Box 2.1 Public Meetings of the U.S. Commission on Ocean Policy

The Commissioners held sixteen public meetings and conducted eighteen regional site visits to examine a wide range of important issues and gain input from local, state, and regional ocean communities throughout the United States.

- **Washington, D.C.**
  September 17–18, 2001: Public meeting
- **Washington, D.C.**
  November 13–14, 2001: Public meeting
- **Southeast—Delaware to Georgia**
  January 14, 2002: Regional site visits (Annapolis/ Chesapeake Bay, MD; Charleston, SC)
  January 15–16, 2002: Public meetings in Charleston, SC
- **Florida and the Caribbean**
  February 21, 2002: Regional site visits (Puerto Rico; South Florida east coast; Tampa–Sarasota, FL)
  February 22, 2002: Public meeting in St. Petersburg, FL
- **Gulf of Mexico—Alabama to Texas**
  February 19, 2002: Regional site visit (Texas A&M University, TX)
  March 6, 2002: Regional site visits (offshore New Orleans, LA; Stennis Space Center, MS)
  March 7–8, 2002: Public meetings in New Orleans, LA
- **Southwest—California**
  April 17, 2002: Regional site visits (San Diego and Monterey, CA)
  April 18–19, 2002: Public meetings in San Pedro, CA
- **Hawaii and Pacific Islands**
  May 13–14, 2002: Public meetings in Honolulu, HI
- **Northwest—Washington and Oregon**
  March 20, 2002: Regional site visit (Portland, OR)
  June 12, 2002: Regional site visits (Olympia and Seattle, WA)
  June 13–14, 2002: Public meetings in Seattle, WA
- **Northeast—New Jersey to Maine**
  July 22, 2002: Regional site visits (southern New England; New York–New Jersey; northern New England)
  July 23–24, 2002: Public meetings in Boston, MA
- **Alaska**
  August 21–22, 2002: Public meetings in Anchorage, AK
  August 23, 2002: Regional site visits (Dutch Harbor and Juneau, AK)
- **Great Lakes**
  September 24–25, 2002: Public meetings in Chicago, IL
- **Washington, D.C.**
  October 30, 2002: Public meeting
- **Washington, D.C.**
  November 22, 2002: Public meeting
- **Washington, D.C.**
  January 24, 2003: Public meeting
- **Washington, D.C.**
  April 2–3, 2003: Public meetings
- **Washington, D.C.**
  April 20, 2004: Release of the Preliminary Report
- **Washington, D.C.**
  July 22, 2004: Public meeting and approval of the draft Final Report

Table 7.1 Thirty Years of Proposals to Reorganize Federal Management of Ocean and Coastal Resources

Between 1971 and 2001, there were many congressional, presidential, and federal advisory committee proposals to improve the management of oceans and other natural resources within the federal government. Details of these proposals are shown below. The icons on the left of each proposal correspond to Figure 7.1.

- **Ash Council Proposal (1971) for a Department of Natural Resources:** The proposal of the President's Advisory Council on Executive Reorganization called for eight cabinet-level agencies, including a Department of Natural Resources, which would include an Oceanic, Atmospheric, and Earth Science Administration made up of the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey. The proposal was modified in 1972 to also address the nation's energy resources in the form of a Department of Energy and Natural Resources. Neither proposal was acted upon by Congress.

- **Moss Proposal (1973) for a Department of Natural Resources and Environment:** The proposal (S. 27) called for the creation of a new Department of Natural Resources and Environment, and transferred all of the functions of the Department of the Interior, the Water Resources Council, the Energy Research and Development Administration, the Nuclear Regulatory Commission, and the Federal Energy Administration to the new department. Various functions of the Department of Commerce (including NOAA), the Department of Defense (civil works and civil regulatory functions), the Department of Agriculture, the Department of Transportation, and the Environmental Protection Agency were also to be transferred to the new department. The proposal was introduced again in 1975 (also S. 27), but no action was taken on either proposal.

- **Dingell Proposal (1973) for a Department of Natural Resources:** The proposal (H.R. 3249) called for redesignating the Department of the Interior as the Department of Natural Resources and moving NOAA to this department. No action was taken.

- **Holifield Proposal (1973) for a Department of Energy and Natural Resources:** The proposal (H.R. 9090) called for establishing an executive department to be known as the Department of Energy and Natural Resources, with five administrations to include an Oceanic, Atmospheric, and Earth Sciences Administration. NOAA and several other agencies would be transferred to the new department, with a division of functions among the five administrations. No action was taken.

- **McDade Proposal (1974) for a Department of Natural Resources:** The proposal (H.R. 12733) called for redesignating the Department of the Interior as the Department of Natural Resources, within which a National Oceanic and Atmospheric Agency would be established. No action was taken.

- **Tunney Proposal (1975) for a Department of Natural Resources:** The proposal (S. 2726) called for establishing a new Department of Natural Resources in the executive branch, transferring all of the functions of the Department of the Interior, the Federal Energy Administration, the Federal Energy Research and Development Administration, and the Water Resources Council to the new department. Various functions of the Departments of Commerce, Defense, Agriculture, and Transportation would also be transferred to the new department. The proposal also called for the establishment of an Executive Office of Resource and Materials Policy and a Joint Congressional Committee on Energy, Materials, and the Environment. No action was taken on this proposal.

