



National Oceanographic Partnership Program

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

March 2004

National Ocean Research Leadership Council

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Table of Contents

I. EXECUTIVE SUMMARY.....	1
II. INTRODUCTION.....	2
III. NOPP INVESTMENT STRATEGY.....	3
IV. NOPP INVESTMENT PROFILE	5
V. FISCAL YEAR 2003 ACTIVITIES.....	7
VI. FISCAL YEAR 2004 ACTIVITIES AND PLANS.....	11
VII. FISCAL YEAR 2005 PLANS	13
VIII. INTERAGENCY COORDINATION ACTIVITIES	13
APPENDIX 1. NATIONAL OCEAN RESEARCH LEADERSHIP COUNCIL (NORLC) LIST OF COMMITTEE MEMBERS.....	15
APPENDIX 2. OCEAN RESEARCH ADVISORY PANEL (ORAP) LIST OF COMMITTEE MEMBERS.....	16
APPENDIX 3. INTERAGENCY WORKING GROUP (IWG) LIST OF COMMITTEE MEMBERS	17
APPENDIX 4. FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE (FOFC) LIST OF COMMITTEE MEMBERS.....	18
APPENDIX 5. NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM REQUESTS FOR PROPOSALS (RFP) AND BROAD AGENCY ANNOUNCEMENTS (BAA).....	19
APPENDIX 6. NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM FY 2003 FUNDED PROJECT SUMMARIES.....	28
APPENDIX 7. 2003 COASTAL OBSERVATION TECHNOLOGY SYSTEMS PROJECTS (COTS).....	33
APPENDIX 8. NATIONAL OCEANOGRAPHIC PARTNERSHIP PROGRAM AWARD FOR EXCELLENCE IN PARTNERING.....	59
ACRONYMS AND ABBREVIATIONS.....	61

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 oceanographic scientific community in support of those goals.

NOPP investments have focused on the following five areas: operational/routine observations, research “observatories”, observational technique development, a “commons” for ocean information, and outreach/education. 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 \$24 million in FY 2003, has increased significantly since the program’s inception. From FY 1997 to FY 2003, NOPP has funded 84 projects, including 20 renewal projects, in response to Broad Agency Announcements and Requests for Proposals. Of the total funds awarded during this period, approximately 57%, 25%, 11% and 7% went to academia, government, industry and 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 an Integrated Ocean Observing System (IOOS), which is coordinated through a NOPP interagency office called Ocean.US. Significant new investments in NOPP related activities are anticipated over the next decade.

Highlights of the NOPP Program in FY 2003 and early part of FY 2004 include the funding of individual projects as well as progress on broader planning efforts. Two projects were funded in FY 2003. In recognition of the fundamental role of partnerships in NOPP activities, the 2003 NOPP Award for Excellence in Partnering went to the “The Argo Project: Global Ocean Observations for Understanding and Prediction of Climate Variability” The Argo array will provide unprecedented real-time views of the evolving physical state of the ocean (temperature, salinity, and current). It will reveal the physical processes that balance the large-scale heat and freshwater budgets of the ocean and will provide a crucial dataset for initialization and assimilation in seasonal-to-decadal forecast models.

In terms of broader planning efforts, the Federal Oceanographic Facilities Committee (FOFC) is presently in the process of conducting planning studies for fleet renewal and how to develop an integrated, cross-agency research fleet plan. Ocean.US, an interagency office established by NOPP to promote the IOOS, convened a summit workshop in March 2003 on the national federation of regional associations that will comprise the IOOS. A NOPP Federal ocean education survey was conducted this year and further development of the NOPP strategic plan was conducted.

II. Introduction

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 National Ocean Research Leadership Council (NORLC), and the Ocean Research Advisory Panel (ORAP) 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.

This report addresses the latter component of the statutory requirement.

NOPP Organization: The NOPP organizational chart is shown below.

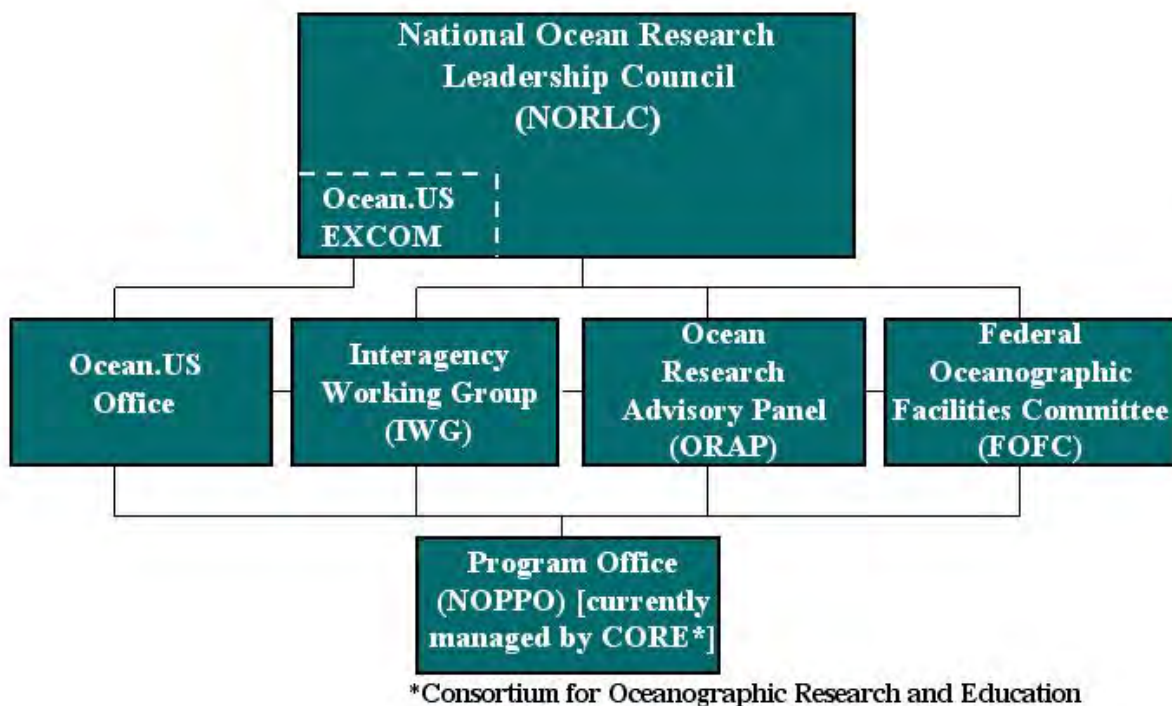


Figure 1. NOPP Organizational Chart

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 or developing ocean research policy. 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 representatives from the National Academies, ocean industries, state governments, academia, and other organizations/communities as appropriate. The current list of members can be found in Appendix 2.

The **Interagency Working Group** (IWG) performs staffing functions assigned by, and on behalf of, the NORLC. Membership reflects that of the NORLC. 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 current list of members can be found in Appendix 4.

The **Ocean Observations 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 have provided personnel or other resources to the Ocean.US Office.

The **Ocean.US Office** serves as the national focal point for integrating ocean observing activities. 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 **National Oceanographic Partnership Program Office** (NOPPO) was established by the 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 to the Consortium for Oceanographic Research and Education (CORE) on 14 July 1997. The NOPPO contract was re-competed in 2002 and was awarded to CORE on 5 February 2003.

III. NOPP Investment Strategy

The five elements of the NOPP Investment Strategy (described below) are based on the NORLC Report “Toward a U.S. Plan for an Integrated, Sustained Ocean Observing System.”

- A. Operational/Routine Observations. This NOPP investment area is for operational observation efforts, including demonstrations and pilot projects that may lead to new operational capabilities. Sustained, long-term, routine observations are used to generate products responding to user-defined needs or requirements.
- B. Research “Observatories”. This NOPP investment category includes observational efforts such as long time-series research, which will yield important fundamental

discoveries about how the ocean and its ecosystems interact over time, and will lead to optimization of operational observing systems. Knowledge of the mechanisms of long-term climate change and its effect on fish stock fluctuations, for instance, is essential to designing effective systems to monitor and predict fish stock fluctuations and permit operational catch quotas annually. NOPP has funded the development of integrated coastal observatories (e.g., LEO-15 off New Jersey), and the conceptual design of sea floor observatory networks further offshore (e.g., NEPTUNE), which could potentially monitor the biological productivity and fish stocks over a large area of the continental shelf. Additional existing open ocean time-series, such as the Hawaiian Ocean Time-Series (HOTS) and Bermuda Area Time Series (BATS), could also eventually be coordinated and integrated into the Integrated Ocean Observing System (IOOS) data streams.

- C. Observational Technique Development. NOPP is interested in the development and/or demonstration of coastal and open ocean observational instrumentation, platforms and techniques to establish new means for continuous, high-resolution measurements of oceanic processes. A principal challenge in this area is to develop rapid analytical techniques and “smart” sampling tools based on real-time measurements.

NOPP is particularly interested in:

1. autonomous and/or long-term and/or distributed approaches that provide new observational capabilities for the ocean community, and
 2. Innovative sensors and measurement techniques to obtain long-term data on oceanographic variables for which technology is less advanced (e.g., chemical, optical, or biological) to better integrate observations with physical variables.
- D. “Commons” for Ocean Information. The Partnership Program has initiated several efforts toward a community-wide, linked ‘system’ of resources, collaborations, and elements for ocean observing and predicting activities. The genesis for this initiative was a series of workshops in 1997 (led by Worth Nowlin) and 1998 (led by Tom Powell) illuminating the need for an Ocean Research Synthesis and Modeling Program (ORSMP) which garnered further impetus and definition with the publication of the NORLC report “Toward a U.S. Plan for an Integrated, Sustained Ocean Observing System” in April 1999. Background on the workshops can be found in Nowlin (1997) and Powell (1998), available through the NOPP web site at <http://www.nopp.org>.

To address these needs, new infrastructure and partnerships are required that span the ocean community. A concept that has been developed to address these needs involves a central “hub facility” supporting a number of “nodes” that can evolve in a phased manner. The hub (or hubs) will provide computational and data assimilation capabilities, high-level analyses, technical assistance, code and analysis software, benchmark solutions, documentation, and other services. Nodes are envisioned as small to large teams (5-15 researchers) collaborating on model/data synthesis projects requiring regional- to global-scale computational capability.

- E. Outreach/Education. As science literacy grows in importance, the oceans readily provide an exciting vehicle to stimulate learning and promote math and science education. NOPP seeks to invest in projects directly addressing public education.

With consensus agreement additional investment areas may be added.

IV. NOPP Investment Profile

Overall fiscal investment in NOPP has increased since startup 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 2 shows the growth of NOPP Funded Activities from 1997-2003 as well as the breakdown by subcategory for Solicited Projects and Managed Activities. In 2003, the total funding was \$30M.

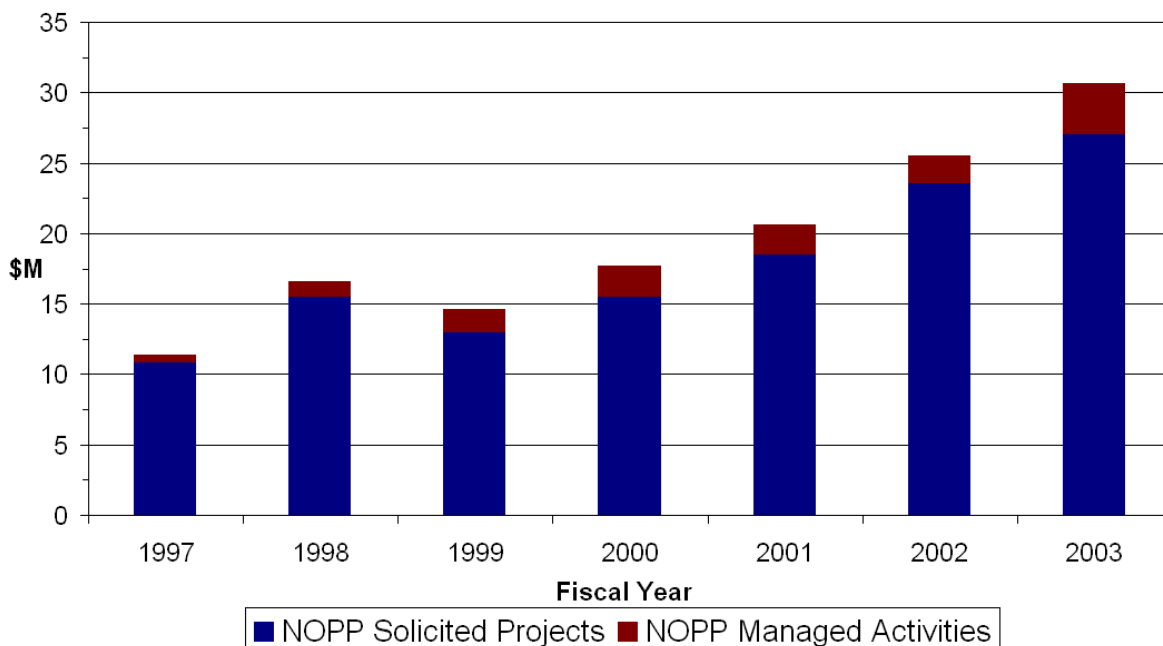


Figure 2. FY 1997-2003 Investment in NOPP Funded Activities, including both NOPP Solicited Projects and NOPP Managed Activities. Note that the dollar amounts shown are those spent each year; out-year commitments are not shown.

NOPP 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 \$30M in 2003 (Figure 2). The cumulative investment over seven years is \$128M. Through 2003, there have been 84 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 science community – including academia, industry and non-governmental organizations. Figure 3 shows the annual distribution of funding for new awards, across sectors within the ocean science community. The bar on the right indicates the sector averages over 1997-2003 for all NOPP Solicited Project awards. Approximately 57%, 25%, 11% and 7% were awarded to academia, government, industry and non-governmental organizations/others, respectively.

