



REPORT TO THE U.S. CONGRESS ON  
THE NATIONAL OCEANOGRAPHIC  
PARTNERSHIP PROGRAM,  
FISCAL YEAR 2014

PRODUCT OF THE  
National Ocean Council



December 2015

EXECUTIVE OFFICE OF THE PRESIDENT

NATIONAL OCEAN COUNCIL

WASHINGTON, D.C. 20503

December 15, 2015

Dear Colleagues:

We are pleased to transmit to you the *Report to the U.S. Congress on the National Oceanographic Partnership Program, Fiscal Year 2014*. Under the National Oceanographic Partnership Act (P.L. 104-201, 10 U.S.C. §§ 7901-7903), the National Oceanographic Partnership Program (NOPP) is required to report to Congress annually.

The NOPP was established by Congress to promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication by improving knowledge of the ocean. These goals are achieved through partnerships among Federal agencies, academia, industry, and non-governmental organizations that advance interagency initiatives and priorities, and cut across agency missions and multiple disciplines. Through the NOPP, public and private sectors across the oceanographic community coordinate to support larger, more comprehensive projects, promote sharing of resources, and foster community-wide innovative advances in ocean science, technology, and education.

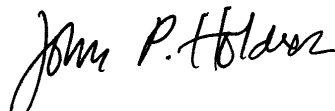
Since its establishment, the NOPP has driven advances in ocean science and technology research that have expanded the knowledge of our ocean. In Fiscal Year 2014, the NOPP continued this tradition of excellence. We appreciate your support of NOPP and look forward to continued engagement with you on this important effort and other ocean issues.

Sincerely,



Christina Goldfuss  
Managing Director, Council on  
Environmental Quality

Co-Chair, National Ocean Council



John P. Holdren, Ph.D.  
Assistant to the President for Science and  
Technology and Director, Office of Science  
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## **About the National Ocean Council**

The National Ocean Council (NOC) is charged with implementing the National Ocean Policy established in July 2010 under Executive Order 13547, Stewardship of the Ocean, Our Coasts, and the Great Lakes. The NOC released the National Ocean Policy Implementation Plan in April 2013 to translate the National Ocean Policy into specific actions Federal agencies will take to address key ocean challenges, streamline Federal operations, save taxpayer dollars, and promote economic growth. Federal agencies, States, Tribes, and regional fishery management councils may choose to form regional planning bodies to provide communities greater collaborative input in these efforts. More information is available at [www.whitehouse.gov/administration/eop/oceans](http://www.whitehouse.gov/administration/eop/oceans).

## **About the National Science and Technology Council**

The National Science and Technology Council (NSTC) is the principal means by which the Executive Branch coordinates science and technology policy across the diverse entities that make up the Federal research and development (R&D) enterprise. One of the NSTC's primary objectives is establishing clear national goals for Federal science and technology investments. NSTC prepares R&D packages aimed at accomplishing multiple national goals. The NSTC's work is organized under five committees: Environment, Natural Resources, and Sustainability; Homeland and National Security; Science, Technology, Engineering, and Mathematics (STEM) Education; Science; and Technology. Each of these committees oversees subcommittees and working groups that are focused on different aspects of science and technology. More information is available at [www.whitehouse.gov/ostp/nstc](http://www.whitehouse.gov/ostp/nstc).

## **About the Office of Science and Technology Policy**

The Office of Science and Technology Policy (OSTP) was established by the National Science and Technology Policy, Organization, and Priorities Act of 1976. OSTP's responsibilities include advising the President in policy formulation and budget development on questions in which science and technology are important elements; articulating the President's science and technology policy and programs; and fostering strong partnerships among Federal, State, and local governments, and the scientific communities in industry and academia. The Director of OSTP also serves as Assistant to the President for Science and Technology and manages the NSTC. More information is available at [www.whitehouse.gov/ostp](http://www.whitehouse.gov/ostp).

## **About the Subcommittee on Ocean Science and Technology**

The purpose of the Subcommittee on Ocean Science and Technology (SOST) is to advise and assist on national issues of ocean science and technology. The SOST contributes to the goals for Federal ocean science and technology, including developing coordinated interagency strategies, and fosters national ocean science and technology priorities, including implementation of the National Ocean Policy. The SOST also serves as the Ocean Science and Technology Interagency Policy Committee (OST-IPC) under the NOC, and ensures the interagency implementation of the National Ocean Policy and other priorities for ocean science and technology objectives.

## **About the Council on Environmental Quality**

The Council on Environmental Quality (CEQ) coordinates Federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives. CEQ was established within the Executive Office of the President (EOP) by Congress as part of the National Environmental Policy Act of 1969 (NEPA), and additional responsibilities were provided by the Environmental Quality Improvement Act of 1970. Through interagency working groups and coordination

with other EOP components, CEQ works to advance the President’s agenda. It also balances competing positions, and encourages government-wide coordination, bringing Federal agencies, state and local governments, and other stakeholders together on matters relating to the environment, natural resources and energy. CEQ co-chairs the National Ocean Council, along with OSTP. More information is available at [www.whitehouse.gov/ceq](http://www.whitehouse.gov/ceq).

