

Implementing the Work Priorities of the Subcommittee on Integrated Management of Ocean Resources (SIMOR)

Work Plan

March 2006



TABLE OF CONTENTS

FOREWORD	3
OVERVIEW.....	4
PRIORITY AREA 1 WORK PLAN.....	5
PRIORITY AREA 2 WORK PLAN.....	10
PRIORITY AREA 3 WORK PLAN.....	13
PRIORITY AREA 4 WORK PLAN.....	15
APPENDIX	20

FOREWORD

The SIMOR Work Plan: Implementing the Work Priorities of the Subcommittee on Integrated Management of Ocean Resources

The Subcommittee on Integrated Management of Ocean Resources (SIMOR) was formed in March 2005 as part of the ocean governance structure described in the President's Ocean Action Plan (www.oceans.ceq.gov). SIMOR focuses on implementing ocean, coastal, and Great Lakes management actions that will benefit from interagency coordination. SIMOR's work is designed to complement the efforts of individual Departments and Agencies, as well as other interagency groups. The SIMOR Work Plan presented here was developed with the active involvement of 19 SIMOR agencies and offices representing all member agencies of the Committee on Ocean Policy. SIMOR intends this Work Plan to be a living document and expects to take up additional activities over the coming months. This Work Plan is organized by four priority areas that describe specific actions to be accomplished within currently available resources. The workgroups responsible for these actions will develop more detailed plans and schedules.

We look forward to working with our partners and other interested parties in implementation of the SIMOR Work Plan and related activities required to move us toward responsible use and management of our ocean and coastal resources.

SIMOR Co-Chairs



Gerhard Kuska
Council on Environmental Quality



Chris Kearney
Department of Interior



Mary Glackin
National Oceanic and Atmospheric Administration



Diane Regas
Environmental Protection Agency

OVERVIEW

The Subcommittee on Integrated Management of Ocean Resources seeks to identify and promote opportunities for collaboration and cooperation among federal agencies and to build partnerships among Federal, State, Tribal and local authorities, the private sector, international partners, and other interested parties. These cooperative efforts will help develop and implement management strategies that ensure continued conservation of coastal and marine habitats and living and non-living resources while also ensuring that the American public enjoys and benefits from those same resources. The Subcommittee on Integrated Management of Ocean Resources, which reports to and provides advice to the Interagency Committee on Ocean Science and Resource Management Integration, will collaborate with the Joint Subcommittee on Ocean Science and Technology to accomplish many priorities. These priorities include strengthening the use of science in resource management decisions, promoting ocean literacy, strengthening infrastructure, advancing observation and modeling capabilities, and fostering interagency partnerships. In addition, the Subcommittee on Integrated Management of Ocean Resources will coordinate with the Subcommittee on Oceans Policy (a subgroup of the National Security Council Global Environment Policy Coordinating Committee), the Committee on the Marine Transportation System, and other interagency groups with ocean, coastal, and Great Lakes responsibilities. The Subcommittee on Integrated Management of Ocean Resources has identified the following work priorities as initial focus areas:

- **Support Regional and Local Collaboration.** Identify and promote opportunities for collaboration among Federal, State, Tribal, and local authorities; the private sector; international partners; and other stakeholders.
- **Facilitate Use of Ocean Science and Technology in Ocean Resource Management.** Work with the Joint Subcommittee on Ocean Science and Technology and others to foster the development and use of management tools, strategies, and information based on the best available science and technology.
- **Enhance Ocean, Coastal, and Great Lakes Resource Management to Improve Use and Conservation.** Enhance interagency coordination on use and conservation of marine resources, and, with the states, evaluate and recommend ways to improve coastal water quality programs.
- **Enhance Ocean Education.** Collaborating with the Joint Subcommittee on Ocean Science and Technology, identify opportunities and articulate priorities for enhancing ocean education, outreach, and capacity building.

PRIORITY AREA I WORK PLAN

WORK PRIORITY AREA I: Support Regional and Local Collaboration. Identify and promote opportunities for collaboration among Federal, State, Tribal, and local authorities; the private sector; international partners; and other stakeholders.