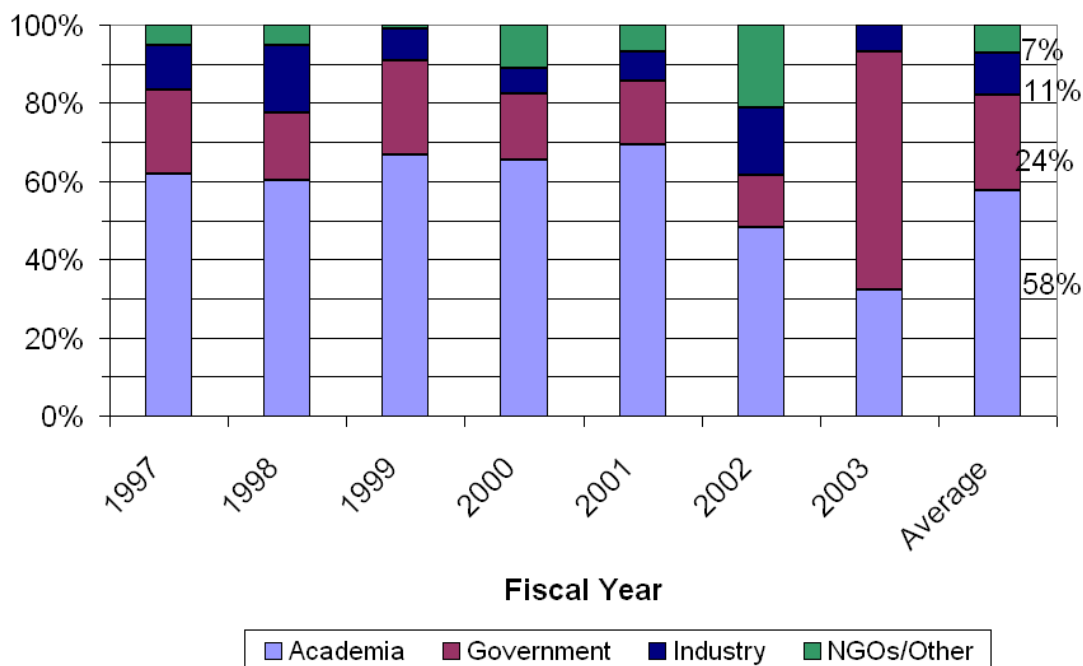


Figure 3. Bar graph showing the annual NOPP funding for new solicited project awards by sector from 1997-2003 for academia, government, industry and NGOs/others. The bar on the right indicates the seven year sector average.

NOPP Managed Activities

NOPP Managed Activities include expenditures for the NOPP Office, the Ocean.US office, the National Ocean Sciences Bowl, the Ocean Information Technology Infrastructure initiative, the

Virtual Ocean Data System and the Year of the Ocean Drifters. The cumulative expenditure for these activities is \$11.2M from 1997-2003 (Figure 2).

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 are primarily single agency expenditures. Significant new investments in NOPP Related Activities are anticipated over the next decade.

V. Fiscal Year 2003 Activities

NOPP FUNDED ACTIVITIES

NOPP Solicited Projects

The NOPP agencies invested approximately \$1.9M in new NOPP-solicited projects in FY 2003 using two Requests for Proposals (RFP). All solicitations employed a peer-review process and awards were approved by the IWG on behalf of the NORLC.

The first FY 2003 NOPP Request for Proposals (RFP) was issued by NOAA on December 11, 2002 for implementing the initial, pre-operational U.S. contribution(s) to the Global Ocean Data Assimilation Experiment (GODAE). GODAE will be a pilot project under Ocean.US. Funded jointly by Navy and NOAA, the funding levels for each year are dependent on appropriations but are expected to be \$1.5M, \$2.5M, and \$4.5M, respectively, for three years beginning in FY 2003. Depending on progress, it is expected that the level of funding for the third year will continue for two additional years. The program employed a competitive peer-review process and a single award was approved by the IWG on behalf of the NORLC. The solicitation is included as Appendix 5.1.

The second FY 2003 NOPP RFP was issued by the Minerals Management Service on June 11, 2003 and focused on The Archaeological and Biological Analysis of World War II Shipwrecks in the Gulf of Mexico: A Pilot Study of the Artificial Reef Effect in Deepwater. Supported jointly by MMS and NOAA, the funding level was \$350K in addition to 18 days of NOAA shiptime. The solicitation is included as Appendix 5.2.

In response to these two RFP's, eight proposals were received and two were funded. The funded projects are listed below and project summaries are provided in Appendix 6.

U.S. GODAE: Global Ocean Prediction with the HYbrid Coordinate Ocean Model (HYCOM).
Lead P.I.: Eric P. Chassignet

The Archaeological and Biological Analysis of World War II Shipwrecks in the Gulf of Mexico: A Pilot Study of the Artificial Reef Effect in Deep Water.
Lead P.I.: Mr. Robert Church

NOPP Managed Activities

This is the 7th year of the NOSB[®], which has grown to encompass 24 sites, 400 high schools, coaches (teachers/parents) and 2000 students. Two additional programs created to complement the NOSB[®], the National Ocean Scholar Program and COAST internship are extending the NOSB[®] experience while creating opportunities for students to further their interest in ocean and coastal sciences. Additional information on the NOSB[®] and other education projects can be found on the NOPP web site at <http://www.nopp.org/>.

The National Oceanographic Partnership Program held Town Meetings at both the American Society of Limnology and Oceanography meeting in Salt Lake, City (February, 2003) and at the Marine Technology Society meeting in New Orleans (June, 2003). Federal officials from the NOPP Interagency Working Group (IWG) provided an overview of recent developments in the NOPP program. Future plans for NOPP were discussed, including an update on the evolving plans to develop routine ocean observations of U.S. coastal and open ocean waters.

NOPP RELATED ACTIVITIES

In addition to the NOPP-Funded Activities described above, individual agencies invested in NOPP Related Activities. Significant examples of such investments included several projects related to the development of an Integrated Ocean Observing System.

NOAA has directly supported development of the Integrated Ocean Observing System (IOOS) through its Coastal Observation Technology System (COTS). Over the last two years (FY02 and FY03) NOAA has provided approximately \$28 million to ocean observation projects at institutions in eleven states. The COTS projects are designed to further the development of integrated coastal ocean observing systems on a regional basis and are further described in Appendix 7.

NATIONAL OCEAN RESEARCH LEADERSHIP COUNCIL

The National Ocean Research Leadership Council met on January 9 and July 7, 2003. The NORLC granted the Interagency Working Group (IWG) approval authority for project awards resulting from the FY 2004 Broad Agency Announcements and Requests for Proposals. They also requested a survey be conducted on the Federal investments in Ocean Education and that the Strategic Plan continue to be developed. The minutes of both meetings are available on the NOPP web site at <http://www.nopp.org>.

OCEAN RESEARCH ADVISORY PANEL

The Ocean Research Advisory Panel did not meet formally in FY 2003 due to a temporary gap in approved membership. An informal, public meeting was held in June, 2003 in New Orleans. Discussion topics included review of the ORAP recommendations on the NOPP education strategy; the Integrated Ocean Observing System and Ocean.US; the reports of the US

Commission on Ocean Policy and Pew Commission; an assessment of the NOPP Investment areas and transitioning NOPP research projects to operations, with particular emphasis on the NOPP Ocean Biogeographic Information System (OBIS).

FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE

The Federal Oceanographic Facilities Committee met twice in FY 2003, on November 13, 2002 and May 28, 2003. Discussion centered on an analysis of a broad range of ocean research fleet renewal acquisition methods which considered both lease and purchase options. Participating agencies were asked for their support in the development of an integrated Federal research fleet renewal plan and an update of the Academic Fleet Renewal Plan, considering emerging requirements such as the Integrated Ocean Observing System, and Ocean Observatories. During FY 2003, FOFC completed a NOPP brochure summarizing information about the federal maritime research aircraft fleet. The brochure was given wide distribution among the oceanographic academic community.

2003 NOPP AWARD FOR EXCELLENCE IN PARTNERING



Award Ceremony for the NOPP 2003 Award for Excellence in Partnering. From left to right: Mr. Dimitriou (FNMOC), Dr. Johnson (NOAA PMEL), Dr. Molinari (NOAA AOML), Mr. Schregardus (Navy), Dr. Owens (WHOI), Dr. Colwell (NSF), VADM Lautenbacher (NOAA), Dr. Riser (UW), Dr. Visbeck (LDEO), Dr. Davis (SIO), Ms. Koch (NOAA).

At the February 11, 2004, NORLC meeting, Dr. Rita Colwell awarded the 2003 NOPP Award for Excellence in Partnering to the Argo Project. Dr. Russ Davis (Scripps Institute of Oceanography) accepted the award on behalf of Dr. Dean Roemmich, lead PI for the Argo Project. The Argo project is an ocean basin scale observing system for real-time observation of salinity and temperature profiles with depth. In three years Argo has progressed from a demonstration project deploying 55 floats to a program scheduled to deploy 412 floats per year over the next three years. The Argo project is demonstrating how academic and government partners can transition a research project to an operational component of the integrated ocean observing system on a global scale and provide timely data to meet the operational requirements of forecasting and prediction centers. This system can be accessed through <http://www.argo.ucsd.edu/>. The Argo Project was selected from among sixty-nine past or present NOPP research projects. A short description of Argo and the criteria for selecting the recipient of the Excellence in Partnering Award can be found in Appendix 8.

OCEAN.US/INTEGRATED OCEAN OBSERVING SYSTEM

Ocean.US is an interagency office to promote the development and implementation of a sustained, Integrated Ocean Observing System (IOOS). IOOS will constitute the U.S. contribution to a Global Ocean Observing System (GOOS) and reflects increasing interest in expanding the operational capabilities of oceanography. A full-time staff of five scientists is now assigned to this office, supplemented by a committee of users including the U.S. GOOS Steering Committee. To date, nine agencies have agreed to provide resources. Representatives of these agencies comprise an Executive Committee that provides oversight and guidance to the Office.

Congress has requested an implementation plan for the establishment of a sustained and Integrated Ocean Observing System (IOOS). In response, Ocean.US was charged to draft recommendations for the "Implementation of the Initial U.S. Integrated Ocean Observing System." With the guidance of its Executive Committee, Ocean.US completed Part I (Structure and Governance) of the plan and began to draft Parts II (Building the Initial IOOS) and III (Enhancing the Initial IOOS). Part I has been endorsed by the Executive Committee. Part II (recommended plan for implementing the system using existing assets) is nearing completion.

The office is initially charged with documenting a set of integrated requirements and capabilities for consideration by the agencies. Efforts are also underway to define more specifically the observational activities to be encompassed by Ocean.US. Two components -- a global, oceanic component and a national coastal component -- are being developed concurrently. The system will be a federation of existing and new observing systems, providing full and open access to ocean data.

Ocean.US Summit on Regional Observing Systems

An important step in the process of developing an implementation strategy for the IOOS was the Ocean.US Summit on Regional Ocean Observing Systems that was held in Washington, DC on March 31 – April 1, 2003. For the first time a national consensus was reached among leading scientists on the need for a coordinated system of monitoring and research for the nation's coastal waters from estuaries and the Great Lakes to the EEZ. Deliverables from the workshop were (1) a signed resolution to establish a National Federation of Regional Associations (NFRA) and (2) recommendations for the structure and function of Regional Associations (RAs) and a National Federation of Regional Associations (NFRA) to work with NOPP agencies to develop a locally relevant, nationally coordinated, sustained and integrated ocean observing system.

In the resolution, the Signatories resolved to work together and with NOPP agencies to (1) establish RAs and an NFRA; (2) establish common standards and protocols for data management and communication; and (3) openly share data, metadata, and related information. Attendees also developed recommendations for the function and responsibilities of, management of, and membership in the RAs and NFRA, as well as their relationship to federal agencies.

VI. Fiscal Year 2004 Activities and Plans

NOPP FUNDED ACTIVITIES

FY 2004 anticipated agency contributions for NOPP Funded Activities are indicated in Table 1.

Table 1. Anticipated Fiscal Year 2004 Agency Contributions to NOPP Funded Activities by Investment Area. This includes Solicited Projects (projects solicited through NOPP BAAs and RFPs) and Managed Activities.

	N O A A	N A V Y	N S F	N A S A	M M S	D O E	E P A	U S A C E	U S G S	D O S	U S C G	O S T P	O M B	D A R P A	D H S
NOPP Solicited Projects	X	X	X	X	X	X	X		X						
NOPP Managed Activities	X	X	X	X	X			X	X						
FY 2004 Anticipated Expenditures (\$M)	12.4	10.0	4.7	4.0	0.8	*	*	*	*	0	0	0	0	0	0

*anticipated expenditures of less than \$100K

NOPP Solicited Projects

A Broad Agency Announcement was issued in August 2003 for funding in FY 2004. Approximately \$3M was to be available on the following three topics: *Sea Surface Temperature (SST) for the Global Ocean Data Assimilation Experiment (GODAE)*, *A Wireless Network for the U.S. Coastal Zone* and 5 subtopics focused on *Marine Mammals*. At present, the proposal review has concluded and approximately 7 awards are anticipated.

NOPP Managed Activities

The Finals of the National Ocean Science Bowl will be held in Charleston, SC, April 24-26, 2004. In terms of outreach, the National Oceanographic Partnership Program held activities at the American Geophysical Union meeting (San Francisco, December, 2003). Activities are also planned for the American Geophysical Union Ocean Sciences (AGU, Portland, January 2004) and the American Society of Limnology and Oceanography/The Oceanography Society (ASLO/TOS, Honolulu, February 2004) meetings.

NOPP RELATED ACTIVITIES

NOAA will continue to provide support for the Coastal Observation Technology System (COTS) projects and for the Ocean.US Office (see Appendix 7 for a description). NOAA will continue to help build regional observing system capacity in concordance with the developing implementation plan for the Integrated Ocean Observing System. The FY 2004 funding level for COTS projects is \$28.6M, mostly directed to specific projects.