- **Ribicoff Proposal (1976) for a Department of Energy and Natural Resources:** The proposal (S. 3339) called for establishing a Department of Energy and Natural Resources to assume the nonregulatory functions of specified agencies dealing with the management and conservation of natural resources and energy research. It also proposed to establish, within the Executive Office of the President, the Natural Resources Council to facilitate communication among federal agencies responsible for natural resource management and policy and to recommend improvements in such management and policy. No action was taken.

- **Hollings Proposal (1976) for a Department of the Environment and Oceans:** The proposal (S. 3889) called for creating a Department of the Environment and Oceans, transferring into this new department existing agencies, such as the Environmental Protection Agency, NOAA, and the U.S. Coast Guard, as well as a number of services and programs from both the U.S. Army Corps of Engineers and the Department of the Interior, to deal with the nation's "common property resources." No action was taken.

Table 7.1 (continued) Thirty Years of Proposals to Reorganize Federal Management of Ocean and Coastal Resources

- **Percy Proposal (1977) for a Department of Energy Supply and Natural Resources:** The proposal (S. 591) called for reorganizing federal energy-related activities in the executive branch, temporarily establishing an Energy Policy Council and a cabinet-level Committee on Conservation to establish energy policy objectives. The proposal also called for establishing an executive Department of Energy Supply and Natural Resources, transferring energy and natural resources functions from the Department of the Interior, the Federal Energy Administration, the Energy Research and Development Administration, and the U.S. Forest Service to the new agency, and transferring additional functions to existing departments and agencies. No action was taken.

- **Brooke Proposal (1977) for a Department of Environment and Natural Resources:** The proposal (S. 1481) called for creating a Department of Environment and Natural Resources, transferring all functions of the Environmental Protection Agency and the Department of the Interior to the new department. Additional authority with respect to oceans, vessel and facility pollution control, coastal zone management, and atmospheric services was also to be transferred to the new department. No action was taken.

- **President Carter's Reorganization Proposal (1978) for a Department of Natural Resources:** The proposal called for a larger governmental reorganization, which included a new Department of Natural Resources, to address the problems being faced on a national scale in the area of natural resource development, with the mission of "managing the nation's natural resources for multiple purposes, including protection, preservation, and wise use." The composition of this new department would be a large part of the Department of the Interior, NOAA, the U.S. Forest Service, and a number of programs from the Department of Agriculture and the U.S Army Corps of Engineers' Directorate of Civil Works. Within the department would be five administrations, one of which would be the Oceanic and Atmospheric Administration to include the functions of NOAA; the Bureau of Land Management's Outer Continental Shelf (OCS) program; the U.S. Geological Survey Conservation Division's OCS program; U.S. Fish and Wildlife Service's anadromous fisheries and marine mammal programs; and the Bureau of Reclamation's Weather Modification program. This proposal was not adopted.

- **National Advisory Committee on Oceans and Atmosphere (advisory to NOAA) (1971–87):** This body, created in 1971 as a result of the Stratton Commission, made a number of recommendations for reorganization. In its 1978 and 1979 reports, the National Advisory Committee on Oceans and Atmosphere recommended that "the President and the Congress should refashion the non-military federal structure dealing with the atmosphere, coastal zone, polar regions, and the oceans…[so as to] centralize programs and federal management elements…to improve control of activities relating to economic development, environmental protection, and scientific and technological capabilities in the oceans and affecting the atmosphere." These recommendations were never implemented.

- **Scheuer Proposal (1983) for an independent NOAA:** The proposal (H.R. 3355) called for establishing NOAA as an independent agency, granting the agency coordination responsibility for oceanic and atmospheric matters, and setting forth the enforcement authority of the administration. No action was taken.

- **Forsythe Proposal (1983) for an independent NOAA:** The proposal (H.R. 3381) called for establishing NOAA as an independent agency, granting it coordination responsibility for oceanic and atmospheric matters, and setting forth the enforcement authority of the administration. The bill reported to the House from the Committee on Merchant Marine and Fisheries, but the proposal was never adopted.

- **Weicker Proposal (1987) for an independent NOAA:** The proposal (S. 821) called for establishing NOAA as an independent federal agency. No action was taken.

- **Lowry Proposal (1988) for an independent NOAA:** The proposal (H.R. 5070) called for establishing NOAA as an independent agency to administer features of U.S. policy with respect to civil oceanic, coastal, and atmospheric activities and programs. No action was taken.

- **Unsoeld Proposal (1993) for transfer of NOAA functions:** The proposal (H.R. 2761) called for transferring to the Department of the Interior the following NOAA offices and assets: the National Ocean Service, the National Marine Fisheries Service, the Office of Oceanic and Atmospheric Research, the fleet of research and survey vessels, and the NOAA Corps. It also called for the transfer of components of the National Ocean Service

Table 7.1 (continued) Thirty Years of Proposals to Reorganize Federal Management of Ocean and Coastal Resources

that carry out coastal management and assessment programs to the Environmental Protection Agency. No action was taken.