SIMOR will serve as a focal point for engaging federal agencies in regional and local collaborations to enhance management of ocean and coastal resources to improve their use and conservation. SIMOR efforts will improve resource management planning, identification and propagation of best practices, and streamlined agency functions. Recognizing the key role of the states in coastal and ocean resource management, SIMOR activities will be responsive to states and will focus initially on several regional areas where governors are taking action on a regional basis. These include the Gulf of Mexico, the Great Lakes, and New England. SIMOR will identify lessons learned from these regional collaborations and present them in a format that facilitates transfer to other regional and local areas. Some examples of initial SIMOR activities will include:

Cooperative Conservation

Cooperative Conservation Lessons Learned (Ongoing Action): In advancing ocean stewardship by implementing the Cooperative Conservation Executive Order (E.O. 13352, August 26, 2004) and promoting cooperative conservation efforts, and in fostering and highlighting regional and local collaboration efforts, SIMOR will promote the development of lessons learned, initiating contact between agencies'/departments' senior EO contacts to share examples of cooperative conservation in the ocean/coastal context and identify new cooperative conservation efforts. Beginning in fall 2005, development will begin on a report of the 'Top Ten' lessons learned that other states and regions could apply to their individual regional contexts.

Gulf of Mexico initiative and lessons learned/best practices

Gulf of Mexico Regional Initiative (Ongoing Action): The purpose of this initiative is to support state and federal interest for collaboration in the Gulf of Mexico region. In moving toward a more coordinated effort in the Gulf of Mexico, this effort will bring together interested federal and state partners in a series of meetings, featuring a high-level Gulf of Mexico Summit in March 2006. SIMOR will promote collaboration in several specific areas including: increasing federal participation where appropriate; addressing interagency coordination and identifying opportunities to streamline intra- and inter-agency functions; guiding the development of environmental and socioeconomic indicators in coordination with the broader national indicator effort to aid in determining success; and promoting regional collaboration including identifying needs for observations and management tools that could be forwarded to the JSOST.

Gulf of Mexico Lessons Learned /Best Practices (Ongoing Action): SIMOR, working together with state partners and guided by the priorities of governors in the region, will support the Gulf Regional Initiative by developing lessons learned and best practices from and for various contexts in the region, including, for example, water quality for healthy beaches and shellfish beds, environmental education, wetlands restoration, characterization of Gulf habitats for management, and reductions in nutrient loading. Depending on locally-identified needs, the community workshops (see initiative description) could serve as one venue to develop lessons learned by addressing such possible local needs as integrated planning, non-point source pollution abatement, and coastal community development in ways that demonstrate integration of state and federal programs and assistance.

Great Lakes Lessons Learned – Building on existing regional collaboration and developing lessons learned for application in other regions of the country

Clean Marinas Initiative (Ongoing Action): The Clean Marina program is an existing voluntary partnership between the federal government, states, and private marinas that promotes state certification of marinas that practice good environmental stewardship in areas such as pollution prevention and waste management. Under the Clean Marinas Initiative, the federal government will work toward achieving Clean Marina certification for all marinas that are currently operating in national parks, national wildlife refuges, national forests, and military bases in coastal states that participate in the Clean Marina program.

Best Practices in Dredging and Sediment Management (Ongoing Action): The purpose of this initiative is to build on existing successes in the Great Lakes with the Great Lakes Regional Dredging Team, which represents a successful example of interagency coordination in the area of dredged material management – an important environmental and economic issue, particularly as it relates to the support of safe and environmentally-sound commerce and transportation. Working with the federal interagency National Dredging Team and the relevant subcommittee of the Committee on the Marine Transportation System, SIMOR will support the development of best practices in the area of management of dredged material/sediment using the watershed approach for application to other regions. As an initial step, SIMOR will co-host with the National Dredging Team a dredged material conference in 2006 to address improved coordination in watershed sediment management and development of best practices.

New England Best Practices – Supporting the establishment of place-based activities and collaborative decision making in the New England region with the development of best practices and lessons learned (New Action)

The purpose of this initiative is to support the interest and efforts of New England states in their establishment of a Northeast Regional Oceans Council—a state-led effort proposed by Rhode Island—by identifying possible geographic areas that could benefit from improved federal coordination and working with states and local government, as well as non-governmental entities. There is a need to identify ways to explore and respond to state efforts to manage ocean and coastal resources in the region. A number of issues (e.g., alternative energy/windfarms, transportation, ESA/right whales, Integrated Ocean Observing

System/Gulf of Maine Ocean Observing System, coastal habitat restoration/submerged aquatic vegetation, and coastal and ocean mapping/subaqueous soil mapping) could serve as example topics for improved coordination or as examples for the development of best practices from or for the region, with possible applicability to other areas of the country as well.