NATIONAL OCEAN RESEARCH LEADERSHIP COUNCIL

The National Ocean Research Leadership Council met on February 11, 2004. Highlights included discussion of NOPP's response to the US Commission on Ocean Policy report, the NOPP Strategic Plan, results of the NOPP Federal Ocean Education survey, the status of the implementation plan for the Integrated Ocean Observing System, potential new directions for NOPP Research and Exploration and an update on ORAP activities. The Chairmanship of the NORLC was transitioned to NOAA after two years under NSF. The minutes of all NORLC meetings are posted on the NOPP web site at <http://www.nopp.org>.

OCEAN RESEARCH ADVISORY PANEL

The ORAP committee held a formal meeting on January 6th, 2004 in Washington, DC. This was the first meeting since a full slate of members was officially appointed in the ORAP in 2003 (Appendix 2). In prior years, an ORAP Vice-Chair position had existed and the committee voted to continue this tradition by electing Dr. Ellen Prager to the post. The draft NOPP Strategic Plan was reviewed and ORAP endorsed the overall broad goals and direction. ORAP agreed to work with the IWG on developing subgoals and associated metrics for each of the Strategic Actions identified in the plan. ORAP also discussed issues regarding potential governance models for the Integrated Ocean Observing System and learned more about the National Polar Orbiting Environmental Satellite System (NPOESS) as one potential model. The ORAP also received a detailed briefing on the US Commission on Ocean Policy report and agreed to send a letter to the governors of all 50 states emphasizing the importance of the report and urging them to provide thoughtful comments back to the Commission. ORAP endorsed an Ocean.US pilot project to spearhead the Ocean.US Surface Current Mapping Initiative and planned a stakeholder workshop in support of the Ocean Biogeographic Information System (OBIS), a potential tool for facilitating ecosystem management. The next ORAP meeting will be held in June or July of 2004.

FEDERAL OCEANOGRAPHIC FACILITIES COMMITTEE

The Federal Oceanographic Facilities Committee (FOFC) met on November 10, 2003. FOFC will develop an integrated federal research vessel fleet plan and develop the first update of the Academic Fleet Renewal Plan released in December 2001. The plans will address recent reports from the U.S. Commission on Ocean Policy, the National Research Council's Ocean Observing and Deep Submergence Studies, and implementation of the Integrated Ocean Observing System (IOOS), where they focus on infrastructure requirements. Opportunities for coordinated acquisitions, common hull designs or mission systems will be analyzed.

OCEAN.US / INTEGRATED OCEAN OBSERVING SYSTEM

The phased implementation plan for achieving an integrated and sustained ocean observing system over the next 5 to 10 years will be completed in 2004 and approved by the Executive Committee.

Workshops will be conducted to accelerate the formation of Regional Associations (RA) and begin the process of establishing the National Federation of Research Associations (NFRA), to develop the plans for education and outreach pertaining to IOOS and the Regional Associations, and to implement the four-year planning cycle for IOOS development. Both the organizational and education workshops will be held in March 2004; the planning workshop is scheduled for July 2004. All three workshops will be held in Washington, DC.

VII. Fiscal Year 2005 Plans

Agency-specific budget requests for the Fiscal Year 2005 Budget are pending before Congress; therefore precise funding levels and associated programmatic issues cannot be identified. The NOPP agencies anticipate contributions to NOPP to be comparable to that of Fiscal Year 2004 and anticipate supporting the existing five investment areas:

- Operational/Routine Observations;
- Research “Observatories”;
- Observational Technique Development;
- “Commons” for Ocean Information; and
- Outreach/Education.

Additional areas of investment may be considered.

NOAA will continue to utilize Coastal Observation Technology System (COTS) funds to support the Ocean.US Office and development of regional observing system capacity while working to establish more comprehensive long-term support for IOOS with its NOPP partners.

VIII. Interagency Coordination activities

The central tenet of NOPP is interagency cooperation. The most recent activities are described in previous sections of this report. The primary thrust of the NOPP over the next few years will be development and implementation of a national integrated ocean observing system coordinated by the Ocean.US office. FOFC continues to coordinate efforts aimed at oceanographic facilities of interest to multiple agencies.

The National Science and Technology Council Committee on Science and Committee on Environment and Natural Resources recently established the Joint Subcommittee on Oceans to consider, among other topics, national ocean science and technology priorities. The Chair and Vice-Chairs of the NOPP IWG serve as ex officio members of the Subcommittee to ensure coordination of efforts.

The NOPP role with the Commission on Ocean Policy continues to be productive. While the Commission's report was not issued in time for discussion at the February 11, 2004 NORLC meeting, the NORLC requested the IWG to provide input on NOPP-related issues in the report to CEQ's Interagency Ocean Policy Group.

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

As of February 2004

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)	Mr. Gordon England, Secretary of the Navy
National Science Foundation (Vice-Chair)	Dr. Arden Bement, Acting Director
National Aeronautics and Space Administration	Mr. Sean O’Keefe, Administrator
Department of Energy	Mr. Kyle E. McSlarrow, Deputy Secretary
Environmental Protection Agency	Mr. Michael Leavitt, Administrator
United States Coast Guard	ADM Thomas H. Collins, Commandant
United States Geological Survey	Dr. Charles Groat, Director
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. Joshua Bolten, Director
Department of State	Mr. John Turner, 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. Charles E. McQueary, Undersecretary for Science and Technology

Appendix 2. Ocean Research Advisory Panel (ORAP) List of Committee Members

As of February 2004

Marcia McNutt, Monterey Bay Aquarium Research Institute (Chair)
Ellen Prager, Earth2Ocean, Inc. (ex: U. of Miami, Vice-Chair)
Paul L. Kelly, Rowan Companies, Inc.
Lawrence Dickerson, Diamond Offshore Drilling, Inc.
Nancy Rabalais, Chair, Ocean Studies Board, NAS
Philip Merilees, National Center for Atmospheric Research (ex: NRL Monterey)
L. Donelson Wright, Virginia Institute of Marine Science
Andrew Clark, Maritime Communication Services, Inc.
William Wright, Royal Caribbean Cruises Ltd.
Jesse Ausubel, Alfred P. Sloan Foundation
Stephen Weisberg, Southern California Coastal Water Research Project Authority
Joseph Pickard, Environet, Inc.
Denise Stephenson-Hawk, Chairman, The Stephenson Group (ex: Clark Atlanta U.)

Pending:

Terry Garcia, National Geographic Society
Valerie Chase‡, (ex: National Aquarium)
Matthew Gilligan‡, Savannah State University
Marlon Lewis‡, Satlantic
Richard Seymour‡, Scripps Institution of Oceanography

‡ Pending appointment

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

As of February 2004

National Oceanic and Atmospheric Administration (Chair)	Dr. Michael Sissenwine
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. Jeff Summers
Environmental Protection Agency	Dr. Darrell Brown
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. David Halpern
Defense Advanced Research Projects Agency	Dr. Theo Kooij
Department of Homeland Security	TBD
Ex Officio Members	
Chair EXCOM	Dr. Richard Spinrad (NOAA)
Chair FOFC	Mr. Robert Winokur (Oceanographer of the Navy)
Director Ocean.US	Dr. Thomas Malone (U. Maryland)

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

As of February 2004

Mr. Robert Winokur (Chair)	Oceanographer of the Navy
Dr. Margaret Leinen	National Science Foundation
Dr. Frank Herr	Office of Naval Research
RADM Nicholas Prahl	National Oceanic & Atmospheric Administration
CAPT Charles T. Lancaster	U.S. Coast Guard
Mr. Kennard W Potts	U.S. Environmental Protection Agency
Dr. Ronald Lai	Minerals Management Service
Ms. Margaret F. Hayes	Department of State
Mr. William Birkemeier	U.S. Army Corps of Engineers
Dr. Jeff Summers	Department of Energy
Dr. John Haines	U.S. Geological Survey
Dr. Eric Lindstrom	National Aeronautics and Space Administration
Dr. Thomas J. Green, Jr.	DARPA Advanced Technology Office

Appendix 5. National Oceanographic Partnership Program Requests for Proposals (RFP) and Broad Agency Announcements (BAA)

5.1 2003 RFP FOR THE GLOBAL OCEAN DATA ASSIMILATION EXPERIMENT (GODAE)

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[Docket No.021202295–2295–01]

Global Ocean Data Assimilation Experiment (GODAE)

AGENCY: National Oceanic and Atmospheric Administration, Department of Commerce.

ACTION: Notice of request for proposals.

SUMMARY: The purpose of this notice is to advise the public that the National Oceanic and Atmospheric Administration (NOAA), on behalf of the National Oceanographic Partnership Program (NOPP), is entertaining preliminary proposals (Letters of Intent) and subsequently full proposals for implementing the initial, preoperational U.S. contribution(s) to the Global Ocean Data Assimilation Experiment. These efforts are a Pilot Project under Ocean.US, the National Office for Integrated and Sustained Ocean Observations, intended to lead to sustained operational efforts supported by U.S. agencies such as NOAA and the U.S. Navy.

The 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 FY 2003, NOPP intends to begin a program to demonstrate the value of near-real-time, ocean data assimilation. Contingent on the availability of appropriated funds, this program is expected to continue for three to five years. The level of funding available each year will be dependent on appropriations. It is expected that approximately \$1,500,000 will be available for the first year of the project, approximately \$2,500,000 for the second year, and up to \$4,500,000 for the third year. It is expected that the level of funding for the third year will continue for two additional years, depending on progress. Proposals should be written as three-year efforts with options to continue in years four and five should progress be satisfactory.

DATES: January 10, 2003, 5 pm (EST)—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.

February 24, 2003, 5 pm (EST)—Full proposal in electronic or hard copy form due. The proposal must clearly delineate each partner's efforts and the associated request(s) for NOPP funds as well as any cost-sharing that may be offered. (Cost- or resource-sharing is not required in any response to this announcement.) The same proposal will implement funding of all partners in the proposed effort, if

selected, thus, separate budgets within the single proposal will be required if more than one funding action is needed. Unsuccessful applications will be destroyed.

June 1, 2003 (approximate)—Funds awarded to selected recipients. Program begins.

ADDRESSES: Because of potential delays and/or damage in mailing or shipment of hard copy submissions, electronic submissions of Letters of Intent (LOI) and Proposals are strongly encouraged. Electronic submissions must be in PDF format. Electronic submissions in other than PDF format will not be accepted. Electronic submissions must be directed to the National Oceanographic Partnership Program at <http://www.onr.navy.mil/sci-tech/ocean/GODAE-NOAA.htm>; ATTN: Stephen R. Piotrowicz. Letters of Intent submitted by facsimile must be directed to Ocean.US, ATTN: Stephen R. Piotrowicz at 703-588-0872. Letters of Intent and Proposals submitted in hard copy form must be submitted to: Ocean.US, 2300 Clarendon Blvd., Suite 1350, Arlington, VA 22201; ATTN: Dr. Stephen R. Piotrowicz. 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 graphics.

FOR FURTHER INFORMATION CONTACT: Dr. Stephen R. Piotrowicz, telephone: (703) 588-0850; facsimile: (703) 588-0872; internet: Steve.Piotrowicz@noaa.gov.

Supplementary Information:

I. Program Authority

Authority: 49 U.S.C. 4472 (b); 33 U.S.C. 883d; 15 U.S.C. 2904; 15 U.S.C. 2934, (CFDA No. 11.431)—Climate and Atmospheric Research.

II. Program Description

Background - The Global Ocean Data Assimilation Experiment (GODAE) is a one-time pilot project to demonstrate the feasibility and practicality of near real-time global ocean data assimilation and numerical modeling for: (a) Short range open ocean forecasts; (b) boundary conditions to extend predictability of coastal regimes; (c) initialize climate forecast models; and (d) research during the period 2003 to 2007. GODAE has been in planning for at least five years.

Within the international community this has culminated in the preparation of both a Strategic Plan and an Implementation Plan (<http://www.bom.gov.au/GODAE/IP/Plan.htm>). NOPP has provided substantial funding for a number of U.S. GODAE-preparatory and GODAE-related activities, which have established a foundation upon which we now wish to build as GODAE moves into its demonstration phase as a Pilot Project under Ocean.US. Elements of the international community are in the process of organizing GODAE. Demonstrating the utility of near-realtime data assimilation in an operational setting would provide critical feedback needed to justify the continuance of basin-scale ocean observing and prediction/estimation systems over the long term.

Funding Availability - Actual funding levels will depend upon the final budget appropriations. This Program Announcement is for a program to be conducted over a three (nominal) to five (with options) year period, by investigators both inside and outside the Federal Government. It is expected, though not certain, that two or more programs involving multiple investigators will be funded, with possible coalescence or down-selection for the Option years 4 and 5. In accordance with the NOPP, team efforts among academia, industry, and government participants are very strongly encouraged; the degree of intersector teaming is a selection criteria. For Federal Government investigators, funding will be provided through intra- or interagency transfers, as appropriate.

The funding instrument for extramural include, but are not limited to, proposals for collaboration between NOAA or NOAA scientists and a recipient scientist or technician and/or contemplation by NOAA of detailing Federal personnel to work on proposed projects. NOAA will make decisions regarding the use of a cooperative agreement on a case-by-case basis.

III. Eligibility

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 U.S.C. 44720. Because this announcement is not proposing to procure goods or services from applicants, the Economy Act (31 U.S.C. 1535) is not an appropriate legal basis.

