anticipated Number of Awards: up to 5

*Anticipated Award Types: Grants are anticipated.

*Anticipated Range of Individual Award Amounts: approximately $400K annually

*Previous Year(s) Average Individual Award Amounts: N/A

*Anticipated Period of Performance for Awards: 3 years

III. ELIGIBILITY INFORMATION

This solicitation is open to all responsible sources.

Historically Black Colleges and Universities and Minority Institutions, as determined by the Secretary of Education to meet requirements of 34 CFR Section 608.2 and 10 U.S.C. Paragraph 2323(a)(1)(C), are particularly encouraged to participate.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process -

Proposals must be submitted electronically by 4:00 p.m. Washington Local Time on 31 March 2005; see details below. One institution should act as the lead institution for each project and submit the proposal covering all participants.

2. Content and Format of Full Proposals -

The Proposals submitted under this BAA should be unclassified. The Proposal submissions will be protected from unauthorized disclosure in accordance with FAR 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information.

Full Proposal Format – Volume 1 - Technical and Volume 2 - Cost Proposal

- Paper Size – 8.5 x 11 inch paper
- Margins – 1" inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – The Technical Proposal (Volume 1) is limited to no more than 15 pages. The cover page, table of contents, severable statements of work for proposed Federal entities (if applicable), list of references and resumes are excluded from the page limitations. Full Proposals exceeding the page limit specified for Volume 1 may not be evaluated. The Cost Proposal (Volume 2) has no page limitation.
- Copies –one electronic copy in .PDF format, submitted by the primary offeror/lead institution (including all supporting documents from all partners and subcontrators), as described below.

Full Proposal Content

VOLUME 1: TECHNICAL PROPOSAL should be one document including efforts proposed by all participants on the project.

- **Cover Page:** This should include the words "Technical Proposal" and the following:

  1) BAA number;
  2) Title of Proposal;
  3) Identity of prime Offeror/Lead Institution and complete list of proposed project participants;
  4) Technical contact (name, address, phone/fax, electronic mail address)
  5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
  6) Duration of effort (differentiate basic effort and options)
  7) Signatures of Principal Investigator and required institutional official(s)

- **Table of Contents**

- **Project Summary/Abstract**

• **Statement of Work:** A Statement of Work (SOW) clearly detailing the scope and objectives of the effort and the technical approach. Include a detailed listing of the technical tasks/subtasks organized by year. Should a particular project include a funding request for the participation of a Federal entity, the proposal should include a separate SOW describing only that work which is to be performed by the Federal entity. A separate SOW should be included for each Federal entity requesting funding. SOWs related to the participation of Federal entities, if any, should be included as an appendix to the Technical Proposal. These appendices will not count against the page limitations set forth above.

• **Project Schedule and Milestones:** A summary of the schedule of events and milestones.

• **Assertion of Data Rights:** Offerors asserting Data Rights should do so in accordance with DFARS 252.227-7013 Rights in Technical Data – Noncommercial Items (NOV 1995). Offerors should include a summary of any proprietary rights to pre-existing results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototype. Any data rights asserted in other parts of the proposal that would impact the rights in this section must be cross-referenced. If there are proprietary rights, the Offeror must explain how these affect its ability to deliver research data, subsystems and toolkits for integration. Additionally, Offerors must explain how the program goals are achievable in light of these proprietary limitations. If there are no claims of proprietary rights in preexisting data, this section shall consist of a statement to that effect.

NOTE: The default data policy in NOPP is full, open, and immediate disclosure of all data taken under NOPP sponsorship. Waivers and exceptions should be requested in the proposal and may be granted by the cognizant Program Officer.

• **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization, use of personnel; project/function/subcontractor relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment, Hardware, Software, Information required, by version and/or configuration.

• **List of References:** Provide source of each reference cited in the proposal. No specific format required.

• **Curriculum Vitae:** Resumes or CV's of no more than two pages should be included for the Principal Investigator and each major co-investigator.

• **Ship Use:** Funding estimates for any ship-time must be specifically included in the proposal, and the budget should include full ship costs and clearly specify the size and type of vessels proposed for use. Ships of opportunity are encouraged. Proposers should include ship time requests on either the former NSF Form 831 (Ship time Request Form) or preferably the University / National Oceanographic Laboratory System (UNOLS) on-line request form available at: http://www.gso.uri.edu/unols/ship/shiptime.html.

VOLUME 2: COST PROPOSAL (one document including a summary budget for the entire project and individual budgets for all participants)

The Cost Proposal shall consist of a cover page, table listing partners and funds requested by partner and year, and certification pages. Cost information should be organized into two parts. Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar or Gov't fiscal year and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work.

Projects which include participation by a Federal entity should include a separate budget detailing the Federal entity's proposed costs in the full partnership proposal. Federal entities will be funded separately via an Economy Act Order.

• **Cover Page:** The words "Cost Proposal" should appear on the cover page in addition to the following information:

- BAA number
- Title of Proposal
- Identity of prime Offeror and complete list of subcontractors, if applicable
- Technical contact (name, address, phone/fax, electronic mail address)
- Administrative/business contact (name, address, phone/fax, electronic mail address)
- Duration of effort (separately identify basic effort and any proposed options) and
- Signatures of Principal Investigator and required institutional officials

• **Table of Partners and Costs:** The cost proposal should lead with a table summarizing by fiscal year and for each academic institution, business, not-for-profit agency, and government agency requesting funds: the Principal Investigator(s), the name of the institution and its nature, and funds requested for each fiscal year of the proposed effort. Information is required in the following example format:

TABLE OF PARTNERSHIPS:

Principal Investigator(s)*	**Institution***	**FY05 funds Requested**	**FY06 funds Requested**	**FY07 funds Requested**	… *Additional years as required*
R. Johnson (lead PI)	Random University (Academic)	$125,314	$127,216	$131,614	
J. Jones & S. Smith	Vandaley Industrie (Business)	$110,615	$37,212	$64,312	
L. Simmons	The Ocean Mammal Conservancy (Non-profit)	$25,000	$25,000	$0	
T. Ritter	DEQ of Texas (State Gov)	$10,000	$10,000	$10,000	
OTHER THAN FEDERAL	----------	$260,929	$189,428	$195,926	

GOVERNMENT SUBTOTAL:				
T. Wilson	NOAA Laboratory for Oceans (Federal Government)	$57,612	$61,214	$50,000
FEDERAL GOVERNMENT PARTICIPANT TOTAL:	----------	$57,612	$61,214	$50,000
PROJECT TOTAL:		*$318,541*	*$250,642*	*$245,926*

*Participant names are fictitious and were used simply for illustrative purposes.

• **Certification package**: Proposals should be accompanied by a completed certification package which can be accessed on the ONR Home Page at Contracts & Grants (http://www.onr.navy.mil/02/rep_cert.asp). Offerors should use the certification for grant proposals and proposals for cooperative agreements or other transaction agreements (other than for prototypes). The certification package is entitled "Certifications for Grants and Agreements."

Certification Packages from the primary offeror must be signed by an authorized institutional official and included in the .PDF file containing the Cost Proposal.

Part 1: Detailed breakdown of all costs by cost category by calendar or Gov't fiscal year:

• Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates
• Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (Must show base amount and rate)
• Travel – Number of trips, destination, duration, etc.
• Subcontract – A cost proposal as detailed as the Offeror's cost proposal will be required to be submitted by the subcontractor. The subcontractor's cost proposal can be provided in a sealed envelope with the Offeror's cost proposal or will be requested from the subcontractor at a later date
• Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate
• Materials should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.)
• Other Directs Costs, particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the contractor/recipient. (Justifications must be provided when Government funding for such items is sought). Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.).

Part 2: Cost breakdown by task/sub-task using the same task numbers in the Statement of Work.

3. Significant Dates and Times –

Anticipated Schedule of Events

Event	Date (MM/DD/YEAR)	Time (Washington DC Local Time)
Full Proposals Due Date	03/31/2005	4:00 p.m.
Notification of Selection for Award	06/01/2005 *	
Award (start date)	07/01/2005 *	

* These dates are estimates as of the date of this announcement.

4. Submission of Late Proposals –

Electronic submission of proposals is required, as described below. Any proposal, modification, or revision, that is received at the designated Government office after the exact time specified for receipt of proposals is "late" and will not be considered unless ALL of the following criteria are met: it is received before selection of awards is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition, and it was the only proposal received. Proposers should note the above carefully. The rule for declining "late" proposals must, by law, be strictly enforced.

However, a late modification of an otherwise timely and successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

If an emergency or unanticipated event interrupts normal Government processes so that electronic versions of proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposals will be deemed to be extend to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

5. Address for the Submission of Full Proposals –

Because of potential delays and/or damage in mailing or shipment of hard copy submissions, electronic submissions of Full Proposals are required. Electronic submissions of full proposals must be in PDF format. No more than two files (Technical and Cost Proposal documents, containing all information described above) can be submitted as part of any single partnership proposal. Offerors are strongly encouraged to name the file(s) in a manner that identifies it by lead PI, PI's institution, and Topic to which proposal is submitted. Example file names are:

Johnson.RandomUniversity.Tech-proposal.NOPP-Topic-4A.pdf

Johnson.RandomUniversity.Cost-proposal.NOPP-Topic-4A.pdf

Electronic proposal submissions must be directed to the National Oceanographic Partnership Program no later than 4:00 pm Washington D.C. Local Time on 31 March 2005 via secure web-based file transfer at http://onroutside.onr.navy.mil/aspprocessor/nopp322.

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Evaluations of the proposals will be performed using the following selection criteria listed in the descending order of importance:

• Relevance of the proposed research to NOPP objectives;
• Overall scientific and technical merits of the proposal;
• Level of support of critical research objectives or operational goals such as data accessibility, education and communication;
• Quality of proposed partnerships including the degree of broad participation within the oceanographic community and demonstration of significant partnering among at least two of the following parties: (i) academia, (ii) industry (or not-for-profit organization), and (iii) government (federal, state, local) and extent resources are shared among partners;
• The offeror's capabilities, related experience, and facilities or unique combinations of these that are critical to the proposal objectives;
• The partnership members' long-term commitment to the proposed objectives;
• The qualifications and experience of the proposed principal investigator and key personnel;

2. Evaluation Panel -

All proposals will be subject to mail and/or panel review by peers, which may include non-governmental reviewers under non-disclosure agreements. All reviewers will adhere to confidentiality and conflict of interest standards. A synopsis of the NOPP review process can be found at http://www.nopp.org/. The final distribution of awards will depend on quality of proposals, programmatic balance, NOPP priorities and availability of funds.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements –

• CCR - Successful Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at http://www.onr.navy.mil/02/ccr.htm.
• Certifications – Proposals should be accompanied by a completed certification package as described in Section IV.2

2. Annual Reporting -

All funded NOPP efforts must submit an Annual Report for use in the mandatory annual Spring NOPP Report to Congress. The NOPP Program Office will call for these each winter.

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities

Offerors should provide all necessary facilities required to complete the proposed project. However, should an offeror request that the government furnish property the offeror must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

2. Use of Animals and Human Subjects in Research

If animals are to be utilized in the research effort proposed, the Offeror must complete a DoD Animal Use Protocol with supporting documentation (copies of AAALAC accreditation and /or NIH assurance, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) prior to award. Similarly, for any proposal that involves the experimental use of human subjects, the Offeror must obtain approval from the Offeror's committee for protection of human subjects (normally referred to as an Institutional Review Board, (IRB)). The Offeror must also provide NIH (OHRP/DHHS) documentation of a Federal Wide Assurance that covers the proposed human subjects study. If the Offeror does not have a Federal Wide Assurance, a DoD Single Project Assurance for that work must be completed prior to award. Please see http://www.onr.navy.mil/02/howto.htm for further information.

3. Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S & T and DT & E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts, grants, and assistance instruments may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at http://www.hpcmo.hpc.mil/.

13.3 FY 2005 REQUEST FOR PROPOSALS (RFP) ON INVESTIGATIONS OF CHEMOSYNTHETIC COMMUNITIES ON THE LOWER CONTINENTAL SLOPE OF THE GULF OF MEXICO

General Information

Document Type: Presolicitation Notice

Solicitation Number: 0105RP39187

Posted Date: Mar 30, 2005

Original Response Date: Apr 20, 2005

Current Response Date: Apr 20, 2005

Original Archive Date: Mar 30, 2006

Current Archive Date: Mar 30, 2006

Classification Code: B -- Special studies and analysis - not R&D

Set Aside: N/A

Contracting Office Address

Minerals Management Service Procurement Operations Branch 381 Elden Street, MS 2100 Herndon VA 20170

Description

The U.S. DEPARTMENT OF THE INTERIOR, MINERALS MANAGEMENT SERVICE (MMS), solicits CAPABILITIES STATEMENTS for the study entitled "INVESTIGATIONS OF CHEMOSYNTHETIC COMMUNITIES ON THE LOWER CONTINENTAL SLOPE OF THE GULF OF MEXICO".

The NAICS code is 541990. The MMS intends to competitively award a contract for a requirement under the auspices of the National Oceanographic Partnership Program (NOPP). NOPP is a collaboration of fifteen Federal agencies to provide leadership and coordination of national oceanographic research and education programs. This solicitation directly addresses two of five elements of the NOPP Investment Strategy that represent emerging national ocean research needs and agency priorities Operational/Routine Observations and Outreach/Education).

Both Minerals Management Service and the National Oceanic and Atmospheric Administration's Office of Ocean Exploration Office will be collaborating agencies. INTRODUCTION: The vast majority of the bottom in deepwater areas of the Gulf of Mexico (GOM) is comprised of soft sediments (mixtures of sand, silt, and clay), but two other major habitat types also occur; chemosynthetic communities and a variety of community types that can be associated with hard bottom in areas that may or may not also be associated with living chemosynthetic megafauna (most all hard bottom areas in the deep Gulf are created through biogenic precipitation of carbonate by chemosynthetic bacteria). Many MMS sponsored studies

have been limited to the maximum depths of the most commonly available in situ observation research tools including the submersibles from Harbor Branch Oceanographic Institution, the Johnson Sea Link I and II, and the Navy's nuclear research submarine, NR1.

All three of these facilities are limited to approximately a 1,000 m working depth. There is a great deal of evidence that chemosynthetic communities occur, and are probably common at depths below 1,000 m. Several high-density chemosynthetic communities have been documented at depths below 2,000 m in the central GOM. Remote sensing signatures, including space imagery and reflectivity of the sea floor from seismic surveys, indicate that there may be many more undiscovered high-density communities in deeper areas of the Gulf, particularly between 1,000 and 2,000 m in depth.

Differences in bottom sediment regimes, salt structure, water temperatures, and hydrate stability compared to the upper slope may radically alter the abundance and composition of lower slope communities. In addition, deepwater hard bottom habitats not associated with chemosynthetic communities are also recognized for their value as unique fish habitat, high biodiversity and deepwater coral habitat.

The most significant deepwater coral species in the GOM, Lophelia has only been recorded from the upper slope depths, but there is no reason not to expect some coral growth, and even the presence of Lophelia at depths below 1,000 m. Although Lophelia is most common world wide between 200-500 m, it has been reported as deep as 3,000 m. One fundamental MMS mission is to identify and consider the protection of sensitive biological habitats in U.S. Federal waters. The oil and gas industry has, and will continue to move into deeper and deeper water in their continuing search for extractable energy reserves in the Gulf of Mexico. Knowledge of the distribution, relative abundance, and population structures of deepwater organisms provides critical information to estimate the potential effects of deepwater exploration and production and allow refinement of mitigation measures for the deeper continental slope area. Little is presently known about the potential occurrence and distribution of lower slope chemosynthetic communities and their sensitivity to possible impacting activities related to energy production. There may be significant differences between upper and lower slope chemosynthetic communities. Even less is known about coral or other hard bottom fauna inhabiting limited hard substrate on the lower Gulf slope.

THE OBJECTIVES OF THIS STUDY ARE: (1) to characterize known or newly discovered chemosynthetic communities at depths below 1,000 m in the central or western Gulf of Mexico. (2) to characterize all other hard bottom biological communities encountered regardless of associations with active hydrocarbon seep activity or living chemosynthetic community species in the central or western Gulf of Mexico, 3) to determine the comparative degree of sensitivity to anthropogenic impacts for both 1) and 2) above through a variety of approaches such as rarity, unique taxonomy/biodiversity, or other environmental risk assessment methodologies. This objective includes development of understanding how these deep communities are similar or different from their shallower counterparts and 4) to further develop successful assessment methodologies for correlation of remote sensing information such as bathymetry, seabed acoustic reflectivity (anomalies), sub-bottom structure or other geophysical signatures obtained by non-visual techniques with the "potential" presence of non-soft bottom biological communities at depths below 1,000 m in the central or western Gulf of Mexico.

