

Ten-Year Strategic Plan for the National Oceanographic Partnership Program (NOPP)

**All that we do is touched with ocean,
Yet we remain on the shore of what we know.**

"For Dudley" in Walking to Sleep, Faber 1971
Richard Purdy Wilbur, Poet Laureate of the U.S., 1987-88

Prepared by the
NOPP Interagency Working Group

Approved by the
National Ocean Research Leadership Council
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Executive Summary

**Ten-Year Strategic Plan for the
National Oceanographic Partnership Program (NOPP)**

NOPP Strategic Objectives (from the enabling legislation)

- National and Homeland Security
- Sustainable Economic Development
- Quality of Life
- Communication and Education

NOPP Value Proposition

NOPP adds significant integrative value to the individual oceanographic, ocean science, resource management and ocean education missions of the Federal agencies and their partners, in common pursuit of the wise use of the oceans and the maintenance of their health.

NOPP Strategic Goals, Purposes, and Critical Actions

<p>Goal 1. Achieve and sustain an Integrated Ocean Observing System (IOOS).</p>	<p><u>Purpose:</u> Provide coastal and global ocean data and products for decision-makers, researchers, and other operational/practical purposes. <u>Critical Action:</u> Stabilize and integrate existing ocean observation programs.</p>
<p>Goal 2. Promote lifelong ocean education.</p>	<p><u>Purpose:</u> Instill in the general public and governmental decision-makers the importance of wise stewardship of the ocean and the coastal zone. <u>Critical Action:</u> Facilitate and support the use of ocean examples in the teaching of the National Research Council's National Science Education Standards.</p>
<p>Goal 3. Modernize ocean infrastructure and enhance technology development.</p>	<p><u>Purpose:</u> Provide access to state-of-the-art tools, training, and facilities for effective and efficient utilization by national ocean programs. <u>Critical Action:</u> Implement the Federal Oceanographic Facilities Committee (FOFC) fleet renewal plan.</p>
<p>Goal 4. Foster interagency partnerships to increase and apply scientific knowledge.</p>	<p><u>Purpose:</u> Enable and ensure multi-agency efforts where such collaboration enhances efficiency or effectiveness, and/or reduces costs. <u>Critical Action:</u> Narrow the technology gap between biological/chemical measurements and physical measurements in support of the science underlying ecosystem-based management.</p>

Ten-Year Strategic Plan for the National Oceanographic Partnership Program (NOPP)

Background

NOPP was established by the U.S. Congress (Public Law 104-201) in Fiscal Year 1997 for two general purposes:

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

NOPP is governed by the National Ocean Research Leadership Council (NORLC). The NORLC consists of the heads or sub-heads of fifteen federal agencies involved in conducting, funding, or using ocean research and its applications. The NORLC has the responsibility to establish NOPP policies and implement procedures, including selection of projects and allocation of funds. It has established an Interagency Working Group (IWG), a Program Office and an Ocean Research Advisory Panel (ORAP). In addition, the NORLC has assimilated the Federal Oceanographic Facilities Committee (FOFC) and formed an interagency coordinating office for an Integrated Ocean Observing System (Ocean.US). The NORLC reports the activities of the Program annually to the Congress. The Appendix to this Plan gives some additional NOPP organizational and management details.

NOPP Objectives

Public Law 104-201 offers four strategic interagency societal objectives that have been recognized by the NORLC and vetted by national studies and panels. These objectives naturally amalgamate missions of individual agencies into an overarching national agenda; the objectives are thus grand challenges that are greater than the mission and resources of a single agency. The following statement of objectives is derived from a 1996 document¹ that was seminal to and predated the legislative creation of NOPP. These objectives are restated in the enabling legislation for NOPP.

¹ "Oceans 2000: Bridging the Millennia. Partnerships for Stakeholders in the Oceans." Consortium for Oceanographic Research and Education, Washington DC, 1996, 63pp. See also: http://www.yoto98.noaa.gov/yoto/meeting/doc/sci_tech_316.doc

NOPP Strategic Objectives
<p>National and Homeland Security. Ensuring that national interests are guaranteed at home and abroad and that basic and applied ocean science remain an essential element of this assurance. This category is meant to include issues associated with preservation of national interests, via military defense, and foreign policy support.</p>
<p>Sustainable Economic Development. Use of the basic and applied knowledge of the ocean and its resources for economic gain while preserving these for future generations, including attention to marine resources, safe transportation, recreation, development, and related industries.</p>
<p>Quality of Life. Health and social well-being of people as derived from using basic and applied knowledge of the ocean. Subject material includes the topics of preservation, improvement and stewardship of the environment (pollution prevention, marine protection, cleanup and remediation), shoreline protection, coastal hazard mitigation, and recreation.</p>
<p>Communication/Education. Conveying an understanding of the importance of the ocean to national decision making, to the public at large, and to decision makers and educators at every level using basic and applied knowledge of the ocean, to include the exploitation of state-of-the-art electronic networking and computer based simulations/ demonstrations.</p>