Improving watershed protection at the local level through community workshops

Community Workshops (Ongoing Action): The purpose of this initiative is to target federal assistance integrating the programmatic, funding, and technical assistance capabilities of NOAA (CZMA), EPA (CWA), and where feasible and appropriate other federal agencies such as USDA (Farm Bill Conservation Programs), DOI (NPS Coastal Watershed Program) and US Army Corps of Engineers' programs to better assist place-based programs in the states (e.g., NEPs, NERRS) to address key, locally-identified issues such as growth, development and use in coastal watersheds and their adjacent and downstream impacts on local streams, rivers, and coastal, estuarine and marine resources. Federal players, led by EPA and NOAA, will work with the Coastal States Organization and place-based programs to demonstrate new and innovative ways to integrate coastal and watershed management programs, funding sources, policies, and other tools. Two to three workshops will be conducted at the community, county, or watershed level within a regional context. Workshops will be designed to: (i) identify and overcome impediments (e.g., program 'silos') to collaborative action to meet shared stakeholder goals; and (ii) support implementation by local stakeholders/communities with the most effective tools and techniques to reduce adverse impacts on coastal and estuarine resources (e.g., species loss, habitat fragmentation, and other impacts resulting from urban and farm runoff, and stormwater). Each workshop will be designed to provide outcomes that address local needs, are regionally transferable and will serve as a template for additional potential workshops within the states across the region. While the issues will be locally significant they should also be regionally important and ecosystem-relevant. Workshops will be implemented in 2006.

Identifying next steps to move toward an Ecosystem-based Approach to Management

Regional and Local Workshops on Successful Approaches to Ecosystem Management (New Action): The purpose of the initiative would be to bring together federal officials from the major agencies involved in pollution control and natural resource conservation and restoration activities in order to highlight and discuss various examples of ecosystem approaches (both successes and challenges) at the project and regional level. The workshops would also target state government and federal pollution control and natural resource managers not typically directly involved in ecosystem based management activities – as a means of expanding the understanding of those not directly involved in such issues. In addition, records of the proceedings could be put on the web to provide an opportunity to share their application nationwide as well as invite comment from the public. Developed with input and guidance from the Coastal States Organization and the National Governors Association, the workshops could focus on a variety of areas, including lessons learned, and as appropriate, key elements of ecosystem-based management and scientific requirements

and approaches for integrating science into decision making. Upon conclusion of workshops, agencies would consider next steps, including some type of “table top exercise” – with definition and parameters.

Executive Technical Qualification for Ecosystem Managers of Ocean and Coastal Programs (New Action): The purpose of this proposal is to ensure a basic level of knowledge among appropriate federal senior leaders regarding ecosystem science. The federal government has implemented a set of core competencies for the Senior Executive Service (SES) that defines the basic skills needed in any field of federal service. In addition to these core qualifications, an ever-increasing number of federal managers need a basic familiarity with principles of ecosystems and ecosystem science. While federal executives do not need to become expert scientists, they should have the ability to ask pertinent questions, understand key concepts, and evaluate alternative courses of action. This goal can be achieved by implementing the following actions: (1) develop a definition of an “ecosystem science executive technical qualification” and appropriate evaluation criteria that can be used as an additional factor for federal leadership positions; (2) evaluate current executive level federal training opportunities and develop new opportunities, if needed, in conjunction with the Federal Executive Institute, with input from outside the government; and (3) encourage agencies to identify target positions across the government where the ecosystem executive technical qualification will be used and to integrate it into the hiring process.

Ocean and Coastal Economics Data and Analysis (New Action)

The purpose of this initiative is to support the needs of federal agencies and state and local governments for comprehensive economic data to address specific management problems such as ocean and coastal transportation and infrastructure issues, minerals management, and understanding of tourism and recreation at the state and local level. NOAA's Ocean Economics Program has developed a more comprehensive picture of the ocean and coastal economy through new data sets and series on the national, state, and local coastal economies in terms of employment, output, and other economic dimensions. The program also provides better means to integrate and use information on the economic value of ocean and coastal resources. This initiative will explore expanding the program to support the requirements of Federal agencies and states for economic information to support decision making.

Strengthening Coordination of Federal Activities in Urban Estuaries (New Action)

Catalyze a national effort for multi-agency coordination to establish a framework utilizing model memoranda of agreement (analogous to the intent of the 2004 Great Lakes Executive order and Chesapeake Bay 2000 multi-agency agreement) to enhance federal coordination and services targeting the protection and restoration of urban estuaries and habitats. Estuaries represent vital economic, environmental, social, and cultural centers that provide jobs, homes, recreation, and a valued quality of life for the people who live, work and recreate there. Yet, these estuaries are facing increased pressures from rapid population growth and ‘urbanization’ which causes the degradation of habitats that are vital

to marine and coastal resources. Urbanization of America's estuaries may represent the single most significant human alteration of our nation's coastal ecosystems in our nation's history. A directed program to enhance federal coordination and services to support the regional protection and restoration would assist local communities within urban estuaries to manage their growth and redevelopment while sustaining ecosystems.