SCOPE OF WORK: This study consists of eight (8) main tasks: (1) selection of a Scientific Review Group; (2) refinement of hypotheses, field methodologies and logistics; (3) site selection; (4) field sampling; (5) sample and data analysis; (6) data interpretation, synthesis and reporting; (7) development of educational outreach materials; and (8) interaction with international marine life database organizations. The estimated cost of this study is between $2.8 and $3.0 million.

The performance period of this study is anticipated to be forty-eight (48) months. The field work is anticipated to occur during the summer of the second and third years with the remaining time dedicated to analyses, synthesis of results, and completion of all deliverables. The study area is the region of the northern Gulf of Mexico lower continental slope below a depth of 1,000 m.

The National Oceanic and Atmospheric Administration's Office of Ocean Exploration (NOAA OE) is expected to provide, at no cost to the Offeror, up to 15 days of field time on the R/V Atlantis II

including the DSRV Alvin submersible during 2006 and up to 15 days of field time including research vessel and other submergence facilities such as ROVs for the 2007 field year (not Alvin).

HOW TO RESPOND: Submit Capabilities Statements on or before COB April 20, 2005, detailing:

(1) Your key personnel, scientific and technical, (those who would have the primary responsibility for performing and/or managing the project) with their qualifications, specific expertise, and experience. Particularly relevant is their expertise in the fields of deep-sea biology (including field and laboratory work experience) demonstrated by qualification and authorship in peer-reviewed publications. Information about technical personnel who will be responsible for the organization of information and the production of documents and manuscripts must be provided.

(2) Your organization's experience with this type of work and a description of your facilities. Specifically, the MMS and NOAA OE will look at your ability to timely complete projects, adhere to schedules and budgets, effectiveness of cost controls, and quality of products delivered; degree of comparability of past projects to the current project, including number, complexity, and size. Information about your subcontracts, partners, and quality of cooperation between organization, staff, key personnel, and the client must be provided.

(3) Specific references (including project identifier/contract number and description, period of performance, dollar amount, client name, and current telephone number) for work of this nature that your personnel or organization is currently performing or has completed within the last three years. If you believe the Government will find derogatory information as a result of checking your past performance record, please provide an explanation and any remedial action taken by your company to address the problem. All proprietary information should be marked as such. Responses will be reviewed and will be held in a confidential manner.

EVALUATION OF CAPABILITY STATEMENTS: (1) Past Performance, which includes: adherence to schedules and budgets, effectiveness of cost control, the acceptability of previous products delivered, effectiveness of program management, and the Offeror's willingness to cooperate with the customer in both routine matters and when confronted by unexpected difficulties.

(2) The degree of comparability of past projects to the current project, including number, complexity, and size.

(3) The experience and expertise of all scientific and technical key personnel. Evaluation factors include the length and quality of experience for each person assigned to perform specific tasks, their experience and expertise in the fields applicable to the performance of this study and their level of effort commitment towards this study.

(4) Your Project Manager's demonstrated leadership ability and experience with managing a large team and ability to control costs and to keep project performance and document preparation on schedule.

CAPABILITY STATEMENTS SHALL BE SUBMITTED AS FOLLOWS: one original and two (2) copies of the Capabilities Statement to Debra Bridge, Contract Specialist, Minerals Management Service, Procurement Operations Branch, MS 2100, 381 Elden St., Herndon, VA 20170-4817. Four (4) additional copies shall be submitted to Connie Landry, Minerals Management Service, Gulf of Mexico OCS Region, 1201 Elmwood Park Boulevard, MS 5431, New Orleans, LA 70123-2394. Two (2) additional copies shall be submitted to Mr. John McDonough, NOAA Office of Ocean Exploration, SSMC3, 1315 East-West Hwy, Silver Spring, MD 20910.

It is the responsibility of the Offeror to ensure that the Capabilities Statements are received by the date and time set forth above. Timeliness of receipt of submissions will be determined by the time received in the Procurement Operations Branch, Herndon, VA. Following the review of the capability statements, all offerors will be informed of the results of the evaluation, and those determined from the evaluation factors described above to be most qualified to successfully perform the effort will be provided a Request For Proposal (RFP). QUESTIONS should be faxed as soon as practicable to Debra Bridge at 703-787-1041 or e-mailed to debra.bridge@mms.gov and paula.barksdale@mms.gov.

ALL INQUIRIES MUST INCLUDE RFP NUMBER 39187 and TITLE ("INVESTIGATIONS OF CHEMOSYNTHETIC COMMUNITIES ON THE LOWER CONTINENTAL SLOPE OF THE

GULF OF MEXICO"), AS WELL AS YOUR FULL NAME, ORGANIZATION NAME, ADDRESS, PHONE AND FACSIMILE NUMBERS. REQUESTS OR QUESTIONS BY TELEPHONE ARE STRONGLY DISCOURAGED.

Point of Contact

Debra M. Bridge Contract Specialist 7037871814 Debra.Bridge@mms.gov;
Email your questions to Point of Contact above, or if none listed, contact the IDEAS EC HELP DESK for assistance at EC_helpdesk@NBC.GOV

13.4 FY 2006 ONR BROAD AGENCY ANNOUNCEMENT (BAA) #05-026 FOR THE NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in DoD Grants and Agreement Regulations (DODGARs) and Federal Acquisition Regulation (FAR) 6.102(d)(2). A formal Request for Proposals (RFP), solicitation, and/or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR, and its partner agencies in the National Oceanographic Partnership Program (NOPP), reserve the right to select for award all, some, or none of the proposals in response to this announcement. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

I. GENERAL INFORMATION

1. Agency Name –

Office of Naval Research,
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995

2. Research Opportunity Title –

National Oceanographic Partnership Program (NOPP)

3. Program Name –

N/A

4. Research Opportunity Number –

ONR BAA 05-026

5. Response Date –

Full Proposals: 24 January, 2006, 4:00PM (Washington D.C. Local Time)

6. Research Opportunity Description –

On behalf of the National Oceanographic Partnership Program (NOPP), the Office of Naval Research (ONR) solicits research proposals meeting the goal and purpose of the Partnership Program outlined in Title II, subtitle E, of Public Law 104-201. Any NOPP member agency may fund research in response to this solicitation.

Up to $3.275 M over three years may be available for this solicitation, subject to appropriation and final approval by the National Ocean Research Leadership Council (NORLC).

Team efforts are required among at least two of the following three sectors:

- academia,
- industry (including Non-Governmental Organizations - NGOs), and
- government (including State and Local)

Background:

Topic Areas of long-term investment by NOPP are predicated on two NOPP strategic niches: (a) the benefits of partnering on common needs, and (b) sharing the responsibility for those items that might otherwise get left undone but which are needed by all.

Topic 1: IOOS
Implement a sustained and integrated ocean observing system (IOOS) for U.S. global and coastal interests. Provide coastal and global ocean data and products for decision-makers, researchers, and for operational/practical purposes, in general support of the four NOPP Strategic Objectives.

Topic 2: Education and Outreach
Increase student and public awareness, knowledge, and understanding of the oceans. Raise the consciousness of the general public and governmental decision-makers to the importance of wise stewardship of the ocean and the coastal zone, through the support of science education and communication.

Topic 3: Infrastructure
Modernize the nation's oceanographic infrastructure (excluding construction). Provide access to state-of-the-art tools, training, and facilities for effective and efficient utilization by national ocean programs, in support of the four NOPP Objectives.

Topic 4: Collaboration
Collaborate to strengthen U.S. interagency initiatives in research and their connections to operations. Ensure multi-agency efforts where such collaboration enhances efficiency or effectiveness, and/or reduces costs, in support of the four NOPP Objectives.

• Not all NOPP solicitations will seek proposals in all four investment areas.
• This FY06 announcement seeks only proposals for new projects under:

Topic 2: Education and Outreach, and
Topic 4: Collaboration

• Subsequent announcements may call for proposals under any of the NOPP topics, including renewals of existing efforts. Renewal/expansion proposals for existing NOPP projects are not being solicited at this time.

Topic 2: Education and Outreach

2A: Understand, identify gaps and predict changes in the workforce for ocean sciences, technology, and operations

The National Science Board has called for a renewed national commitment to educate and train the science and technology workforce needed to sustain innovation for a vital and highly competitive economy. Many other national committees and commissions (National Commission on Teaching and America's Future, National Commission on Mathematics and Science Teaching for the 21st Century, U.S. Commission on National Security in the 21st Century) have voiced this concern. The ocean sciences, technology, and operations workforce is of special interest because of growing issues related to the ocean, aging of the current workforce, dropping enrollments in the physical sciences and engineering, and the prospect for expanded career opportunities as ocean observing systems become operational. Although the need is recognized, little quantitative research has been done to characterize the current and predict the future ocean sciences, technology and operations workforce, identify gaps in education and training, and consider alternatives to fill those gaps. Many organizations (industry, academia, professional societies, and government at all levels) would utilize this information in their initiative planning and workforce decisions.

The research sought here is the initial step in a long-term research effort to remedy this situation. This initial step is intended to establish the scope (extent and depth) of the overall long-term research effort and to identify high priority areas for further intensive research. In-depth research efforts identified through the funded research may be supported via options to the initial research project and/or through additional BAA announcements. To fully describe the scope of the long-term effort, the proposed research should at a minimum: (1) characterize the current workforce in ocean/coasts and Great Lakes sciences, technology, and operational arenas; (2) provide initial predictions for evolution of this workforce over time with attention to ocean observing systems and other innovations as they come on-line; and (3) consider alternatives for education and training programs that respond to these workforce trends, with a particular focus on higher education. Research should also identify information needed to characterize long-term workforce trends. All projections should address the existing state of the workforce and its evolution over the next 10 to 20 years. The research should consider the ocean sciences, technology, and operational careers (on-shore and off-shore) in industry, academia, non-profit organizations, and government.

Career sectors to be considered include:

(1) Operations and maintenance of facilities such as ships (exploration, research and survey), underwater vehicles (submersibles, ROVs, TOVs, and AUVs), and ocean observing systems (in situ and remote sensing),
(2) Data and information management including data telemetry (IT and software systems),
(3) Analysis, modeling and interpretation of ocean information for use in research and operational decision-making,
(4) Ocean engineering including in-water, airborne, land-based and space-based platform and sensor technologies,
(5) Basic research in the ocean sciences and technology, and
(6) Ocean education, extension, capacity building, and communications.

The research at a minimum will identify the current and project the future:

(1) Size of workforce
(2) Job functions and knowledge and skill sets required
(3) Geography of workforce
(4) Life styles and aptitudes and pay range
(5) Marketplace competition – identification of existing talent pool and gaps in that pool
(6) Models of effective education and training practice in industry for each of the career sectors and sub-sectors considered by the proposed research.

Research addressing the education and training alternatives should consider:

(1) Existing and future education and training programs needed to fill workforce gaps, with a particular focus on higher education,
(2) Employers interest in programs that establish standards for skills and abilities, and
(3) Mechanisms to foster an up-to-date, representative, and vital workforce within the context of the demographic changes underway within the U.S.

Proposed research should build on existing knowledge of the workforce and complement and collaborate with existing research efforts underway in this area. Consistent with NOPP policy and to facilitate the long-term research effort, the primary data collected and compiled during the course of the proposed research will be made available for ready access, download, and use by decision-makers, researchers, and other operational/practical users.

Offeror must clearly describe research objectives and methods (analytical techniques and methodologies) and provide a timeline with milestones. Research responsibilities of each team member and their background and qualifications for these responsibilities must be clearly articulated, including relevant prior research experience with the proposed methods, relevant experience and expertise collecting primary information and utilizing existing sources, and relevant familiarity with similar analysis carried out in this or other fields.

Up to $575,000 will be available over a two-year period to support research addressing this BAA statement. Although funding levels of individual projects may vary, the government anticipates supporting at least one (1) two-year project, at a level of approximately $250K per year. Offerors may also propose one or two one-year options at a funding level of approximately $200K per year. (Note that the maximum size of anticipated awards would imply a maximum of $500K being available over a two-year period. However, the number of awards and the annual funding level are approximations and the $575K figure was inserted intentionally.) Offeror must provide a progress report 6 months after receipt of initial funding, an interim report at 18 months, a final report at 24 months, and a report at the end of each option year if the option years are supported. It is anticipated, as with all research projects, that results provided in the progress reports will be published in the appropriate peer reviewed literature.

Topic 4: Collaboration

4A: An Open-Source Community Model for Coastal Sediment Transport

Sediment transport processes continually modify the boundaries between terrestrial and ocean environments in a variety of different settings, the most familiar being a sandy beach. But in addition to beaches, rivers debouch directly into the sea, or form deltas or estuaries; tidal inlets connect backbarrier sounds to the continental shelf; and humans perturb nature by creating harbors and dredging channels. Understanding sediment transport processes in such diverse coastal settings is essential for addressing a variety of coastal issues related to commerce, defense, and the quality of the marine environment; however, the scientific communities fostering sediment transport research have long been largely split along terrestrial and marine party lines. As a result, understanding of the transport and fate of sediment in coastal settings is far from satisfactory. Although researchers from federal agencies, academia, and private industry are independently developing predictive numerical models for sediment transport in the coastal environment, the establishment of a publicly available, well-tested, and widely accepted community model, along with documentation and test cases, would greatly benefit the coastal research and management communities.

Partnership efforts are sought to develop a community coastal sediment-transport modeling system as a means for motivating, advancing, capturing, and sharing scientific knowledge of processes responsible for transport, transformation, and fate of particulates in coastal environments. The modeling system is intended to facilitate comparison of existing theories with laboratory and field measurements and, ultimately, to provide a tool for research scientists, engineers, military personnel, and resource managers to address real-world applications driven by societal needs. The need for such a system and a discussion of key components and challenges are described by Sherwood et al., 2000 (EOS, Transactions of the American Geophysical Union, 81(43), p. 502).

Characteristics of the modeling system components should include and address the following.

- The overall goal is a numerical model coupling hydrodynamics, sediment transport, and morphodynamics suitable for diagnostic simulations of coastal processes extending downstream from the limit of tidal influence in rivers, through the surf zone, and out onto the continental shelf at length scales up to tens of km and time scales ranging up to years. Codes describing the hydrodynamics of the coastal processes of interest, while not perfect, already exist and are readily available. This task focuses on the development of sediment transport modules that can be integrated into existing hydrodynamic codes; it is not intended to support significant development of wave or circulation codes.
- The source code for the model should be expertly written, well-documented, modular, portable, and suitable for extension and revision. The initial model code and all subsequent code developed in this program must be available and either reside in the public domain or be open source code (in the spirit of the GNU software license).
- Auxiliary programs for grid generation, pre- and post processing of model input/output, visualization, and comparison of model results with measurements, data preparation, pre- and post-processing and visualization of model results.
- Model maintenance infrastructure including documentation, version control, web-based distribution and user support, and user training.
- Test cases for model verification and intra-model comparison, including data required for input or comparison.

Proposals should include a diverse team capable of providing the following:

- Project management and support for the community model infrastructure, including plans and timetables for model dissemination.
- Scientific development, implementation, and testing of individual model components to address key processes such as transport for cohesive, non-cohesive, and mixed sediments; bed/water exchanges of sediment; particle aggregation/disaggregation; wave-current interactions; fluid mud processes, and bottom roughness.

Proposals may include pilot or demonstration applications of the model leveraged with ongoing and planned field studies; however, this NOPP task is not intended to support significant laboratory or field activities.

Up to $2.7 M will be available over a three-year period to support this effort. The government anticipates supporting one (1) three-year project at a level of approximately $900K per year.

7. Point(s) of Contact –

Questions of a technical nature shall be directed to the cognizant Technical Point of Contact, as specified below:

Science and Technology Point of Contact:

Dr. James E. Eckman
National Oceanographic Partnership Program
ONR 322
Office of Naval Research
One Liberty Center, Room 1073
875 N. Randolph St.
Arlington, VA 22203-1995
Tel: 703-696-4590
Fax: 703-696-3390, ATTN: NOPP BAA
Email: eckmanj@onr.navy.mil

Questions of a business nature shall be directed to the cognizant Contract Specialist, as specified below:

Business Point of Contact:

Ms. Ellen Simonoff
Contracting Officer
Placement Two Branch
ONR 252
Office of Naval Research
One Liberty Center, Room W1272
875 N. Randolph St.
Arlington, VA 22203-1995
Tel: (703) 696-0157
Fax: (703) 696-0993, ATTN: NOPP BAA
Email: simonoe@onr.navy.mil

8. Instrument Type(s) –

It is anticipated that awards will be in the form of grants. However, the Government reserves the right to award cooperative agreements, contracts, or other transaction agreements to appropriate parties, should the situation warrant use of an instrument other than a grant. It is strongly preferred that one institution act as the lead institution for each project and that a single award be issued to the lead institution who would then issue sub-awards to the other non-Federal participants. Should a project include a request for funding to a Federal entity, funds to that entity will be provided through a separate Economy Act Order.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers -

12.300

10. Catalog of Federal Domestic Assistance (CFDA) Titles –

DOD Basic and Applied Scientific Research

11. Other Information -

N/A

II. AWARD INFORMATION

1. Total Amount of Funding Available: Up to $3.275 M over three years, subject to appropriation(s) and final approval by the National Ocean Research Leadership Council (NORLC).
2. Anticipated Number of Awards: Up to 2
3. Anticipated Award Types: Grants are anticipated.
4. Anticipated Range of Individual Award Amounts: approximately $250K annually (Topic 2A) or $900K annually (Topic 4A)
5. Anticipated Period of Performance for Awards: 2 years (Topic 2A) or 3 years (Topic 4A)

III. ELIGIBILITY INFORMATION

This solicitation is open to all responsible sources.