IV. Evaluation Criteria

Evaluations of the proposals will use the following selection criteria:

1. Relevance of the proposed program to NOPP objectives, including (30%): Support of critical research objectives or operational goals that meet NOPP and participating federal agency requirements, Broad participation within the oceanographic community, Partners with a long-term commitment to the proposed objectives, Resources are shared among partners, and Active involvement of one or more operational centers.
2. Overall technical merits of the proposal (30%), including: Demonstration of the utility of nearreal-time data assimilation in operational settings; Coordination and/or collaboration with existing operationally oriented efforts; Feedback mechanisms between assimilation efforts and data set providers; Collaborative activities with international efforts providing mutual benefits to both.
3. The offeror's capabilities, related experience, and facilities or unique combinations of these that are critical to the program's objectives (10%).
4. The qualifications and experience of the proposed principal investigator(s) and key personnel (10%).
5. The degree of significant partnering among at least two of the following parties, academia, industry or government (10%).
6. Realism and duration of the proposed costs (10%). The proposed program shall produce substantive results in no more than three years to allow review and decisions on any proposed options for extension to years four and five. Nonproductive programs will be considered for termination at the end of three years, regardless of any options.

V. Selection Procedures

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 take the results of the mail reviews and rate the proposals into three Tiers (1—Strong Proposal, fundable with no significant issues; 2— Strong Proposal, fundable with issues to be resolved; 3—Not Recommended). The ratings will be determined by a vote of the Panel on each proposal individually with the Tier assigned according to the highest number of votes received. In the event of a tie between two or three tiers, the proposal will be assigned to the highest rated Tier of the Tiers that tied for the highest number of votes.

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 into tiers. No consensus advice will be given by the Panel (unless the panel is composed entirely of Federal employees.). The recommendations and evaluations of the panel will be considered by the NOPP Interagency Working Group along with the following program policy factors:

- Availability of funding;
- Duplication of on-going Federal support;
- Duplication with other applications in the solicitation;
- Geographic diversity;
- Diversity among the types of institutions receiving awards;
- Collaboration among multiple jurisdictions; and
- Subject area diversity within the competition.

The recommendations of the participating funding agencies will be forwarded to the National Ocean Research Leadership Council for final selection(s) based on the program policy factors given above. Any proposal within Tier One or Tier Two may be selected for award. The Program Manager(s) in the agencies will also recommend the total duration of funding and the amount of funding for each partner in the proposal. Unsatisfactory performance by a recipient under prior Federal awards may result in an application not being considered for funding.

VI. Instruction for Application - What To Submit

Letter of Intent (LOI) - To prevent the expenditure of effort that may not be successful, it is in the best interest of applicants to submit letters of intent, however, it is not a requirement. Letters of Intent (LOI) must be sent by electronic mail. The following information should be included:

(1) The LOI should clearly identify the program area being addressed by starting the project title with “U.S. GODAE:” Principal Investigators and collaborators should be identified by affiliation and contact information. The total amount of Federal funds being requested should be listed for each budget year for each collaborator’s institution.

(2) A concise (2-page limit) description of the program including a brief summary of the work to be completed, methodology to be used, approximate costs of the major elements (salaries and benefits, direct costs, and travel). Evaluation will be by NOPP agency program management. Projects deemed suitable during Letters of Intent (LOI) review will be encouraged within 15 days to submit full proposals; projects may also be discouraged from submitting full proposals, but investigators may still do so if they wish.

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

Full Proposal Guidelines - Each full proposal must include the first seven items listed below; the standard forms included as Item 8 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 8 1/2" x 11" paper. Brevity will assist reviewers and program staff in dealing effectively with proposals, therefore, the Program Description may not exceed 15 pages. Tables and visual materials, including figures, charts, graphs, maps, photographs and other pictorial presentations are included in the 15- page limitation; literature citations and letters of support, if any, are not included in the 15-page limitation. Conformance to the 15-page limitation will be strictly enforced. 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 will result in the proposal being rejected without review.

- (1) **Signed Title Page:** The title page should be signed by the Principal Investigator(s) and the institutional representative and should clearly identify program by starting the title "U.S. GODAE:" 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 program; the total should include all collaborator's budgets on projects involving multiple institutions, even if one of the collaborators is a Federal institution.
- (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) **Program Description/Work Statement (15-page limit):** The Program Description should include identification of the problem, objectives of the work, relevance to the operational prediction mission, proposed implementation strategy, and proposed methodology. The following elements should be described in detail: (a) **Approach:** The Project should demonstrate the implications of realtime ocean data assimilation into operational analysis and forecast models, or into analysis and forecast systems that are running in an operational mode. It should facilitate the process of acceptance of such assimilation by one or more operational entities, entraining the operational entity(ies) working on a 24/7 basis. Approaches that propose work independent of operational activities, such that a "hand-off" is proposed at the end of the project will not be deemed responsive to this call. (b) **Data Management:** It should illustrate how real-time (within 24 hour) delivery of products will be achieved, although longer-delivery times (with, for example, more quality control) may be acceptable in addition but not instead, for some products.
- (4) **Budget and Budget Justification:** There should be a separate budget for each year of the project as well as a cumulative annual budget for the entire project. Subcontracts should have a separate budget page. Applicants should provide justification for all budget items in sufficient detail to enable the reviewers to evaluate the appropriateness of the funding requested.
- (5) **Current and Pending Support:** Information on the number of personmonths per year devoted to this project and ongoing projects regardless source of support (Federal, State, or local government agencies, private foundations, industrial or other commercial organizations) by the Principal Investigator and other senior personnel must be listed. Similar information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including those within NOAA.
- (6) **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.

- (7) 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, and total award. The section should be a brief summary and should not exceed two pages total.
- (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, for proposals selected for funding by NOAA, applicants should enter “11.431” for the CFDA Number and “Climate and Atmospheric Research” for the title. The form must contain the original signature(s) of an authorized representative of the applying institution(s).

DOC/NOAA is strongly committed to broadening the participation of Historically Black Colleges and Universities (HBCU), Hispanic Serving Institutions (HSI), and Tribal Colleges and Universities (TCU) in its educational and research programs. The DOC/NOAA vision, mission, and goals are to achieve full participation by Minority Serving Institutions (MSI) in order to advance the development of human potential, to strengthen the nation’s capacity to provide high-quality education, and to increase opportunities for MSIs to participate in and benefit from Federal Financial Assistance programs. DOC/NOAA encourages all applicants to include meaningful participation of MSIs. Institutions eligible to be considered MSIs are listed at the following Internet Web site: <http://www.ed.gov/offices/OCR/99minin.html>.

The Department of Commerce Pre- Award Notification of Requirements for Grants and Cooperative Agreements contained in the Federal Register notice of October 1, 2001 (66 FR 49917), as amended by the Federal Register notice published on October 30, 2002 (67 FR 66109), is applicable to this solicitation. Applications under this program are not subject to Executive Order (EO) 12372, “Intergovernmental Review of Federal Programs. This notice has been determined to be not significant for purposes of E.O. 12866. It has been determined that this notice does not contain policies with Federalism implications as that term is defined in EO 13132. Notice and comment are not required under 5 U.S.C. 553(a)(2), or any other law, for notices relating to public property, loans, grants, benefits or contracts. Because notice and comment are not required, a Regulatory Flexibility Analysis, 5 U.S.C. 601 et seq., is not required and has not been prepared for this notice.

This documents contains collection of information requirements subject to the Paperwork Reduction Act (PRA). The use of Standard Forms 424 and 424B have been approved by OMB under the respective control numbers 0348–0043 and 0348–0040.

Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the Paperwork Reduction Act unless that collection displays a currently valid OMB Control Number. Louisa Koch, Acting Assistant Administrator, Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration. [FR Doc. 02–31195 Filed 12–10–02; 8:45 am] BILLING CODE 3510–KD–P

5.2 2003 RFP FOR THE ARCHAEOLOGICAL AND BIOLOGICAL ANALYSIS OF WORLD WAR II SHIPWRECKS IN THE GULF OF MEXICO: A PILOT STUDY OF THE ARTIFICIAL REEF EFFECT IN DEEPWATER

General Information

Document Type: Presolicitation Notice

Solicitation Number: 0103RP73095

Posted Date: Jun 11, 2003

Original Response Date: Jul 08, 2003

Original Archive Date: Jun 10, 2004

Current Archive Date:

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

Contracting Office Address

Minerals Management Service Procurement Operations Branch 381 Elden Street, MS
2500 Herndon VA 20170

Description

This announcement (0103RP73095) solicits sources for a study in specific areas of interest to the Minerals Management Service (MMS) Environmental Studies Program, relative to artificial reef effects in deep water. BACKGROUND: The Minerals Management Service hereby solicits, in cooperation with the National Oceanographic Partnership Program (NOPP), research proposals pursuing the goal and purpose of the Partnership Program outlined in Title II, subtitle E, of Public Law 104-201. The central focus of the Partnership Program is an integrated and sustained ocean observation system achieved by a federation of many elements to support a wide range of users. The following five Investment Areas form 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 and platforms); D) "Commons" for Ocean Information ("hubs" and "nodes", etc.); E) Outreach/Education. This solicitation specifically addresses two (2) of these areas; the Operational/ Routine Observations (Topic A) and the Outreach/Education (Topic E) Investment Areas. Partnership proposals shall be sought to investigate up to eight (8) shipwrecks dating from the World War II era in primarily deep water, which is here defined as anything deeper than 300 feet. Oil industry

surveys have located each of these wrecks and MMS presumes a high level of confidence in the accuracy of the positions as they have been reported. OBJECTIVES: The archaeological objective of this study is to ground-truth, document, positively identify, and assess the National Register status of these wrecks. This objective will require both historical research and field investigation to be conducted for each site. Several of the vessels are attributed solely based on their location relative to their reported position of loss. Others have been positively identified by means of videography acquired by the oil industry. Copies of these tapes will be made available to the contractor by the MMS for purposes of their pre-dive planning. The biological component of this study is intended to approach one basic question: do man-made artificial structures or objects, i.e., shipwrecks, function as artificial reefs in deep water? Although there is not yet a complete understanding of how artificial reefs function on the continental shelf, particularly in the photic zone above 100 m, it is generally accepted that artificial reefs can serve a positive function by the creation of new hard bottom habitat in areas where hard bottom is naturally lacking (most of the Gulf of Mexico). In the case of fish, artificial reefs can act both as attraction devices and as new habitat where new fish biomass is created and exported, meaning production. The fouling community growing on new hard bottom provided by artificial substrate is unquestionably new production for those organisms that require hard substrate. Although artificial structures alone do not add food or nutrients to the marine environment, the biofouling community may be very efficient in stripping both nutrients and suspended material from passing water and plankton and building a high standing stock community. The trophic linkages between the flux of organic material to deepwater fouling communities and potentially related fish communities have not been investigated. THE PERIOD OF PERFORMANCE of the resultant contract will be twenty-four (24) months, with an estimated cost of \$300,000 - \$350,000. Up to eighteen (18) days of ship time aboard NOAA research vessels, operating personnel, and a remotely operated vehicle will be made available to the successful Offeror(s) in FY 2004 by the NOAA Office of Ocean Exploration at no cost, subject to appropriation and final approval by the National Ocean Research Leadership Council. TO VIEW THE DETAILED STATEMENT OF WORK and the required deliverables and schedule, send an email request to richard.bolick@mms.gov and reference Solicitation Number 0103RP73095. IN ORDER TO COMPETE FOR THIS CONTRACT, Offerors must demonstrate that they are qualified to perform the work by providing, not later than 3:00PM EDT, July 8, 2003, a Capabilities Statement describing in detail: (A) Your key personnel, scientific and technical (those who would have the primary responsibility for performing and/or managing the project), with their qualifications and specific expertise and experience. Particularly relevant is their expertise in the fields of marine archeology, history of World War II, and invertebrate biology. (B) The organization's experience with this type of work and a description of its facilities and resources. And (C) 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. Also please include any negative references and your rebuttal explaining your side of the story. REFERENCES WILL BE CHECKED. Offerors shall submit their Capabilities Statement in original and two (2) copies to Richard P. Bolick, Contract Specialist, Minerals Management Service, 381

Elden Street, MS-2500, Herndon, Virginia 20170-4817. Seven (7) additional copies shall be submitted to Ms. Connie Landry, Minerals Management Service, Gulf of Mexico OCS Region, 1201 Elmwood Park Boulevard, MS 5431, New Orleans, Louisiana 70123-2394. 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, Virginia. CAPABILITIES STATEMENTS WILL BE EVALUATED BASED ON: (A) Experience and expertise of all scientific and technical Key Personnel. Particularly relevant is their expertise in the fields of marine archaeology and history, and other oceanographic disciplines as required, their experience in the type of work proposed, and their demonstrated ability to do the work. Scientific personnel must collectively demonstrate relevant experience in the appropriate disciplines. Assessment factors will be their qualifications and the relevance of their qualifications to their assigned task. The technical personnel who will be responsible for the organization of information and the production of documents, manuscripts and programs will also be evaluated. Evaluation factors include: 1. The length and quality of experience for each person assigned to perform specific tasks; 2. The level and quality of formal education in the disciplines and technical fields necessary, examining the level of relevant education attained as well as honors, awards, and recognition of previous work. 3. Experience with similar programs and studies. (B) The Project Manager, who may also be the Principal Investigator, shall have: (1) experience and demonstrated leadership ability required for the coordination of the study process; (2) experience in managing a multi-disciplinary team and the interdisciplinary processes required for this study; and (3) ability to control costs and to keep project performance and document preparation on schedule. (C) The organization's history of: (1) successful completion of similar projects (similar in size, scope, complexity, duration, and dollar value); (2) producing high-quality documents; and (3) conducting similar projects on schedule and within budget. The Capabilities Statement must demonstrate that both the organization and proposed key personnel meet MMS requirements to successfully complete this project. MMS will evaluate the number, size, and complexity of similar projects completed by the proposed project team and the organization, including past performance, to determine the potential for success and contract award. Past performance consists of adherence to schedules and budgets, effectiveness of cost control, the acceptability of services delivered, the Offeror's willingness to cooperate with the customer in both routine matters and when confronted by unexpected difficulties, and the Offeror's business integrity. Inquiries will be made of sponsoring organizations. Only those Offerors demonstrating an ability to successfully perform this project will be asked to submit competitive proposals. Questions should be faxed to Richard P. Bolick at (703) 787-1022 or e-mailed to richard.bolick@mms.gov . All correspondence should include this RFP number (0103RP73095), full name/company name, address and phone and fax numbers.