PRIORITY AREA 2 WORK PLAN

WORK PRIORITY AREA 2: Facilitate Use of Ocean Science and Technology in Ocean Resource Management. Work with the Joint Subcommittee on Ocean Science and Technology and others to foster the development and use of management tools, strategies, and information based on the best available science and technology.

The Challenge

A key challenge for SIMOR, working in collaboration with the JSOST¹, is fostering the development and use of the best possible science-based management tools, strategies, and information to improve ocean, coastal, and Great Lakes resource management. Our goal is to encourage the development of mechanisms to ensure that relevant research occurs and that the results are applied by resource managers. Steps needed to achieve this goal include: coordinating research for management needs across federal, state, academic, international, and NGOs sectors; supporting the transition from research to operations; and actively engaging resource managers at the federal, state, and local level in identifying research needs to support management decisions, experimenting with early results, and providing feedback to guide future efforts.

Successfully meeting this challenge would result in:

- Regionally-networked research efforts beginning with high priority management needs and applied research results in the form most readily used by resource managers.
- Active regional science plans that support regional management efforts (e.g., the Gulf of Mexico Partnership). Goals and management actions would be informed by science.
- Federal programs collaborating across agencies and with their state and local counterparts to improve the application of science to management, as appropriate.
- Integrated, ecosystem approach to observations, measurements, and modeling with interoperability standards to support decision making.
- Routine sharing of new science from the research community to resource managers at all levels, resulting in informed management decisions.
- Use of research results in operations, management, and policy-making, and use of operationally-collected measurements in research.

¹ JSOST and SIMOR share a number of challenges (e.g., Education). In addition, it is noteworthy that JSOST needs to be responsive to other users of science and technology (e.g., Homeland Security).

- Sustained reporting of environmental and socioeconomic indicators to allow tracking of ecological health and to inform stakeholders of trends in the marine environment.

Proposed Steps to Success

The USCOP report called for an active relationship between research and management efforts and the OAP provided a first step toward implementing this relationship with the establishment of a federal framework. Priority next steps include the following:

Federal-State Research Priorities Task Team

SIMOR will establish a task team of resource managers from state and federal agencies to provide input on high priority basic and applied research needs to the JSOST Ocean Research Priorities Plan and Implementation Strategy, which will be final by December 31, 2006. One option that the task team might address would be to partner with JSOST and states to convene a facilitated workshop to discuss science in support of management.

IOOS Regional Associations and Resource Management Needs

As the IOOS Regional Associations continue to develop and evolve, SIMOR, in consultation with JSOST, will work with Ocean.US and the IOOS Regional Associations to implement approaches for ensuring that state and local resource managers are interacting with, and presenting their needs and views to, the Regional Associations, and that the Regional Associations are responsive to the needs of state and local resource managers, as well as relevant voluntary resource partnerships. It is important for SIMOR to articulate the resource management needs in an ecosystem context, which would then guide the observations that are collected in the IOOS framework. As such, one option that a task team might address would be to work to identify and collaborate on priorities for the development of resource management science as a part of IOOS. This information could be conveyed to the JSOST (as well as Ocean.US and the Regional Associations) via an "IOOS for managers' priorities document."

Regional Science Planning to Support Resource Management

SIMOR will work with JSOST to implement an interagency approach in establishing regional planning efforts designed to support regional management activities, working with NOAA Sea Grant during FY 2006 to accomplish this for six regions.

Federal-State Science and Management Integration Task Team

SIMOR and JSOST will establish a joint task team of federal and state resource managers and federal and state researchers to address steps that they can take, independently and together, to improve communication: (1) from the scientific community to resource managers about important scientific information; and (2) from ocean and coastal resource managers to the scientific community about key research needs.

Northern Gulf of Mexico Ecosystem Data Services Pilot

MOUs are currently in place with the federal participants and Mississippi Department of Marine Resources. A preliminary prototype Internet-based service targeted for MDMR needs is underway for use in first quarter FY06. Development of additional information services for the region will build on existing service experience of the participants in topics such as hypoxia, harmful algal blooms, coastal erosion and sedimentation, and fecal coliform contamination in coastal waters. SIMOR could assist in the coordination and implementation of Internet-based data access and delivery services tailored for the needs of state-level coastal and marine resource managers by drawing on existing data and information sources in NOAA, NASA, Navy and EPA as well as Northern Gulf of Mexico state agencies.

PRIORITY AREA 3 WORK PLAN

WORK PRIORITY AREA 3: Enhance Ocean, Coastal, and Great Lakes Resource Management to Improve Use and Conservation. Enhance interagency coordination on use and conservation of marine resources, and, with the states, evaluate and recommend ways to improve water quality programs.

Identify next steps to enhance interagency coordination on use and conservation of marine resources (e.g. energy, fisheries, recreation, and transportation).