Historically Black Colleges and Universities and Minority Institutions, as determined by the Secretary of Education to meet requirements of 34 CFR Section 608.2 and 10 U.S.C. Paragraph 2323(a)(1)(C), are particularly encouraged to participate.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process – Proposals must be submitted electronically by 4:00 p.m. Washington Local Time on 24 January 2006, see details below. One institution should act as the lead institution for each project and submit the proposal covering all participants.

2. Content and Format of Full Proposals – The Proposals submitted under this BAA should be unclassified. The Proposal submissions will be protected from unauthorized disclosure in accordance with FAR 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information.

Full Proposal Format – Volume 1 - Technical and Volume 2 - Cost Proposal

- Paper Size – 8.5 x 11 inch paper
- Margins – 1" inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – The Technical Proposal (Volume 1) is limited to no more than 15 pages. The cover page, table of contents, severable statements of work for proposed Federal entities (if applicable), list of references and resumes are excluded from the page limitations. Full Proposals exceeding the page limit specified for Volume 1 may not be evaluated. The Cost Proposal (Volume 2) has no page limitation.
- Copies –one electronic copy in .PDF format, submitted by the primary offeror/lead institution (including all supporting documents from all partners and subcontrators), as described below.

Full Proposal Content

VOLUME 1: TECHNICAL PROPOSAL should be one document including efforts proposed by all participants on the project.

Cover Page: This should include the words "Technical Proposal" and the following:

1) BAA number;
2) Title of Proposal;
3) Identity of prime Offeror/Lead Institution and complete list of proposed project participants;
4) Technical contact (name, address, phone/fax, electronic mail address)

5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
6) Duration of effort (differentiate basic effort and options)
7) Signatures of Principal Investigator and required institutional official(s)

Table of Contents

Project Summary/Abstract

Statement of Work: A Statement of Work (SOW) clearly detailing the scope and objectives of the effort and the technical approach. Include a detailed listing of the technical tasks/subtasks organized by year. Should a particular project include a funding request for the participation of a Federal entity, the proposal should include a separate SOW describing only that work which is to be performed by the Federal entity. A separate SOW should be included for each Federal entity requesting funding. SOWs related to the participation of Federal entities, if any, should be included as an appendix to the Technical Proposal. These appendices will not count against the page limitations set forth above.

Project Schedule and Milestones: A summary of the schedule of events and milestones.

Assertion of Data Rights: Offerors asserting Data Rights should do so in accordance with DFARS 252.227-7013 Rights in Technical Data – Noncommercial Items (NOV 1995). Offerors should include a summary of any proprietary rights to pre-existing results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototype. Any data rights asserted in other parts of the proposal that would impact the rights in this section must be cross-referenced. If there are proprietary rights, the Offeror must explain how these affect its ability to deliver research data, subsystems and toolkits for integration. Additionally, Offerors must explain how the program goals are achievable in light of these proprietary limitations. If there are no claims of proprietary rights in pre- existing data, this section shall consist of a statement to that effect.

NOTE: The default data policy in NOPP is full, open, and immediate disclosure of all data taken under NOPP sponsorship. Waivers and exceptions should be requested in the proposal and may be granted by the cognizant Program Officer.

Management Approach: A discussion of the overall approach to the management of this effort, including brief discussions of the total organization, use of personnel; project/function/subcontractor relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment, Hardware, Software, Information required, by version and/or configuration.

List of References: Provide source of each reference cited in the proposal. No specific format required.

Curriculum Vitae: Resumes or CV's of no more than two pages should be included for the Principal Investigator and each major co-investigator.

Ship Use: Funding estimates for any ship-time must be specifically included in the proposal, and the budget should include full ship costs and clearly specify the size and type of vessels proposed for use. Ships of opportunity are encouraged. Offeror should include ship time requests on either the former NSF Form 831 (Ship time Request Form) or preferably the University / National Oceanographic Laboratory System (UNOLS) on-line request form available at: http://www.gso.uri.edu/unols/ship/shiptime.html .

VOLUME 2: COST PROPOSAL (one document including a summary budget for the entire project and individual budgets for all participants)

The Cost Proposal shall consist of a cover page, table listing partners and funds requested by partner and year, and certification pages. Cost information should be organized into two parts. Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar or Gov't fiscal year and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work.

Projects which include participation by a Federal entity should include a separate budget detailing the Federal entity's proposed costs in the full partnership proposal. Federal entities will be funded separately via an Economy Act Order.

Cover Page: The words "Cost Proposal" should appear on the cover page in addition to the following information:

- BAA number
- Title of Proposal
- Identity of prime Offeror and complete list of subcontractors, if applicable
- Technical contact (name, address, phone/fax, electronic mail address)
- Administrative/business contact (name, address, phone/fax, electronic mail address)
- Duration of effort (separately identify basic effort and any proposed options)
- Signatures of Principal Investigator and required institutional officials

Table of Partners and Costs: The cost proposal should lead with a table summarizing by fiscal year and for each academic institution, business, not-for- profit agency, and government agency requesting funds: the Principal Investigator(s), the name of the institution and its nature, and funds requested for each fiscal year of the proposed effort. Information is required in the following example format:

TABLE OF PARTNERSHIPS:

Principal Investigator(s)*	Institution*	FY06 funds Requested	FY07 funds Requested	FY08 funds Requested	… Additional years as required
R. Johnson (lead PI)	Random University (Academic)	$125,314	$127,216	$131,614	
J. Jones & S. Smith	Vandaley Industries (Business)	$110,615	$37,212	$64,312	
L. Simmons	The Ocean Mammal Conservancy (Non-profit)	$25,000	$25,000	$0	
T. Ritter	DEQ of Texas (State Gov)	$10,000	$10,000	$10,000	
OTHER THAN FEDERAL	_____	$260,929	$189,428	$195,926	

GOVERNMENT SUBTOTAL:				
T. Wilson	NOAA Laboratory for Oceans (Government)	$57,612	$61,214	$50,000
FEDERAL GOVERNMENT PARTICIPANT TOTAL:	_____	$57,612	$61,214	$50,000
PROJECT TOTAL:	_____	$318,541	$250,642	$245,926

*Participant names are fictitious and were used simply for illustrative purposes.

• Certification package: Proposals should be accompanied by a completed certification package which can be accessed on the ONR Home Page at Contracts & Grants (http://www.onr.navy.mil/02/how_to.asp). For grant proposals and proposals for cooperative agreements or other transaction agreements (other than for prototypes), the certification package is entitled "Certifications for Grants and Agreements." For contract proposals, the certification package is entitled, “Representations and Certifications for Contracts.”

Certification Packages from the primary offeror must be signed by an authorized institutional official and included in the .PDF file containing the Cost Proposal.

Part 1: Detailed breakdown of all costs by cost category by calendar or Gov't fiscal year:

- Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (Must show base amount and rate)
- Travel – Number of trips, destination, duration, etc
- Subcontract – A cost proposal as detailed as the Offeror’s cost proposal will be required to be submitted by the subcontractor. The subcontractor’s cost proposal can be provided in a sealed envelope with the Offeror’s cost proposal or will be requested from the subcontractor at a later date
- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate
- Materials should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.)
- Other Directs Costs, particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the contractor/recipient. (Justifications must be provided when Government funding for such items is sought). Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.).

Part 2 : Cost breakdown by task/sub-task using the same task numbers in the Statement of Work.

3. Significant Dates and Times –

Anticipated Schedule of Events

Event	Date (MM/DD/YEAR)	Time (Washington DC Local Time)
Full Proposals Due Date	1/24/2006	4:00 p.m.
Notification of Selection for Award	05/01/2006 *	
Award (start date)	06/01/2006 *	

* These dates are estimates as of the date of this announcement.

4. Submission of Late Proposals –

Electronic submission of proposals is required, as described below. Any proposal, modification, or revision, that is received at the designated Government office after the exact time specified for receipt of proposals is "late" and will not be considered unless ALL of the following criteria are met: (1) it is received before selection of awards is made, (2) the contracting officer determines that accepting the late proposal would not unduly delay the acquisition, and (3) the electronic submission was received at the initial point of entry to the Government infrastructure no later than 5:00 p.m. one working day prior to the date specified for receipt of proposals. Offeror should note the above carefully. The rule for declining "late" proposals (even a proposal submitted one (1) minute late) must, by law, be strictly enforced.

However, a late modification of an otherwise timely and successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

If an emergency or unanticipated event interrupts normal Government processes so that electronic versions of proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposal will be deemed to be extend to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

5. Address for the Submission of Full Proposals –

Because of potential delays and/or damage in mailing or shipment of hard copy submissions, electronic submissions of Full Proposals are required. Electronic submissions of full proposals must be in PDF format. No more than two files (Technical and Cost Proposal documents, containing all information described above) can be submitted as part of any single partnership proposal. Offerors are strongly encouraged to name the file(s) in a manner that identifies it by lead PI, PI's institution, and Topic to which proposal is submitted. Example file names are:

Johnson.RandomUniversity.Tech-proposal.NOPP-Topic-4A.pdf Johnson.RandomUniversity.Cost-proposal.NOPP-Topic-4A.pdf

Electronic proposal submissions must be directed to the National Oceanographic Partnership Program no later than 4:00 pm Washington D.C. Local Time on 24 January 2006 via secure web-based file transfer at:

http://onroutside.onr.navy.mil/aspprocessor/nopp322

Successful submission of a file will be followed by transmission by ONR of a text e-mail acknowledging receipt, sent to an e-mail address of the submittors specification. Submittors are strongly urged to keep this text message as additional proof of date and time of receipt.

V. EVALUATION INFORMATION

1. Evaluation Criteria –

Evaluations of the proposals will be performed using the following selection criteria listed in the descending order of importance:

- Relevance of the proposed research to NOPP objectives;
- Overall scientific and technical merits of the proposal;
- Level of support of critical research objectives or operational goals such as data accessibility, education and communication;
- Quality of proposed partnerships including the degree of broad participation within the oceanographic community and demonstration of significant partnering among at least two of the following parties: (i) academia, (ii) industry (or not-for-profit organization), and (iii) government (federal, state, local) and extent resources are shared among partners;
- The offeror's capabilities, related experience, and facilities or unique combinations of these that are critical to the proposal objectives;
- The partnership members' long-term commitment to the proposed objectives;
- The qualifications and experience of the proposed principal investigator and key personnel;

2. Evaluation Panel -

All proposals will be subject to mail and/or panel review by peers, which may include non-governmental reviewers under non-disclosure agreements. All reviewers will adhere to confidentiality and conflict of interest standards. A synopsis of the NOPP review process can be found at http://www.nopp.org /.

The final distribution of awards will depend on quality of proposals, programmatic balance, NOPP priorities and availability of funds.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements –

• CCR - Successful Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at http://www.onr.navy.mil/02/ccr.htm .

• Certifications – Proposals should be accompanied by a completed certification package as described in Section IV.2

2. Annual Reporting -

All funded NOPP efforts must submit an Annual Report for use in the mandatory annual Spring NOPP Report to Congress. The NOPP Program Office will call for these each winter.

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities Offerors should provide all necessary facilities required to complete the proposed project. However, should an offeror request that the government furnish property the offeror must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

2. Use of Animals and Human Subjects in Research
If animals are to be utilized in the research effort proposed, the Offeror must complete a DoD Animal Use Protocol with supporting documentation (copies of AAALAC accreditation and /or NIH assurance, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) prior to award. Similarly, for any proposal that involves the experimental use of human subjects, the Offeror must obtain approval from the Offeror's committee for protection of human subjects (normally referred to as an Institutional Review Board, (IRB)). The Offeror must also provide NIH (OHRP/DHHS) documentation of a Federal Wide Assurance that covers the proposed human subjects study. If the Offeror does not have a Federal Wide Assurance, a DoD Single Project Assurance for that work must be completed prior to award. Please see http://www.onr.navy.mil/02/howto.htm for further information.

3. Department of Defense High Performance Computing Program
The DoD High Performance Computing Program (HPCMP) furnishes the DoD S & T and DT & E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts, grants, and assistance instruments may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at http://www.hpcmo.hpc.mil/

13.5 FY 2006 NOAA REQUEST FOR PROPOSALS FOR THE NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM

ANNOUNCEMENT OF FEDERAL FUNDING OPPORTUNITY

EXECUTIVE SUMMARY

- **Federal Agency Name(s): Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration, Department of Commerce**
- **Funding Opportunity Title: The Argo Project: Global Ocean Observations for Understanding and Prediction of Climate Variability**
- **Announcement Type: Notice of request for proposals**
- **Funding Opportunity Number:** OAR-ORS-2006-2000414
- **Statutory Authority:** 49 U.S.C. 44720 (b); 33 U.S.C. 883d; 15 U.S.C. 2904; 15 U.S.C. 2931-2934
- **Catalog of Federal Domestic Assistance (CFDA) Number**: 11.431, Climate and Atmospheric Research.
- **Dates**: Letters of Intent in electronic, facsimile, or hard copy form are due 5 p.m. ET, October 31, 2005. Letters of Intent are used for assessment purposes only and are not a requirement for proposal submission. Full proposals in electronic or hard copy form are due 5 p.m. ET, December 16, 2005. Funds awarded and project beings approximately July 1, 2006.
- **Funding Opportunity Description:** The Office of Oceanic and Atmospheric Research (OAR), on behalf of the National Ocean Partnership Program (NOPP), is entertaining letters of Intent and subsequently full proposals for implementing the next phase of the U.S. contribution to the global Argo array of profiling floats. Beginning in FY 2006 NOAA intends to complete the development and deployment of the initial phase of Argo and begin to demonstrate the sustained operation of Argo. Contingent on the availability of appropriated funds, this phase of Argo is expected to continue for five years. The level of funding available each year will be dependent on appropriations. It is expected that approximately $9,200,000 annually will be available for the project. It is expected that one, multi-investigator award will be made.

FULL ANNOUNCEMENT TEXT

I. Funding Opportunity Description

A. Program Objective

The National Oceanographic Partnership Program (NOPP) was established by 10 U.S.C. 7902 et seq. to (1) promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean; and (2) coordinate and strengthen oceanographic efforts in support of those goals by identifying and carrying out partnerships among Federal agencies, academia, industry, and other

members of the oceanographic scientific community in the areas of data, resources, education, and communication.

In 1999, Argo was identified as a key NOPP program and selected for implementation. Beginning in FY 2006 NOAA intends to complete the deployment of the initial phase of Argo and begin to demonstrate the sustained operation of Argo. Contingent on the availability of appropriated funds, this phase of Argo is expected to continue for five years.

B. Program Description

Argo, a broad-scale global array of temperature/salinity profiling floats, is planned as a major component of the ocean observing system. Argo builds on the existing upper-ocean thermal networks, extending their spatial and temporal coverage, depth range and accuracy, and enhancing them through addition of salinity and velocity measurements. For the first time, the physical state of the upper ocean will be systematically measured and assimilated in near real-time.

The objectives of Argo fall into several categories. Argo will provide a quantitative description of the evolving state of the upper ocean and the patterns of ocean climate variability, including heat and freshwater storage and transport. Argo is designed to have a strong complementary relationship with the Jason altimeter mission. The data will enhance the value of the Jason altimeter through measurement of subsurface vertical structure (T (z), S (z)) and reference velocity, with sufficient coverage and resolution for interpretation of altimetric sea surface height variability. For the first time, the physical state of the upper ocean will be systematically measured and assimilated in near real-time.

Argo data will be used for initialization of ocean and coupled forecast models, data assimilation and dynamical model testing. A primary focus of Argo is seasonal to decadal climate variability and predictability, but a wide range of applications for high-quality global ocean analyses is anticipated.

The initial design of the Argo network is based on experience from the present observing system, on newly gained knowledge of variability from the TOPEX/Poseidon altimeter, and on estimated requirements for climate and high-resolution ocean models. All Argo data will be publicly available in near realtime via the GTS (Global Telecommunications System), and in scientifically quality-controlled form with a few months delay. Global coverage should be achieved during the Global Ocean Data Assimilation Experiment (GODAE), which together with CLIVAR (CLImate VARiability and Predictability Program) and GCOS/GOOS, provide the major scientific and operational impetus for Argo. The design emphasizes the need to integrate Argo within the overall framework of the global ocean observing system.