Cross-Cutting Challenges to Achieving these Objectives

Some critical cross-cutting challenges frustrate our ability to make substantive progress on these four objectives. The challenges have evolved primarily from increasing pressures for wise management of the oceans and coasts, from increasing knowledge of the underlying science and from the ultimate end-users of the information. The challenges are:

- **Data:** science-based management policies and decisions are hindered by a lack of ocean data and products based on those data, especially over the broad ocean expanses needed for climate change detection, from the regions needed for national and homeland security, and in our coastal zones needed for resource management, hazard mitigation, marine operations, and public health. The data most lacking are those involving biological and chemical variables, for which robust autonomous measuring systems barely exist.
- **Knowledge and Understanding:** even with sufficient data, wise use and protection of the ocean require greatly enhanced understanding of how physical, bio-chemical and socio-economic systems interact; how human activities and global change affect the capacity of ecosystems to support biodiversity and renewable resources; and how future states of the ocean may be predicted. Building this essential knowledge base is at the core of both science and mission-agencies; it involves people, education, and data and information management systems, including numerical models for diagnostics and forecasting.

- Tools and Infrastructure²: measurements in the ocean and making use of that data and information take tools and a supporting infrastructure; both are currently deficient and aging. The tools and infrastructure needed include ships, submersibles, satellites, aircraft, instruments, numerical predictive models, laboratory facilities, educational programs, computers and data systems, designated funding mechanisms and organizational structures.
- Public Awareness and Education: the public is the ultimate source of funds for these activities, and the ultimate beneficiary of the efforts. The public, in general, needs to be more aware of the ocean environment (through, for example, improved formal and informal educational programs) and to appreciate the need for robust policies to maintain the ocean and its resources for future generations. Also, additional studies of the economic benefits of ocean investments are necessary to increase public awareness and to suggest wise investments.
- Collaboration for Efficiency and Synergy: the actions that must be addressed to achieve the four objectives are too big for any one state or federal agency, cut across the missions and concerns of many of them, and require government-private-academic partnerships to make progress. NOPP was designed by Congress to develop and implement these partnerships, but such collaborations are hindered by cultural and bureaucratic obstacles such as a tradition of “operations” being in government but “research” being in universities, and by various legal restrictions on public-private partnerships or even on multiple-agency funding of the same research or operational effort.

NOPP Value Proposition

The **NOPP Value Proposition** focuses on the added value that NOPP brings to the interagency enterprise. The NOPP Goals below are chosen to address specifically those areas that most need interagency and inter-sector³ partnerships.

Value Proposition

NOPP adds significant integrative value to the individual oceanographic, ocean science, resource management and ocean education missions of the Federal agencies and their partners, in common pursuit of the wise use of the oceans and the maintenance of their health.

² "Infrastructure" is used here in the broad sense of those enabling capabilities that have critical but broad and enduring impact on research and/or operations. For example, a ship is prototypical infrastructure: its capital costs are amortized over (typically) 30 years, and it serves many purposes during its life. Different federal agencies will place varying facilities and programs into the category of "infrastructure."

³ The enabling legislation specified "partnerships among federal agencies, academia, industry, and other members of the oceanographic scientific community." NOPP has organized its activities into the following sectors: government (Federal, State, local), academia, and private (industry and Non-Governmental Organizations).

NOPP provides a mechanism for the partnering agencies to:

- share the decisions on what is needed,
- construct collaborative arrangements to undertake the needed work,
- share the costs, and
- share the fruits of the investments.

NOPP provides an environment of ocean-centered collegiality at the NORLC level and at its working level of the Interagency Working Group. NOPP provides a forum for non-governmental input and collaboration on ocean research programs and priorities through the Ocean Research Advisory Panel. In this environment, serendipity is fostered and opportunity is exploited.

The existence of NOPP is motivated by, and predicated upon, the benefits of partnering on common needs, and sharing the responsibility for those items that might otherwise get left undone but which are needed by all.

The program provides funding for selected research, technology development, operations, outreach and education directed towards the four strategic objectives. The highest priority effort has been the development and execution of a sustained and Integrated Ocean Observing System (IOOS). IOOS is the cornerstone of this NOPP Strategic Plan, but is not the only activity required to meet the program objectives.

NOPP Goals

The four **NOPP Goals** below are based on the original NOPP investment areas as revised to reflect seven years of experience in an evolving political and scientific climate. Agency and ocean-science community inputs, Congressional direction, scientific advice of the Ocean Research Advisory Panel (ORAP), an increased understanding of NOPP's role beyond the missions of the individual agencies, and input from the U.S. Commission on Ocean Policy (USCOP) are incorporated into these Goals.