## **About this Document**

This document was developed by the National Oceanographic Partnership Program Office, which supports the administration of the Program. The document was published by the NOC.

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## Table of Contents

Executive Summary.....	1
Introduction .....	2
Interagency Working Group on Ocean Partnerships.....	2
Interagency Working Group on Facilities and Infrastructure .....	2
Ocean Research Advisory Panel.....	3
NOPP Investment Profile .....	3
NOPP-Solicited Activities .....	3
NOPP-Managed Activities.....	4
NOPP Excellence in Partnering Award.....	4
Fiscal Year 2014 Activities.....	5
NOPP-Solicited Activities .....	5
NOPP-Managed Activities.....	6
NOPP Office.....	6
National Ocean Science Bowl .....	6
NOPP Interagency Interactions.....	6
Interagency Working Group on Ocean Partnerships .....	7
Interagency Working Group on Facilities and Infrastructure .....	7
Ocean Research Advisory Panel.....	7
Fiscal Year 2015 Activities and Plans .....	8
NOPP-Solicited Activities .....	8
NOPP-Managed Activities.....	8
NOPP Office.....	8
National Ocean Science Bowl .....	8
NOPP Interagency Interactions.....	9
Interagency Working Group on Ocean Partnerships .....	9
Interagency Working Group on Facilities and Infrastructure .....	9
Conclusion.....	9
Appendix 1. Development and Process for NOPP-Funded Research .....	11
Appendix 2. NOPP-Funded Projects Initiated in Fiscal Year 2014 .....	12
Appendix 3. NOPP Solicitations in Fiscal Year 2014.....	13
Abbreviations .....	14

## Executive Summary

The National Oceanographic Partnership Program (NOPP) marked its 17<sup>th</sup> year in Fiscal Year (FY) 2014. Since its inception, the NOPP has forged interagency and multi-sector cooperation through a multitude of cross-cutting ocean science and technology research and education projects. The NOPP has proven to be an effective forum for developing new interagency activities that advance ocean knowledge and transcend single agency missions.

In FY 2014, the NOPP, coordinating through the Interagency Working Group on Ocean Partnerships and the NOPP Office, continued to make progress on four strategic goals:

- Facilitate and promote ocean partnerships through the NOPP;
- Foster partnerships necessary to support actions in the National Ocean Policy Implementation Plan;
- Promote coordinated ocean agency planning;
- Catalyze scientific research on critical and emerging issues.

In FY 2014, the NOPP partner agencies focused their investments into large-scale projects with potential regional, national, and global impacts. The following three solicitations were funded in FY 2014:

1. *Advancing Air-Ocean-Land-Ice Global Coupled Prediction on Emerging Computational Architectures*: The goal of the Advancing Air-Ocean-Land-Ice Global Coupled Prediction on Emerging Computational Architectures study is to improve the oceanographic and meteorological understanding of the earth's physical system which will enable more accurate weather predictions.
2. *Demonstrating a United States Marine Biodiversity Observation Network (Marine BON)*: The goal of the Marine BON study is to launch pilot biodiversity observation networks in several regions of the United States with the intent of demonstrating the capacity for developing a national network. Marine biodiversity is a key indicator of ocean health, and an integrated picture of what is happening to marine biodiversity will provide marine resource managers and policymakers with tools to address threats ranging from invasive species to climate change.
3. *Marine Arctic Ecosystem Study (MARES) – Ecosystem Dynamics and Monitoring of the Beaufort Sea: An Integrated Science Approach*: The goal of the MARES study is to advance the overall knowledge of the Arctic marine environment in order to address issues of national importance as the Arctic becomes more accessible, including climate change, energy development, and environmental sustainability.

Eight new projects were funded in FY 2014 under these three topics, bringing the total number of projects funded by the NOPP from 1997 to 2014 to 200. The funding dedicated to these new projects in FY 2014 totaled \$6.33M, an increase over the previous fiscal year. With \$0.90M in funding for continuing projects in FY 2014, the total NOPP-Solicited Activities investment in FY 2014 was \$7.23M.

The NOPP partner agencies continued their support of the National Ocean Science Bowl in FY 2014 through a contract with the Consortium for Ocean Leadership. The nationwide competition is held at 22 regional competition sites with over 300 high schools and approximately 2,000 students participating each year. Since the beginning of this program in 1998, more than 24,000 students and teachers have participated, and many of these participants have gone on to college and careers in the fields of ocean science, education, and policy.



## Introduction

The National Oceanographic Partnership Program (NOPP) was established by Congress in Fiscal Year (FY) 1997 to promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication by improving knowledge of the ocean (P.L. 104-201, 10 U.S.C. §§ 7901-7903). This is accomplished through partnerships among Federal agencies, academia, industry, and non-governmental organizations. While the ocean governance structure within which the NOPP operates has evolved over time, the program continues to serve as an effective forum for the advancement of the national goals through the development of interagency initiatives and priorities that span across agencies, sectors, and disciplines. Many NOPP-associated groups and activities also contribute toward advancement of the National Ocean Policy by providing forums for coordination, communication, and partnership across agencies.