International planning for Argo, including sampling and technical issues, is coordinated by the Argo Science Team. Presently 19 nations plus the European Union have Argo programs that include float development, procurement and/or production, with three additional nations expected this year. Combined deployments from these nations are expected to exceed 2200 floats per year by 2006.

C. Program Authority

Authority: 49 U.S.C. 44720 (b); 33 U.S.C. 883d, 15 U.S.C. 2904; 15 U.S.C. 2931-2934, (CFDA No. 11.431) - CLIMATE AND ATMOSPHERIC RESEARCH.

II. Award Information

This RFP is to implement the NOAA component of the U.S. contribution to Argo. The NOAA component of the U.S. contribution to Argo is, presently, to develop and maintain 50% of the global, operating array of instruments; the maintenance of the real-time data stream, including insertion of data onto the GTS; and the delayed-mode quality control of the data from those instruments. It is expected that approximately $9,200,000 annually will be available for the project. Actual funding levels will depend upon final budget appropriations each year of the program.

This announcement is for a project to be conducted by investigator(s) both inside and outside of NOAA, over a five year period. It is expected, though not certain, that a single project involving multiple investigators will be funded. In accordance with the NOPP, team efforts among academia, industry, and government participants with resource sharing are strongly encouraged. For Federal Government investigators, funding will be provided through intra or interagency transfers, as appropriate. The funding instrument for extramural awards will be a grant unless it is anticipated that NOAA will be substantially involved in the implementation of the project such as developing, deploying, and the operation of instrumentation; managing data streams; and/or quality control of data; in which case the funding instrument should be a cooperative agreement. NOAA will make decisions regarding the use of a cooperative agreement on a case-by-case basis.

III. Eligibility Information

A. Eligible Applicants

Extramural eligibility is not limited. Eligible applicants include institutions of higher education, other non-profits, commercial organizations, international organizations, state, local and Indian tribal governments. Applications from non-Federal and Federal applicants will be competed against each other. PLEASE NOTE: Before non-NOAA Federal applicants may be funded, they must demonstrate that they have legal authority to receive funds from another Federal agency in excess of their appropriation. The only exception to this is governmental research facilities for awards issued under the authority of 49 USC 44720. Because this announcement is not proposing to procure goods or services from applicants, the Economy Act (31 USC 1535) is not an appropriate legal basis for receipt of federal funds.

B. Cost Sharing or Matching Requirement

Cost sharing or matching is not required; however, resource sharing amongst partners within NOPP programs is encouraged. See Evaluation Criteria 6.

IV. Application and Submission Information

A. Address to Request Application Package

There is no application package for letters of intent. Applications for full proposals are available through www.grants.gov. For applicants without internet access, contact Dr. Stephen R. Piotrowicz, mail address: NOAA/Office of Oceanic and Atmospheric Research, 1315 East-West Highway, R/OSS, Rm. 11538, Silver Spring, MD 20910; phone: 703-588-0850; or e-Mail: steve.piotrowicz@noaa.gov.

B. Content and Form of Application Submission

1. Letters of Intent

To prevent the expenditure of effort that may not be successful, proposers are encouraged to first submit Letters of Intent. Letters of Intent are used for assessment purposes only and are not a requirement for proposal submission. Letters of Intent must be single or double-spaced, typewritten in at least a 10-point font, and printed on metric A4 (210 mm x 297 mm) or 8½" x 11" paper. The following information should be included:

(a) Title page: The title page should clearly identify the project area being addressed by starting the project title with "The Argo Project: Global ocean observations for understanding and prediction of climate variability." Principal Investigators and collaborators should be identified by affiliation and

contact information. The total amount of Federal funds and matching funds being requested should be listed for each budget period.

(b) A concise (2-page limit) description of the project. Proposers may wish to use the Evaluation Criteria for additional guidance in preparing the Letter of Intent.

(c) Resumes (1-page limit) of the Principal Investigators.

2. Full Proposals

Each full proposal must include the first eight items listed below; the standard forms included as Item 9 will only be required for proposal(s) selected for funding. All pages should be single- or double-spaced, typewritten in at least a 10-point font, and printed on metric A4 (210 mm x 297 mm) or 8½" x 11" paper. Brevity will assist reviewers and program staff in dealing effectively with proposals, therefore, the Project Description may not exceed 15 pages. Proposals from 3 or more investigators may include a statement of work of up to 15 pages of overall project description plus up to 5 additional pages in total for individual project descriptions. Literature citations and letters of support, if any, are not included in the 15-page limitation. All information needed for review of the proposal should be included in the main text; no appendices, other than support letters, if any, are permitted. Failure to adhere to the above limitations may result in the proposal being rejected without review.

(1) Signed Title Page: The title page should be signed by the Principal Investigator and the institutional representative and should clearly identify project by starting the title "The Argo Project: Global ocean observations for understanding and prediction of climate variability." The Principal Investigator and institutional representative should be identified by full name, title, organization, telephone number, and address. The total amount of Federal funds being requested should be listed for each year of the project; the total should include all subrecipient's budgets on projects involving multiple institutions.

(2) Abstract: An abstract must be included and should contain an introduction of the problem, rationale and a brief summary of work to be completed. The abstract should appear on a separate page, headed with the proposal title, institution(s) investigator(s), total proposed cost and budget period.

(3) Project Description/Work Statement: The Project Description should include identification of the problem; objectives (both operational and scientific) of the work; relevance to the operational prediction mission; proposed implementation strategy; proposed methodology (e.g., float acquisition, communications, deployment); transition to preoperational status in the period 2011-2016; and a transition plan for long-term data management. The following elements should be described in detail:

(a) Deployment strategy: The project should include a plan for interactions with the operational and research communities with regard to the deployment strategy for the U.S. contribution to the global 3-degree array. The project should describe with whom interactions will occur, and how their recommendations will be considered to determine the configuration of the array that you intend to deploy. The project should also address how the proposed deployment strategy complements and/or supplements other components of the observing system as they relate to operational predictions, as well as to the objectives of CLIVAR (CLImate VARiability program) and GODAE (Global Ocean Data Assimilation Experiment).

(b) Deployment logistics: All costs associated with the implementation of Argo should be included, including communications and deployment costs. The proposal should demonstrate that access to appropriate deployment platforms (ships, aircraft) is available to implement the strategy being proposed.

(c) Data Management: The proposal should also include a plan for continued inter-comparison of floats from different manufacturers within the consortium and within the international science group. It should illustrate how real-time (within 24 hours) delivery of data

will be achieved. Since the implementation of the global Argo array will be the responsibility of several international groups that may change over time, the proposal must include a plan for maintaining the integrity of the data system (data flow and quality control) over the lifetime of the project.

(4) Current and Pending Support: Applicants must provide information on all current and pending support for ongoing projects and proposals, including subsequent funding in the case of continuing grants. All current project support from whatever source (e.g., Federal, State, or local government agencies, private foundations, industrial or other commercial organizations) must be listed. The proposed project and all other projects or activities requiring a portion of time of the Principal Investigator and other senior personnel should be included, even if they receive no Federal salary support from the project(s). The number of person-months per year to be devoted to the projects must be stated, regardless of source of support. Similar information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including those within NOAA.

(5) Vitae (2 pages maximum per investigator): Abbreviated curriculum vitae are sought with each proposal. Reference lists should be limited to all publications in the last three years with up to five other relevant papers.

(6) Results from prior research: The results of related projects supported by NOAA and other agencies should be described, including their relation to the currently proposed work. Reference to each prior research award should include the title, agency, award number, Principal Investigators, of award and total award. The section should be a brief summary and should not exceed two pages total.

(7) DUNS Number: All applications must have a DUNS (Dunn and Bradstreet [D&B]) Data Universal Numbering System when applying for Federal grants. No application is deemed complete without the DUNS number and only OMB may grant exceptions.

(8) Standard Application Forms: For proposal(s) selected for funding, the following forms must also be submitted: Standard Forms 424, Application for Federal Assistance, and 424B, Assurances—Non-Construction Programs, (Rev 4–88). Please note that both the Principal Investigator and an administrative contact should be identified in Section 5 of the SF424. For Section 10, applicants should enter ‘‘11.431’’ for the CFDA Number and “Climate and Atmospheric Research” for the title. The form must contain the original signature of an authorized representative of the applying institution.

(9) Proposals submitted in hard copy form should contain one original plus two copies of the full proposal. If color and/or grayscale graphics are included in the proposal, and offerer feels that color or grayscale graphics would be necessary for the review process, the offerer may submit twelve additional copies of the these graphics.

C. Submission Dates and Times

October 31, 2005, 5 pm (ET) - Letter of Intent in electronic, facsimile, or hard copy form due. Letters of Intent are used for assessment purposes only and are not a requirement for proposal submission.

December 16, 2005, 5 pm (ET) - Proposal due.

Proposals submitted through www.grants.gov will be accompanied by a data and time receipt indication on them. If an applicant does not have internet access, hard copy proposals will be accepted and date recorded when they are received in the program office. Electronic or hard copies of proposals received after the deadline will not be considered and hard copy applications will be returned to the sender.

D. Intergovernmental Review

Applications under this program are not subject to Executive Order 12372, “Intergovernmental Review of Federal Programs.”

E. Other Submission Requirements

Letters of Intent should be sent electronically to: Steve.Piotrowicz@noaa.gov. For those applicants without internet access, hard copies may be mailed to Ocean.US, 2300 Clarendon Blvd., Suite 1350, Arlington, VA 22201; ATTN: Dr. Stephen R. Piotrowicz. Faxes may be sent to: Ocean.US, ATTN: Stephen R. Piotrowicz at 703-588-0872.

Proposals should be submitted through Grants.gov. For those applicants without internet access, hard copies may be sent to Ocean.US, 2300 Clarendon Blvd., Suite 1350, Arlington, VA 22201; ATTN: Dr. Stephen R. Piotrowicz.

V. Application Review Information

A. Evaluation Criteria

Evaluations of the proposals will use the following selection criteria:

1. Importance and/or relevance and applicability of the proposed project to the program goals: This ascertains whether there is intrinsic value in the proposed work and/ore relevance to NOAA, Federal, regional, State or local activities (25%):

a. Data accessibility;
b. applicability of the project to NOPP objectives of developing a better understanding of the oceans and establishing leadership in oceanography through broad participation within the oceanographic community, significant partnering between at least two of the following parties: academia, industry, or government, and those partners have a long-term commitment to the proposed objectives of the project;
c. resource sharing among partners; and
d. achieving and sustaining an Integrated Ocean Observing System.

2. Technical/scientific merit: This assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are clear project goals and objectives (25%):

a. Instrumentation to be employed;
b. deployment strategy, including how the proposed strategy interfaces with the global Argo array and complements and/or supplements deployment strategies of other components of the observing system as they relate to operational predictions, as well as the objectives of CLIVAR and GODAE;
c. deployment logistics, including communications as well as deployment; and
d. data management.

3. Overall qualifications of the applicants: This ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project (30%).

4. Project costs: The Budget is evaluated to determine if it is realistic and commensurate with the project needs and timeframe (10%).

5. Outreach and education: NOAA assesses whether this project provides a focused and effective education and outreach strategy to protect the Nation's natural resources (10%).

B. Review and Selection Process

The review process will be conducted by the NOPP Program Office on behalf of the NOPP agencies. A description of the NOPP Proposal Review Process can be found at:

http://www.nopp.org/Dev2Go.web?id=236688&rnd=31591. All proposals, including those submitted by NOAA employees, will be evaluated similarly. The process uses peer reviews solicited by mail and/or a panel. Federal conflict of interest rules are followed. The individuals who provide peer review are scientists drawn from academic, government, and industrial/commercial communities. Mail reviews require a scoring in accordance with the criteria presented in Section IV, Evaluation Criteria, as well as a narrative assessment. If a panel is convened along with soliciting mail reviews, it will consider the results of the mail reviews and rate the proposals. If only a panel is convened, it will both score the proposals numerically in accordance with the criteria in Section IV and rate the proposals. The ratings will be determined by a vote of the Panel on each proposal individually. No consensus advice will be given by the Panel (unless the panel is composed entirely of Federal employees). The merit review ratings will provide a rank order to the selecting official to make the selection(s). The selecting official shall award in rank order unless the proposal is justified to be selected out of rank order based on one or more of the following factors:

1. Availability of funding.

2. Balance/distribution of funds:

   a. Geographically.
   b. By type of institutions.
   c. By type of partners.
   d. By research areas.
   e. By project types.

3. Whether this project duplicates other projects funded or considered for funding by NOAA or other Federal agencies.

4. Program priorities and policy factors.

5. Applicant's prior award performance.

6. Partnerships and/or Participation of targeted groups.

7. Adequacy of information necessary for NOAA staff to make a NEPA determination and draft necessary before recommendations for funding are made to the Grants Officer.

VI. Award Administration Information

1. Award Notices

This notice of award is signed by the NOAA Grants Officer and is the authorizing document. It may be provided by postal mail or electronically to the appropriate business office of the recipient organization. Unsuccessful applications will be destroyed.

2. Administrative and National Policy Requirements

The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements – The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements contained in the Federal Register notice of December 30, 2004 (69 FR 78389) is applicable to this solicitation.

Limitation of Liability - In no event will NOAA or the Department of Commerce be responsible for proposal preparation costs if these programs fail to receive funding or are cancelled because of other agency priorities. Publication of this announcement does not oblige NOAA to award any specific project or to obligate any available funds.

National Environmental Policy Act (NEPA) - NOAA must analyze the potential environmental impacts, as required by the National Environmental Policy Act (NEPA), for applicant projects or proposals which are seeking NOAA federal funding opportunities. Detailed information on NOAA compliance with NEPA can be found at the following NOAA NEPA website: (http://www.nepa.noaa.gov/), including our NOAA Administrative Order 216-6 for NEPA, (http://www.nepa.noaa.gov/NAO216_6_TOC.pdf), and the Council on Environmental Quality implementation regulations, (http://ceq.eh.doe.gov/nepa/regs/ceq/toc_ceq.htm).

Consequently, as part of an applicant's package, and under their description of their program activities, applicants are required to provide detailed information on the activities to be conducted, locations, sites, species and habitat to be affected, possible construction activities, and any environmental concerns that may exist (e.g., the use and disposal of hazardous or toxic chemicals, introduction of non-indigenous species, impacts to endangered and threatened species, aquaculture projects, and impacts to coral reef systems). In addition to providing specific information that will serve as the basis for any required impact analyses, applicants may also be requested to assist NOAA in drafting of an environmental assessment, if NOAA determines an assessment is required.

Applicants will also be required to cooperate with NOAA in identifying and implementing feasible measures to reduce or avoid any identified adverse environmental impacts of their proposal. The failure to do so shall be grounds for the denial of an application. In some cases if additional information is required after an application is selected, funds can be withheld by the Grants Officer under a special award condition requiring the recipient to submit additional environmental compliance information sufficient to enable NOAA to make an assessment on any impacts that a project may have on the environment.

3. Reporting – If you are selected to receive a grant award for this project you must:
    a. Submit a project status report for, and participate in, an annual program review by the U.S. Argo Science and Implementation Panel.
    b. Submit a final report within 180 days after the completion of the project.
    c. The final report must describe the project and include an evaluation of the work performed and the results and benefits in sufficient detail to enable us to assess the success of the completed project.

This may be submitted either electronically or in hard copy.

VII. Agency Contact(s)

Contact Dr. Stephen R. Piotrowicz, mail address: NOAA/Office of Oceanic and Atmospheric Research, 1315 East-West Highway, R/OSS, Rm. 11538, Silver Spring, MD 20910; phone: 703-588-0850; or e-Mail: steve.piotrowicz@noaa.gov.

Appendix 14. National Oceanographic Partnership Program FY 2005 Funded Project Summaries

TOPIC 1A. FUSING MULTI-SENSOR REGIONAL SCALE DATA TO MONITOR AND QUANTIFY COASTAL PROCESSES

High-Level Data Fusion Software for SHOALS-1000TH

Lead PI: Dr. Grady Tuell, Optech International

Optech International and the Department of Marine Science of the University of Southern Mississippi will partner to develop and apply data fusion approaches to SHOALS-1000TH data. The partnership will exploit the strengths of each group and will provide for significant interaction between the research and development team at Optech International, who are presently involved in related sensor and data fusion work, and the faculty and students at the University of Southern Mississippi, who have capabilities in ocean optics, hydrography, and marine GIS. Under this funding, we will conduct the necessary research and development to evolve current data fusion capabilities to higher levels within a formal data fusion paradigm: the SIT (spatial-information-technique) data fusion model. Our work will be completed in the IDL language, and will be integrated into Optech International's existing data fusion software.