Strategic Plan Structure

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

To summarize, the structure of this strategic plan is:

- Four overarching Strategic Objectives, derived from the enabling legislation.
- Four cross-cutting NOPP Goals, each chosen to support several of the Objectives and to address the main challenges to achieving those objectives; these Goals are based on national meetings, panel studies, USCOP recommendations, and NORLC direction.
- For each Goal:
 - One Critical Action, to represent the minimum acceptable progress in ten years.
 - References, to provide background for both the Goal and the listed Critical Action.

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

NOPP Goals...to be achieved within Ten Years

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

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

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

Critical Action:

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

References:

"Building Consensus: Toward an Integrated and Sustained Ocean Observing System," Ocean.US Workshop Proceedings, Airlie House, Warrenton, VA, March 10-15, 2002.

"Enabling Ocean Research in the 21st Century: Implementation of a Network of Ocean Observatories." National Research Council, Washington DC, 240 pp, 2003.

"Implementation of the Initial U.S. Integrated Ocean Observing System, Part I, Structure and Governance," Ocean.US, Arlington, VA, May 2003.

Declaration of the Earth Observation Summit, July 31, 2003, Washington DC.
<http://earthobservationsummit.gov/declaration.html>.

"The Integrated, Strategic Design Plan for the Coastal Ocean Observations Module of the Global Ocean Observing System." GOOS Report No. 125; IOC Information Documents Series N°1183; UNESCO 2003
http://ioc.unesco.org/goos/docs/GOOS_125_COOP_Plan.pdf

"Preliminary Report of the U.S. Commission on Ocean Policy." Governors' Draft, Washington D.C., April 2004. See also: <http://oceancommission.gov/documents/prelimreport/welcome.html>

Hankin, S. and the DMAC Steering Committee, 2004, Data Management and Communications Plan for Research and Operational Integrated Ocean Observing Systems: I. Interoperable Data Discovery, Access, and Archive, Ocean.US, Arlington, VA 292 pp. See also:
http://dmac.ocean.us/dacsc/docs/dmac_plan_05_10_04.pdf

Goal 2 Promote lifelong ocean education.

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

Critical Action:

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

References:

“A National Strategy to Improve Ocean Literacy and Strengthen Science Education Through An Improved Knowledge of the Oceans and Coasts,” Ocean Research Advisory Panel, Washington, DC, September 2002.

“Preliminary Report of the U.S. Commission on Ocean Policy.” Governors’ Draft, Washington D.C., April 2004. See also: <http://oceancommission.gov/documents/prelimreport/welcome.html>

Ocean.US Communications Plan (in preparation)

Goal 3 Modernize ocean infrastructure and enhance technology development.

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

Critical Action:

Implement the Federal Oceanographic Facilities (FOFC) fleet renewal plan.

References:

“Charting the Future for the Future of the National Academic Research Fleet: A Long Range Plan for Renewal,” Federal Oceanographic Facilities Committee, Washington, DC, December 2001.

“An Information Technology Infrastructure Plan to Advance Ocean Sciences,” Ocean Information Technology Infrastructure Steering Committee, Washington, DC, January 2002.

“National Oceanographic Partnership Program Federal Research Aircraft,” University-National Oceanographic Laboratory System, Moss Landing, CA, (date unknown)

“Preliminary Report of the U.S. Commission on Ocean Policy.” Governors’ Draft, Washington D.C., April 2004. See also: <http://oceancommission.gov/documents/prelimreport/welcome.html>

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

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

Critical Action:

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

References:

"From Research to Operations in Weather Satellites and Numerical Weather Prediction: Crossing the Valley of Death." National Research Council, Washington DC, 96 pp, 2000.

"Preliminary Report of the U.S. Commission on Ocean Policy." Governors' Draft, Washington D.C., April 2004. See also: <http://oceancommission.gov/documents/prelimreport/welcome.html>.

"Fair Weather: Effective Partnerships in Weather and Climate Services." National Research Council, Washington DC, 238 pp, 2003.

Appendix

NOPP Organization and Management

Public Law 104-201 establishes NOPP and a National Ocean Research Leadership Council (NORLC) to oversee NOPP. The NORLC appoints an Ocean Research Advisory Panel (ORAP) and a Program Office (NOPPO). The ORAP is advisory to the NORLC, and the NOPPO supports NORLC activities.

National Oceanographic Research Leadership Council (NORLC)

The NORLC is composed of the principals of agencies and meets semiannually. The NORLC has a Chair, elected by the NORLC members, and two⁴ Vice-Chairs. The term of office is two years, but without restriction as to tenure. In 2004, the incoming Chair is from NOAA, with Vice-Chairs from NSF and from Navy. One of the first actions of the NORLC after forming was to name an Interagency Working Group (IWG) composed of sub-principals from each agency.