Convene interagency team to identify medium/long term major trends, or areas of interest, involving issues of common interest and/or responsibility amongst agencies. Team will also evaluate current major interagency activities, for potential models for broader application, gaps in agency statutory or regulatory authorities, as well as areas in need of improvement/expanded coordination.

Development of an inter-agency mechanism, covering all agencies involved in SIMOR, JSOST, etc, that spells out the means for informing other agencies of any proposed activities that would be sited in the oceans and for providing the “lead” agency a heads-up about the interests of other agencies as any review proceeds. This would serve two purposes: (a) improved knowledge of the array of uses that already exist or are proposed for the ocean; and (b) provide a means for early identification of potential conflicts. It’s too early to know whether we need a new mechanism for resolving interagency conflicts, but identifying conflicts and observing how they’re resolved could be educational.

SIMOR will work to encourage the development of an interagency data and information management program to collect and disseminate data on chemical, pathogenic, and toxin constituents that affect the risks to human health of eating shellfish and other seafood. This effort will strive to increase the availability and utility of such information, and the efficiency with which it could be accessed by local managers, through use of comparable methods and compatible data bases.

Working with the states, evaluate and recommend ways to improve coastal water quality programs, initially focusing on programs that address the impacts of land-based sources of pollution on coastal, ocean, and Great Lakes resources, such as the Coastal Zone Management Act (CZMA) nonpoint source pollution control program.

The vibrancy of coastal areas across the US has yielded an abundance of diverse and rich opportunities for citizens. These include recreation, tourism, transportation, renewable energy development and other economic development activities. The continued growth and expansion of such activities include an accompanying need to address a variety of challenges in coastal areas. Various federal and state programs are designed to provide

support to local and state decision makers to meet these challenges. As a first step towards improved coordination among these programs, SIMOR will engage federal and state managers with the objective of developing a model for improved collaboration among relevant federal and state coastal and water quality programs. The goal of this model is improved federal support for states that seek to plan and implement strategies designed to achieve water quality goals. The participating agencies will report back to SIMOR on specific state needs and coordination approaches. Among the federal programs that may play a role in such an effort because they are implemented at the state and local level include, but are not limited to, several programs within NOAA (the Coastal Zone Management Program, the National Estuarine Research Reserve System, the National Marine Sanctuary Program), within EPA (the National Estuary Program, and water quality programs under the Clean Water Act), and within the U.S. Fish and Wildlife Service (the Coastal Program, and the Coastal Barrier Resources System). Further, discussions among federal and state partners will identify other programs which could be included in a particular area, whether it be a region, a watershed or a local community or communities.

PRIORITY AREA 4 WORK PLAN

WORK PRIORITY AREA 4: Enhance Ocean Education. Collaborating with the Joint Subcommittee on Ocean Science and Technology, identify opportunities and articulate priorities for enhancing ocean education, outreach, and capacity building.

The JSOST and SIMOR will establish a permanent interagency working group on ocean education. Education is a constantly evolving process, and continuous coordination is needed between agencies to ensure the most efficient use of existing resources. The charge to the working group will be to improve coordination of Federal programs focused on ocean education and outreach so they effectively reflect priorities at the regional, State, and local levels – while maintaining consistency with broad national goals.

Membership on the working group would consist of designees, appointed by their agency's ICOSRMI member, who have authority to commit program funding from EPA, NASA, NSF, NOAA, MARAD, MMS, ONR, USGS, FWS, Education and other agencies. Joint chairmanship of the group would rotate on a biennial basis. This would ensure greater cooperation by each agency and would spread the workload more evenly. Co-chairs would report to JSOST and to SIMOR at joint meetings.

A key charge to the working group will be to improve coordination of Federal programs focused on ocean education and outreach efforts so they effectively reflect priorities at the regional, state, and local level - while consistent with broad national goals. An additional focus of the interagency group will be to assess the federal, state, and local relationship regarding education as well as examine ways to ensure that informal education of the public regarding matters related to coasts and oceans is communicated clearly and effectively. At the first meeting, the working group will be charged with developing an annual plan for improving coordination of federal programs, including recommendations for reorganizations, realignments, and other changes as the group deems appropriate. Such a plan shall be reviewed and approved by the ICOSRMI .

The working group will report to the JSOST and SIMOR co-chairs to ensure proper coordination without being overly cumbersome. The co-chairs would keep apprised of the working group activity, resolve conflicts, and ensure agency interest in education activities is maintained. The co-chairs have the authority to advise and provide guidance on policy decisions and commitments.