The expected outcomes of the partnership are: (1) a number of new data fusion algorithms and computer programs which will produce coastal and environmental information from SHOALS-1000TH data; (2) increased accuracy of environmental information resulting from the collection and application of in situ oceanographic ground truth; (3) the transfer of knowledge from academia to industry regarding the collection and use of in situ optical data; (4) transfer of knowledge from industry to academia related to airborne laser bathymetry and sensor and data fusion; and (5) the education of future researchers and workforce through the integration of these concepts into graduate level courses at the University of Southern Mississippi. Optech International and the University of Southern Mississippi each will make significant in-kind contributions in this effort.

Number of Years: 3

Requested Funds: $600,000

Partners: Optech International
University of Southern Mississippi

TOPIC 4A. NEW METHODS FOR DETECTION OF FISH POPULATIONS OR MAPPING OF FISH HABITAT

Understanding Apex Predator and Pelagic Fish Habitat Utilization in the California Current System by Integrating Animal Tracking with in situ Oceanographic Observations

Lead PI: Dr. Daniel Costa, University of California at Santa Cruz

The Tagging of Pacific Pelagics (TOPP) program is pioneering the application of bio-logging science to study pelagic habitat use by marine vertebrates in the North Pacific. This effort will analyze the data currently being collected by the TOPP program to define and map habitat utilization, migratory corridors, and hot spots for 18 species of marine vertebrates in the Northeastern Pacific Ocean. These species include bluefin and yellowfin tuna, albacore, white, mako, blue and salmon sharks, California sea lions, northern elephant seals, black footed and Laysan albatrosses, sooty and pink footed shearwaters, blue, fin and humpback whales and loggerhead and leatherbacks sea turtles. The proposed study will develop a dynamic, ecosystem-based approach to map and understand habitat utilization by top predators in the California Current System (CCS). This will involve monitoring animal movements in response to seasonal and yearly environmental conditions. The outcome will be an examination of the persistence and predictability of pelagic hot spots in the region of the North American continental shelf and slope waters.

Many of these species are of high commercial value and management plans in both domestic and international waters have yet to be implemented. By examining the movements of the animals in relationship to the environment we can begin to develop predictive models of how individual species use the CCS habitat. In addition to learning about the habitat envelope of the tagged animals, the animals will contribute to the west coast effort in ocean observation. Sensors on the tagged animals will provide oceanographic information of the CCS region that will provide information on the vertical habitat at a resolution appropriate to understand animal behavior.

Number of Years: 3

Requested Funds: $1,428,816

Partners: University of California at Santa Cruz
Stanford University
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Fisheries Environmental Laboratory

Development of Mid-Frequency Multibeam Sonar for Fisheries Applications

Lead PI: Dr. John Horne, University of Washington

This project will investigate the utility of mid-frequency (1-10 kHz) acoustics to detect, enumerate and identify pelagic fish distributions. Despite recent trends to broaden the frequency range, the vast majority of fisheries acoustic abundance surveys are conducted at higher (i.e. >38 kHz) frequencies. Low frequency backscatter measurements, including measurements in the resonance region, using explosive charges as sources, have largely been restricted to deep scattering layers. Mid frequencies (0.5 to ~10 kHz) have not been applied to fisheries acoustics applications.

The proposed research tasks will integrate: 1) comparisons of fish backscatter models, 2) models of mid frequency sound propagation, 3) development and measurements of a mid-frequency multibeam sonar, and 4) backscatter measurements using splitbeam echosounders and the multibeam sonar. Field measurements will be conducted during two separate acoustic-based biomass surveys of walleye pollock (Theragra chalcogramma) and Pacific hake (Merlucius productus). Walleye pollock are found in a boreal ecosystem with low species diversity. Pacific hake are found offshore of the west coast of North America in a temperate, high diversity ecosystem. Model predictions and field measurements at mid frequencies will be compared to those at high frequencies to evaluate the applicability of mid frequencies to describe and quantify pelagic fish distributions.

Number of Years: 3

Requested Funds: $1,346,956

Partners: University of Washington
Stanford University
Applies Physics Laboratory
Alaska Fisheries Science Center
Northwest Fisheries Science Center

Continuous Monitoring of Fish Population and Behavior by Instantaneous Continental-Shelf-Scale Imaging with Ocean-Waveguide Acoustics

Lead PI: Dr. Nicholas Makris, Massachusetts Institute of Technology

A new lower frequency acoustic method (300-5000 Hz) is proposed for (1) instantaneously detecting, imaging and spatially charting fish populations over continental-shelf scales, and then (2) continuously monitoring the areal densities and behavior of these fish populations over time. It is proposed that this new method be applied to explore the abundance, temporal and spatial distributions and behavior of fish populations in the Gulf of Maine on and near Georges Bank, a marine ecosystem being studied in the Census of Marine Life program.

To provide verification of areal fish population density and species identification, the new method will be used in conjunction with simultaneous measurements of fish population by conventional line-transect methods that employ direct sampling with net and trawl as well as standard higher frequency acoustics (>10kHz). Since the new method can continuously monitor wide areas, it will be used to quantitatively assess the impact of fish behavior and distributions on conventional line transect methods, which are known to greatly under-sample fish populations in time and space. Correlation of behavior, including school and shoal formations, migrations, interactions and fragmentations, with local geologic and oceanographic habitat will be made. The impact of remotely sensed fish behavior on the detection and enumeration of fish population and abundance by conventional line transect methods will be assessed.

Number of Years: 3

Requested Funds: $1,351,213

Partners: Massachusetts Institute of Technology
Northeastern University
Woods Hole Oceanographic Institution
Penn State University
WaveTech Engineering LLC
Marine Acoustics, Inc.
Naval Research Laboratory
National Marine Fisheries Service
National SPAWAR and Naval Engineering and Facilities Center

Novel Acoustic Techniques to Measure Schooling in Pelagic Fish in the Context of an Operational Coastal Ocean Observatory

Lead PI: Dr. Kelly Benoit-Bird, Oregon State University

This project brings together a team with expertise in acoustics, engineering, biology, fisheries, and oceanography to develop and apply acoustic techniques to measure schooling in pelagic fish. We will combine traditional, split-beam fisheries echosounding techniques and direct sampling with new acoustic techniques and new platforms in a study area monitored by an existing operational ocean observatory. To measure synoptic distributions of fish schools we will collect mid-frequency back- and bistatic-scattering from fish using a unique horizontally oriented multibeam system. We will experimentally evaluate the use of ship-board and moored mid-frequency sonar for the detection and resolution of fish schools at long range (kilometer scale) in the context of propagation and scattering in a shallow water waveguide. Toward the goal of integrating mid to geometric frequency scattering measurements, we will observe the relationship of high-frequency echosounder and multibeam measurements to mid-frequency short-range measurements (direct path scattering) and mid-frequency long-range measurements (waveguide scattering). In doing so, we will correlate the results of the longer-range measurement (less understood and more complex scattering geometries) with more traditional (better understood) higher frequency and geometric scattering regimes and techniques. We will also investigate the ability of higher frequency multibeam techniques to assess the internal structure of detected schools. A 200 kHz multibeam capable of collecting water column data will be integrated into an autonomous underwater vehicle (REMUS). Deploying this cutting edge instrument on an autonomous platform will allow us to access fish at greater depths, while sampling the high spatial resolution necessary to measure the geometry of fish in an aggregation.

The success of REMUS-deployed instruments was demonstrated mapping bioluminescence patches at the ONR and NOPP-sponsored experiments. During our field efforts in years 2 and 3 of the project, the multibeam-equipped AUV will fly in a grid within the range of the mid-frequency, horizontally looking multibeam sonar while a surface ship collects echosounder data at multiple frequencies and conducts collection trawls. The intensive acoustic sampling from the three platforms will permit us to integrate data on mid- and high-frequency acoustic scattering, providing information on basic acoustics, biological sources of acoustic clutter, and schooling of fish.

All field sampling will be conducted within the New Jersey Shelf Observing System, which provides real-time data throughout the Mid-Atlantic Bight. The surveys will be positioned adaptively using real-time data collected with the international constellation of ocean color satellites, a nested grid of HF radars, and an operational fleet of autonomous Webb Gliders. The goal is to use the environmental data to optimize ship and AUV acoustic surveys by using the observatory to identify specific water masses, frontal boundaries, and subsurface phytoplankton plumes. The surveys will then identify and track schools of fish associated with this hydrographic and biological structure. This approach will provide a context for the fish schooling information, allowing us to begin to look for correlations between the fish biology and environmental variability. Results will be passed into the Ocean Biogeographic Information System (OBIS) ensuring that biological data is integrated into the Census of Marine Life.

Number of Years: 3

Requested Funds: $489,366

Partners: Oregon State University
University of Washington
Rutgers University
Simrad USA

A Novel Technique to Detect Epipelagic Fish Populations and Map their Habitat

Lead PI: Dr. James Churnside, National Oceanic and Atmospheric Administration

The main objective of this interdisciplinary and interagency project is to develop and apply a new sampling technique by coupling airborne data collections (LIDAR and instrument package) with traditional ship-based methods and satellite-derived data to detect and enumerate species-specific fish schools and to synoptically map their habitat. Data collected will form a nested array of spatial and temporal scales that will be analyzed and modeled in a spatial GIS-based environment. Our ultimate goal is to substantially improve our understanding of the relation between ecologically important key fish species (e.g. sardine and albacore) and the physical environment by collecting synoptic measurements with improved spatial and temporal resolution of observations. The coupled airborne surveys enable collection of data at high temporal resolution, allowing measurements of fish movement and behavior not possible using traditional ship-based methods alone.

Developments of new measurement techniques and spatially explicit habitat modeling are sorely needed because relationships among spatial and temporal varying biological and physical processes are poorly understood, resulting in impaired management. While we know that many important species congregate in areas of the sharpest physical gradients, key forcing mechanisms causing variability in the temporal phasing and distribution of these congregations are relatively unknown.

The outreach portion of this project includes 1) development of a web site with downloadable information for educational purposes, 2) data sharing for the purpose of data inclusion into the Ocean Biogeographic Information System (OBIS) developed by the Census of Marine Life program, 3) and seminars and meetings with fishing or other coastal communities for the purpose of information sharing, education, and cooperative research planning.

Results from this project will aid in filling research gaps and thus improving management of resources and associated environmental problems. Future utility and application of results for management is maximized through the partnerships established within the project between the government agency responsible for management, academic and government researchers, and the fishing industry. Increased basic, gap-filling research, development of new techniques partnered with traditional methods, and development of cooperative interagency-industry research efforts are crucial as we enter an era of decreasing fish stocks, rapidly changing environmental conditions, and declining or insufficient research funding sources.

Number of Years: 3

Requested Funds: $1,485,200

Partners: National Marine Fisheries Service
Environmental Technology Laboratory
Oregon State University
University of Washington
University of Alaska Fairbanks

HYCOM Coastal Ocean Hindcasts and Predictions: Impact of Nesting in HYCOM GODAE Assimilative Hindcasts

Lead PI: Dr. George Halliwell, University of Miami

Although the coastal ocean is strongly influenced by surface atmospheric forcing and coastal freshwater runoff, offshore ocean variability can exert a significant influence in many regions due to a wide range of processes such as basin-scale climate variability, boundary current meanders, and mesoscale/submesoscale eddies. To accurately downscale this offshore variability to a coastal ocean model, the model must be nested within fields that accurately represent the state of the ocean and its variability at the nested model boundaries. We propose to evaluate the HYbrid Coordinate Ocean Model (HYCOM) GODAE ocean data assimilation product for this purpose by using it to provide initial/boundary conditions to nested HYCOM coastal hindcasts and forecasts. The overall regional focus will encompass the coastal Gulf of Mexico through the Florida Straits, which represent a broad range of shelf geometries, river runoff, seasonal atmospheric forcing differences, and both weak and strong offshore forcing to enable the impact of the HYCOM GODAE product to be evaluated over a wide range of conditions. Three primary subregions will be emphasized: (1) the South Florida Coastal Region (SFCR), which is strongly impacted by Everglades and river runoff and by the Florida Current and associated meanders and eddies; (2) the West Florida Shelf (WFS) which is relatively broad and occasionally influenced by the Loop Current and its associated eddies; and (3) the Northern Gulf Coastal Region (NGCR), which is influenced by Mississippi river runoff and sometimes by cold core cyclones associated with the Loop Current. The influence of downscaled information on the capability of nested coastal models to reproduce mean conditions and seasonal variability, and to both hindcast and forecast synoptic and mesoscale/submesoscale variability, will be separately assessed. Hindcast and prediction experiments will be conducted over time intervals where extensive coastal observations are available, such as WERA high-frequency radar surface velocity maps in the SFCR; moored velocity, temperature and salinity plus CODAR high frequency radar surface velocity maps in the WFS. Nested WFS HYCOM simulations will be compared to nested simulations by the WFS ROMS model to determine to what extent sensitivity to initial and boundary conditions is model dependent. We will also use a higher resolution HYCOM assimilative product covering the Gulf of Mexico through the Florida Straits, itself nested within the larger-scale, publicly-available HYCOM GODAE product, to obtain initial and boundary conditions. This GOM model is being used to test state-of-the-art assimilation algorithms, so coastal hindcasts and predictions nested within it will provide important feedback to evaluate these new algorithms, demonstrate the impact of higher resolution initial and boundary conditions, and guide improvement to the global HYCOM GODAE product.

Number of Years: 3

Requested Funds: $1,216,934

Partners: University of Miami
University of South Florida
Naval Research Laboratory – Monterey
Naval Research Laboratory – Stennis Space Center
Planning Systems Incorporated

Boundary Conditions, Data Assimilation, and Predictability in Coastal Ocean Models

Lead PI: Dr. Roger Samelson, Oregon State University

Research is proposed to determine the impact of open ocean boundary conditions from GODAE Pacific Ocean models on numerical model simulations of Oregon coastal ocean circulation. The proposed research will address the direct impact of boundary conditions from the 1/12° Pacific HYCOM model and two intermediate-scale models on the coastal model. The intermediate-scale models have high-resolution atmospheric forcing and boundary conditions from the basin-scale GODAE model. The impact on the coastal ocean simulations of assimilating satellite remote sensing observations, including sea-surface heights and temperatures, and of using scatterometer wind stress fields will also be addressed. Validation of the simulated coastal ocean circulation will be provided by existing elements of the Oregon coastal ocean observing system, including short-range and long-range coastal HF radar arrays, and by extensive in-situ data sets from major observational programs during 2000-2003. The impact of the boundary conditions will be assessed quantitatively through data assimilation, using a variational representer-based generalized inverse method. The closely related issues of uncertainty and predictability in coastal ocean circulation models will be addressed using a variety of empirical and theoretical methods to study disturbance growth mechanisms and to develop uncertainty budgets for these models. Issues analogous to those addressed here for the coastal ocean arise generally in limited-area modeling of the mesoscale atmosphere, and the proposed collaboration consequently includes expertise in atmospheric modeling, in order to stimulate and take maximal advantage of progress on shared challenges. The proposed collaboration includes a large-scale GODAE modeler, which will ensure the relevance of the project to GODAE goals and facilitate the transfer of research results and their implications to the developers of the GODAE system.

Number of Years: 3

Requested Funds: $1,209,987

Partners: Oregon State University
Naval Research Laboratory
National Center for Atmospheric Research

Boundary Conditions, Data Assimilation, and Predictability in Coastal Ocean Models

Lead PI: Dr. Christopher Edwards, University of California at Santa Cruz

The objective of this proposal is to use the recently developed ROMS 4D variational data assimilation, ensemble prediction, and generalized stability analysis toolkits to explore the influence that open boundary conditions from Global Ocean Data Assimilation Experiment (GODAE) products and satellite-derived data have on the observability and predictability of the Monterey Bay and greater California central coast circulation. Although the coastal circulation is in part driven by strong local forcing when present, the generally narrow continental shelf and open coastline of this region also leave it exposed to the energetic mesoscale circulation of the California Current System and more generally to the stratification and transports of the eastern Pacific Ocean. The Center for Integrated Marine Technologies (CIMT) is a NOAA funded program, carrying out a wide range of observations as well as modeling of the physical and biological properties of Monterey Bay. It is a major contributor to the Central and Northern California Coastal Ocean Observing System (CeNCOOS). These observations, combined with our current capability to model this region and the new ROMS toolkits provide the foundation of this proposal. We have identified multiple approaches to investigate quantitatively the relative influence of GODAE-derived boundary conditions, assimilated satellite data, and surface fluxes on the regional circulation. Several metrics relevant to our region and consistent with the available, *in situ* observing system are described. Specifically, we propose to:

• use the adjoint ROMS and error estimates from the GODAE and satellite products to explore the sensitivity of metrics that characterize the physical circulation of Monterey Bay and the central coast to errors and uncertainties in the open boundary conditions, initial conditions and surface forcings;

• analyze the variance of efficiently perturbed ensembles of Monterey Bay hindcasts and forecasts to further explore the sensitivity of predictions to uncertainties in GODAE open boundary conditions;

• assess the impact of GODAE boundary conditions on regional weather prediction by applying our improved SST estimates as a lower boundary condition to a regional atmospheric model;

• compute and analyze representer functions for different observation types and locations to identify those of maximum value for the observation system.