Interagency Working Group (IWG)

The IWG meets monthly, functions as staff to the NORLC and in general functions on a day-to-day basis on behalf of the NORLC. The IWG prepares Broad Agency Announcements for the oceanographic community, prepares the NORLC for its semiannual meetings and acts as the working interface to the ORAP and the NOPPO. The Chair and Vice-Chairs of the IWG reflect the NORLC organization. The membership of the IWG is designated by the respective NORLC member for each agency.

Ocean Research Advisory Panel (ORAP)

The ORAP meets semiannually, but continues some of its work projects between meetings. ORAP is a formal committee under the Federal Advisory Committee Act (FACA) and is chartered by the Secretary of the Navy through the Office of the Secretary of Defense (OSD). The Office of Naval Research (ONR) provides the Designated Federal Official (DFO) for the ORAP, which is a FACA requirement, and provides the funding for the ORAP activities. The Chair of ORAP is chosen by its membership. The membership term is nominally 3 years, with a four-year maximum (FACA rule). Members are nominated by the NORLC, the existing ORAP, the IWG, solicited publicly by the NOPPO, and also through Congressional contacts and offices. The basic structure is to select 6 new members each year, for a standing ORAP of 18 members. The IWG vets the nominations and forwards through its Navy member a list to the Secretary of the Navy for pre-approval by that office and by OSD. The final list is then formally invited to become ORAP members, nominally in the Spring of each year. P.L. 104-201 requires 10-18 members for ORAP, and certain representation: members must represent academia, ocean industry, state government, and the National Academies.

⁴ P.L. 104-201 required only one Vice-Chair; the NORLC determined in 2001 that two Vice-Chairs would be more effective.

NOPP Program Office (NOPPO)

P.L. 104-201 required a Program Office, to be awarded competitively. The Consortium on Ocean Research and Education (CORE) won that contract in 1997, and won its recompetition in 2002. The duties of NOPPO include the support of NORLC, ORAP, and IWG meetings, outreach and education regarding NOPP, and the management of the inter-agency proposal solicitation and peer-review process on behalf of the federal agencies in NOPP.

Federal Oceanographic Facilities Committee (FOFC)

In 2001 the NORLC formally accepted the Federal Oceanographic Facilities Committee into the NOPP structure. It had been a stand-alone committee on behalf of those federal agencies with major ocean infrastructure. FOFC advises the NORLC on policies, procedures, and plans relating to oceanographic facility use, upgrades, and investments. The committee also provides guidance on requirements and other matters relative to national oceanographic assets. The facilities under consideration include, but are not limited to, major federal assets, such as: oceanographic ships, submersibles, ROVs, AUVs, and maritime research aircraft including UAV's. FOFC will also provide guidance, input, and direction as necessary for other systems used in ocean observations such as moorings, drifters, observatories and their impact on the utilization and mix of federal facilities. The membership of FOFC is senior officials from the NOPP agencies; the Chair rotates and serves for two-years, renewable once. The Chair must be from one of the agencies funding or operating major oceanographic facilities, namely NOAA, NSF, or Navy.

Ocean.US

Ocean.US (the dot-com version of Oceanus⁵) was formed by an interagency Memorandum of Agreement (MOA) under NOPP in 2000 to coordinate the development of a sustained and integrated ocean observing system (IOOS). It was announced by the Chief of Naval Research, the Administrator of NOAA, and the President of CORE at a joint hearing of the House Resources Subcommittee on Fisheries, Conservation, Wildlife, and the Oceans, and the House Armed Services Subcommittee on Military Research and Development. The NORLC directs the Ocean.US office through an Executive Committee (EXCOM) composed of NORLC members⁶ or their designees. The Chair of the EXCOM is chosen by the Chair of the NORLC, and may not be from the same agency as the current Chair of the NORLC. The Director of the Ocean.US office is chosen by the EXCOM. The Ocean.US office functions with federal employees assigned to it, full or part-time, and with contractor assistance. The Office of Naval Research acts as its host agency and provides off-site facilities and contractor assistance. NOAA provides an IT support contractor.

⁵ In Greek mythology, the Titan Oceanus is the unending stream of water encircling the world. Together with his sister/wife Tethys he produced the rivers and the three thousand ocean nymphs. He was the grandfather of the wife of Poseidon, God of the sea, protector of all waters. Poseidon is the brother of Zeus; they were Olympians. In Roman mythology, Poseidon is known as Neptune.

⁶ Only those NORLC members signatory to the Ocean.US MOA and providing resources to Ocean.US are part of EXCOM. The signatory agencies are: Navy, NOAA, NSF, NASA, MMS, USGS, DOE, USCG, ACOE, EPA; not all contribute resources.