Original Point of Contact

Dick Bolick Contract Specialist 7037871395 richard.bolick@mms.gov;

Appendix 6. National Oceanographic Partnership Program FY 2003 Funded Project Summaries

TOPIC A. OPERATIONAL / ROUTINE OBSERVATIONS

U.S. GODAE: Global Ocean Prediction with the HYbrid Coordinate Ocean Model (HYCOM)

Lead PI: **Dr. Eric P. Chassignet**

A broad partnership of institutions proposes to collaborate in developing and demonstrating the performance and application of eddy-resolving, real-time global and basin-scale ocean prediction systems using the HYbrid Coordinate Ocean Model (HYCOM). These systems will be transitioned for operational use by the U.S. Navy at both the Naval Oceanographic Office (NAVOCEANO), Stennis Space Center, MS, and the Fleet Numerical Meteorology and Oceanography Center (FNMOC), Monterey, CA, and by NOAA at the National Centers for Environmental Prediction (NCEP), Washington, D.C. The systems will run efficiently on a variety of massively parallel computers and will include sophisticated, but relatively inexpensive, data assimilation techniques for assimilation of satellite altimeter sea surface height (SSH) and sea surface temperature (SST) as well as in-situ temperature, salinity, and float displacement. The partnership will address the Global Ocean Data Assimilation Experiment (GODAE) goals of three-dimensional (3D) depiction of the ocean state at fine resolution in real-time and provision of boundary conditions for coastal and regional models. It will also provide the ocean component and oceanic boundary conditions for a global coupled ocean-atmosphere prediction model. It will make these results available to the GODAE modeling community and general users on a 24/7 operational basis via a comprehensive data management strategy.

The partnership under this proposal represents a truly broad spectrum of the oceanographic community, bringing together academia, Federal agencies, and industry/commercial entities, spanning modeling, data assimilation, data management and serving, observational capabilities, and application of HYCOM prediction system outputs. The institutions participating in this partnership have long histories of supporting and carrying out a wide range of oceanographic and ocean prediction-related research and data management. All institutions are committed to validating an operational hybrid-coordinate ocean model that combines the strengths of the vertical coordinates used in the present generation of ocean models by placing them where they perform best. This collaborative partnership provides an opportunity to leverage and accelerate the efforts of existing and planned projects, in order to produce a higher quality product that will collectively better serve a wider range of users than would the individual projects. In addition to operational eddy-resolving global and basin-scale ocean prediction systems for the U.S. Navy and NOAA, respectively, this project offers an outstanding opportunity for NOAA-Navy collaboration and cooperation ranging from research to the operational level.

Number of years: 5

Total Proposed Budget: \$11,875,760

Table of Partners:

Partner	Sector	Role and Task
University of Miami	Educational	Project Coordination, ocean, modeling data assimilation, remote sensing, numerics, ice modeling, analysis and outreach
University of Southern Mississippi	Educational	Comparison of HYCOM results with observational databases
University of North Carolina	Educational	Site-specific, limited-area forecasting of the coastal ocean circulation along the South Atlantic Bight
Rutgers University	Educational	High resolution coastal modeling
University of South Florida	Educational	Comparison of HYCOM results with observational data
The Naval Research Laboratory	Government	ocean modeling, data assimilation, provision of boundary conditions for models
The Naval Oceanographic Office	Government	Computational runs of the eddy-resolving 1/12° global HYCOM prediction system
Fleet Numerical Meteorological and Oceanographic Center	Government	Computational runs of HYCOM as the ocean component of an operational coupled global ocean-atmosphere prediction system
The National Oceanographic and Atmospheric Administration	Government	Data assimilation methodologies and managing the data sharing framework
SHOM (France)	Government	Complete the writing of the HYCOM adjoint model
LEGI (France)	Government	Data assimilation research
Lawrence Livermore National Laboratory	Government	Development and validation of the massively parallel ocean and sea-ice components of HYCOM
Planning System Incorporated	Industrial	Responsible for hindcast and pre-operational real-time runs of

		HYCOM
OPeNDAP	Industrial	Data sharing toolkit
Fugro-GEOS / Ocean Numerics	Industrial	Establish a number of regional forecast systems in active deepwater oil and gas exploration and production areas and develop a commercial market for operational ocean products within the oil industry.
Horizon Marine Incorporated	Industrial	Evaluate the skill for forecasting major eddy events for the oil and gas industry for economic and safety applications
ROFFS	Industrial	Evaluate the HYCOM output compared with our ocean circulation features analyses for fishing forecasting nowcasts and forecasts.
Orbimage	Industrial	Provide feedback on the accuracy and utility for commercial fisheries applications
Shell Oil Company	Industrial	Will evaluate the potential of the forecast system outputs in deriving useful criteria for deep water oil and gas facilities and operations
ExxonMobil		

TOPIC C. OBSERVATIONAL TECHNIQUE DEVELOPMENT

The Archaeological and Biological Analysis of World War II Shipwrecks in the Gulf of Mexico: A Pilot Study of the Artificial Reef Effect in Deep Water.

Lead P.I.: **Mr. Robert Church**

This study is intended to approach one basic question: do man-made artificial structures or objects, *i.e.*, shipwrecks, function as artificial reefs in deepwater? Although there is not yet a complete understanding of how artificial reefs function on the continental shelf, particularly in the photic zone above 100 m, it is generally accepted that artificial reefs can serve a positive function by the creation of new hard bottom habitat in areas where hard bottom is naturally lacking (most of the Gulf of Mexico). In the case of fish, artificial reefs can act both as attraction devices and as new habitat where new fish biomass is created and exported, meaning production. The fouling community growing on new hard bottom provided by artificial substrate is unquestionably new production for those organisms that require hard substrate. Although artificial structures alone do not add food or nutrients to the marine environment, the biofouling community may be very efficient in stripping both nutrients and suspended material from passing water and plankton and building a high standing stock community. The trophic linkages between the flux of organic material to deepwater fouling communities and potentially related fish communities have not been investigated. The ideal laboratory for this study exists in the Gulf of Mexico where 56 ships were sunk by German submarines during World War II, most within a few months of each other in 1942. Seven of these vessels, located during oil and gas surveys, were selected for this study because they represent a range of depths (from 400 feet to over 6,500 feet) and carried a variety of cargoes. In addition to the biological characterizations that will be conducted at each site, the vessels will be documented and studied as historic sites for nomination to the National Register of Historic Places.

Number of years: 2

Total Proposed Budget: \$350,000

Table of Partners:

MMS Gulf of Mexico Region	Governmental	Project management, contract inspection
NOAA Ocean Exploration	Governmental	18 days of research vessel time and remote operated vehicle
C&C Technologies	Industrial	Project coordination, development, validation, and production of products. Archaeological and historical research
University of West Florida	Educational	Marine Vertebrates
Dauphin Island Sea Lab	Educational	Deep sea corals
Droycon Bioconcepts	Industrial	Microbiology
University of Alaska Fairbanks	Educational	Marine Invertebrates

The Past Foundation	Educational	Video documentary and internet production
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Appendix 7. 2003 Coastal Observation Technology Systems Projects (COTS)

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. COTS projects target two critical elements of developing regional capacity for coastal/ocean observations: 1) creating infrastructure (e.g., sensors, data management systems) and methodologies to collect, share, and integrate environmental data and create useful information products, and 2) developing organizational/governance structures for regional associations as components of the Integrated Ocean Observing System (IOOS).

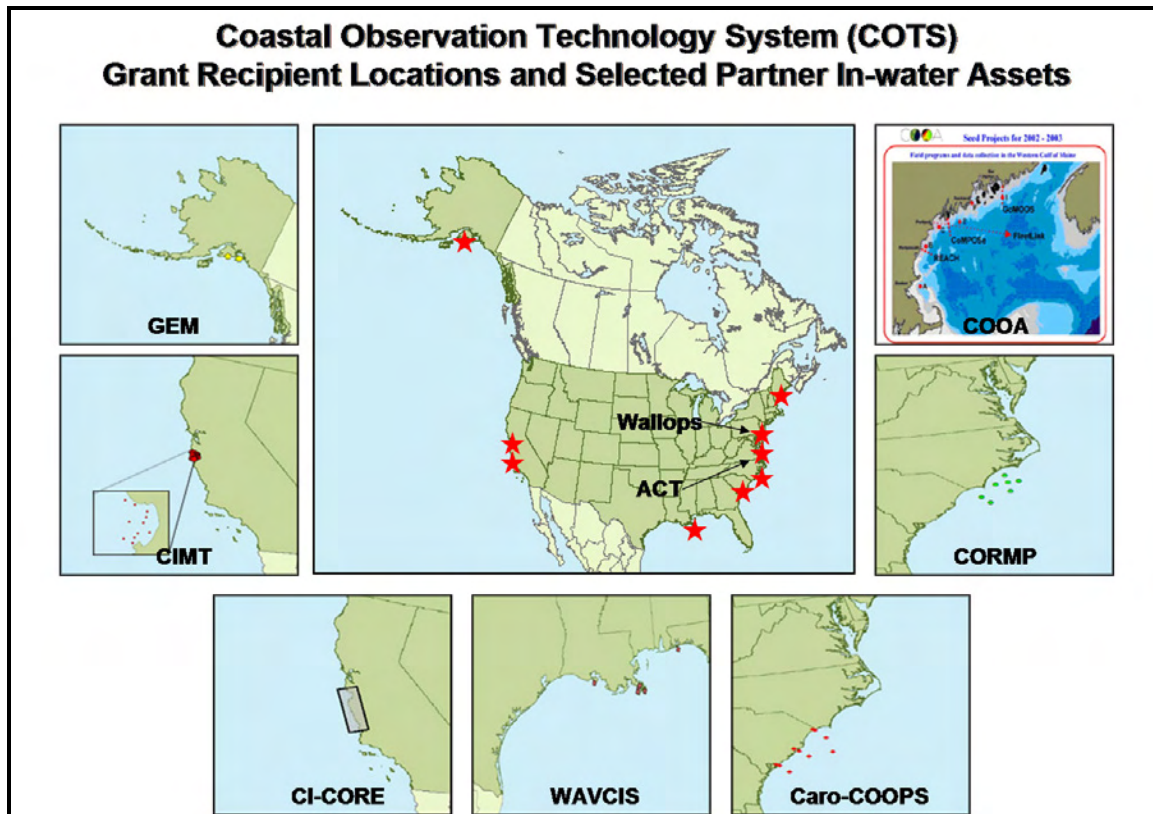
In fiscal year 2003 (FY 03) NOAA funded sixteen COTS projects for a total amount of approximately \$17 M. Nine awards were congressionally directed and seven of those were continued from FY 02. Another seven projects were competitively selected in response to an announcement in FY 03. Of these, six support development of regional associations and one supports technical capacity development in the Gulf of Maine.

COTS focuses on creating an environment to share data and information collected by, and technology useful to, coastal observing systems. Partners will be able to share information on techniques and methods they are employing, and work to create a seamless flow of data, information, and products. Interoperability is the first overarching theme as the COTS partners strive to create a model of integrated observing systems that will serve to advance the national agenda as well address regional needs. The regional organization component of the COTS project will help establish the necessary coordination framework for the various groups working within and across regions. The overall effort includes facilitating communication, reporting, and workshops as necessary, with the NOAA Coastal Services Center serving as the lead federal coordinating partner.

NOAA also utilizes COTS funds to support 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. NOAA is also 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.

COTS FY 03 CONGRESSIONALLY DIRECTED AWARDS

Regional Pilot Projects



Alliance for Coastal Technologies (ACT)

Funding – \$2.98 M in FY 03

ACT is a partnership of research institutions, state and regional resource managers, and private sector companies interested in developing and applying sensor technologies for monitoring coastal environments. Through a consortium of research institutions across the country, ACT will offer unbiased evaluation of developing coastal sensor and sensor platform technologies, a data and information clearinghouse, and a forum for capacity building through regular workshops and seminars. ACT's partners include Moss Landing Marine Labs and the Monterey Bay Aquarium Research Institute, University of Maryland Center for Environmental Science, Skidaway Institute of Oceanography, University of South Florida, and the Gulf of Maine Ocean Observing System.

Goal(s)

Aid resource managers, coastal scientists, and private sector companies by providing critical information on the latest, best, most innovative, and most efficient technologies for monitoring and predicting the state of coastal waters.

ACT Web site www.actonline.ws

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California Center for Integrative Coastal Ocean Research (CI-CORE)

Funding – \$993 K in FY 03

The CI-CORE participants will supply observatory coverage along the entire length of the California coast. Remotely sensed, in situ, sea floor habitat, and additional historical data will be integrated to begin identifying processes that control ecosystem structure and productivity. Understanding of these processes will help further the development of predictive models. Partners include ten California State University (CSU) campuses: CSU Humboldt, CSU Sacramento, San Francisco State University's Romberg Tiburon Center, CSU Hayward, San Jose State University/Moss Landing Marine Labs, CSU Monterey Bay, California Polytechnic State University at San Luis Obispo, CSU Long Beach, CSU Los Angeles, and San Diego State University.

Goal(s)

- Provide timely and appropriate environmental data to scientists, agencies, and the public for policy development and the evaluation of the effectiveness of coastal and environmental policy.
- Provide Web-based products that are publicly accessible and highly interpreted in near real-time.