### Interagency Working Group on Ocean Partnerships

The objective of the Interagency Working Group on Ocean Partnerships (IWG-OP) is to develop, plan, and coordinate on NOPP ocean research and technology projects which result from agency partnerships and address topics of mutual and emerging interest. The IWG-OP focuses on projects that call for more than the work of a single agency, require government-private-academia partnerships, or involve several agency missions. Partnerships facilitated through the IWG-OP speak to a full range of ocean science, technology, and resource management priorities. Sub-groups of the IWG-OP address specific areas of interest:

- The Biodiversity Ad Hoc Group plans future steps for and initiates partnership activities involving such issues as biodiversity technology and science, metrics, indices and proxies, applications and data sharing, and international conventions and frameworks;
- The Task Force for Ocean Exploration and Research Technology and Infrastructure (TFORT) advises, assists, and makes recommendations to the IWG-OP on policies and procedures related to ocean exploration and undersea research technology and infrastructure; and
- The Federal Renewable Ocean Energy Working Group (FROEWG) identifies information needs and supports research necessary to enhance the regulatory process for siting and deploying renewable ocean energy technologies.

### Interagency Working Group on Facilities and Infrastructure

The Interagency Working Group on Facilities and Infrastructure (IWG-FI) addresses policies, procedures, and plans relating to oceanographic facility use, investments, and upgrades, and assists with oceanographic asset issues. The scope of the IWG-FI includes major Federal assets such as oceanographic ships, submersibles, remotely operated vehicles, autonomous underwater vehicles, and maritime research aircraft, which includes unmanned airborne vehicles. Sub-groups under the IWG-FI focus on particular areas of interest:

- The Subcommittee on Unmanned Systems (SUS) advises on policies and procedures related to unmanned systems uses, upgrades, and investments; and
- The Federal Fleet Metrics Group advises on Fleet operations management and Fleet performance and utilization.

## Ocean Research Advisory Panel

The Ocean Research Advisory Panel (ORAP) was established in FY 1997 to deliver independent advice and guidance to the National Ocean Research Leadership Council (NORLC), which is now operating through the National Ocean Council (NOC). ORAP is composed of individuals from the National Academies, academia, State governments, ocean industries, and the non-industry private sector, and is managed by the Office of Naval Research, with oversight by the Department of Defense (DOD). ORAP provides advice to the NOC on a variety of topics covering the broad range of ocean sciences, education, and resource management.

## NOPP Investment Profile

The primary function of the NOPP is to promote partnerships both within the Federal government and between the Federal government and other members of the ocean sciences community, including academia, industry, and non-governmental organizations. Each year, ocean research and technology topics of mutual and emerging interest that would benefit from cross-agency and cross-sector partnership are identified by the IWG-OP, selected topics are announced through an agency-issued formal NOPP Broad Agency Announcement (BAA), a Request for Proposals (RFP), or a Federal Funding Opportunity (FFO), and projects are selected for funding. The process of developing these funding opportunities is fully described in Appendix 1.

The NOPP Investment Profile has two investment types. The first investment in the NOPP profile consists of the projects selected by NOPP participating agencies, represented here as NOPP-Solicited Activities. The second investment consists of NOPP-Managed Activities, or single agency expenditures that support NOPP objectives, including the NOPP Office and the National Ocean Science Bowl (NOSB).

The amount of dollars spent in each fiscal year for NOPP-Solicited Activities and NOPP-Managed Activities from FY 1997 through FY 2014 totals \$435.46M, and is shown in Figure 1. In FY 2014, the NOPP partner agencies focused their investments into large-scale projects with potential regional, national, and global impacts. These large-scale projects will result in increased NOPP-Solicited Activities investments over the five-year lifespan of these projects.

### NOPP-Solicited Activities

NOPP-Solicited Activities are the direct result of formal NOPP BAAs, RFPs, or FFOs. NOPP-Solicited Activities are multi-year projects which may receive funding in the first year of the project as well as in out-years. In an effort to increase transparency, two types of NOPP-Solicited Activities will be reported from FY 2014 onwards:

- NOPP-Solicited New Activities: Projects initiated in the fiscal year of the report;
- NOPP-Solicited Continuing Activities: Projects initiated in prior fiscal years that received funding in the fiscal year of the report.

In FY 2014, NOPP-Solicited New Activities included two solicitations from FY 2013 and one solicitation from FY 2014 that completed the proposal review process and had funds distributed. The NOPP-Solicited New Activities in FY 2014 totaled \$6.33M. In FY 2014, NOPP-Solicited Continuing Activities totaled \$0.90M. The total funding for the combined NOPP-Solicited Activities in FY 2014 was \$7.23M, and the cumulative investment in these activities from FY 1997 to FY 2014 was \$393.69M.