The working group will coordinate with the Ocean Research and Resources Advisory Panel (ORRAP) Education Sub-panel. The Chair of the ORRAP Education Sub-panel will be invited to attend education working group meetings in an ex officio capacity as appropriate. The working group will be tasked with coordinating education efforts nationally and communicating with regional and state associations so that education and outreach efforts are effectively carried through on a regional, state and local basis. This includes coordinating the regional activities of member agencies (e.g., COSEE and Sea Grant) with regional organizations and education

networks (e.g., the Gulf of Mexico Alliance and the Coastal America Coastal Ecosystem Learning Centers).

Implementation Tasks

The implementation tasks listed below are examples for the working group to consider and are not all-inclusive. The interagency working group should, in developing the plan, draw from these examples – or the concepts embodied in them – in developing a wide-ranging set of tasks on all matters related to ocean education. The task given the highest priority by the JSOST and SIMOR co-chairs is the first one, develop an implementation plan.

Develop an Implementation Plan

The foundation for implementation of education goals in the Ocean Action Plan is development of an Ocean Education Implementation Plan. A number of existing reports and strategic plans related to improving ocean education and earth science education provide the basis for creating this plan. The Ocean Education Implementation Plan will provide the long range guidance for interagency collaboration and indicate the priorities of those collaborative activities. It will be used as the basis for development of annual implementation plans as well as assessment of progress towards the long term goals detailed in the Ocean Action Plan. The Ocean Education Implementation Plan should build off of previous efforts and add two components that do not currently exist:

- An inventory of current ocean education activities conducted by agencies or funded by them. The National Oceanographic Partnership Program (NOPP) Office did an inventory of FY 2002 programs, however, this inventory needs to be expanded and updated prior to completion of the Ocean Education Implementation Plan. The resulting database of activities and programs must be updated biennially in order to monitor trends and provide input to annual implementation plan development. Ideally, automated reporting instruments used to conduct these inventories could also be used for gap analysis and project overlap.
- Development of suitable metrics for evaluation of Federal programs in ocean education. Interagency coordination is required for the development of metrics and evaluation tools relative to ocean education programs supported or conducted by Federal agencies. Within the last five years and especially since the Office of Management and Budget (OMB) began using the Program Assessment Rating Tool (PART), Federal agencies have begun to grapple with the issue of education program performance measurement. Much of this work has centered on linking education program outcomes to agency missions and goals (e.g. NOAA, NASA, USDA), and to a lesser extent on the establishment of specific performance metrics for program management and impact evaluation (e.g. EPA, NOAA). Most of the efforts for identifying the outcomes of environmental education programs are focused on the measurement of knowledge, skills, and abilities and/or stewardship actions. The long-term impacts of education, which can take years if not decades to surface, are less well understood and far more difficult to measure.

Increase Coordination and Promote Collaboration

This task seeks to create and strengthen collaborative efforts for enhancing ocean education among the public/private sectors, states/regions, scientists/educators and the Federal agencies that support these efforts. Examples of how this task might be carried out include:

- Strengthening and promoting existing national collaborative efforts. For example, the Centers for Ocean Sciences Education Excellence (COSEE) seek to build effective partnerships between research scientists and educators. The COSEE network is a recognized model for bringing ocean-related education materials to the classroom and the general public and providing ocean scientists with opportunities to learn more about educational needs. The network also links those who develop ocean education materials with those who disseminate it. The existing network of seven centers and a national office is not fully institutionalized and there are geographic gaps in the location of the Centers.
- Strengthening and promoting regional collaborative efforts. For example, there is an environmental education component to the Gulf of Mexico Alliance, a regional effort by the five Gulf States with support from Federal agencies to address regional priority coastal and ocean concerns. The Alliance is a model of regional and intergovernmental collaboration and the environmental education component of the Alliance has the potential to provide valuable lessons in collaboratively working toward the goal of lifelong ocean education. One of the goals of the education component of the Alliance is to link and coordinate regional educational activities and materials.
- Looking for opportunities to promote collaborative efforts that bring together new combinations of partners. For example, this could include the collaboration of scientists and educators on Federally-funded ocean-related research. A model for this type of collaboration is a multi-disciplinary NOPP project that examined the biological and archeological aspects of deepwater World War II shipwrecks in the Gulf of Mexico. Educators were an integral part of the project team. The project included real time logs, a website, and a documentary video that brought the results into the classroom and to the general public.
- Identifying opportunities for private sector collaboration and sponsorship of education and outreach activities. For example, Adopt-A-Waterway brings together the public and private sectors to raise money for local governments to clean-up and prevent pollution caused by urban and storm runoff. Adopt-A-Waterway includes a comprehensive outreach program that provides educational materials.
- Utilizing existing entities that promote effective messages through a network. A model for this is the informal education network of the Coastal America Coastal Ecosystem Learning Centers (CELC) (p. 17 of US Ocean Action Plan). The network consists of 21 federally designated aquaria and research institutions that serve as hubs in reaching an audience of 21 million people annually.