NOAA-PFEL will provide the satellite data as well as develop and apply new feature tracking metrics both to observations and our model output. The ECCO-GODAE consortium will provide estimates of transport and vertical structure of the open ocean, and multiple approaches to blend the large-scale information and the regional ocean model will be compared. Feedback to the GODAE partners is explicit. The first two years of the analysis will focus on late 2002 through 2003, for which both observations and mature boundary conditions exist today. During year 3 of the proposal, we will extend our sensitivity studies to the present, when additional data sets, such as expanded surface current estimates by long-range HF radar, are expected.

Number of Years: 3

Requested Funds: $1,192,216

Partners: University of California, Santa Cruz
University of Colorado
Naval Research Laboratory – Monterey
NOAA/Pacific Fisheries Environmental Laboratory
University of Hawaii
Massachusetts Institute of Technology

TOPIC 4B. SENSORS FOR SUSTAINED, AUTONOMOUS MEASUREMENT OF CHEMICAL OR BIOLOGICAL PARAMETERS IN THE OCEAN

Commercialization of Autonomous Sensor Systems for Quantifying pCO2 and Total Inorganic Carbon

Lead PI: Dr. Michael DeGrandpre, University of Montana

NOPP Topic 4B provides an ideal opportunity for the oceanographic community to be proactive in the commercialization of chemical sensor technology required to advance ocean science. We will use NOPP funding to promote commercialization of one such technology, the SAMI-CO2, a sensor developed for autonomous measurements of the partial pressure of CO2 (pCO2). The SAMI-CO2 was commercialized in 1999 through an exclusive license from the University of Montana to Sunburst Sensors, a company in Missoula, Montana (see sunburstsensors.com). Field deployments by DeGrandpre and others have demonstrated the excellent long-term stability predicted by the SAMIs' well-understood theoretical response. The design, however, is complex and prone to failures, especially by customers who are not trained to operate the SAMI. Incremental changes in the design have improved reliability, but a full redesign is required to implement modern electronic and manufacturing technology. The new design will allow individual investigators to make pCO2 measurements reliably over long time periods in widespread ocean locations on many different ocean platforms. It will focus on improving the reliability, ease of operation and platform flexibility while reducing the size, cost and power requirements.

The specific work involves 8 tasks: 1) reagent and blank flushing, 2) electronic drift, 3) optical cell complexity and performance, 4) calibration complexity, 5) software, 6) documentation, 7) optimization of size, power, and manufacturing costs, and 8) environmental testing. Within ~1.5-2 years of NOPP funding, prototype designs will be available for testing by the oceanographic community. Feedback from these tests will be implemented and a final design will be widely marketed by Sunburst Sensors during Year 3.

Number of Years: 3

Requested Funds: $879,024

Partners: Scripps Institution of Oceanography
University of California at San Diego
Woods Hole Oceanographic Institution
Sunburst Sensors

Development of Fluorescent Induction and Relaxation Systems for the Measurement of Biomass and Primary Productivity on Webb Sloccum Gliders

Lead PI: Dr. Oscar Schofield, Rutgers University

Despite their relatively small area, continental shelves are disproportionately important in biogeochemical cycles. Quantifying the transport and transformation of organic matter on continental shelves, however, is difficult due to the numerous processes operating over a wide range of space (meters to 100s of kilometers) and time (hours to years) scales. Traditional sampling strategies are hard pressed to sample the relevant scales. Autonomous underwater vehicles (AUVs), though, have advanced to the point that they now allow scientists to maintain a continuous presence in the sea. Over the last decade, the pump-and-probe and Fast Repetition Rate Fluorometers (FRRF) have provided unprecedented insight into the factors controlling phytoplankton physiology and primary production in the ocean. The use of fluorescence kinetics is increasingly becoming an integral part of many oceanographic field programs, but its broad community use is limited by the complexity and high cost of the available instrumentation. These systems are limited to just a few labs even though these measurements are becoming increasingly central to field work and have been commercially available for almost a decade.

To overcome these problems, we have designed and built a new instrument, called Fluorescence Induction and Relaxation (FIRe) System, to measure a comprehensive suite of photosynthetic characteristics in phytoplankton and benthic organisms. This NOPP partnership will develop a miniaturized cost-effective biological sensor capable of measuring the concentration, physiological state, and productivity of phytoplankton. Specifically, we will miniaturize a new compact FIRe system which will be combined with Aanderaa 3835 oxygen electrodes. This sensor will be combined with a miniaturized optical Satlantic nitrate sensor. These sensor suites will be integrated into Webb Slocum Gliders. They will complement existing backscatter-attenuation-absorption Glider sensor packages, to provide a complete particle productivity sensing capability on long duration autonomous AUVs. We will demonstrate the utility of this system by collecting measurements in an existing AUV shelf-wide time series focused on defining the physical forcing on particle dynamics of the Mid-Atlantic Bight (MAB). We propose to use the FIRe-O2 sensor suite to study how shelf-wide processes drive summer upwelling and the associated phytoplankton blooms, and to determine the linkage to low bottom water DO in the MAB.

Our goals for these deployments are to: A) Map the seasonal spatial extent of the MAB cold pool; B) Map the health, productivity and concentration of phytoplankton associated with the Cold Pool as it flows southward on the MAB; C) Relate the health, productivity and concentration of phytoplankton to the availability of nitrogen on the MAB; and D) Assess the coupling of the shelf O2 levels to the health and concentrations of the phytoplankton on the shelf.

This project will directly benefit several ongoing education efforts. It will provide data and field opportunities for Ph.D., masters, and undergraduate students. The K-12 outreach will be facilitated through the Mid-Atlantic Center for Ocean Science Education Excellence (COSEE) here at Rutgers.

Number of Years: 3

Requested Funds: $410,000

Partners: Rutgers University
Webb Research Corporation
Satlantic Incorporated

Transitioning Submersible Chemical Analyzer Technologies for Sustained, Autonomous Observations from Profiling Moorings, Gliders and other AUVs

Lead PI: Dr. Alfred Hanson, SubChem Systems, Inc.

We plan to transition our existing prototype autonomous profiling nutrient analyzers (APNA) into a commercial product that can be readily deployed on autonomous profiling moorings, coastal gliders and propeller-driven unmanned underwater vehicles and used for sustained, autonomous ocean observations of chemical distributions and variability. Field tests of the APNA prototype deployed on the University of Rhode Island's profiling mooring and the REMUS AUV have demonstrated its capability to autonomously profile nutrient concentrations in real-time and provide the in situ self-calibration data needed to verify in situ performance. At the same time, these field tests have identified a series of issues that need to be addressed to convert the nutrient analyzer into a commercial unit that can be widely used by the community for sustained and accurate, stable, autonomous operation in the ocean. These issues are: (1) a more compact size, (2) reduced reagent and power consumption, (3) enhanced biofouling suppression, (4) ease of use by non-chemists, and (5) documented performance when deployed on different platforms.

We will address these issues by using recent advances in micro-fluidics and optical detectors (new SubChem and WET Labs technologies) to (1) reduce sample flow rates and volumes and thus reagent and power consumption; (2) extend the length of field deployments by periodically isolating sensitive components so that back-flushing and chemical techniques can be used to suppress bio-fouling, (3) increase the ease of use by simplifying operation, pre-packaging reagents and outputting the data in engineering units, and (4) document thoroughly the performance by conducting a demonstration experiment at a field site that has strong vertical and horizontal nutrient gradients and episodic phytoplankton blooms.

We plan to achieve these objectives through a partnership between industry, university, and government. During this project, the industry partners will take the lead in developing the commercial version of the nutrient analyzers while the university and government partners will take the lead in establishing the initial performance criteria for the nutrient analyzer and in providing the deployment platforms and conducting the field testing and demonstration experiments. These partners have extensive experience in working together to develop and test new sensing and deployment systems and then collaborating through SBIR and NOPP programs to commercialize those technologies for use by the broader community. We will undertake this project using the collaborative management and experimental techniques that evolved during earlier successful instrument development, testing and commercialization efforts.

Number of Years: 3

Requested Funds: $1,317,732

Partners: SubChem Systems, Inc.
University of Rhode Island
WET Labs, Inc.
SPAWAR Systems Center – San Diego

Development of a Mass Spectrometer for Deployment on Moorings and Cabled Observatories for Long-Term Unattended Observation of Low-Molecular Weight Chemicals in the Water Column

Lead PI: Dr. Jean Whelan, Woods Hole Oceanographic Institution

The goals of this project are to address the need for advanced chemical sensing in the ocean environment through development of a new mass spectrometer for long-term unattended deployment. The mass spectrometer is based on Monitor Instruments' miniature cycloidal mass analyzer technology and oceanographic components developed by WHOI. Testing and trial deployments will be carried out by WHOI at its Deep Submergence Laboratory and Martha's Vineyard Coastal Observatory (MVCO). Monitor Instruments will carry out commercialization of this instrument, which will be known as TETHYS (TETHered Yearlong Spectrometer).

We are performing a multi-year development of the TETHYS instrument. TETHYS will be optimized for long-term measurement of low molecular weight dissolved biogenic, atmospheric, and noble gases as well as light hydrocarbon compounds from 2 to 100 AMU. This instrument will have minimum limits of detection on the order of parts-per-billion and be capable of shallow water to full ocean depth deployment. It will utilize techniques currently under development at WHOI to enable automated re-calibration in-situ and will also include measures for anti-fouling, an essential consideration for long-term deployment. TETHYS is being designed for production in significant quantity, through the use of low cost components that can be rapidly produced and is designed to operate without moving parts or high-frequency electronics. Without the need for mechanical pumping and high-frequency electronics, the instrument will better avoid mechanical wear and subsequent failure, and will not generate vibration or EM field fluctuations. These modes of noise are potential sources of interference to other instrumentation attached to a given mooring or cable node (i.e. hydrophones, seismometers, electromagnetic sub-bottom profilers, magnetometers). The instrument will also be capable of carrying an onboard battery for operation on moorings or in the case of power disruption to the node.

TETHYS is designed to be extremely durable, with service intervals on the scale of weeks to months, with modularity allowing for periodic maintenance and component upgrade. Its physical configuration will enable initial deployment and maintenance by scuba divers from the R/V Tioga at the MVCO. This configuration will also accommodate later deployment and maintenance with ROVs in deeper environments.

Number of Years: 3

Requested Funds: $942,991

Partners: Woods Hole Oceanographic Institution
Monitor Instruments Company LLC

NOPP GOAL 4. COLLABORATE TO STRENGTHEN U.S. INTERAGENCY INITIATIVES IN RESEARCH AND THEIR CONNECTIONS TO OPERATIONS

Investigation of Chemosynthetic Communities on the Lower Continental Slope of the Gulf of Mexico

Lead PI: Dr. James Brooks, TDI-Brooks International, Inc.

A major environmental study was recently awarded to the Bryan, Texas, company TDI Brooks International Inc., for a total amount of $3,161,795 plus facilities valued at $1,500,000, to study deep-sea communities in the Gulf of Mexico. This project, titled "Investigations of Chemosynthetic Communities on the Lower Continental Slope of the Gulf of Mexico," includes the study of both known and newly discovered chemosynthetic communities as well as other hard bottom habitats including deepwater corals. Other objectives include assessment of the comparative degree of sensitivity to anthropogenic impacts to these deepwater habitats, how they are similar or different from their shallower counterparts, and how the detection of these kinds of habitats can be improved using remote sensing information resulting in their protection from impacts. The project is jointly funded under the National Oceanographic Partnership Program (NOPP) by Minerals Management Service (MMS) and the National Oceanic and Atmospheric Administration's Office of Ocean Exploration (NOAA OE)

One of the fundamental missions of the MMS is to identify and consider the protection of sensitive biological habitats in U.S. Federal waters. Chemosynthetic communities on the upper continental slope have been studied extensively and are protected by Notice to Lessees (NTL) and avoidance mitigations. The oil and gas industry has moved, and will continue to move, into deeper and deeper water in their continuing search for extractable energy reserves in the Gulf of Mexico. Knowledge of the distribution, relative abundance, and population structures of deepwater organisms provides critical information to estimate the potential effects of deepwater exploration and production, and to allow refinement of mitigation measures for the deeper continental slope area. Mitigation procedures exist to minimize impacts, but current basic understanding of chemosynthetic and other communities in extremely deep water is restricted to the study sites chosen by previous projects that were limited by the depth capabilities of available submersible technology.

NOAA's Office of Ocean Exploration engages in path finding ocean discovery and advancement of knowledge in support of NOAA's Research Strategic Plan. The Office's objectives are to explore the ocean and map its resources, and to gain new insights about its physical, chemical, biological, and archaeological characteristics, as well as its living and non-living resources. The Office seeks innovative scientific objectives that will bring new discoveries and allow the public to engage in exploration through education and outreach activities connected to the expedition.

The first year of field work will begin early in 2006. Prior to the use of the research vessel *Atlantis II* and the famous research submersible *Alvin*, an exploratory cruise will be conducted to investigate a number of potential sites using a drift camera system. Characterization of a larger number of sites will be possible using the camera system as well as box cores and trawling. Beginning in early May, the *Alvin* research submersible will be used for a total of 15 dive days to investigate six or seven known or newly discovered sites.

Field work in 2007 will utilize other submergence facilities provided by NOAA OE, likely the Remotely Operated Vehicle (ROV) *Jason II*. During both 2006 and 2007, additional field work will involve the use of the Huggin Autonomous Underwater Vehicle (AUV) to further characterize the fine scale detail of study sites. The final two years of the project will be utilized exclusively for data analysis, synthesis and writing of reports and publications.

Number of Years: 4

Requested Funds: $4,662,000

Partners: TDI-Brooks International, Inc.
Harvard University
Louisiana State University
Nova SE University
Penn State University
Texas A&M University at Corpus Christi
University College Dublin
University of Georgia
University of Vienna
Max Planck Institute
Woods Hole Oceanographic Institution
Monterey Bay Aquarium Research Institute
Smithsonian Institution
Station Biologique de Roscoff
Swedish Museum of Natural History

Appendix 15. FY 2005 Coastal Observation Technology Systems Projects

The Coastal Observation Technology System (COTS) project grants currently funded by NOAA are designed to further the development of integrated coastal ocean observing systems on a regional basis. The overarching goal of COTS projects is to develop regional capacity for coastal/ocean observations by creating infrastructure (e.g., sensors, data management systems) and methodologies to collect, share, and integrate environmental data and create useful information products. These projects, all congressionally directed, are creating the initial observing system capacity that will form the nucleus of the regional observing systems (RCOOS). In FY05 NOAA funded 13 COTS projects for a total amount of approximately $23M. Twelve of these were continuing from FY04 and one was a new award. Three other awards were continued into FY05 but without new funds.

NOAA also supports the Ocean.US office and is working with the COTS partners and other federal agencies to ensure that projects conform to the vision and implementation requirements of an integrated ocean observing system. Additionally, NOAA is engaged with the private and academic sectors to determine the economic value of enhanced ocean observations and to define relationships and respective roles to ensure that federal resources are focused on providing essential core functions.

In previous reports, funding for Regional Association development (coordination) grants were included in our discussion of COTS projects. In FY05, however, the funding source for these projects substantially changed and it may no longer be appropriate to classify them as COTS projects. In FY03 NOAA funded six competitively selected projects to begin engaging IOOS stakeholders and developing organizational/governance structures (e.g., business plans) for regional associations as components of the IOOS. Two more were added in FY04, and in FY05, funding was provided to all 11 regions, the total presently envisioned in the IOOS Development plan. Funding was increased in FY05 to a total of approximately $3.5M and is based on demonstrated need for each region.

The regional organization component is establishing the necessary coordination framework for the various groups working within and across regions. NOAA Coastal Services Center is the lead NOAA office for COTS and Regional Association projects and works closely with Ocean.US to ensure effective communication across projects. The contribution from Ocean.US in this report provides additional information related to the IOOS Regional Associations.