▲ **Chrysler Proposal (1995) for transfer of NOAA functions:** After the House and Senate passed the Concurrent Resolution on the Budget for Fiscal 1996 (H. Con. Res. 67), which called for eliminating the Department of Commerce as part of a congressional effort to streamline government, increase efficiency, and save taxpayer dollars, Congressman Chrysler introduced H.R. 1756, proposing to eliminate various parts of NOAA and transfer other parts of the agency to other existing agencies as part of an overall proposal to dismantle and wind up the affairs of the Department of Commerce over a period of three years. As with other proposals of this magnitude, the bill was referred to eleven committees, involving an additional ten subcommittees. Several committee members strongly dissented in the House Committee on Ways and Means report (Rept. 104-260), but no specific mention was made about NOAA. Although several subcommittees discharged or reported on the bill, no further action was taken.

● **Abraham Proposal (1995, 1997) for an independent NOAA:** The proposal (S. 929) called for re-establishing NOAA as an independent executive entity, following the abolishment of the Department of Commerce and transferring the functions from the former NOAA to a new NOAA. It also set forth other administrative changes, as well as the coordination of environmental policy. The proposal was reported out of committee to the Senate floor, but action was never taken. Variations of this proposal were introduced again in 1997 (S. 1226 and S. 1316), but no action was taken.

▲ **Royce Proposal (1997) for transfer of NOAA functions:** This proposal (H.R. 1319), similar to earlier House proposals to dismantle the Department of Commerce, called for the termination of various parts of NOAA and the transfer of other parts of the agency to other existing agencies. No action was taken.

● **Royce Proposal (1997) for an independent NOAA:** This proposal (H.R. 2667) was similar to other House proposals to terminate the Department of Commerce, except that it called for creating an independent NOAA, to which any of the former NOAA's functions that were not already terminated or transferred to other agencies by the bill would be transferred. No action was taken.

▲ **Young Proposal (1998) for transfer of certain NOAA functions:** The proposal (H.R. 4335) called for transferring to the Secretary of the Interior the functions of the Secretary of Commerce and the National Marine Fisheries Service under the Endangered Species Act of 1973. No action was taken.

● **Royce Proposal (1999) for an independent NOAA:** The proposal (H.R. 2452) called for re-establishing NOAA as an independent agency in the executive branch, under the supervision and direction of an Administrator of Oceans and Atmosphere. Certain functions would be transferred to a new NOAA: National Marine Fisheries Service functions; all functions performed by the National Ocean Service; National Environmental Satellite, Data, and Information Service functions; Office of Oceanic and Atmospheric Research functions; and National Weather Service functions. Other programs would be transferred to other existing agencies: coastal nonpoint pollution functions would be transferred to the Environmental Protection Agency; aeronautical mapping and charting functions would be transferred to the Transportation Administrative Services Center at the Department of Transportation; and functions relating to mapping, charting, and geodesy would be moved to the U.S. Army Corps of Engineers. This proposal was part of a larger proposal to terminate the Department of Commerce. It was introduced again in 2001 (H.R. 375). No action was taken on either proposal.

Table 13.1 The Leading Role of the United States in International Trade

In 2000, the United States led the world in international trade, accounting for nearly 19 percent of total world imports and 12 percent of total world exports of merchandise.

Rank in 2000	Exporters	Value (Billions of U.S. dollars)	Percent	Rank in 2000	Importers	Value (Billions of U.S. dollars)	Percent
1	United States	$781	12.3%	1	United States	$1,258	18.9%
2	Germany	$552	8.7%	2	Germany	$503	7.5%
3	Japan	$479	7.5%	3	Japan	$380	5.7%
4	France	$298	4.7%	4	United Kingdom	$337	5.1%
5	United Kingdom	$284	4.5%	5	France	$305	4.6%
6	Canada	$277	4.3%	6	Canada	$245	3.7%
7	China	$249	3.9%	7	Italy	$236	3.5%
8	Italy	$238	3.7%	8	China	$225	3.4%
9	Netherlands	$213	3.3%	9	Hong Kong	$214	3.2%
10	Hong Kong	$202	3.2%	10	Netherlands	$198	3.0%

Source: U.S. Department of Transportation. "U.S. International Trade and Freight Transportation Trends 2003." <http://www.bts.gov/publications/us_international_trade_and_freight_transportation_trends/2003/> (Accessed May 2004).

Table 23.1 The Bounty of the Sea

This table highlights some of the chemicals and biological materials isolated from marine organisms that are in use or being developed.