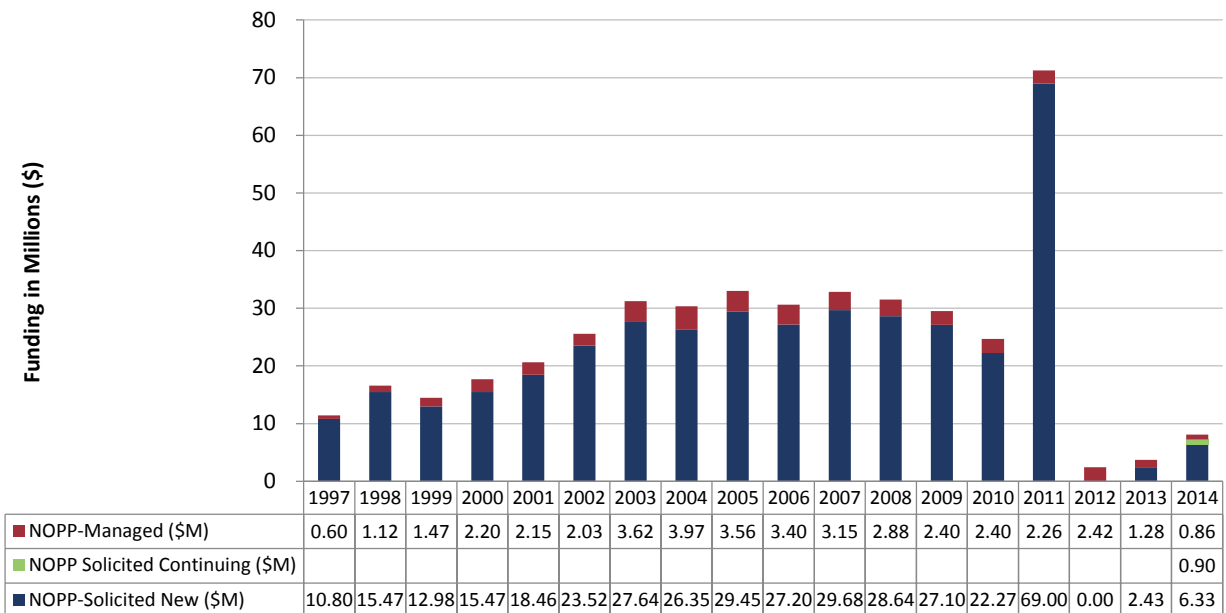


Figure 1. Investments in NOPP-Managed and NOPP-Solicited Activities from FY 1997 to FY 2014. Note that in FY 2014 NOPP-Solicited Activities was separated into two categories: NOPP-Solicited Continuing and NOPP-Solicited New.

## NOPP-Managed Activities

Funding for NOPP-Managed Activities in FY 2014 totaled \$0.86M, and the cumulative investment in these activities from FY 1997 to FY 2014 was \$41.77M.

## NOPP Excellence in Partnering Award

Each year the NOPP Excellence in Partnering Award is presented to a research team that best demonstrates the partnership objectives of the NOPP. The 2014 NOPP Excellence in Partnering Award was awarded to the project team “Development of an Integrated ISFET pH Sensor for High Pressure Applications in the Deep-Sea.” The project was led by Dr. Kenneth Johnson from the Monterey Bay Aquarium Research Institute, with co-Principal Investigators from Scripps Institution of Oceanography, University of Washington, and Honeywell, Inc. The project was funded through the National Science Foundation (NSF), with additional support from a combination of non-profit and academic institutions, as well as a Fortune 100 Corporation. The project was nominated by NSF for its ability to provide “high precision and accurate pH measurements from an array of profiling floats that can last for the five year life of a float” and for advancing “our understanding of the impacts of ocean acidification.”

The “Deep-Sea Durafet pH” sensor, developed by the team after several years of engineering and testing, is a prototype that now operates in a depth up to 2000 meters and is expected to become commercially available for other ocean research projects and education. This robust and stable sensor will enable autonomous monitoring of ocean pH, especially as it relates to pH changes driven by increasing atmospheric carbon dioxide. Deep-Sea Durafet pH sensors are currently operating on profiling floats and CTD/Rosette samplers, where they are producing high quality pH profiles.

## Fiscal Year 2014 Activities

### **NOPP-Solicited Activities**

NOPP partner agencies invested approximately \$6.33 M in new NOPP-solicited activities in FY 2014. The new projects selected for funding in FY 2014 were in response to the following three solicitations, with the first two having been solicited in FY 2013:

#### **FY 2014 Office of Naval Research (ONR) Broad Agency Announcement #ONR-BAA-13-011: Advancing Air-Ocean-Land-Ice Global Coupled Prediction on Emerging Computational Architectures**

The goal of the Advancing Air-Ocean-Land-Ice Global Coupled Prediction on Emerging Computational Architectures study is to improve the oceanographic and meteorological understanding of the earth's physical system which will enable more accurate weather predictions. A technical goal of the study is, by the end of the collective efforts, to produce a data-assimilative, eddy-resolving, high-resolution air-ocean-land-ice coupled prediction system suitable for medium-range to seasonal forecasts that might begin the transition process to National operational environmental prediction centers. The four projects selected under this BAA will collectively perform the background scientific research necessary to design and test such a model, including the data assimilation component. Information on the selected projects is in Appendix 2.