Observations

- Hyperspectral imagery (from aircraft over flights)
- Water temperature
- Conductivity
- Spectral absorption and attenuation coefficients
- Pigment concentrations
- Water-leaving radiances
- Photosynthetically active radiation (PAR)
- Irradiance
- Salinity
- Beam-c
- Nutrients
- Phytoplankton composition
- Zooplankton composition

CI-CORE Web site

www.mlml.calstate.edu/cicore/

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Director, Moss Landing Marine Laboratories
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**Area of aircraft over flight for hyperspectral
imagery data collection**

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

Funding – \$2.48 M in FY 03

This project will establish the capacity to monitor and model estuarine and coastal ocean conditions in the North and South Carolina. Caro-COOPS is designed to integrate real-time monitoring of hydrologic and meteorological conditions with state-of-the-art computer models to characterize and predict complex coupled air-land-sea processes. The Virtual Network Information System (VNIS), a Web-based data and information dissemination hub, will be developed to manage and disseminate data and products resulting from this project. Caro-COOPS partners include the University of South Carolina's Belle Baruch Institute, North Carolina State University, and the University of North Carolina at Wilmington.

Goal(s)

- Assess the predictability of specific coastal processes and events and develop accurate forecasting models.
- Create tools for applying and evaluating these predictions in the context of “end-to-end” early warning systems.

Observations

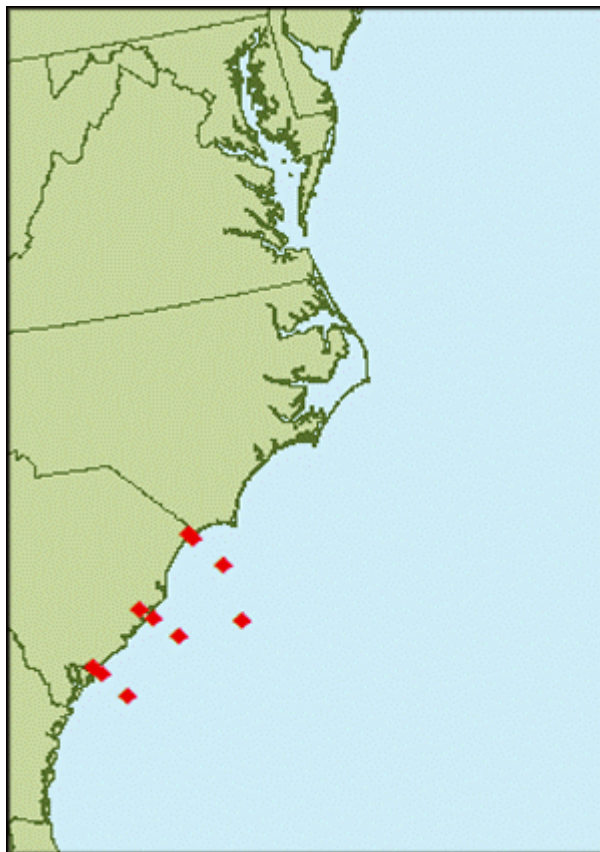
- Water level
- Water temperature
- Barometric pressure
- Air temperature
- Relative humidity
- Wind speed/direction
- Current speed/direction
- Bottom currents
- Wave height/period/direction
- Salinity
- Chlorophyll
- NO₃- and Br-

Caro-COOPS Web site

www.carocoops.org/

Contact

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In situ mooring/station locations

Center for Integrated Marine Technologies (CIMT)

Funding – \$1.98 M in FY 03

This project will focus initially on observations in the Monterey Bay area, with potential for an increased spatial extent in the future. The CIMT team plans to use satellites, moorings, ships, and shore-based measurements to understand how key marine resources respond to short and long-term changes in physical oceanographic processes. A distributed network information system with an emphasis on collecting, integrating, managing, and visualizing data will be a key component of this project. Partners include the University of California Santa Cruz, Monterey Bay Aquarium Research Institute, Naval Postgraduate School, Moss Landing Marine Labs, and the National Marine Fisheries Service Southwest Fisheries Science Center. Observing platforms include research ship surveys, satellite-based remote sensing, coastal high frequency (HF) current mapping system (CODAR), low-altitude overflights, and in situ moorings.

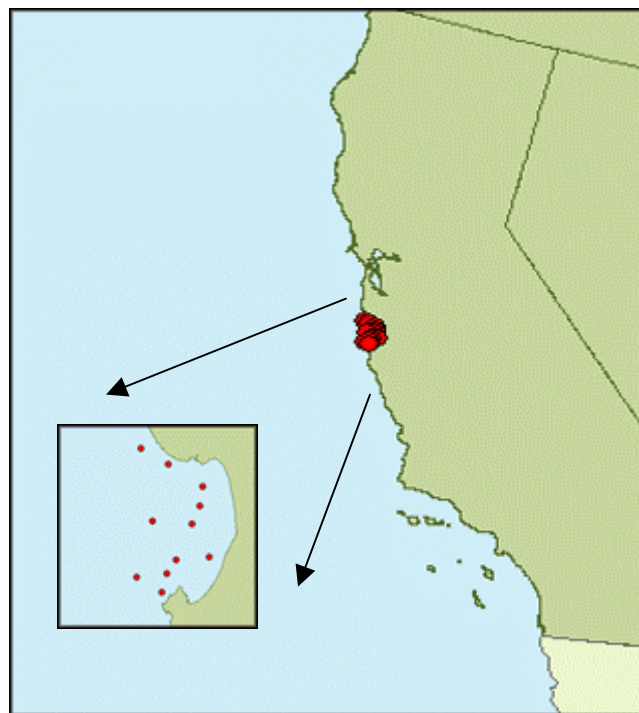
Goal(s)

- Combine emerging technological approaches that will allow the determination of the processes underlying the dynamics of the coastal upwelling ecosystems.
- Establish the scientific basis for the effective monitoring and management of natural resources along the California coast.

Observations

Shipboard Observations (underway):

- 120 kHz Echosounder
- 200 kHz Echosounder
- 600 kHz broadband ADCP
- Flow-through thermosalinograph,
- turbidity, and fluorometry
- Marine mammal and seabird
- observations
- Large mammal tracking via
- satellite tags
- Macro/micro nutrients
- Zooplankton abundance,
- distribution, and community
- structure
- Phytoplankton community
- structure
-
- ***Shipboard Profiles:***
- Conductivity
- Temperature
- Fluorescence
- Total suspended solids
- Chromophoric dissolved organic
- Matter (CDOM)



In situ moorings and ship survey station locations

- Chlorophyll a and phaeopigment fluorescence
- Quantification of harmful algal blooms through molecular probes
- Domoic acid measurements

Moored Observations:

- Air temperature
- Relative humidity
- Barometric pressure
- Wind speed/direction
- Buoy heading
- Relative wind direction
- pCO₂
- Near-surface (0-300m @ 8m bins) 300, 150, and 75 kHz ADCP
- Near-surface CTD with fluorometer and transmissometer
- Near-surface nitrate
- Near-surface oxygen
- Near-surface optical backscatter
- Near-surface chlorophyll fluorescence
- Near-surface upwelling radiance
- Above surface, 10m, and 20m downwelling irradiance, upwelling radiance, and PAR
- Discrete thermistor (10 depths)
- Autonomous biological observation system
- Passive acoustics system

CIMT Web site

<http://CIMT.ucsc.edu/siteNew/>

Contact

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Coastal Ocean Observing and Analysis (COOA)

Funding – \$2.48 M in FY 03

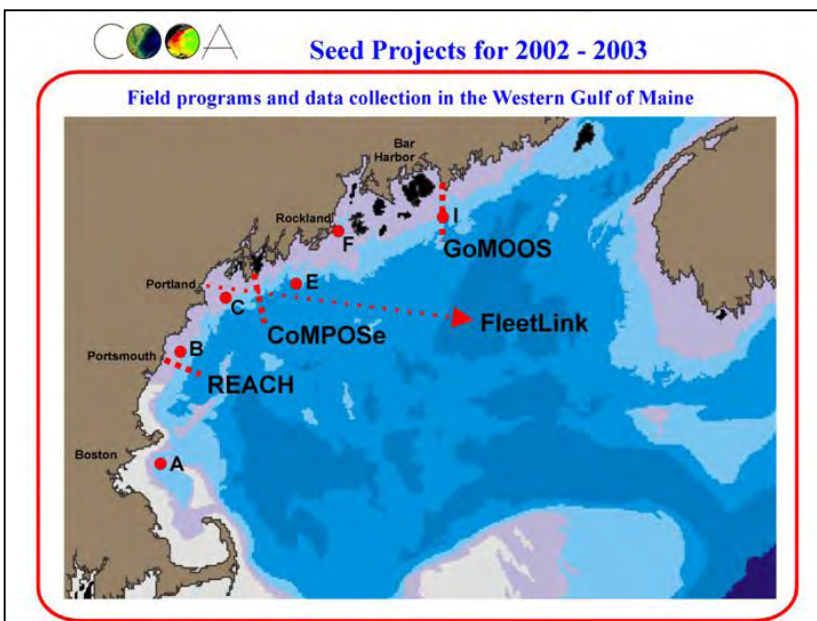
The University of New Hampshire (UNH) Center of Excellence in Coastal Ocean Observation and Analysis (COOA) will develop and implement new methodologies and approaches for coastal ocean observing across the spectrum, from data acquisition and analysis to integration and synthesis. The new methodologies are aimed at improving our understanding of coastal marine ecosystems, the fate of land-derived carbon and other elements in the coastal ocean, and the effect of climate change and anthropogenic activity on the coastal ocean. COOA aims to establish a sustainable program of coastal ocean observations, analysis, and enabling technology development focused on delivering information of value to scientists, managers, policy makers, educators, and of general interest to the public. COOA has launched five seed projects to be led by researchers with expertise in a core discipline underlying coastal ocean observation and analysis. The targeted customers for the seed projects are expert users of such observational data. The center will work with existing UNH and NOAA entities with shared missions including, but not limited to, the New Hampshire Sea Grant Program, Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), Center for Coastal and Ocean Mapping (C-COM), Joint Hydrographic Center (JHC), and UNH Marine Program.

Goal(s)

- Complement and enhance the expertise and capacity for coastal ocean observing efforts in the Northeast U.S., including the Gulf of Maine Ocean Observing System (GoMOOS) and others.
- Link to and integrate with other COTS programs and activities.

Observations

- Conductivity
- Water temperature
- Water depth
- Nutrients
- Chlorophyll concentration
- Toxic dinoflagellate cell counts
- Copepod species abundance counts
- Sea surface temperature
- Vertical temperature structure
- Wind speed/direction
- Humidity
- Air temperature
- Air pressure
- Phytoplankton photophysiology (through PAM fluorescence and oxygen evolution)
- Absorption properties of different water constituents (waveguides and integrating spheres)



- Characteristics of the underwater light field (through above-water and in-water hyperspectral radiometer systems)

COOA Web site

www.cooa.unh.edu/

Contact

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Coastal Ocean Research and Monitoring Program (CORMP)

Funding – \$1.19 M in FY 03

The CORMP project mission is to describe, understand, and monitor the impacts of natural and anthropogenic changes on the coastal ocean off the southeast U.S. The focal points are 1) an observing system to measure, describe, and model physical conditions in the region; 2) the effects of the Cape Fear River plume on water quality, productivity, and fisheries recruitment; and 3) the dynamics of a storm-influenced continental shelf in terms of biological, chemical, and physical coastal ocean processes. With the advent of the Caro-COOPS project, CORMP will establish a relationship with Caro-COOPS to manage and distribute observational data and products in an efficient manner, using the VNIS data hub described above.

Goal(s)

- Develop a “backbone” observing system for physical oceanography, meteorology, and remote sensing in support of research and monitoring.
- Understand coastal ocean processes responsible for cross-shelf transport.
- Understand coastal ocean processes in a riverine plume environment.
- Understand the interactions between riverine and coastal ocean systems as they relate to natural cycles and events (e.g., hurricanes) and the impacts of anthropogenic activities.
- Develop predictive models of natural and anthropogenic impacts on coastal ocean ecosystems and the socioeconomic basis of the region.

Observations

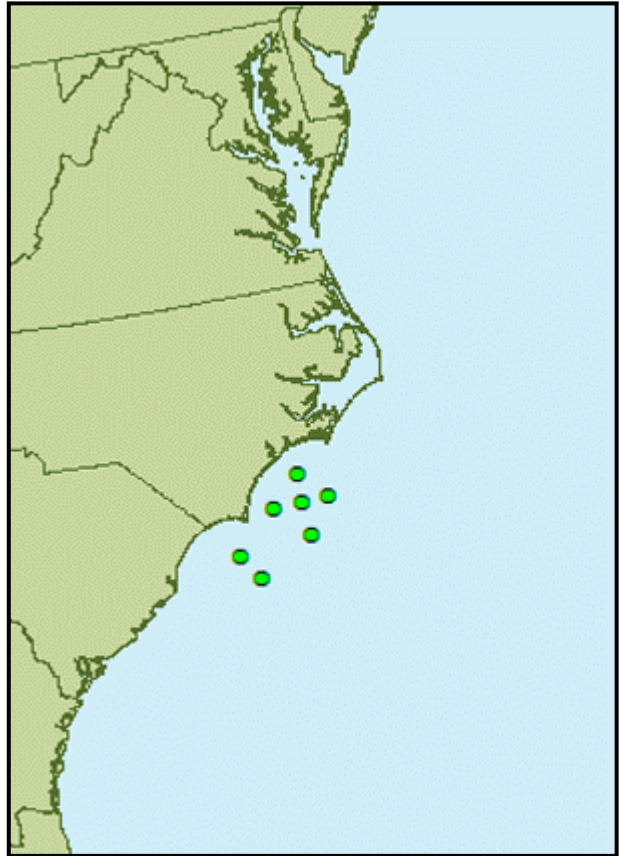
- Sea surface temperature
- Salinity
- Conductivity
- Water temperature
- Pressure
- Water level
- Nutrients
- Currents
- Seabed elevation
- Sediment grain size
- Turbidity
- Photosynthetically active radiation (PAR)
- Colored dissolved organic matter
- Particulate matter
- Benthic ecology (larval fish trap samples, box core and grab samples, underwater surveys)

CORMP Web site

www.uncwil.edu/cmsr/comp/

Contact

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In situ mooring locations

Gulf of Alaska Ecosystem Monitoring and Research (GEM) Program

Funding – \$745 K in FY 03 (over three years)

The Gulf of Alaska Ecosystem Monitoring and Research Program is a new program adopted by the Exxon Valdez Oil Spill Trustee Council in July 2002 for collecting long-term marine-related observations from the northern Gulf of Alaska. GEM is dedicated to building long-term physical and biological observations relevant to the status and future of natural resources of interest to humans, in partnership with coastal communities, government agencies, and nongovernment institutions. As a new program, GEM is currently selecting permanent long-term monitoring projects through a process of synthesis, research, and modeling. Four pilot projects currently generate observations of interest: the longest continuous ocean monitoring station in the northern Gulf of Alaska in partnership with the University of Alaska Fairbanks, an additional mooring in Prince William Sound in partnership with the Prince William Sound Science Center, and two vessels-of-opportunity projects.