Application	Original Source	Status
Pharmaceuticals		
Anti-viral drugs (herpes infections)	Sponge, *Cryptotethya crypta*	Commercially available
Anti-cancer drug (non-Hodgkin's lymphoma)	Sponge, *Cryptotethya crypta*	Commercially available
Anti-cancer drug	Bryozoan, *Bugula neritina*	Phase II clinical trials
Anti-cancer drug (mitotic inhibitor)	Sea hare, *Dolabella auricularia*	Phase I clinical trials
Anti-cancer drug (tumor-cell DNA disruptor)	Ascidian, *Ecteinascidia turbinata*	Phase III clinical trials
Anti-cancer drug	Ascidian, *Aplidium albicans*	Advanced preclinical trials
Anti-cancer drug	Gastropod, *Elysia rubefescens*	Advanced preclinical trials
Anti-cancer drug (microtubule stabilizer)	Sponge, *Discodermia dissoluta*	Phase I clinical trials
Anti-cancer drug	Sponge, *Lissodendoryx sp.*	Advanced preclinical trials
Anti-cancer drug	Actinomycete, *Micromonospora marina*	Advanced preclinical trials
Anti-cancer drug (G2 checkpoint inhibitor)	Ascidian, *Didemnum granulatum*	In development
Anti-cancer drug	Sponge, *Jaspis sp.*	In development
Anti-inflammatory agent	Marine fungus	In development
Anti-fungal agent	Sponge, *Trachycladus*	In development
Anti-tuberculosis agent	Gorgonian, *Pseudopterogorgia*	In development
Anti-HIV agent	Ascidian	In development
Anti-malarial agent	Sponge, *Cymbastela*	In development
Anti-dengue virus agent	Marine crinoid	In development
Molecular Probes		
Phosphatase inhibitor	Dinoflagellate	Commercially available
Phospholipase A2 inhibitor	Sponge, *Luffariella variabilis*	Commercially available
Bioluminescent calcium indicator	Bioluminescent jellyfish, *Aequora victoria*	Commercially available
Reporter gene	Bioluminescent jellyfish, *Aequora victoria*	Commercially available
Medical Devices		
Orthopedic and cosmetic surgical implants	Coral, mollusk, echinoderm skeletons	Commercially available
Diagnostics		
Detection of endotoxins (LPS)	Horseshoe crab	Commercially available
Enzymes		
Polymerase chain-reaction enzyme	Deep-sea hydrothermal vent bacterium	Commercially available
Nutritional Supplements		
Polyunsaturated fatty acids used in food additives	Microalgae	Commercially available
Pigments		
Conjugated antibodies used in basic research and diagnostics	Red algae	Commercially available
Cosmetic Additives		
Cosmetic (anti-inflammatory)	Gorgonian, *Pseudopterogorgia elisabethae*	Commercially available

Source data combined from:

Pomponi, S. A. "The Bioprocess-technological Potential of the Sea." *Journal of Biotechnology,* 70 (1999): 5-13.
Pomponi, S. A. "The Oceans and Human Health: The Discovery and Development of Marine-derived Drugs." *Oceanography 14* (2001): 78-87.
National Institutes of Health, National Cancer Institute, Natural Products Branch, Frederick, MD.
Jordan, M.J., and L. Wilson. "Mining the Ocean's Pharmacological Riches: A Lesson from Taxol and Vinca Alkaloids." In *Marine Biotechnology in the 21st Century.* Washington, DC: National Academy Press, 2001.

Table 24.1 Federal Revenues from Offshore Mineral Development

Significant funds are paid into the U.S. Treasury each year from outer Continental Shelf (OCS) bonuses, royalties, and rents. This money is used in part to help support federal conservation programs. A small amount generated from nearshore development is shared with OCS producing states.

Year	Oil and Gas Royalites	Bonuses, Rents and Other Revenue	Total by Year
1997	$3,444,561,989	$1,814,666,046	$5,259,228,035
1998	$2,703,722,873	$1,618,914,459	$4,322,637,332
1999	$2,611,742,229	$576,646,226	$3,188,388,455
2000	$4,094,576,078	$1,115,086,564	$5,209,662,642
2001	$5,448,825,260	$1,056,762,550	$6,505,590,810
Total	$18,303,428,429	$6,182,075,845	$24,485,504,274

Source: Minerals Management Service. <http://www.mrm.mms.gov/Stats/pdfdocs/coll_off.pdf> (Accessed March 2004). Year 2001 data source: MMS Revenue Management Office, Lakewood, CO.

Table 25.1 Organizations Collecting Socioeconomic Data on the Ocean and Coasts

The organizations listed below will play key roles in creating an operational coastal and ocean economics program to support management activities.

Entity	Role
National Oceanic and Atmospheric Administration	Current economic activities are performed by NOAA's National Marine Fisheries Service to help draft and defend Fishery Management Plans and by the Coastal and Ocean Resource Economics (CORE) Program, which conducts individual studies on issues of interest, such as economic valuations of beaches or coral reefs.
Bureau of Labor Statistics	In cooperation with the states, the Bureau collects the largest amount of basic employment and wage data on the U.S. economy. These data will continue to be the fundamental elements used for monitoring the coastal and ocean economies at national, regional, and local levels.
Bureau of the Census	The Census Bureau is the other major collector of primary data on the economy, including the tabulation of population, housing, and major economic sectors.
U.S. Department of Agriculture	USDA has responsibility for the Census of Agriculture, which includes data on marine aquaculture.
Bureau of Economic Analysis	BEA uses data from other agencies to maintain the most important measure of annual economic activity: the national income and product accounts, whose best-known element is the gross domestic product. Related measures, such as the gross state product, are key to understanding regional economies.
Minerals Management Service	MMS collects and analyzes socioeconomic data to examine the impacts of outer Continental Shelf activities on natural, historical, and human resources.
U.S. Environmental Protection Agency	EPA undertakes substantial economic research in the fields of land, water, and air pollution. EPA's economic research focuses particular attention on nonmarket values, and provides an important supplement to NOAA's work in this area.
National Science Foundation	NSF supports much of the basic research in the sciences, including the social sciences. It has recently undertaken new initiatives to better integrate the natural and social sciences to improve management of the environment and natural resources.
Bureau of Transportation Statistics	BTS collects and analyzes data related to maritime trade and transportation, such as tonnage of U.S. commerce shipped and foreign vessel entries and departures at major U.S. ports.
Universities and Other Research Organizations	The majority of research on coastal and ocean economies is conducted as a cooperative arrangement between the federal government and researchers in the nation's universities and private research organizations. The interactions among federal, academic, and private researchers strengthen the quality of research by introducing multiple perspectives and organizational missions.