#### **FY 2014 National Oceanic and Atmospheric Administration (NOAA) Broad Agency Announcement #NOAA-NOS-IOOS-2014-2003803: Demonstrating a U.S. Marine Biodiversity Observation Network (Marine BON)**

The goal of the Marine BON study is to launch pilot biodiversity observation networks in several regions of the United States with the intent of demonstrating the capacity for developing a national network. Marine biodiversity is a key indicator of ocean health, and an integrated picture of what is happening to marine biodiversity will provide marine resource managers and policymakers with tools to address threats ranging from invasive species to climate change. The pilot biodiversity observation networks will focus on developing standardized methodologies, integrating existing efforts, and closing gaps in taxonomic and spatial coverage. Three studies were selected under this topic. The first study will develop a Marine BON in Alaska, the second will develop one in the Santa Barbara Channel in California, and the third will form a network across three National Marine Sanctuaries in California, Texas, and Florida. Information on the selected projects is in Appendix 2.

#### **FY 2014 NOPP Partners Request for Proposals # M14PS00023: Marine Arctic Ecosystem Study (MARES) – Ecosystem Dynamics and Monitoring of the Beaufort Sea: An Integrated Science Approach**

The goal of the MARES study is to advance the overall knowledge of the Arctic marine environment (i.e. the ocean-atmospheric-sea ice-land systems) and its role as a driver of marine ecosystem functioning and change. This study will meet the needs of the NOPP agency partners in addressing issues of National importance as the Arctic becomes more accessible, including climate change, energy development, and environmental sustainability. The study will integrate physical, biological, chemical, and social data as well as spatiotemporal dimensions and resource management. Information on the selected project is in Appendix 2. This RFP was the only funding solicitation announced in FY 2014, and additional information on this solicitation is in Appendix 3.

## NOPP-Managed Activities

### NOPP Office

In FY 2014, the NOPP Office continued to support interagency activities including all meetings and intercessional activities of the IWG-OP, IWG-FI, and ORAP. In support of these groups, the NOPP Office served as liaison to other related interagency committees.

An important role of the NOPP Office is to provide public outreach and education about the NOPP and NOPP projects. In this role, the NOPP Office represented the NOPP at the 2014 Ocean Sciences Meeting and the 2014 American Geophysical Union Fall Conference. These conferences provided opportunities for outreach to students, scientists, and industry. In addition to attending conferences, the NOPP Office represented the NOPP at numerous topical meetings and briefings throughout the year.

The NOPP Office continued to promote public outreach through maintaining its website, [www.nopp.org](http://www.nopp.org), and through its Twitter and Facebook accounts. Through participation in social media, the NOPP Office assists the NOPP in engaging a wider public audience in the importance of ocean science and technology research and education, as well as the importance of partnerships.

### National Ocean Science Bowl

The National Ocean Sciences Bowl (NOSB®) was created through the NOPP in 1998 in honor of the International Year of the Ocean. In FY 2014, it continued to be supported by NOPP partner agencies through a contract with the Consortium for Ocean Leadership. The NOSB has shown through a longitudinal study that many of students who compete in the program enter a college program or career in the fields of ocean science, education, and policy.

In FY 2014, the nationwide competition was held at 22 regional competition sites with over 300 high schools and approximately 1,645 students participating. The 2014 Finals Competition was held May 1<sup>st</sup> through 4<sup>th</sup> at the University of Washington in Seattle. The theme for the 2014 NOSB Finals, one significant to the Pacific Northwest shellfish industry, was ocean acidification. Ocean acidification research encompasses several scientific disciplines: chemistry, oceanography, marine ecology, marine biology and others. The winner of the 2014 NOSB was Boise High School from Boise, Idaho. The top eight teams from the 2014 NOSB are shown in Table 1.

*Table 1. 2014 NOSB Finals Competition Winners*

Place	School
1 <sup>st</sup>	Boise High School – Boise, Idaho
2 <sup>nd</sup>	Arcadia High School – Arcadia, California
3 <sup>rd</sup>	Juneau-Douglas High School – Juneau, Alaska
4 <sup>th</sup>	Bishop Sullivan Catholic High School – Virginia Beach, Virginia
5 <sup>th</sup>	Eastside High School – Gainesville, Florida
6 <sup>th</sup>	Chaparral Star Academy – Austin, Texas
7 <sup>th</sup>	Thomas Jefferson High School for Science and Technology – Alexandria, Virginia
8 <sup>th</sup>	Lexington High School – Lexington, Massachusetts

### NOPP Interagency Interactions

Interagency partnership is a central tenet of the NOPP; as such, the engagement of partner agencies is essential to the success of NOPP initiatives. In FY 2014, agency participation in the NOPP included sponsoring research through partnership funding opportunities, hosting topical workshops, providing

input to NOPP publications, and attending NOPP-related outreach events. The following sections summarize the FY 2014 activities of the NOPP and agency participation.