Alliance for Coastal Technologies (ACT)

University of Maryland Center for Environmental Sciences

The Alliance for Coastal Technologies (ACT) concept emerged in 1999 from discussions of the NOAA Coastal Services Center, the U.S. GOOS Steering Committee, and leaders in coastal resources management and marine technology development and manufacturing. There was a consensus that there was a genuine user demand for real-time data and comprehensive information products on coastal ocean conditions worldwide, but their development had been slow. Underscoring the urgent need to integrate new technologies into ocean observing systems, the U.S. Commission on Ocean Policy in its Final Report, "An Ocean Blueprint for the 21st Century," delivered to the President and Congress on September 20, 2004, stated**:**

> "The implementation of a sustained national Integrated Ocean Observation System (IOOS) is overdue and should begin immediately."

The vision of ACT is to facilitate the recommendation that:

> "the latest, innovative, and most effective technologies are continuously integrated into the national IOOS at all levels."

ACT is committed to overcome the challenges to make this vision a reality, providing technology users with the choices and certainty they require for making knowledgeable decisions, enhancing communications between technology stakeholders, and building and strengthening the enabling environment and thus the capacity for technology innovation and adoption.

ACT was launched in May 2001 with initial funding provided to the Chesapeake Biological Laboratory (CBL) by the NOAA Coastal Services Center (CSC). During this first phase, ACT organized as a collaborative, networked laboratory, comprised of a Headquarters unit to coordinate all ACT activities, partner research institutions distributed throughout the country to conduct field and laboratory work and regional outreach activities, and mechanisms for stakeholder input and participation by the Stakeholder Council and Alliance Members. A pilot operational period followed, during which ACT established, documented, implemented, and assessed its governance structure, technical functions and tasks, and mechanisms for products and services delivery to ACT customers. With its organizational and operational structure in place, ACT began full implementation of all program activities in from May 2003 to April 2004, including the inaugural ACT technology verification begun in October 2003 on *in situ* dissolved oxygen sensors.

Alaska Ocean Observing System (AOOS)

Seward Association for the Advancement of Marine Science
dba Alaska SeaLife Center

The Alaska Ocean Observing System's (AOOS) mission is to provide quality processed data and use these to generate information products and model forecasts to meet the needs of stakeholders including commercial, subsistence and sport fishermen, oil and gas developers, shipping interests, Alaska Native communities, resource managers, and researchers. The AOOS products will be provided through a distributed, web-based information network and span a hierarchy of spatial scales from local to regional to hemispheric, and range temporally from real-time to seasonal and longer. The focus of this proposal is on sustainability of Alaska's vast marine resources, mitigation of impacts due to coastal erosion, and improved navigation safety and search and rescue operations. New information products developed through AOOS will be accessible and understandable and encourage growth of comprehensive knowledge of ecosystem function, form and dynamics. Such knowledge gives managers and policy makers the best information available to make informed decisions regarding the preservation of ecosystem services (e.g., foods, fuels and fibers that also provide spiritual, recreational, educational, and other nonmaterial benefits to people), the challenges of climate change induced coastal erosion, and the best strategies for navigation safety and search and rescue operations.

This proposed work will enhance the present AOOS by:

- Developing statewide capacity in data management, modeling and product visualization by establishing a data management team and a Modeling and Analysis Center located at the University of Alaska Fairbanks in conjunction with the Arctic Regional Supercomputing Center.

- Implementing the Prince William Sound (PWS) Ocean Observing System as a pilot project, which includes enhanced observations, models and real-time products. This will serve as the AOOS demonstration project with techniques and knowledge that can be transferred to other regions in Alaska.

- Establishing observational components of an Arctic Ocean Observing System and initiating product development for stakeholders.

- Establishing observation components of a Bering Sea/Aleutian Islands Ocean Observing System by monitoring boundary conditions (currents and water properties) where flow enters (Amukta Pass) and exits (Bering Strait) the eastern Bering Sea, and enhancing ongoing biological monitoring activities throughout the region.

- Establishing observational components of a Gulf of Alaska Ocean Observing System (which includes Prince William Sound) by enhancing existing monitoring capacity in the Southeast and Seward/Cook Inlet/Kodiak subregions.

A comprehensive plan for development of AOOS is under construction and includes administrative infrastructure and governance, education and outreach, science advice and implementation planning, and a Data Management and Communications Committee.

Carolinas Coastal Ocean Observing and Prediction System (Caro-COOPS)

University of South Carolina Research Foundation

The central goal of Caro-COOPS is prediction of coastal ocean processes. The ultimate objectives are to 1) integrate information on the causal biological, chemical, and physical processes in the Carolinas' coastal ocean to provide a thorough understanding of how physical forcing and biological responses are coupled on regional to local spatial scales and event, seasonal, inter-annual, and decadal time scales; 2) assess the predictability of specific coastal processes and events and use this information to develop accurate forecasting models; and 3) create tools for applying and evaluating these predictions to provide user communities with early-warning systems and for informed decision-making and planning. Caro-COOPS is a wholly integrated system for coastal observations and their application to user-driven needs, including 1) an extensive array of instrumented moorings in the South Atlantic Bight off the Carolinas; 2) a comprehensive data management system, essential for aggregation, organization, standardization, visualization, and dissemination of high quality, real-time data; and 3) an advanced suite of integrated models that will markedly improve the predictive capacities of real-time physical data from coastal ocean instrumentation.

An initial demonstration of the real-time interdisciplinary forecast concept for Caro-COOPS is real-time prediction and analyses of storm surge and flooding before and during landfall of coastal storms. This will improve warnings and provide local officials with the information needed for mitigation, preparedness, and prevention measures. Most recently, Caro-COOPS has also been laying the groundwork for a pilot project that applies coastal ocean data and predictions capabilities to the development of tools that support commercial and recreational fisheries and their management.

Implementation of Caro-COOPS involves collaborative interactions with other observing systems programs, particularly the Coastal Ocean Research Program (CORMP) at University of North Carolina at Wilmington, the multi-institutional SouthEast Coastal Ocean Observing System (SEACOOS), and the emerging Southeast Coastal Ocean Observations Regional Association (SECOORA) promoted by OceanUS.

Central Gulf of Mexico Ocean Observing System (CenGOOS): Integration and Enhancement of Observing System Elements

University of Southern Mississippi

A major recommendation of the U.S. Commission on Ocean Policy (USCOP) and an area targeted for funding by the National Oceanic and Atmospheric Administration (NOAA) and other agencies is the development of coastal and ocean observation systems. A key element in this effort is the establishment of regional ocean observation networks, which will contribute to an evolving national integrated ocean observing system (IOOS). Since 2004, The University of Southern Mississippi's Department of Marine Science (DMS) has been providing leadership and expertise in the development of a Governance and Business Plan for the Gulf of Mexico Coastal Ocean Observation System Regional Association (GCOOS-RA). In addition, DMS launched the initial phase of the Central Gulf of Mexico Ocean Observing System, or CenGOOS, by the establishment of a three-meter ocean observing buoy south of Horn Island, MS. This buoy is equipped to monitor and report a variety of ocean and meteorological observations. Installation of this buoy has provided experience with instrumentation, data telemetry, and logistics of deployment and maintenance.

Furthermore, this effort has led to a working partnership between DMS and the NOAA National Data Buoy Center (NDBC) at the John C. Stennis Space Center. NDBC is providing assistance for Quality Assurance and Quality Control (QA/QC) of meteorological data collected from the buoy and subsequent distribution to the National Weather Service for use in forecasting, prediction, and emergency management. Additional observational data are received, processed, and made available to the public locally through the DMS website (www.cengoos.org) and via the GCOOS data stream.

This project seeks to expand coastal observational efforts in the northern central Gulf Coast, to integrate these activities with other regional observation networks in the Gulf by working through the GCOOS-RA, and to establish partnerships with a broad user community. Collaboration with NOAA NDBC and other agencies (e.g., NOAA National Coastal Data Development Center) will enable the data stream from our observations to be incorporated into the national IOOS backbone. Specific goals for this first phase of the enhancement and integration of CenGOOS will involve installation of coastal high frequency (HF) radar sites for surface current measurement. An additional buoy will be deployed at a strategic location on the shelf in the Mississippi Bight. A close collaboration with modeling expertise at the Naval Research Laboratory will provide a physical and ecological framework for interpretation of observational data. Episodic ship surveys and maintenance cruises will also be performed in the Mississippi Sound and Bight.

Subsequent phases of CenGOOS will involve installation of additional buoys and other sensors, such as, instrumented drifters, autonomous underwater vehicles (AUV), and autonomous profilers. These efforts will be closely coordinated with other central Gulf organizations and agencies to enhance both regional and national IOOS capabilities.

Center for Integrative Coastal Observation, Research and Education (CICORE)
San Jose State University Foundation

CICORE is dedicated, through a combined program of research, education and public outreach, to addressing California coastal research, regulatory and management issues to ensure sustainable use of the coastal zone. Taking advantage of the statewide distribution of California State University (CSU) campuses, CICORE promotes three core technologies to develop a distributed, yet integrated, coastal monitoring observatory focused on the critically impacted region from the 100 meter isobath into, and onto, the shore and estuaries. These technologies include (1) high-resolution seafloor bathymetry and habitat mapping, (2) hyperspectral imaging of benthic, shallow water and coastal environments to improve resource management in critical coastal and wetlands areas and (3) *In situ* monitoring at fixed locations to provide a state-wide observatory of time-varying water quality parameters. In addition to serving the state needs, CICORE is integrated with other observatory programs locally, regionally and nationally to help satisfy the mandate of the US Integrated and Sustained Ocean Observing System (IOOS) as articulated by Ocean.US and other state and federal programs. This program contributes to California's national leadership in promoting these mandates.

Accomplishments to date:

• First high-resolution bathymetric survey of the entrance of the Golden Gate conducted since the 1950s.

• Documentation of sediment erosion and deposition in the Monterey Submarine Canyon head.

• Co-location of bathymetric and hyperspectral imagery for creating bathymetry and bottom type maps to from deep water in to the shoreline.

• Hyperspectral imaging of 5460 km^2 at seven sites to bring the total area of hyperspectral imaging to 9775 km^2 of coastal and shallow water areas.

• Incorporation of a multispectral imager with four times greater spatial resolution with the hyperspectral imager.

• Development of a kelp coverage product and increased wetlands hyperspectral coverage.

• Expansion of *in situ* monitoring from four to six sites with the inclusion of South San Francisco Bay and Long Beach Harbor.

• Data delivery structured to conform to Ocean.US Data Management and Communications Steering Committee recommendations, including FGDC compliant metadata and adopting the Marine Extension of CDL form.

• Increase the number of partner members from eight to 10 with the inclusion of CSU Long Beach and San Diego State University.

• Restructuring of the governance to include both a board of directors whose members are the presidents of the participating California State University campuses and an advisory council whose membership represents a broad spectrum of external scientific experts, official representatives of local, regional, state and federal governmental organizations, and interested non-governmental organizations.

Center of Excellence in Coastal Ocean Observation and Analysis (COOA)

University of New Hampshire

The goal of this project is to create a monitoring system for the coastal marine ecosystem of the Western Gulf of Maine as part of the Integrated Ocean Observing System. Research conducted by the University of New Hampshire's Coastal Observing Center is laying the foundation for an observing system with the capability to detect, model, and ultimately forecast changes in the ecosystem. Our research will lead to a mechanistic understanding of the factors controlling the ecosystem, and thus will play a role in decisions related to ecosystem-based management.

The system is designed to serve the information needs of fisheries and coastal resource managers, educators, and scientists. The Western Gulf of Maine region is centered at the entrance to the Great Bay Estuary at Portsmouth Harbor, and extends north to the Kennebec River Estuary and south to Cape Cod. The figure directly right illustrates this region. Partners include: the Gulf of Maine Ocean Observing System (GoMOOS), Gulf of Maine Ocean Data Partnership, Martha's Vineyard Coastal Observatory, Northeast Fisheries Science Center, Northeast Center for Ocean Science Education Excellence (COSEE), Gulf of Maine Council, Cooperative Institute for Coastal and Estuarine Technology (CICEET), Regional Association for Research on the Gulf of Maine (RARGOM), Great Bay and Wells National Estuarine Research Reserves, Seacoast Science Center, and the Northeast Consortium.

Benefits from the observing system include:

- Information generated will facilitate ecosystem-based fisheries management
- Effects of climate and human-induced influences on the ecosystem will be understood
- Methods demonstrated can be translated to other coastal ocean observing systems

The system includes three subsystems:

- Data acquisition: A combined effort using remote sensing and *in situ* monitoring with an emphasis on developing automated methods amenable to operational use
- Data management and distribution: WebCOAST is the portal for our data as well as other information including historical archives and inventories of monitoring programs
- Modeling and analysis: Coupled physical-biological models for the region and other products created will benefit scientists, resource managers, teachers and students

Coastal Ocean and Research and Monitoring Program (CORMP)

University of North Carolina at Wilmington

The Coastal Ocean Research and Monitoring Program (CORMP), begun in 2000 as an exploratory coastal ocean research program focusing on collection of data applicable to physical and ecological predictive models, fisheries sustainability, and habitat quality, is emerging as a comprehensive coastal ocean observing system serving the region's scientific research community and an established and growing constituency of public service and local users. During the proposed funding period, the CORMP observing array will be expanded to provide near real-time, quality assured oceanographic and marine meteorological data over a region extending from the South Carolina-North Carolina border to north of Cape Lookout, NC. These data will be web-available and compliant with the Ocean.US Data Management and Communication Subcommittee (DMAC) and SouthEast Atlantic Coastal Ocean Observing System (SEACOOS) data management standards, thereby ensuring integration and interoperability with other Integrated Ocean Observing Systems (IOOS) within and beyond the Southeastern Coastal Ocean Observing Regional Association (SECOORA). These efforts constitute a strong commitment by CORMP to provide a balanced regional observing system dedicated to serving a full spectrum of users who stand to benefit from CORMP in the region.

CORMP consists of four focus areas: ocean observations, data management, ecosystem research and modeling, and outreach and education. These focus areas operate synergistically to achieve programmatic objectives to**:**

1) provide a regional hub in a national observing system,

2) collect and disseminate physical and ecological data to establish baseline conditions, identify responses to stochastic events, predict and verify long-term trends, and

3) engage regional partners, stakeholders and end-users in the development and implementation of a sustainable ocean-observing program.

CORMP will supplement its expanded observing capabilities by utilizing emerging technologies (i.e. Webb Glider; MODIS) to collect data at temporal and spatial scales needed to ensure quality control (i.e., independent validation of mooring data) and to support research, modeling and the development of user-driven end products. Further, CORMP will provide a seamless and sustainable two-way flow of information among its partners and end-users, SECOORA affiliates, and other national IOOS programs, thereby facilitating the program’s ability to adapt to evolving needs and emerging technologies. Through these efforts, CORMP will provide a model for a comprehensive coastal observing system that is fully integrated with user-driven needs and research to address issues of prime regional importance.

Enhancements to the Coastal Ocean Monitoring and Prediction System for West Florida (COMPS): A Component of the Integrated Ocean Observing System

University of South Florida

The project seeks to continue and expand efforts related to the Coastal Ocean Monitoring and Prediction System (COMPS) for the west coast of Florida. The project goals include maintaining and enhancing an existing coastal ocean observing system, analyzing the data being generated, and disseminating these data and their scientific findings in accordance with the protocols and understandings of the developing Integrated Ocean Observing System. Additionally, the program on *in-situ* data collection is strongly linked with a parallel modeling activity, and while the support for modeling is not requested in this proposal, the proposed work will be enriched by the modeling activities. For instance, siting arguments for new measurement locations are strongly tied to the modeling activities. All of the proposed data acquisitions will be available in near real time on the Internet, and the standards and protocols for sharing and archiving of data in support of the Integrated Ocean Observing Systems will be followed.

As with the present data collection efforts, all of the new real time data will also be made available to the NDBC and the NOS for QA/QC and for dissemination via the NOAA gateway. OpenDAP access is already in place for all data from the real time systems. The goal is to have transparent data sharing for use by a broad range of government, private sector, and academic users. PIs are also collaborating with a range of investigators both at and external to USF for the purposes of sharing results among a group of multidisciplinary scientists, all engaged in attempting to understand the material property distributions of the coastal ocean for numerous societal benefits. Some immediate applications are to the study of Harmful Algal Blooms (HABs) and other ecological concerns, and for providing assistance in maritime operations, emergency preparedness, hazardous spill response, and search and rescue. Data and information products from COMPS are served to these user communities via the web in NetCDF and OpenGIS formats. The project has led to partnerships in the emerging Regional Associations for both the Southeastern and Gulf of Mexico regions. COMPS is, and will remain, a building block of the Regional Coastal Ocean Observing Systems for both regions.

Gulf of Maine Ocean Observing System (GoMOOS): Sustaining the System

Gulf of Maine Ocean Observing System

The primary goal of the project is to maintain existing capabilities, including the flow of data upon which our users have grown to depend. Therefore, these funds will support core aspects of the observing subsystem and basic staff support for the organization and its Board of Directors. Priorities involve elements that have proven reliable in the past and/or serve well-defined strategic needs for regional users and the IOOS in general. The prioritized list includes the 3 basic subsystems: (1) data acquisition, (2) modeling, and (3) data management and communications (DMAC).