Table 26.1 Proposed Core Variables for the IOOS

Participants at an Ocean.US workshop recognized the following variables as important measurements to be made by the national Integrated Ocean Observing System.

Physical	Chemical	Biological
Salinity	Contaminants: water	Fish species
Water temperature	Dissolved nutrients	Fish abundance/biomass
Bathymetry	Dissolved oxygen	Zooplankton species
Sea level	Carbon: total organic	Optical properties
Directional wave spectra	Contaminants: sediments	Ocean color
Vector currents	Suspended sediments	Pathogens: water
Ice concentration	pCO_2	Phytoplankton species
Surface heat flux	Carbon: total inorganic	Zooplankton abundance
Bottom characteristics	Total nitrogen: water	Benthic abundance
Seafloor seismicity		Benthic species
Ice thickness		Mammals: abundance
Sea-surface height		Mammals: mortality events
		Bacterial biomass
		Chlorophyll-a
		Non-native species
		Phytoplankton abundance
		Phytoplankton productivity
		Wetlands: spatial extent
		Bioacoustics

Source: National Ocean Research Leadership Council. *Building Consensus: Toward an Integrated and Sustained Ocean Observing System.* Proceedings of an Ocean.US workshop. Arlington, VA, March 2002.

Table 26.2 Proposed Supplemental IOOS Variables

In addition to the ocean-specific variables listed in Table 26.1, the participants at the Ocean.US workshop highlighted a number of other variables that affect ocean and coastal environments.

Meteorological	Terrestrial	Human Health & Use
Wind vector	River discharge	Seafood contaminants
Air temperature	Groundwater discharge	Pathogens: seafood
Atmospheric pressure		Fish catch and effort
Precipitation (dry and wet)		Seafood consumption
Humidity		Beach usage
Aerosol type		
Ambient noise		
Atmospheric visibility		
Cloud cover		

Source: National Ocean Research Leadership Council. *Building Consensus: Toward an Integrated and Sustained Ocean Observing System.* Proceedings of an Ocean.US workshop. Arlington, VA, March 2002.

Table 26.3 Proposed Annual Costs for Implementation of the IOOS

Assuming start-up in fiscal year 2006, this table shows the Ocean.US cost estimates for the IOOS for each year through fiscal year 2010. These figures do not include the costs for some essential components, including satellite observations, that could add another $100–$250 million per year.

Fiscal Year	Cost
2006	$138 million (start-up costs)
2007	$260 million
2008	$385 million
2009	$480 million
2010	$500 million (fully operational system)
Total for first five years	$1.8 billion
Out years	$500 million/yr (to keep system operational, not accounting for inflation)

Source: Ocean.US, Arlington, VA.

Table 26.4 Proposed Start-up Costs for the IOOS

In fiscal year 2006, the proposed start-up cost of $138 million is based on expenditures for four distinct components.

Activity	Cost to Perform
Accelerate the implementation of the U.S. commitment to the Global Ocean Observing System	$30 million
Develop data communications and management systems for the national IOOS	$18 million
Enhance and expand existing federal observing programs	$40 million
Develop regional observing systems	$50 million
Total	**$138 million**

Source: Ocean. US. *An Integrated and Sustained Ocean Observing System (IOOS) for the United States: Design and Implementation.* Arlington, VA, May 2002.

Table 28.1 National Civilian and Military Data Centers

Listed below are the existing federal data centers, sponsoring agencies, and scientific specialties.