### **Interagency Working Group on Ocean Partnerships**

The IWG-OP met monthly in FY 2014 to explore innovative areas of ocean science and technology research and to initiate partnerships. These meetings resulted in the development of the MARES solicitation. The NOPP Office held additional peer review panel meetings in support of the project selection process for the MARES, Marine BON, and Advancing Air-Ocean-Land-Ice Global Coupled Prediction on Emerging Computational Architectures solicitations.

The IWG-OP released a new brochure titled *The Way Ahead!* The brochure outlines the four main goals of the IWG-OP which are to promote ocean partnerships, support actions associated with the National Ocean Policy Implementation Plan, promote interagency ocean planning, and foster scientific research for priority and emerging issues. The brochure can be found on the NOPP website at <http://www.nopp.org/wp-content/uploads/2014/11/IWG-OP-Brochure-2014.pdf>.

The IWG-OP Biodiversity Ad Hoc Group met quarterly in FY 2014. This group introduced the Marine BON NOPP topic and was closely involved with the planning and initiation of the Marine BON projects. The Biodiversity Ad Hoc Group also informed participating agencies on biodiversity related topics.

The FROEWG met three times in FY 2014. The focus was on renewable-energy related projects such as offshore wind energy and the development, and cost-effective monitoring of marine and hydrokinetic projects.

The TFORT met biannually in FY 2014. It focused on issues related to ocean exploration and undersea research technology and infrastructure.

### **Interagency Working Group on Facilities and Infrastructure**

The IWG-FI met biannually in FY 2014 to review the progress on actions tasked to the SUS and the Federal Fleet Metrics Group. During FY 2014, the IWG-FI continued to make progress toward meeting priority objectives of the National Ocean Policy Implementation Plan.

The Federal Fleet Metrics Group met five times in FY 2014 to update the *Federal Fleet Performance Measures: Status, Issues, and Recommendations* report.

The SUS met biannually in FY 2014. The SUS was tasked with several actions that supported the National Ocean Policy Implementation Plan including developing an inventory of the Federal and non-Federal undersea and remote sensing systems. The SUS also focused on updating the *Federal Unmanned Systems: Status, Issues, and Recommendations* report.

### **Ocean Research Advisory Panel**

ORAP, the Nation's only Federal Advisory Committee Act (FACA) committee whose scope covers the full spectrum of ocean science, education, and resource management topics, continued to provide advice and guidance to the NOC. ORAP held two meetings in FY 2014. The ORAP reviewed reports on ocean education, ecosystem based management, and balancing ocean infrastructure and research. Following this meeting, the ORAP electronically delivered two reports titled *Leveraging Ocean Education Opportunities* and *Implementing Ecosystem-Based Management* to the National Ocean Council. These reports are available in the FACA database and on the NOPP web page.

*Implementing Ecosystem Based Management* was prepared at the request of the NOC to identify strategies and recommendations in advancing ecosystem-based management (EBM) as outlined by the

National Ocean Policy. Key findings of this report include the need for greater clarity and understanding of EBM across stakeholder groups, re-engineering of existing management frameworks to implement EBM through pilot projects and eventually long-term management efforts, and consistent messaging across Federal agencies for EBM to become a key management principle. The report can be found on the NOPP website at <http://www.nopp.org/wp-content/uploads/2010/03/Implementing-EBM-v4.pdf>.

*Leveraging Ocean Education* was prepared at the request of the NOC to provide input on leveraging Federal ocean education efforts to maximize investment and more effectively linking informal ocean education efforts to education standards. Key findings of this report include endorsing the Next Generation Science Standards as the framework for aligning agency Science, Technology, Engineering, and Mathematics (STEM) education and outreach goals; clarifying the framework for assembling, managing, and leveraging the STEM portfolio; connecting existing STEM networks through an overarching National network; and supporting professional development programs for STEM educators and scientists. The report can be found on the NOPP website at <http://www.nopp.org/wp-content/uploads/2010/06/Leveraging-Ocean-Education-Opportunities.pdf>.

## **Fiscal Year 2015 Activities**

The NOPP partner agencies continue in FY 2015 to contribute toward extramural funding opportunities, implementation of the National Ocean Policy, and other activities to foster interagency partnerships and coordination. The NOPP Office will continue to support interagency activities and ORAP.

### **NOPP-Solicited Activities**

Planning for three NOPP-Solicited Activities is underway. Solicitations were announced for three FY 2015 projects on 1) Seamless Forecasting from the Deep Ocean to the Coast, 2) Earth System Prediction Coupled Air-Sea Process Studies and Coupled Data Assimilation, and 3) Integrating the Hydrological Cycle for Improved Coastal and Global Forecasting. Funding projections for these projects are still tentative.

