

**Calendar No. 76**

109TH CONGRESS }  
*1st Session* }

SENATE

{ REPORT  
109-60

THE OCEAN AND COASTAL OBSERVATION  
SYSTEM ACT OF 2005

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R E P O R T

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND  
TRANSPORTATION

ON

S. 361



APRIL 19, 2005.—Ordered to be printed

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED NINTH CONGRESS

FIRST SESSION

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### THE OCEAN AND COASTAL OBSERVATION SYSTEM ACT OF 2005

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Mr. STEVENS, from the Committee on Commerce, Science, and  
Transportation, submitted the following

### R E P O R T

[To accompany S. 361]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 361) to develop and maintain an integrated system of ocean and coastal observations for the Nation's coasts, oceans and Great Lakes, improve warnings of tsunamis and other natural hazards, enhance homeland security, support maritime operations, and for other purposes, having considered the same, reports favorably thereon without amendment and recommends that the bill do pass.

#### PURPOSE OF THE BILL

The purpose of S. 361, the Oceans and Coastal Observation System Act of 2005, is to establish a national, integrated ocean and coastal observing system that will collect, compile, and make available data on ocean conditions in the United States Exclusive Economic Zone, including the Great Lakes.

#### BACKGROUND AND NEEDS

Advances in ocean and coastal science, management, and use are currently limited by a lack of real-time, comprehensive, and accessible data on key environmental variables such as temperature, currents, wind speed, wave height, nutrient concentration, salinity, and dissolved oxygen. The National Oceanic and Atmospheric Administration (NOAA) has emphasized that programs throughout NOAA do not have the basic environmental data they need to create effective models or conduct analyses used in the management process. Additionally, NOAA and other agencies need long term

oceanographic databases to effectively monitor cyclical changes in the environment, such as El Niño events and global climate change.

To address these marine data and information needs, the September 2004 final report of the U.S. Commission on Ocean Policy (Commission) emphasized the need to expand and integrate ocean and coastal observation systems around the nation. In Chapter 26, "Achieving a Sustained, Integrated Ocean Observing System," the Commission offered 13 specific recommendations on developing, funding, implementing, and utilizing a nationwide ocean observation system and linking this system with other national and international environmental monitoring programs. Additionally, scores of other Commission recommendations related to ocean data and information needs also support the need for an integrated, national ocean observation system. The Commission's recommendations are in line with those of the National Ocean Research Leadership Council (NORLC), which consists of the leadership of NOAA, the Navy, the National Aeronautics and Space Administration (NASA), and the National Science Foundation (NSF). In its April 1999 report, the NORLIC called for the full implementation of an integrated and sustained ocean observing system by 2010.

Ocean and coastal data are also needed to satisfy the marine conservation, research, and management activities established in statute. A number of mandates explicitly or implicitly require routine ocean observations. For example, title V of the Marine Protection, Research, and Sanctuaries Act requires the Environmental Protection Agency and NOAA to administer a national coastal water quality monitoring program. Further, the Coastal Zone Management Act of 1972 created the National Estuarine Research Reserve System, which monitors the status and trends in coastal ecosystem health at these reserves.

Independent regional ocean observation systems, such as the Gulf of Maine Ocean Observing System (GoMOOS), the Alaska Ocean Observing System, and dozens of other current and planned systems around the United States coastline have attempted to fill these information needs on a regional basis. The GoMOOS, for example, is a prototype system of integrated ocean observing devices (buoys, radar, satellites, etc.) that are linked to provide real-time ocean data collection via the internet so that ocean prediction models and systems can be developed, a process similar to that utilized in forecasting. Other regional systems are being developed to meet local or project-based research needs, collecting different types of data in different ways and using various approaches for organizing, managing, and communicating these data.

These regional efforts have developed in an ad hoc, fragmented manner, limiting the uniformity, consistency, and compatibility of data among systems. NOAA and other users of ocean and coastal data are unable to link these systems, thereby losing a valuable opportunity to develop a comprehensive picture of coastal, ocean, and Great Lakes conditions around the nation. Regional systems are also limited by uneven and unpredictable funding, which further limits their ability to meet their own basic needs.