Name of Center	Sponsoring Agency	Specialty
National Data Centers		
Carbon Dioxide Information Analysis Center (CDIAC)	U.S. Department of Energy	Atmospheric trace gases, global carbon cycle, solar and atmospheric radiation
Center for International Earth Science Information Network (CIESIN)	Columbia University (supported by contracts from 22 nonfederal and federal agencies)	Agriculture, biodiversity, ecosystems, world resources, population, environmental assessment and health, land use and land cover change
Earth Resources Observation Systems (EROS) Data Center (EDC)	U.S. Geological Survey (USGS)	Cartographic and land remote-sensing data products
National Earthquake Information Center (NEIC)	USGS	Earthquake information, seismograms
National Climatic Data Center (NCDC)	National Oceanic and Atmospheric Administration (NOAA)	Climate, meteorology, alpine environments, ocean–atmosphere interactions, vegetation, paleoclimatology
National Geophysical Data Center (NGDC)	NOAA	Bathymetry, topography, geomagnetism, habitat, hazards, marine geophysics
National Oceanographic Data Center (NODC)	NOAA	Physical, chemical, and biological oceanographic data
National Snow and Ice Data Center (NSIDC)	University of Colorado (under cooperative agreement with NOAA)	Snow, land ice, sea ice, atmosphere, biosphere, hydrosphere
National Ice Center (NIC)	NOAA, U.S. Coast Guard, U.S. Navy	Global ice, meteorology, and oceanographic data
National Coastal Data Development Center	NOAA	Data relevant to coastal managers
National Space Science Data Center (NSSDC)	National Aeronautics and Space Administration (NASA)	Astronomy, astrophysics, solar and space physics, lunar and planetary science
Distributed Active Archive Centers (DAACs)		
Oak Ridge National Laboratory (ORNL) DAAC	NASA	Terrestrial biogeochemistry, ecosystem dynamics
Socioeconomic Data and Applications Center (SEDAC) DAAC	NASA	Population and administrative boundaries
Land Processes (EDC) DAAC	NASA	Land remote-sensing imagery, elevation, land cover
National Snow and Ice Data Center (NSIDC) DAAC	NASA	Sea ice, snow cover, ice sheet data, brightness, temperature, polar atmosphere
Goddard Space Flight Center (GSFC) DAAC	NASA	Ocean color, hydrology and precipitation, land biosphere, atmospheric dynamics, and chemistry
Langley Research Center (LaRC) DAAC	NASA	Radiation budget, clouds, aerosols, and tropospheric chemistry
Physical Oceanography (PO) DAAC	NASA	Atmospheric moisture, climatology, heat flux, ice, ocean wind, sea-surface height, temperature
Alaska Synthetic Aperture Radar (SAR) Facility DAAC	NASA	Sea ice, polar processes
Military Data Centers of Particular Importance to Ocean-related Issues		
Naval Oceanographic Office	U.S. Navy	Bathymetry, hydrography, oceanography
Naval Ice Center	U.S. Navy	Global ice, meteorology, and oceanographic data
Fleet Numerical Meteorology and Oceanography Center	U.S. Navy	Atmosphere and oceans

Source (except military centers): National Research Council. *Government Data Centers: Meeting Increasing Demand.* Washington, DC: National Academy Press, 2003.

Table 29.1 U.S. Participation in International Ocean Agreements

An examination of ocean-related international treaties and agreements reveals the wide range of international ocean policy issues, including fisheries management, species protection, vessel safety, and coral reef preservation. (Note: some of the listed agreements are not formal treaties or conventions, and thus, ratification is not applicable.)

Agreement Name	Description	Date of Agreement	Date Entered Into Force	Has the U.S. Signed?	Has the U.S. Ratified?
United Nations Convention on the Law of the Sea and Related Agreements					
United Nations Convention on the Law of the Sea (LOS)	LOS is a comprehensive regime of law and order for the world's oceans and seas. LOS is comprised of 320 articles and 9 annexes and governs all aspects of ocean space, such as delimitation, pollution control, scientific research, resource management, technology transfer, and dispute settlement.	12/10/82	11/16/94	No	No
Agreement on Part XI of the LOS Convention (Deep Seabed Mining Agreement)	Amends the LOS regime governing the deep seabed. Reflects a shift to more free-market oriented policies. Modifies decision making to reflect political and economic interests and financial contributions of states, while retaining the principle that the seabed is the "common heritage of mankind."	07/28/94	07/28/96	Yes	No
Fisheries-related Agreements					
Agreement for the Implementation of the LOS Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (FSA)	The FSA sets out principles for the conservation and management of straddling stocks and highly migratory fish on the high seas and places new regulatory authority in the hands of regional fishery bodies.	08/04/95	12/11/01	Yes	Yes
Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas	The Compliance Agreement promotes compliance by fishing vessels on the high seas with international conservation and management measures. It requires a party to make all efforts to ensure that vessels flying its flag do not engage in any activity that undermines the conservation or management of biological resources.	11/24/93	04/24/03	Yes	Yes
International Convention for the Conservation of Atlantic Tunas	The International Convention is a fishery treaty for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas.	05/14/66	03/21/69	Yes	Yes
Marine Environment					
Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention)	The London Convention regulates the disposal of waste materials into the sea. It establishes "black- and gray-lists" for wastes that can be considered for disposal at sea according to the hazard they present to the environment.	12/29/72	08/30/75	Yes	Yes