Another topic is in the process of being developed. The suggested Sea Ice Forecasting Study is in the planning process with interested parties including the Bureau of Ocean Energy Management (BOEM), ONR, NOAA, and the National Ice Center. Based on early planning, the proposed review process, and Federal budgets, this project may not initiate until FY 2016 or FY 2017.

Both the Marine BON and MARES studies were launched late in FY 2014, making the build-up of these studies a high priority focus of NOPP-Solicited Activities in FY 2015. Under both studies, kick-off meetings are planned to address several topics including Principal Investigator coordination, data management, and reporting requirements.

### **NOPP-Managed Activities**

#### **NOPP Office**

In FY 2015, the NOPP Office continues to support interagency activities and the ORAP.

#### **National Ocean Science Bowl**

The FY 2015 NOSB Finals Competition was held April 23-26, 2015, in Ocean Springs, Mississippi, hosted by the Gulf Coast Research Laboratory Marine Education Center. The theme was Science of Oil in the Ocean, and Boise High School won for the second straight year.



## **NOPP Interagency Interactions**

In FY 2015, NOPP continues to work with and through the appropriate ocean governance channels, including the NOC, to provide collaboration opportunities to initiate innovative ocean science and technology research. FY 2015 activities are described below.

### **Interagency Working Group on Ocean Partnerships**

In FY 2015, the IWG-OP continues to meet monthly and engage with representatives from other interagency working groups to expand its efforts to facilitate and promote partnerships across ocean science, technology, and education topics. The IWG-OP will continue to implement initiatives in line with its strategic plan, including initiatives in support of the National Ocean Policy, and continue to develop solicitations for future years, with potential research topics including ocean and sea ice forecasting, energy development, and submerged landforms.

The IWG-OP's Biodiversity Ad Hoc Group continues to meet quarterly during FY 2015. The group will continue to inform participating agencies on biodiversity related topics including biological research and monitoring for environment and habitat protection and/or fisheries management, archiving marine biological data, vulnerable deep-sea ecosystem issues, microbial communities, and the integration of satellite data with in situ observations of elements in marine biodiversity.

TFORT continues to implement activities as guided by its new Five-Year Goals and Priorities Plan (FY 2015 – FY 2019). The new five-year plan identifies 10 technology priorities that form the core reference for all activities related to TFORT. Under the five-year plan, TFORT will focus on technology development and transition between agencies, as well as conduct activities in coordination with, and in support of, the outreach and education objectives of the IWG-OP as they relate to ocean research and undersea technology.

FROEWG continues to inform participating agencies on renewable energy options including marine, hydrokinetic and wind energy, and will continue its activities moving forward.

### **Interagency Working Group on Facilities and Infrastructure**

The IWG-FI continues to meet regularly during FY 2015. The IWG-FI continues to address policies, procedures, and plans relating to oceanographic facility use, upgrades, and investments, and support the implementation of National Ocean Policy. The scope of the IWG-FI in FY 2015 continues to include developing metrics, both standardized and mission-specific, that assess, characterize, and quantify the usage of major Federal assets including ships, maritime research aircraft, unmanned aerial vehicles and unmanned undersea vehicles. The IWG-FI will also provide guidance as needed for other systems used in ocean observations, such as moorings, drifting buoys, and observatories.

The SUS continues to advise the IWG-FI on policies and plans related to unmanned systems uses, upgrades, and investments in FY 2015. The FY 2015 priorities of the SUS are to complete actions under the National Ocean Policy Implementation Plan and to facilitate coordination between agencies utilizing unmanned systems.

## **Conclusion**

In FY 2014, the NOPP saw many successes, including the launch of large-scale ocean science and technology studies, successful outreach at conferences, and continued implementation of the National Ocean Policy. Going forward, the NOPP will draw upon its 17 years of experience and lessons learned to serve as an efficient mechanism for implementing productive ocean partnerships among Federal agencies,



industry, and academia; supporting interagency working groups focused on key ocean research and facilities issues; and supporting implementation of the National Ocean Policy.

## Appendix 1. Development and Process for NOPP-Funded Research

Two or more agencies typically collaborate on funding NOPP research. Funded NOPP projects require multi-sector partnerships among academia, industry (including non-government organizations), and government (including state, local, and tribal).

Research topics funded through NOPP are initiated via interactions among agency program managers, often at IWG-OP meetings. The partner agencies then discuss the research topic with other agencies through the IWG-OP. At this point, interagency partnerships are formed, tentative levels of support are pledged on an as-available basis, and draft solicitation language is developed. The IWG-OP reviews the funding announcement language that is then announced by a lead agency as a Broad Agency Announcement, Request for Proposals, or Federal Funding Opportunity on behalf of NOPP.