- Promoting environmental conservation through hands on educational projects that serve to protect, preserve, and restore our oceans and coasts. A model of this is the U.S. Freedom Corps, AmeriCorps NCC signature project with the Coastal America CELC network. Through this effort volunteer outreach projects are being implemented throughout the country.

Evaluate means to enhance the public’s knowledge of ocean related matters as appropriate at the regional, state, and local level.

A full range of options should be evaluated by the interagency group.

Ensure that data collected through ocean and Earth observations are translated into useable forms for teachers, students, and the general public.

Ocean observation systems, including the Global Ocean Observing System (GOOS), IOOS, and ORION, fit within the broader context of the Global Earth Observation System of Systems (GEOSS), an international initiative established “*to monitor continuously the state of the Earth, to increase understanding of dynamic Earth processes, to enhance prediction of the Earth system, and to further implement our international environmental treaty obligations.*” The goal is to provide to all nations “*timely, quality, long-term, global information as a basis for sound decision making.*” This information is critical for addressing issues of concern to society.

Over the last few decades, observations of the ocean from space-based and in situ sensors have altered our understanding of ocean dynamics, ocean-atmosphere coupling, and other fundamental processes of oceanography. Our understanding of how the earth operates as a system and our ability to monitor earth’s environments has reached levels sufficient for application to solution of societal needs. These capabilities also present an unprecedented opportunity for advancing science education in formal and informal settings. Satellite imagery of the earth along with the visualizations and models built from observational data provide powerful teaching tools. Open access to data and software tools provide the opportunity for research and analysis by individuals other than the oceanographic research community, including amateur scientists, educators, and students.

It is critical that the data from all the various ocean observing efforts reach educators and the public in a coordinated and coherent fashion. Each observing system would benefit from coordinated education and public outreach planning. Agencies would be able to pool their resources to accomplish common goals, and educators and the public would have seamless access to ocean observing data from a wide variety of systems.

- A variety of organizations have begun to consider how to make the data collected via ocean observing systems useful to the public. Several Centers in the COSEE network have focused efforts on local use of observing data. The Ocean. US office is attempting to coordinate education-related efforts for the Integrated Ocean Observing System (IOOS) and Ocean Research Interactive Observatory Networks (ORION). Another

example of how this task might be addressed includes expanding public access of Global Earth Observing System of Systems (GEOSS) data.

- Agencies could expand the use of ocean and earth science data by creating new electronic environments modeled on those used by the research community for students and other novice scientists. These environments would be easier to use, graphics intensive, provide a wealth of background content information and on-line training. Such an environment would enable a new approach to teaching ocean sciences and improved access for all members of the public.

Assess the current and future ocean workforce to determine if additional effort is needed to ensure adequate preparation of the nation's ocean workforce.

In 2003, the National Science Board (in "*The Science and Engineering Workforce: Realizing America's Potential*") recognized both the economic importance of science and technology in the United States and the need to maintain a healthy workforce of highly skilled researchers and educators in science and mathematics. Little is known about the ocean-related workforce although it is an increasingly important part of America's science and engineering workforce. Jobs in ocean sciences and resource management are not disaggregated in Department of Labor statistics and the small size of the workforce makes projections based on the U.S. workforce, as a whole, unreliable indicators of future trends in marine-related jobs.

- An assessment of available information regarding the current ocean workforce, the future ocean workforce, and ocean related academic programs, in coordination with the Departments of Labor and Education, could identify additional efforts needed in this area.

High-level Ocean Education Event

At the July, 2005 ICOSRMI meeting, the ICOSRMI proposed a high-level Ocean Education event.

- The Working Group will seek further guidance from the ICOSRMI on what type of event should be held and explore options for moving this forward.

APPENDIX

SUBCOMMITTEE ON INTEGRATED MANAGEMENT OF OCEAN RESOURCES (SIMOR) MEMBERSHIP LIST

Gerhard Kuska, CEQ, Co-Chair
Mary Glackin, NOAA, Co-Chair
Diane Regas, EPA, Co-Chair
Chris Kearney, DOI, Co-Chair

Department of Agriculture

Merlyn Carlson
Deputy Under Secretary Natural Resources
and Environment

Courtenay McCormick
Acting Deputy Under Secretary for Natural
Resources and Environment

Plus One:

Howard Hankin
NRCS Ecological Sciences Division

Department of Commerce National Oceanic and Atmospheric Administration

Mary Glackin
SIMOR Co-Chair
Assistant Administrator for Program,
Planning & Integration