Goal(s)

- Detect – serve as a sentinel (early warning) system by detecting annual and long-term changes in the marine ecosystem, from coastal watersheds to the central gulf.
- Understand – identify causes of change in the marine ecosystem, including natural variation, human influences, and their interaction.
- Inform – provide integrated and synthesized information to the public, resource managers, industry and policy makers in order for them to respond to changes in natural resources.
- Solve – develop tools, technologies and information that can help resource managers and regulators improve management of marine resources and address problems that may arise from human activities.
- Predict – develop the capacity to predict the status and trends of natural resources for use by resource managers and consumers.

Observations

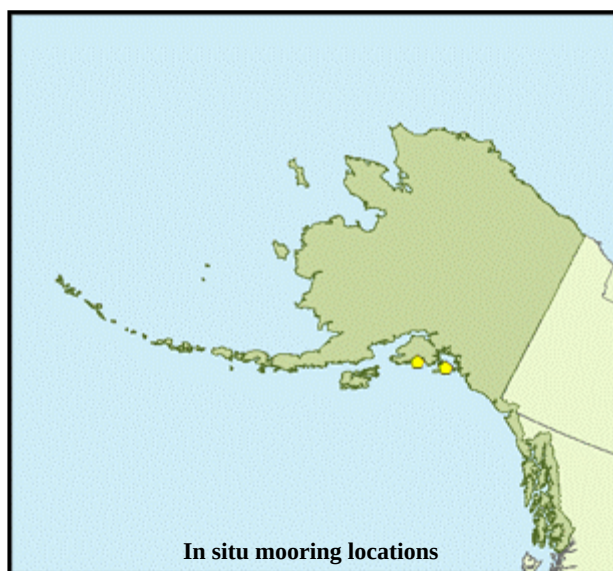
- Temperature
- Salinity
- Current speed/direction
- Fluorescence
- Plankton

GEM Web site

www.oilspill.state.ak.us/gem/

Contact

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Wallops Ocean Observation Project

Funding – \$1.39M in FY 03 (not yet awarded as of September 4, 2003)

For over the past twenty years, NASA Wallops Flight Facility scientists have participated in coastal research activities. Chlorophyll a/phytoplankton measurement, beach shoreline/profile mapping, air-sea and wave studies, and sea surge investigations are but a few of the many coastal-related phenomena that are researched in support of flight satellite instrumentation development and mission support. Recently, a marine biological and a coastal circulation and biogeochemical modeling capability have enhanced the science research conducted at Wallops. Wallops' unique remote sensing and research capabilities will continue to allow it to make advances and contributions to a variety of coastal research topics. This project will seek to develop new platform technologies, miniaturize sensors for deployment on a variety of platforms, and collaborate with potential commercialization efforts in the Small Business Innovation Research (SBIR) program. Logistically, Wallops is uniquely located along the mid-Atlantic region. The region encompasses the coastal area from Cape May, New Jersey, to Cape Fear, North Carolina, inclusive of the Delaware Bay, Chesapeake Bay, and Albemarle Sound, some of the largest estuarine systems in the country, and adjacent to one of the most populous regions of the U.S.

Goal(s)

- Develop low-cost sensor platforms
- Miniaturize ocean sensors
- Commercialize efforts through existing SBIR initiatives

Contact(s)

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Wave Current Surge Information System (WAVCIS)

Funding – \$1.0 M in FY 02 (over three years)

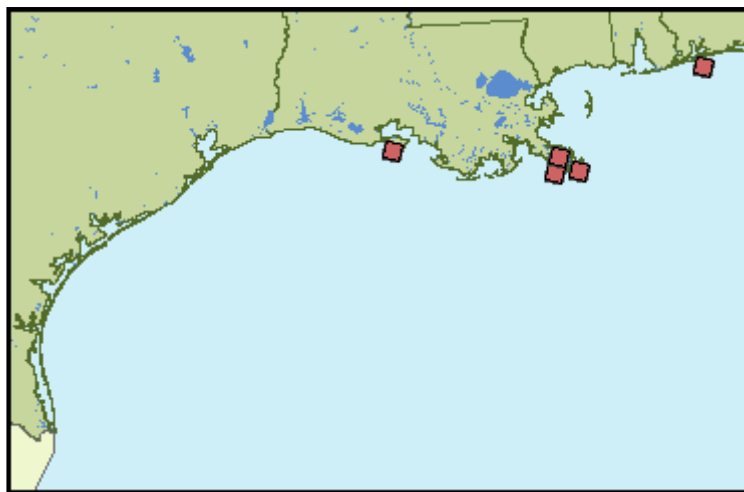
This project, in existence for the past three years, consists of an array of metocean sensors deployed on nearshore and offshore platforms in the coastal waters off Louisiana. Further development of WAVCIS will establish an observation and computer simulation workbench to strengthen predictive capabilities and facilitate basic and applied coastal oceanographic research. To reach this goal, WAVCIS personnel will integrate the in situ data streams with advanced numerical models and remotely sensed data and collaborate with regional efforts to develop broadband connectivity for data access and distribution via the Internet. Partners include the Coastal Studies Institute and the Earth Scan Laboratory at Louisiana State University. There are three active CSI stations with another ten under construction or planned, two National Data Buoy Center (NDBC) C-MAN platforms, and four NDBC moored buoys included in this network.

Goal(s)

- Continue refining the system architecture to allow for experiments addressing storm-driven coastal processes.
- Continue building a powerful integrated program tailored to industry and a variety of coastal restoration initiatives.

Observations

- Significant wave height
- Maximum wave height
- Dominant wave direction
- Average wave period
- Peak wave period
- Wind wave height
- Wind wave period
- Wind wave direction
- Wave steepness
- Current velocity
- Current direction
- Sustained wind speed
- Wind direction
- Wind gust
- Air temperature
- Barometric pressure
- Sea surface temperature
- Water depth
- Pressure tendency
- Dew point
- Visibility



In situ mooring locations

WAVCIS Web site

<http://wavcis.csi.lsu.edu/>

Contact

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COTS FY 2003 COMPETITIVE AWARDS

Coastal Observing System Regional Association and Regional Pilot Projects

A Regional Association Project to Observe Ocean Climate in the Gulf of Maine in Support of Marine Resource Management

Gulf of Maine Ocean Observing System

\$470,000 for one year

October 1, 2003 – September 30, 2004

Principal Investigator: Philip Bogden, Gulf of Maine Ocean Observing System

Phone: (207) 773-0423; E-mail: bogden@gomoos.org

The Gulf of Maine Ocean Observing System (GoMOOS) has three fundamental and interconnected goals in carrying out this project:

- To create a new suite of information products supporting fisheries management and adaptive management practices in the Gulf of Maine;
- To augment existing ocean observing activities (GoMOOS buoys and NOAA/NMFS surveys) with a critically located climate sentinel buoy in the Northeast Channel; and
- To implement a real-time distributed information network that will leverage and coordinate existing ocean observing activities at GoMOOS and NOAA/NMFS.

GoMOOS will accomplish these goals by extending its existing partnerships to include scientists at National Marine Fisheries Service/Northeast Fisheries Science Center, University of New Hampshire, and Cornell University. The information network will apply new OpenGIS Consortium (OGC)-compliant Web protocols to extend spatial coverage of new products from the Gulf of Maine to Cape Hatteras.

Marine resource managers in the Gulf of Maine, and the fishermen whose livelihoods they affect, stand to benefit from the coordinated ocean observing, information product development, and distributed data and information management activities proposed in this project.

This project will also serve the IOOS community by demonstrating a coordinated data-exchange activity that can be implemented in other regions and will demonstrate the power of geographic information systems (GIS) in creating useful information products.

Partners: GoMOOS, University of Maine, University of New Hampshire, Cornell University, and NOAA/NMFS

Building an Integrated Great Lakes Observing System

Great Lakes Commission

\$109,923 for one year

October 1, 2003 – September 30, 2004

Principal Investigator: Michael Donahue, Great Lakes Commission

Phone: (734) 971-9135; E-mail: mdonahue@glc.org

The Great Lakes Commission (Commission), in consultation with states, provinces, federal agencies, and other collaborators, will lead a coordinated effort to establish and formalize a comprehensive business plan for the creation of an integrated Great Lakes Observing System (GLOS). The focal point of the business plan will be the creation of a regional association based upon collaborative partnerships of agencies, institutions, and stakeholders.

The development of the GLOS business plan will involve

1. Convening a stakeholder conference bringing together all relevant data providers, information managers, and end users;
2. Coordination of specialized workshops and conference calls; and
3. Publication of a finalized business plan.

The business plan will outline several components to include

1. The composition of governance for the regional association
2. The operational characteristics of the GLOS
3. Roles and responsibilities of associates and funding mechanisms to sustain
 - o data collection and transmission networks;
 - o information integration and retrieval;
 - o modeling and analysis; and
 - o communications and outreach.

The Commission plans to complete the business plan development for the GLOS within a one-year time frame. The Commission will draw upon its in-house technical expertise and regional partnerships to advance this important initiative.

Partners: Great Lakes Commission, NOAA Great Lakes Environmental Research Laboratory, NOAA National Weather Service, US Fish and Wildlife Service, and University of Wisconsin

CenCOOS: Central California Ocean Observing System: Leadership in Coordination of Ocean Observing

Monterey Bay Aquarium Research Institute

\$100,000 for one year

October 1, 2003 – September 30, 2004

Principal Investigator: Marcia McNutt, Monterey Bay Aquarium Research Institute (MBARI)

Phone: (831) 775-1814; E-mail: mcnutt@mbari.org

The Monterey Bay Aquarium Research Institute, on behalf of the Monterey Bay Crescent Ocean Consortium (MBCORC) and its project partners (universities, state and federal agencies, and others), will initiate focused regional coordination and integration of the ocean observing activities in central and northern California.

Participating institutions will designate a representative to CenCOOS, and selection will be made of a regional ocean system coordinator (ROSC) in order to efficiently conduct business matters. The initial tasks for the ROSC will be to

1. Prepare a summary paper of the status of observing systems and how they relate to each other and an analysis of how to combine efforts into a regional system;
2. Meet with stakeholders in the region to understand their needs and prepare a plan to meet those needs;
3. Establish subcommittees from participating institutions to cover important aspects such as technology, data management, education, connections to policy makers, etc.;
4. Determine through conversations with NOAA representatives how the CenCOOS regional system can best connect with the national backbone;
5. Produce a long-term organizational plan for CenCOOS; and
6. Present an integrated CenCOOS plan for the many observing efforts planned and underway.

This coordinating effort for CenCOOS will ensure that partners will move forward in a more strategic and integrated way, and with the needs of the end users in mind. This effort is expected to reap large rewards in terms of

- increased efficiencies of the existing research projects and data collection;
- more integrated approaches as efforts move forward; and
- enhanced utility of ocean observing activities for resource managers, policy makers, researchers, and educators.

The process of effectively developing a sustainable organizational structure is envisioned to take at least three years. Given the one-year funding constraints for this award, this project can only address the first year's activities.

Partners: California State University, Monterey Bay; California Polytechnic State University San Luis Obispo; Earth System Science and Policy Institute, Elkhorn Slough National Estuarine Research Reserve; Fleet Numerical Meteorology and Oceanography Center; Hopkins Marine Station of Stanford University; Humboldt State University; the California Department of Fish and Game's Marine Pollution Studies Laboratory, Marine Region Headquarters, and Marine Wildlife Veterinary Care and Research Center;; Marine Protected Areas Center, Science Institute, NOAA;, Monterey Bay Aquarium; Monterey Bay Aquarium Research Institute; Monterey Institute of International Studies; Monterey Peninsula College, Marine Advanced Technology Education Center; Moss Landing Marine Lab; National Weather Service; Naval Postgraduate School; Naval Research Lab, Marine Meteorology Division; Monterey Bay National Marine Sanctuary; NOAA/NMFS Pacific Fisheries Environmental Lab; NOAA/NMFS Santa Cruz Lab; Romberg Tiburon Center for Environmental Studies, San Francisco State University; San Francisco State University; University of California (UC), Monterey Bay, Education, Science, and Technology Center; UC Davis, Bodega Marine Lab; UC Santa Cruz; UC Santa Cruz, Institute of Marine Sciences/Long Marine Lab; UC Sea Grant Extension Program; U.S. Geological Survey, Pacific Science Center; and West Coastal and Polar Regions Undersea Research Center, NOAA

Southeast Regional Association of Coastal Observations (SERA-COOS): Building a Regional Association Framework of the Coastal Ocean Observing System of the Southeastern United States

South Carolina Sea Grant Consortium

\$98,979 for one year

October 1, 2003 – September 30, 2004

Principal Investigator: Rick Devoe, South Carolina Sea Grant Consortium

Phone: (843) 727-2078; E-mail: rick.devoe@scseagrant.org

The overall goal of this project is to develop a functional and cost-effective governance mechanism – the Southeast Regional Association of Coastal Observations (SERA-COOS) – to ensure that coastal observing system efforts in the southeastern United States are well-coordinated, science-based, stakeholder-driven, linked to the national “backbone,” and sustained in the foreseeable future.