Table 29.1 (continued) U.S. Participation in International Ocean Agreements

Agreement Name	Description	Date of Agreement	Date Entered Into Force	Has the U.S. Signed?	Has the U.S. Ratified?
Marine Environment (continued)					
Protocol to the London Convention	The Protocol is more restrictive than the Convention and in principal part creates a "reverse list," which implies that all dumping is prohibited unless explicitly permitted.	11/08/96	Not in force	Yes	No
International Convention for the Prevention of Pollution from Ships (MARPOL 1973/1978)	MARPOL is concerned with the prevention of accidental and operational vessel-source pollution. It is implemented through six technical annexes. Annexes I (oil) and II (noxious liquids carried in bulk) are mandatory. Annexes III (harmful substances carried in package form), IV (sewage), V (garbage from ships), and VI (air emissions) are optional.	MARPOL			
			10/02/83	Yes	Yes
		Annexes I and II			
			10/02/83	Yes	Yes
		Annex III			
			07/01/92	Yes	Yes
		Annex IV			
			09/27/03	No	No
		Annex V			
			12/31/88	Yes	Yes
		Annex VI			
			Scheduled to enter into force 5/19/05	Yes	No
Global Plan of Action for the Protection of the Marine Environment from Land-based Activities (GPA)	The GPA is designed to be a source of conceptual and practical guidance to be drawn upon by national and/or regional authorities in devising and implementing sustained action to prevent, reduce, control, and eliminate marine degradation from land-based activities.	11/03/95	Not a treaty	Supported	Not applicable
Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)	CCAMLR established a Commission with the authority to adopt measures for the conservation of Antarctic marine living resources, including the designation of protected species, open and closed seasons and areas for harvesting, and catch limits.	04/07/80	05/20/80	Yes	Yes
Antarctic Treaty	The Treaty provides that Antarctica shall be used for peaceful purposes only and for scientific investigation and cooperation. It prohibits nuclear explosions and disposal of radioactive waste.	12/01/59	06/23/61	Yes	Yes
Protocol on Environmental Protection to the Antarctic Treaty	The Protocol provides for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems.	10/04/91	01/14/98	Yes	Yes

Table 29.1 (continued) U.S. Participation in International Ocean Agreements

Agreement Name	Description	Date of Agreement	Date Entered Into Force	Has the U.S. Signed?	Has the U.S. Ratified?
Marine Environment (continued)					
Declaration on the Establishment of the Arctic Council	The Arctic Council is a high-level forum that promotes cooperation, coordination, and interaction among Arctic states, with the involvement of Arctic indigenous communities on common issues (except military security), in particular, sustainable development and environmental protection in the Arctic.	09/19/96	Not a treaty	Supported	Not applicable
Boundary Waters Treaty	The treaty established the International Joint Commission between the United States and Canada to prevent and resolve disputes relating to the use and quality of the boundary waters (such as the Great Lakes).	01/11/1909	05/05/1910	Yes	Yes
Biodiversity and Wildlife					
International Convention for the Regulation of Whaling (ICRW)	The ICRW establishes the International Whaling Commission, which regulates commercial and aboriginal subsistence whaling.	12/02/46	11/10/48	Yes	Yes
Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (RAMSAR)	RAMSAR provides the framework for national action and international cooperation for the conservation and wise use of wetlands. The system currently includes 1368 wetland sites, totaling 120 million hectares (about 296 million acres).	02/02/71	12/21/75	Yes	Yes
Convention on International Trade in Endangered Species (CITES)	The goal of CITES is to ensure that international trade in wild animals and plants does not threaten their survival. Trade in listed species is regulated through a permit system.	03/03/73	07/01/75	Yes	Yes
Convention Concerning the Protection of the World Cultural and Natural Heritage	The World Heritage Convention defines the kind of natural or cultural sites which are eligible for inscription on the World Heritage List, and sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them.	11/23/72	12/17/75	Not applicable (UNESCO treaties are not opened for signature)	Yes

Table 30.1 Summary of Costs Associated with Recommendations of the U.S. Commission on Ocean Policy

The amounts listed below indicate the estimated new costs, in millions of dollars, for implementing the recommendations in each chapter of the report. For a number of chapters, subcategories highlight costs associated with important thematic areas; these may not correspond to a single recommendation. Items noted with a pound sign (#) include costs that are beyond the scope of the proposed Ocean Policy Trust Fund. These are typically high cost actions of broad national concern that do not apply exclusively to ocean and coastal issues. An example of this type of activity is the modernization of the nationwide wastewater and drinking water infrastructure.

	First Year Cost (millions of dollars)	Ongoing Annual Cost (millions of dollars)	Additional costs included elsewhere	Additional deferred costs
Chapter 01: Recognizing Ocean Assets and Challenges				
no recommendations	N/A	N/A		
Chapter 02: Understanding the Past to Shape a New National Ocean Policy				
no recommendations	N/A	N/A		
Chapter 03: Setting the Nation's Sights				
no recommendations	N/A	N/A		
Chapter 04: Enhancing Ocean Leadership and Coordination				
Chapter Total	$ 1.062	$ 2.124		
Chapter 05: Advancing a Regional Approach				
Chapter Total	$ 12.750	$ 48.750		■
Regional ocean councils	$ 3.000	$ 12.000		
Regional ocean information programs	$ 9.000	$ 36.000		
Regional ecosystem assessments	$ 0.750	$ 0.750		
Chapter 06: Coordinating Management in Federal Waters				
Chapter Total	$ 5.900	$ 21.800		
Development of an offshore management regime	$ 0.900	$ 1.800		
Design and implementation of marine protected areas	$ 5.000	$ 20.000		
Chapter 07: Strengthening the Federal Agency Structure				
Chapter Total	$ -	$ -		
Chapter 08: Promoting Lifelong Ocean Education				
Chapter Total	$ 25.150	$ 136.370	Ch. 25	
Support for K–12 efforts	$ 11.500	$ 16.040		
Expansion of the COSEE program	$ -	$ 29.100		
Support for undergraduate, graduate, and post-doctoral students	$ -	$ 46.000		
Increasing diversity in ocean fields	$ 1.000	$ 3.930		
Community education and outreach	$ 1.250	$ 12.500		
Other measures	$ 11.400	$ 28.800		
Chapter 09: Managing Coasts and Their Watersheds				
Chapter Total	$ 55.000	$ 155.000		
Strengthening the CZMA program	$ 35.000	$ 95.000		
Support for watershed initiatives	$ 20.000	$ 60.000		
Chapter 10: Guarding People and Property Against Natural Hazards				
Chapter Total	$ 2.500	$ 10.000		■
Chapter 11: Conserving and Restoring Coastal Habitat				
Chapter Total#	$ 40.000	$ 75.000		■