For the other vital aspects of the overall program, including user outreach, product development and analysis, Regional Association development, and data integration, we will pursue other sources of income. For example, the President of the Board is lead PI on a Regional Association Development Grant proposal that will allow regional interests to determine how GoMOOS should further evolve to meet a truly regional set of needs and objectives. To broaden regional participation and assure the data from regional providers are integrated and transformed into useful products, GoMOOS has been hosting and helping to develop the Gulf of Maine Ocean Data Partnership. Consistent with the Partnership objectives, GoMOOS is also developing a Memorandum of Agreement with the Federal Geographic Data Committee (FGDC) which includes a corresponding set of support activities. Finally, GoMOOS has been contracting with the Southeastern Universities Research Association (SURA) to provide support for the SURA Coastal Ocean Observing and Prediction (SCOOP) program. SCOOP partners, including GoMOOS, are working closely with the NOAA Coastal Service Center to help provide the "IT glue" that will hold together the various regional elements into a truly national system of systems for ocean observing, with the broader goal of becoming the oceanic component of the Global Earth Observing System of Systems (GEOSS).

Accomplishments to Date:

- Four years of sustained collection and delivery of data, with associated modeling and analysis,
- User-driven information product development targeting a variety of user sectors,
  - Interoperability with the NDBC and regional Weather Service offices, which provide regular reporting of GoMOOS data on NOAA weather radio,
  - On-line, decision-support tools for fisheries managers with GIS visualization
  - Support and hosting for the Gulf of Maine Ocean Data Partnership,
  - Creation and hosting of the Gulf of Maine Mapping Portal (www.GoMMaP.org), which provides a single point of access for on-line GIS products that dynamically integrate data from dozens of organizations in the U.S. & Canada, and
  - Ongoing support for, and contributions to, the nationwide interoperability demonstration at www.openioos.org.

Joint Center for Ocean Observing Technology

University of New Hampshire

We propose to establish the NOAA/UNH Joint Ocean Observing Technology Center to focus on the assembly of component subsystems to produce priority measurement and prediction services. The NOAA/UNH Joint Center for Ocean Observing Technology (herein called the "Center") will be a collaborative venture between the National Oceanic and Atmospheric Administration (NOAA), the University of New Hampshire (UNH), the Gulf of Maine Ocean Observing System (GoMOOS), and corporate partners such as Atmospheric and Environmental Research, Inc. (AER). The Center will work in concert with other NOAA-funded centers at UNH including the Cooperative Institute for Coastal and Estuarine Environmental Technology, the Center for Coastal Response Research, the Joint Hydrographic Center, and the Coastal Observing Center. This collaboration will leverage the expertise found in government agencies, universities, and commercial entities to provide weather, oceanographic, and climate products aimed at enhancing the quality of life and economical stability of the Gulf of Maine region.

The Center will develop and prototype new coastal and oceanic products that will enhance our understanding of the regional environment. The intent of these products, which will be developed for both the lay and experienced users, is to provide state-of-the-art short- and long-term weather, climate and other environmental information through the fusion of data from national and international satellite programs, regional *in situ* observation systems, and advanced data assimilation and modeling techniques.

The initial focus of the proposed Center will be to demonstrate pre-operational system-of-system prototypes by maximizing the extraction and integration of regional information from existing or planned observational platforms; enhancing and compositing diverse regional atmosphere-ocean-land observing system data; and coupling advanced regional modeling systems with visualization methodologies to produce better and more useful environmental predictions. Specific goals are to: (1) create and serve Web-based products designed for targeted user communities by fusing/synthesizing observations and model-generated results; (2) establish the Isles of Shoals Observatory as a test-bed facility for infusing new observing technology into the Gulf of Maine regional observing network; and (3) develop a regional-scale prototype system of systems for observing / modeling ocean-atmosphere-terrestrial interactions.

Long Island Sound Integrated Coastal Observing System (LISICOS)

University of Connecticut

With more than eight million people living in its watershed, Long Island Sound (LIS) is the nation's preeminent urban estuary. LIS provides the region with natural resources, including oysters, clams, lobsters, and bluefish, and both commercial and sport fishing are important to the regional economy. Unfortunately, LIS has also served as the region's sewer, resulting in water quality degradation and critical habitat loss. Extensive wastewater treatment plant upgrades have been mandated to rectify these problems. The high concentration of development along the surrounding coastline has also prompted increased dredging for navigation, electric power transmission, and gas pipelines. The goal of the Long Island Sound Integrated Coastal Observing System is the development of a sustained capability to observe the Long Island Sound ecosystem and an adequate capability to understand and predict its response to natural and anthropogenic changes.

Major components of LISICOS will include:

- a coherent and sustained time-series observation program coupled with short periods of more intensive process studies,
- the development of a data center,
- development of forecast products for mariners and managers,
- development and assessment of models of oxygen and nutrient cycles, circulation, and water properties, and
- outreach programs to enhance of partnerships with State, Federal and local governments and citizens.

Accomplishments to Date:

- Deployment and maintenance of five buoys that monitor salinity, temperature, and dissolved oxygen throughout the sound,
- Three of the above buoys provide over-water meteorological observations. One includes a surface wave sensor, and one includes PAR and chlorophyll sensors,
- Development of a three-dimensional circulation model,
- Development and testing of a primary-production respiration model,
- Coupling of the circulation and ecosystem models, and
- Analysis of existing hydrography to infer exchange between LIS, the Hudson River, and the shelf waters.

Southern California Coastal Ocean Observing System (SCCOOS): Shelf to Shoreline Observatory Development

Scripps Institution of Oceanography

SCCOOS was initiated in September 2004, to implement and evaluate new sensor and information technologies to facilitate the creation of an integrated, multi-disciplinary coastal observatory in the Southern California Bight. The predominant goals are to provide policy makers and managers with a better scientific basis to evaluate and design new management strategies and to manage risks. Real-time observations, model/data-based forecasts, and a flexible information distribution system will provide critical information to these users. To achieve these goals, a consortium of eleven Southern California universities and laboratories that surround the Southern California Bight (SCB) created the Southern California Coastal Ocean Observing System which brings together agencies, managers, and data provider/user groups with the implementers of the observatory within a single regional association. SCCOOS will integrate data and projects from local, state, and federal and individual institutional efforts to create an integrated, multidisciplinary coastal observatory in the SCB. We propose to continue pilot activities within the COTS program for the next 3 years to further the development and maturation of a functioning coastal observatory in Southern California. While this project will occur over the next three years, we are submitting only a one year detailed budget at this time due to the uncertainty in funding which results from the dependence of the COTS programs on yearly Congressional support.

Accomplishments to Date:

- Began the fabrication and installation of 3 multidisciplinary moorings in Santa Barbara, Santa Monica, and San Diego. Other in-situ observations (gliders, drifters, CTD) are being prepared for deployment,
- Initiated an automated shore station data collection program based upon sites established by state and federal funding. 8 sites are presently available,
- Began a CALCOFI cruise in-shore to coincide with stations occupied by water quality managers,
- Developed educational outreach program to 5th grade science students to meet State science requirements,
- Initiated the collection of data from NPDES monitoring data and shoreline water quality data,
- Began coordinating the installation of a long range CODAR in San Diego and San Clemente Island with USCG and USN personnel, and
- Initiated the construction of an operational regional ocean model and surfzone transport model. Testing conducted in San Diego and Los Angeles regions.

A Continuation of the Ocean-Atmosphere Sensor Integration System Project (OASIS): A Wallops Coastal Ocean Observation Laboratory Project

Virginia's Center for Innovative Technology

This collaborative effort between Virginia's Center for Innovative Technology (CIT), NASA Wallops Flight Facility (WFF), NOAA and a number of academic institutions will monitor the influence of the Chesapeake Bay on the adjacent coastal ocean margin ecosystems through the development, deployment and use of various ocean observation tools. Coastal regions within the Mid-Atlantic Bight (MAB) are directly influenced by regional freshwater fluxes that emanate from several large bay systems (Delaware and Chesapeake Bays). The outflows from these bays have high sediment loads and high levels of nutrients, particulate and dissolved organic matter (POM, DOM) that heavily influence the adjacent coastal margin ecosystems.

The focus of this project is to establish an ocean observing system along the coastal ocean regions of Virginia, Maryland and Delaware. This will be accomplished by developing, testing, and deploying new sensors, platforms and applications to support NOAA and NASA coastal ocean remote sensing activities and products. This includes a fleet of solar-powered surface autonomous vehicles called the Ocean-Atmosphere Sensor Integration System (OASIS) being commercialized with support from NASA's Small Business Innovation Research (SBIR) program. Software is being developed for command and control of multiple OASIS platforms to support real-time dynamic mapping capabilities. A Coastal Bio-Optical buoy (COBY) will be deployed and maintained during biweekly cross-shelf surveys.

The project proposes to continue investigating the interactions between biology and physics in this ocean margin system. In the first year of this effort, an objective is creation of a full surface current product for the Mid-Atlantic Coastal Ocean Regional Association (MACORA) by maintaining a system of three long-range and two standard-range high frequency (HF) radars for measuring surface currents. Finally, the project is establishing and fostering new collaborations with regional partners and is developing strong educational and outreach efforts. Field observations will be obtained using standard protocols. Real-time observations will be archived onto our CODAAC data handling system and made available to the public using OpenDAP protocols.

Project partners include: NASA, NOAA/ETL, NOAA/National Ocean Service (NOS), Old Dominion University, Rutgers University, Donald L. Blount & Associates, DLBA Robotics, Emergent Technologies, EG&G Services, SGT, University of Maryland, Virginia Marine Science Consortium, and Pacific Gyre and Noesis.

Acronyms and Abbreviations

AAALAC	Association for Assessment and Accreditation of Laboratory Animal Care
ACT	Alliance for Coastal Technologies
AGU	American Geophysical Union
AOOS	Alaska Ocean Observing System
APNA	Autonomous Profiling Nutrient Analyzer
ASLO	American Society of Limnology and Oceanography
AUV	Autonomous Underwater Vehicle
BAA	Broad Agency Announcement
Caro-COOPS	Carolinas Coastal Ocean Observing and Prediction System
CBL	Chesapeake Biological Laboratory
CCR	Central Contractor Registry
CCS	California Current System
CeNCOOS	Central and Northern California Ocean Observing System
CenGOOS	Central Gulf of Mexico Ocean Observing System
CEQ	Council on Environmental Quality
CFDA	Catalog of Federal Domestic Assistance
CICEET	Cooperative Institute for Coastal and Estuarine Environmental Technology
CICORE	California Center for Integrative Coastal Ocean Research
CIMT	Center for Integrated Marine Technologies
CIT	Center for Innovative Technology
CLIVAR	CLImate VARiability and Predictability Program
COAST	Coastal and Ocean Science Training
COB	Close of Business
COBY	Coastal Bio-Optical Buoy
CoML	Census of Marine Life
COMPS	Coastal Ocean Monitoring and Prediction System
COOA	Coastal Ocean Observing and Analysis
COOS	Coastal Ocean Observing System
COP	Committee on Ocean Policy
CORE	Consortium for Oceanographic Research and Education
CORMP	Coastal Ocean Research and Monitoring Program
COSEE	Centers for Ocean Science Excellence in Education
COTS	Coastal Observation Technology System
CSC	Coastal Services Center
CSU	California State University
CTD	Conductivity-Temperature-Depth
DARPA	Defense Advanced Research Projects Agency
DEQ	Department of Environmental Quality
DHHS	Department of Health and Human Services
DHS	Department of Homeland Security
DMAC	Data Management and Communications
DoC	Department of Commerce
DoD	Department of Defense

DODGARS	Department of Defense Grant and Agreement Regulations
DoE	Department of Energy
DoI	Department of Interior
DoS	Department of State
DUNS	Data Universal Numbering System
ECCO	Estimating the Circulation and Climate of the Ocean
EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency
EXCOM	Ocean.US Executive Committee
FAR	Federal Acquisition Regulation
FGDC	Federal Geographic Data Committee
FIRe	Fluorescence Induction and Relaxation
FOFC	Federal Oceanographic Facilities Committee
FRRF	Fast Repetition Fluorometer
FWG	FOFC Working Group
FY	Fiscal Year
G&A	General and Administrative
GCOOS	Gulf of Mexico Coastal Ocean Observing System
GCOOS-RA	Gulf of Mexico Coastal Ocean Observing System Regional Association
GCOS	Global Climate Observing System
GEOSS	Global Earth Observation System of Systems
GFE	Government Furnished Equipment
GIS	Geographic Information System
GODAE	Global Ocean Data Assimilation Experiment
GOM	Gulf of Maine
GoMOOS	Gulf of Maine Ocean Observing System
GOOS	Global Ocean Observing System
GTS	Global Telecommunications System
G-WIS	Gulf-Wide Information System
HAB	Harmful Algal Bloom
HF	High Frequency
HPCMP	High Performance Computing Modernization Program
HYCOM	HYbrid Coordinate Ocean Model
IACUC	Institutional Animal Care and Use Committees
ICOSRMI	Interagency Committee on Ocean Science and Resource Management Integration
IEOS	Integrated Earth Observing System
IOOS	Integrated Ocean Observing System
IRB	Institutional Review Board
IWG	Interagency Working Group
IWGEO	Interagency Working Group on Earth Observations
IWG-4H	Interagency Working Group on Harmful Algal Blooms, Hypoxia and Human Health
JSOST	Joint Subcommittee on Ocean Science and Technology
LIS	Long Island Sound

LISICOS	Long Island Sound Integrated Coastal Observing System
MAB	Mid-Atlantic Bight
MMS	Minerals Management Service
MOA	Memorandum of Agreement
MTS	Marine Technology Society
NASA	National Aeronautics and Space Administration
NDBC	National Data Buoy Center
NEPA	National Environmental Policy Act
NFRA	National Federation of Regional Associations
NGCR	Northern Gulf Coastal Region
NGO	Non-Governmental Organization
NIH	National Institutes of Health
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOPP	National Oceanographic Partnership Program
NOPPO	National Oceanographic Partnership Program Office
NORLC	National Ocean Research Leadership Council
NOS	National Ocean Service
NOSB	National Ocean Sciences Bowl
NRCS	Natural Resources Conservation Service
NSC	National Security Council
NSF	National Science Foundation
NSTC	National Science and Technology Council
NTL	Notice to Lessees
OAP	Ocean Action Plan
OAR	Office of Atmospheric Research
OASIS	Ocean-Atmosphere Sensor Integration System
OBIS	Ocean Biogeographic Information System
OE	Ocean Exploration
OGC	Office of General Counsel
OGC	Open GIS Consortium
OHRP	Office of Human Research Protections
OMB	Office of Management and Budget
ONR	Office of Naval Research
ORAP	Ocean Research Advisory Panel
ORPP	Ocean Research Priorities Plan
ORRAP	Ocean Research and Resources Advisory Panel
ORION	Ocean Research Interactive Observatory Networks
OSTP	Office of Science and Technology Policy
PCC	Policy Coordinating Committee
PFEL	Pacific Fisheries Environmental Laboratory
PI	Principal Investigator
PWS	Prince William Sound
RA	Regional Association
RARGOM	Regional Association for Research on the Gulf of Maine

RCOOS	Regional Coastal Ocean Observing System
RFP	Request for Proposals
ROMS	Regional Oceanic Modeling System
ROV	Remotely Operated Vehicle
SBIR	Small Business Innovative Research
SCB	Southern California Bight
SCCOOS	Southern California Coastal Ocean Observing System
SCOOP	SURA Coastal Ocean Observing and Prediction
SEACOOS	SouthEast Coastal Ocean Observing System
SECOORA	Southeast Coastal Ocean Observations Regional Association
SFCR	South Florida Coastal Region
SIMOR	Subcommittee on Integrated Management of Ocean Resources
SOW	Statement of Work
SPAWAR	Space and Naval Warfare
SST	Sea Surface Temperature
Sub-PCC	Global Environment Policy Coordinating Committee Subcommittee on Oceans Policy
SURA	Southeastern Universities Research Association
SWSS	Sperm Whale Seismic Study
TETHYS	TETHered Yearlong Spectrometer
TOPP	Tagging of Pacific Pelagics
TOS	The Oceanography Society
TOV	TeleOperated Vehicle
UNH	University of New Hampshire
UNOLS	University-National Oceanographic Laboratory System
USACE	United States Army Corps of Engineers
USC	United States Code
U-SCAN	U.S. Coastal Area Network
USCG	United States Coast Guard
USCOP	United States Commission on Ocean Policy
USDA	United States Department of Agriculture
USF	University of South Florida
USGS	United States Geological Survey
USM	University of Southern Maine
WFF	Wallops Flight Facility
WFS	West Florida Shelf