Once a funding opportunity is announced, all submitted proposals undergo a peer review process similar to that of the National Science Foundation. Proposals are reviewed based on:

- Relevance of the proposed research to NOPP objectives;
- Overall scientific and technical merits of the proposal;
- Level of support of critical research objectives or operational goals;
- Quality of proposed partnerships;
- The offeror's capabilities, related experience, and facilities that are critical to the proposal objectives;
- The long-term commitment of the partners to the proposed objectives;
- The qualifications and experience of the proposed PI and key personnel; and
- Reasonableness of cost.

The rankings of the peer review panel are made available to, and reviewed by, the agency program managers, who make a recommendation for funding. After IWG-OP discussion, the funded research projects are announced.

To learn more about the NOPP process and what makes a successful funding solicitation, please see the NOPP Best Practices and Guidelines document: [www.nopp.org/wp-content/uploads/2011/03/NOPP-Funding-Best-Practices\\_FINAL.pdf](http://www.nopp.org/wp-content/uploads/2011/03/NOPP-Funding-Best-Practices_FINAL.pdf).

## **Appendix 2. NOPP-Funded Projects Initiated in Fiscal Year 2014**

### ***Advancing Air-Ocean-Land-Ice Global Coupled Prediction on Emerging Computational Architectures***

- Accelerated Prediction of the Polar Ice and Global Ocean (APPIGO)  
Lead Principal Investigator (PI): Dr. Eric Chassignet, Florida State University
- An Integration and Evaluation Framework for ESPC Coupled Models  
Lead Principal Investigator (PI): Dr. Ben Kirtman, University of Miami
- NPS-NRL-Rice-UIUC Collaboration on Navy Atmosphere-Ocean Coupled Models on Many - Core Computer Architectures  
Lead Principal Investigator (PI): Dr. Lucas Wilcox, Naval Postgraduate School
- RRTMGP: A High-Performance Broadband Radiation Code for the Next Decade  
Lead Principal Investigator (PI): Dr. Eli Mlawer, Atmospheric and Environmental Research, Inc.

### ***Marine Arctic Ecosystem Study (MARES) – Ecosystem Dynamics and Monitoring of the Beaufort Sea: An Integrated Science Approach***

- Marine Arctic Ecosystem Study (MARES) – Ecosystem Dynamics and Monitoring of the Beaufort Sea: An Integrated Science Approach  
Lead Principal Investigator (PI): Dr. Francis Wiese, Stantec Consulting Services, Inc.

### ***Demonstration of a U.S. Marine Biodiversity Observation Network (Marine BON)***

- National Marine Sanctuaries as Sentinel Sites for a Demonstration Marine Biodiversity Observation Network (MBON)  
Lead Principal Investigator (PI): Dr. Frank Muller-Karger, University of South Florida
- Demonstrating an Effective Marine Biodiversity Observation Network in the Santa Barbara Channel  
Lead Principal Investigator (PI): Robert Miller - University of California Santa Barbara
- Initiating an Arctic Marine Biodiversity Observing Network (AMBON)  
Lead Principal Investigator (PI): Katrin Iken - University of Alaska Fairbanks

## Appendix 3. NOPP Solicitations in Fiscal Year 2014

### *FY 2014 NOPP Partners Request for Proposals # M14PS00023*

- Marine Arctic Ecosystem Study (MARES) – Ecosystem Dynamics and Monitoring of the Beaufort Sea: An Integrated Science Approach  
RFP Announcement: <http://www.nopp.org/wp-content/uploads/2014/05/RFP-M14PS00023-Released-13Jun14.pdf>

## Abbreviations

AMBON	Arctic Marine Biodiversity Observing Network
APPIGO	Accelerated Prediction of the Polar Ice and Global Ocean
BAA	Broad Agency Announcement
BOEM	Bureau of Ocean Energy Management
BON	Biodiversity Observation Network
DOD	Department of Defense
EBM	Ecosystem-Based Management
ESPC	Earth System Prediction Capability
FACA	Federal Advisory Committee Act
FFO	Federal Funding Opportunity
FROEWG	Federal Renewable Ocean Energy Working Group
FY	Fiscal Year
IWG-FI	Interagency Working Group on Facilities and Infrastructure
IWG-OP	Interagency Working Group on Ocean Partnerships
M	Million
MARES	Marine Arctic Ecosystem Study
Marine BON	Marine Biodiversity Observation Network
MBARI	Monterey Bay Aquarium Research Institute
NIC	National Ice Center
NOAA	National Oceanic and Atmospheric Administration
NOC	National Ocean Council
NOPP	National Oceanographic Partnership Program
NORLC	National Ocean Research Leadership Council
NOSB	National Ocean Sciences Bowl
NSF	National Science Foundation
ONR	Office of Naval Research
ORAP	Ocean Research Advisory Panel
PI	Principal Investigator
PL	Public Law
RFP	Request for Proposals
STEM	Science, Technology, Engineering, and Mathematics
SUS	Subcommittee on Unmanned System
TFORT	Task Force on Ocean Exploration and Undersea Research Technology and Infrastructure
UAVs	Unmanned Aerial Vehicles
UUVs	Unmanned Undersea Vehicles