Table 30.1 (continued) **Summary of Costs Associated with Recommendations of the U.S. Commission on Ocean Policy**

	First Year Cost (millions of dollars)	Ongoing Annual Cost (millions of dollars)	Additional costs included elsewhere	Additional deferred costs
Chapter 12: Managing Sediments and Shorelines				
Chapter Total	$ 12.500	$ 72.500	Ch. 15,25	■
Chapter 13: Supporting Marine Commerce and Transportation				
Chapter Total#	$ 1.500	deferred		■
Chapter 14: Addressing Coastal Water Pollution				
Chapter Total#	$ 11.000	$ 53.900	Ch. 25	
Addressing point sources#	$ 2.000	$ 8.500	Ch. 25	
Addressing nonpoint sources#	$ 5.000	$ 29.800	Ch. 25	
Addressing atmospheric deposition	$ 4.000	$ 15.600		
Chapter 15: Creating a National Monitoring Network				
Chapter Total#	$ 10.000	$ 60.000	Ch. 27	
Chapter 16: Limiting Vessel Pollution and Improving Vessel Safety				
Chapter Total#	$ 40.000	$ 88.000	Ch. 25	■
Chapter 17: Preventing the Spread of Invasive Species				
Chapter Total	$ 31.500	$ 50.000	Ch. 8, 15, 25	■
Chapter 18: Reducing Marine Debris				
Chapter Total	$ 2.000	$ 5.000		
Chapter 19: Achieving Sustainable Fisheries				
Chapter Total	$ 29.950	$ 87.850	Ch. 25	■
Improvements to Fishery Councils, Commissions, and SSCs	$ 7.650	$ 16.550		
Enhanced cooperative research	$ 1.000	$ 10.000		
Improved fisheries enforcement	$ 6.300	$ 12.300		
Designation of essential fish habitat	$ 5.000	$ 15.000	Ch. 25	
Bycatch reduction	$ 5.000	$ 30.000		
Other measures	$ 5.000	$ 4.000		
Chapter 20: Protecting Marine Mammals and Endangered Marine Species				
Chapter Total	$ 7.000	$ 16.000	Ch. 25	
Chapter 21: Preserving Coral Reefs and Other Coral Communities				
Chapter Total	$ 7.200	$ 25.200	Ch. 25	
Chapter 22: Setting a Course for Sustainable Marine Aquaculture				
Chapter Total	$ 3.000	$ 7.000	Ch. 25	
Chapter 23: Connecting the Oceans and Human Health				
Chapter Total	$ 2.000	$ 10.000	Ch. 14, 15, 25	
Expand O&HH research initiative	$ –	$ –	Ch. 25	
Improve seafood safety and coastal water quality	$ 2.000	$ 10.000	Ch. 14,15	
Chapter 24: Managing Offshore Energy and Other Mineral Resources				
Chapter Total	$ 1.900	$ 8.800	Ch. 25	■
Offshore renewable energy	$ 0.900	$ 1.800		
Offshore non-energy mineral resources	$ 1.000	$ 7.000		

Table 30.1 (continued) Summary of Costs Associated with Recommendations of the U.S. Commission on Ocean Policy

	First Year Cost (millions of dollars)	Ongoing Annual Cost (millions of dollars)	Additional costs included elsewhere	Additional deferred costs
Chapter 25: Creating a National Strategy for Increasing Scientific Knowledge				
Chapter Total#	$ 280.000	$ 960.000	Ch. 27	
Doubling of basic and applied ocean research investments	$ 200.000	$ 650.000		
Ocean exploration initiative	$ 30.000	$ 110.000	Ch. 27	
Comprehensive national coastal and ocean maps and charts	$ 50.000	$ 200.000		
Chapter 26: Achieving a Sustained, Integrated Ocean Observing System				
Chapter Total	$ 231.000	$ 753.000		
Chapter 27: Enhancing Ocean Infrastructure and Technology Development				
Chapter Total#	$ 205.900	$ 191.800		
Science infrastructure	$ 200.000	$ 150.000		
Other ocean-related infrastructure#	#	#		
Technology development and implementation	$ 5.900	$ 41.800		
Chapter 28: Modernizing Ocean Data and Information Systems				
Chapter Total	$ 14.000	$ 24.000		■
Chapter 29: Advancing International Ocean Science and Policy				
Chapter Total	$ 3.260	$ 7.850	Ch. 25	
State Department science capacity and support	$ 1.260	$ 2.850		
International capacity building	$ 2.000	$ 5.000	Ch. 25	
Chapter 30: Funding Needs and Possible Sources				
Chapter Total	$ 500.000	$ 1,000.000		
Support for additional state, territorial, and tribal responsibilities	$ 500.000	$ 1,000.000		
GRAND TOTAL	**$ 1,536.072**	**$ 3,869.944**		