Rebecca Lent
Director, Office of International Affairs
NOAA Fisheries Service

Plus One:

Michael Snyder
Policy Advisor

Department of Defense

Donald Schregardus
Deputy Assistant Secretary of the Navy
(Environment)

Plus One:

RDML James A. Symonds
Office of the Chief of Naval Operations

Joint Chiefs of Staff

Robert Winokur
Technical Director
Office of the Oceanographer of the Navy

Plus One:

CDR James Kraska
Oceans and Maritime Policy,
International Negotiations
J-5, The Joint Staff

US Army Corps of Engineers

Lynn R. Martin
Environmental Planner
Institute for Water Resources

Plus One:

Joan Pope
Engineer Research and Development
Center

Department of Energy

Carmen DiFiglio
Director, Office of Electricity Policy
Analysis

Plus One:

Mitch Baer, CCM
Senior Policy Analyst
Policy and International Affairs

**Department of Health and Human
Services****U. S. Food and Drug Administration**

Dr. William Jones
Acting Director, Division of Field Programs
Office of Compliance, CFSAN/FDA, HFS-
615

Plus One:

Laina Bush
Senior Food and Drug Policy Analyst
Health and Human Services Head Quarters

Department of Homeland Security

CAPT Lorne Thomas
USCG, Office Chief, Operating and
Environmental Standards

CDR Eric Giese
Chief of Fisheries Enforcement

Plus One:

LCDR Chris Barrows
Assistant Chief of Fisheries Enforcement

Department of the Interior

Chris Kearney
SIMOR Co-Chair
Deputy Assistant Secretary for Policy
and International Affairs

Staff Support:

Terry Holman
Special Assistant

Department of the Interior**US Fish and Wildlife**

Hannibal Bolton
Chief, Division of Fish and Wildlife
Management and Habitat Restoration

Plus One:

Tom Busiahn
Chief, Branch of Fish and Wildlife
Management Assistance

Department of the Interior**US Geological Survey**

Dr. Suzette M. Kimball
Regional Director, Eastern Region

Plus One:

John W. Haines
Program Coordinator
Coastal & Marine Geology Program

**Department of the Interior
Minerals Management Service**

Dr. James (Jim) Kendall
Chief Scientist

**Department of Justice
Environment and Natural Resources
Division**

Peter H. Oppenheimer
Law and Policy Section
Environment and Natural Resources
Division

Plus One:

Karen Wardzinski
Law and Policy Section
Environment and Natural Resources
Division

Department of Labor

Brad Mantel
Office of the Assistant Secretary for Policy

Department of State

Amb. David Balton
Deputy Assistant Secretary, Oceans and Fisheries

Plus One:

Margaret Hayes
Director, Office of Oceans Affairs

William Gibbons-Fly
Director, Office of Marine Conservation

Department of Transportation

Linda Lawson
Director, Office of Safety Energy and Environment

Plus One:

Camille Mittelholtz
Environmental Policies Team Leader
Office of Safety, Energy and Environment

Environmental Protection Agency

Diane Regas
Director, Office of Wetlands, Oceans, and Watersheds

Suzanne Schwartz
Director, Oceans and Coastal Protection Division

Plus One:

Anthony Moore
Senior Policy Advisor

National Aeronautics and Space Administration

Dr. Paula Bontempi
Ocean Biology and Biogeochemistry Program Scientist

Plus One:

Lawrence Friedl
Applications Program Manager

National Science Foundation

Dr. Larry Clark
Division Director, Division of Ocean Sciences

Plus One:

Roxanne Nikolaus
Staff Associate, Division of Ocean Sciences

EXECUTIVE OFFICE OF THE PRESIDENT

Office of the Vice President

Kevin O'Donovan
Assistant to the Vice President for Domestic Policy

Office of Management and Budget

Emily Woglom
Program Examiner

Council on Environmental Quality

Dr. Gerhard F. Kuska

Domestic Policy Council

TBD

National Security Council

TBD

Homeland Security Council

Gary Rasicot
Director for Cargo and Port Security

Office of Science and Technology Policy

Dr. Teresa Fryberger (Interim)
Assistant Director, Environment

Ex Officio Members

Dr. Richard Spinrad
JSOST Co-Chair
National Oceanic and Atmospheric Administration

Dr. Margaret Leinen
JSOST Co-Chair
National Science Foundation

SIMOR Executive Secretariat

Hazel Groman
SIMOR Executive Secretary
Environmental Protection Agency

SIMOR Staff Support:

Jennifer Linn
Environmental Protection Agency

Dr. Chad McNutt
National Oceanic and Atmospheric
Administration