This effort will concentrate on reaching and establishing a dialogue with as many stakeholders as possible at the initial stages of SERA-COOS development. Successful engagement should ensure the nascent regional association is structured and organized in a manner to have maximum relevance and utility to the scientific and user community at large. The intensive campaign to reach a diverse range of potential stakeholders will also provide insights into user needs that can help guide the effective and efficient build-out of subregional observing systems currently being developed.

A regional coordinator will be responsible for identifying and soliciting interest from public and private organizations. Two workshops will be convened – one on governance models, and the other to establish the provisional regional association. Involvement of both a consultant and an organizational facilitator will enhance the chances of success.

Year 1 objectives are as follows:

1. Review existing organizational models and identify features and functions that could lend to development of SERA-COOS;
2. Identify and document public and private organizations and associations with involvement or interest in generating or using data from observing systems in the southeastern U.S. coastal ocean;
3. Contact and brief representatives of the organizations;
4. Maintain and augment an active dialogue with representatives from Ocean.US and adjacent regional associations; and
5. Plan and convene an organizational “summit” involving representatives from identified organizations to discuss and reach consensus on governance, management, and operational elements for formalizing SERA-COOS.

Year 2 and 3 objectives (preliminary) are:

1. Engage in a formal strategic planning process;
2. Develop a SERA-COOS business plan; and
3. Maintain and enhance lines of communication with the regional and national levels.

Partners: South Carolina Sea Grant Consortium, South Carolina Sea Grant Extension, Florida Sea Grant, University of South Carolina, Georgia Sea Grant Extension, Skidaway Institute of Oceanography, University of South Florida, University of Miami, University of North Carolina at Chapel Hill, Florida Sea Grant Extension, and North Carolina Sea Grant Extension

A Proposal to Build Regional Association Partnerships Leading to the Implementation of a Pacific Northwest Regional Ocean Observing System

University of Washington

\$100,000 for one year

January 1, 2004 – December 31, 2005

Principal Investigator: David Martin, University of Washington

Phone: (206) 543-1300; E-mail: dmartin@apl.washington.edu

The goal of this project is to foster and enhance Pacific Northwest regional partnerships to grow constituencies that will allow for the eventual installation and long-term maintenance of a Pacific Northwest Regional Ocean Observing System (PNW Regional IOOS).

To meet this goal, the University of Washington, other universities, and state and federal agency partners will

1. Identify the full spectrum of stakeholders;
2. Proactively engage the regional ocean science community;
3. Obtain input about subregional-scale oceanographic concerns;
4. Obtain consensus agreement on the overall process to define a governance structure;
and
5. Build international and inter-region partnerships.

This effort will foster the development of strong regional association partnerships through proactively engaging, educating, and entraining stakeholders throughout the Pacific Northwest in the benefits of an integrated regional ocean observing system.

Developing partnerships that will allow for the eventual deployment of technologies using the expertise of the many Pacific Northwest marine stakeholders is the immediate challenge addressed in this project. Specifically, this two-year project will conduct two regional workshops per year. The workshops will engage users, scientists, and providers of ocean data information in collaborative deliberations leading to consensus building on a number of issues relevant to this regional effort.

Partners: University of Washington, Oregon State University, Oregon Graduate Institute/Oregon Health and Science University, Washington Department of Ecology, and NOAA NCDDC and NDBC.

Alaska Ocean Observing System

Seward Association for the Advancement of Marine Science, Alaska SeaLife

\$100,000 for three years

October 1, 2003 – September 30, 2005

Principal Investigator: Craig Dorman, University of Alaska

Phone: (907) 474-7311; *craig.dorman@alaska.edu*

This project will support planning and development of the Alaska Ocean Observing System (AOOS). AOOS is the umbrella regional association for three Alaska regional observing networks (Gulf of Alaska, Bering Sea, and Arctic Ocean) that are being developed as part of the national Integrated and Sustained Ocean Observation System (IOOS) under the National Ocean Planning Partnership (NOPP) and Ocean.US.

The goals of AOOS are identical to those of IOOS. The priority set on each goal most likely would be different in Alaska and might be as follows:

1. More effectively protect and restore healthy coastal marine ecosystems
2. Enable the sustained use of marine resources
3. Improve the safety and efficiency of marine resources
4. More effectively mitigate the effects of natural hazards
5. Improve predictions of climate change and its effects on coastal populations
6. Improve national security
7. Reduce public health risks

To accomplish these goals, the planning and development of AOOS will revolve around five critical areas:

1. Assessing user needs and building a user network
2. Assessing current observing capacity and funding base
3. Planning a comprehensive integrated system that meets user needs
4. Developing a business plan for the system to ensure that it will be cost-effective and sustainable
5. Establishing data management requirements

AOOS will be planned and implemented through the collective efforts of a consortium of users including academia, federal and state agencies, nongovernmental organizations, marine research entities, subsistence users, community representatives, and industry.

The formal governance structure will include an executive director and clerical staff who will provide primary support for four committees: Governance Committee, Users Committee, Implementation Committee, and a Data Management Advisory Committee.

Partners: North Pacific Research Board, University of Alaska, and Seward Association for the Advancement of Marine Science

Development of the Regional Association for the Gulf of Mexico Ocean Observing System

Texas A&M Research Foundation

\$106,143 for three years

October 1, 2003 – September 30, 2006

Principal Investigator: Worth Nowlin, Texas A&M University

Phone: (979) 845-3900; E-mail: wnowlin@tamu.edu

The overall objective of this project is to develop a regional association for the management of a Gulf of Mexico Coastal Observation System (GCOOS) as a contribution to the U.S. Integrated Ocean Observing System (IOOS). The effort will include development of linkages with coastal observing programs of other nations in the Gulf.

Organizational workshops leading up to this project, involving partners from state and federal agencies and academic researchers, have already agreed on the components necessary and a mission statement for the design and implementation of the GCOOS regional observing system. It was clearly understood that it remains for the partners in the GCOOS to develop an acceptable governance structure and business plan. It also remains to define, develop, and establish the formal framework for interaction with other nations bordering the Gulf of Mexico. These remaining key activities are the primary focus for this project.

In addition, this project will develop a parallel but linked structure for collaboration with the states of Mexico and Cuba that share the Gulf of Mexico. This project will help understand the degree to which these parallel structures need to be integrated into a larger framework.

The objectives of the project follow. The first three are the highest priority and comprise the foci of this project during the first year, though all are important.

1. Identify and develop the GCOOS user base and its requirements (present and potential).
2. Create a governance structure, as defined in Part I of the IOOS Implementation Plan, for the GCOOS. This will be the regional association.
3. Develop a business plan, as defined in Part I of the IOOS Implementation Plan, for the GCOOS regional association.
4. Continue ongoing work to obtain further commitments for data sharing and to identify and publicize products from existing activities.
5. Initiate activities to share, compare, and validate numerical models for potential use in the GCOOS.

Partners: Texas A&M University, University of Southern Mississippi, National Data Buoy Center, Naval Oceanographic Office, Texas General Land Office, and University of South Florida

Appendix 8. National Oceanographic Partnership Program Award for Excellence in Partnering

8.1 CRITERIA FOR THE EXCELLENCE IN PARTNERING AWARD

One of the stated objectives of the National Oceanographic Partnership Program (NOPP) is to identify and carry out partnerships among Federal agencies, academia, industry and other members of the ocean sciences community in the areas of data, resources, and education. The purpose of these partnerships, as specified in the National Oceanographic Partnership Act, is “to 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.”

The NOPP Award for Excellence in Partnering has two purposes: 1) to recognize the successful efforts of the partners in conducting a superior project and 2) to identify to the ocean sciences community and its supporters what constitutes a successful NOPP effort. The award will be given annually* to a completed NOPP-funded project that best exemplifies the partnership objectives of NOPP and successfully addresses at least one of the national goals put forth in the National Oceanographic Partnership Act.

Award recipients are selected based on the degree of and commitment to partnering, the success of the partnership effort, and the impact of the partnership on the ocean research community. The criteria are:

- Ocean sector diversity among the partners;
- Level of effort/involvement by partners;
- Long-term commitment of the partners beyond the NOPP-funding period;
- The success of the partnership in meeting its project objectives; and
- Impact of the effort to the ocean research community.

*Awards do not have to be made annually if it is judged that there are no suitable candidates.

8.2 2002 EXCELLENCE IN PARTNERING AWARD PROJECT SUMMARY AND PARTNER LIST

The Argo Project: Global Ocean Observations for Understanding and Prediction of Climate Variability

PI: Dr. Dean Roemmich, Scripps Institution of Oceanography, UCSD

Partners:

Dr. Silvia Garzoli, Dr. Robert Molinari, NOAA/AOML
Dr. Gregory Johnson, NOAA/PMEL
Dr. W. Brechner Owens, Woods Hole Oceanographic Institution
Dr. Stephen Riser, University of Washington
Dr. Martin Visbeck, Lamont Doherty Earth Observatory, Columbia University
Dr. Mike Clancy, Fleet Numerical Meteorological and Oceanography Center (FNMOC)

The U.S. NOPP-Argo project is a 5-year implementation, 2001 – 2006, of the U.S. contribution to the international Argo program (<http://www.argo.ucsd.edu>). With more than 1000 profiling CTD floats now active, Argo has completed over 1/3 of its planned global array of 3000 autonomous instruments, and established a data system to meet the needs of both operational and scientific users. The Argo array will provide unprecedented real-time views of the evolving physical state of the ocean (temperature, salinity, and current). It will reveal the physical processes that balance the large-scale heat and freshwater budgets of the ocean and will provide a crucial dataset for initialization and assimilation in seasonal-to-decadal forecast models. Argo is a major initiative in oceanography, with research and operational objectives, providing a global dataset for climate science and many other applications.

Activities of the U.S. NOPP-Argo partnership include:

- Fabrication and deployment of Argo floats worldwide, 344 floats in the present year. This includes technical oversight of active floats, and prioritization and planning of deployments to meet the needs of the Argo user community.
- Technology development in profiling floats for improved reliability and capability.
- Data system development and management of both real-time (operational) and research quality datasets.
- Early demonstration of the scientific value of Argo data.
- Leadership and collaboration in many aspects of international Argo, including the Argo Director (J. Gould), Argo Science Team Chairman (D. Roemmich), basin float deployment coordination, technology oversight, and data system development.

The U.S. NOPP-Argo partnership is fundamentally a multi-institutional undertaking so that the functions, expertise, and workload needed for building and maintaining the global array can be fully integrated and appropriately distributed. The partnership includes the scientific and technology experts at institutions with long-term commitment to the ocean observing system. It encourages friendly competition but with complete reliance on cooperation.

The first international Argo Science Workshop was jointly sponsored by the U.S. and Japan-Argo programs in Tokyo in November, 2003. Over 200 attendees demonstrated the broad scientific utilization and rapidly developing operational applications of the Argo dataset. Workshop posters and abstracts are available at the Argo Science Team web site referenced above. All Argo data are freely available from the global Argo data center maintained by FNMOC (<http://www.usgodae.org/argo/argo.html>).

Acronyms and Abbreviations

AGU	American Geophysical Union
AOML	Atlantic Oceanographic and Meteorological Laboratory
ASLO	American Society of Limnology and Oceanography
BAA	Broad Agency Announcement
BATS	Bermuda Area Time Series
CORE	Consortium for Oceanographic Research and Education
COSEE	Centers for Ocean Science Excellence in Education
COTS	Coastal Observatory Technology Systems
CTD	Conductivity-Temperature-Depth
DARPA	Defense Advances Research Projects Agency
DHS	Department of Homeland Security
DOC	Department of Commerce
DoE	Department on Energy
DoS	Department of State
EEZ	Economic Exclusion Zone
EPA	Environmental Protection Agency
EXCOM	Ocean.US Executive Committee
FOFC	Federal Oceanographic Facilities Committee
FNMOC	Fleet Numerical Meteorology and Oceanography Center
GODAE	Global Ocean Data Assimilation Experiment
GoMOOS	Gulf of Maine Ocean Observing System
GOOS	Global Ocean Observing System
HBCU	Historically Black Colleges and Universities
HIS	Hispanic Serving Institutions
HOTS	Hawaiian Ocean Time Series
HYCOM	Hybrid Coordinate Ocean Model
IOOS	Integrated Ocean Observing System
IWG	Interagency Working Group
LEO	Long-term Ecosystem Observatory
METOP	Meteorological Operational
MMS	Minerals Management Service
MPC	Marine Prediction Center
MSI	Minority Serving Institutions
NASA	National Aeronautics and Space Administration
NAVOCEANO	Naval Oceanographic Office
NEPTUNE	North East Pacific Time-series Undersea Network Experiment
NESDIS	National Environmental Satellite, Data, and Information Service
NFRA	National Federation of Regional Associations
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NOPP	National Oceanographic Partnership Program
NOPPO	National Oceanographic Partnership Program Office

NORLC	National Ocean Research Leadership Council
NOSB	National Ocean Sciences Bowl
NPOESS	National Polar-orbiting Operational Environmental Satellite
NSF	National Science Foundation
NWS	National Weather Service
OBIS	Ocean Biogeographic Information System
OMB	Office of Management and Budget
ONR	Office of Naval Research
ORAP	Ocean Research Advisory Panel
ORSMP	Ocean Research Synthesis and Modeling Program
OSTP	Office of Science and Technology Policy
PI	Principal Investigator
PMEL	Pacific Marine Environmental Laboratory
POES	Polar-orbiting Operational Environmental Satellite
RA	Regional Association
RFP	Request for Proposals
SBIR	Small Business Innovative Research
SEA-COOS	South East Coastal Ocean Observing System
SSH	Sea Surface Height
SST	Sea Surface Temperature
SVW	Surface Vector Winds
TCU	Tribal Colleges and Universities
TOPP	Tagging of Pacific Pelagics
TOS	The Oceanography Society
UNOLS	University-National Oceanographic Laboratory System
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USGS	United States Geological Survey
VODHub	Virtual Ocean Data Hub