To overcome these challenges, regional and national ocean observation partners have worked together through Ocean.US to promote a comprehensive, integrated, and nationwide ocean and coast-

al observation system. Ocean.US is an interagency ocean observation office (with 12 Federal agencies represented) created through a memorandum of understanding by the National Oceanographic Partnership Program under which Ocean.US would coordinate the development of an operational, integrated, and sustained ocean and coastal observing system, such as that which would be established by S. 361.

The Ocean and Coastal Observation System Act of 2005 would further advance and better coordinate the ocean data collection systems around the country and formalize their long-term relationship with the Federal government. The goal of this bill is to build on the existing Federal observing backbone to establish an ocean observing program that would produce continuous and comprehensive ocean observations in the United States Exclusive Economic Zone, including the Great Lakes. The existing backbone includes NOAA's weather buoys, tide gauges, tsunami detection buoys, and real-time observing partnerships such as the Physical Oceanographic Real Time System. With continued funding and administration support, managers of the ocean and coastal observation system would (1) provide a continuous stream of near real-time data for oceanographic parameters of national priority; (2) develop standards and protocols for data transfer and archiving; and (3) improve linkages between regional observing systems to facilitate coverage around the continental United States.

An integrated and institutionalized ocean and coastal observing system would provide NOAA and its State partners with critical nationwide environmental data (including currents, nutrient flows, coastal flooding or erosion, presence of pathogens and contaminants, larval transport patterns, and other physical, chemical, and biological information) that can be utilized to improve fisheries modeling and management, coastal planning, harmful algal blooms and hypoxia management and mitigation, prediction of climate change, and other marine ecosystem activities. All of these functions support and supplement other legislative mandates established in the Coastal Zone Management Act, the Harmful Algal Bloom and Hypoxia Research and Control Act, and other legislation related to oceans, fisheries, and atmospheric science.

In addition, this national system would provide the Coast Guard with real-time information on sea-state conditions that they could use to determine when and how to conduct their many missions, and it would be especially applicable in determining how to carry out search-and-rescue activities. Observing systems would also provide the Navy with detailed observations to support core Navy missions, including development of improved sensor technologies and predictive and tactical models for littoral environments.

Information generated by this system could also be utilized in providing advanced warning of hazardous ocean and coastal conditions to state managers and potentially affected communities. For example, when a tsunami or hurricane occurs, information from tsunami detection buoys could be combined with wave height indicators and tidal gauges in the observing system to track destructive wave patterns, thereby helping communities minimize loss of life and property. Ocean and coastal data collection instruments could also better detect the marine physical, chemical, and biological conditions that are precursors to harmful algal bloom outbreaks, al-

lowing fishermen and coastal tourist destinations to anticipate possible economic impacts resulting from lost revenue. Several other types of information products generated by the ocean and coastal observing system could help coastal communities prepare for a range of potentially harmful ocean conditions and take steps to minimize their losses.

The potential applications of this system extend far beyond natural hazard notification, as it would reach multiple sectors of the general public in the form of user-friendly data products that would be easily and freely accessible to anyone seeking the data. For example, fisheries scientists and managers could use the information to predict ocean conditions linked to productivity and incorporate this information into their management system. Fishermen, sailors, and others who traverse the ocean could better predict sea conditions to know when and where to go out safely, and shippers could transport goods more efficiently. Ocean scientists and regulators could better understand, predict, and rapidly respond to the distribution and impacts of marine pollution. Educators and students could learn more about how and why oceans function as they do.

The economic impact of this ocean and coastal observing system is difficult to quantify, but studies to date indicate that it would generate significant cost savings over the life of the system. The Commission estimated that such a national, integrated system would cost \$138 million to formally establish and \$500 million to maintain annually, but these estimates are comparable to the \$700 million provided annually to the National Weather Service for similar information and products for weather and atmospheric phenomena. The economic return is significant; for example, an economic impact study on GoMOOS estimated it saved the regional economy at least \$6 for every \$1 invested. Additionally, the Commission noted that the estimated value of El Niño forecasts reaches \$1 billion annually.

Once established, this ocean and coastal observation system would help improve weather and flood forecasting, promote understanding of global change processes, enhance safety and efficiency of marine operations, facilitate research, strengthen homeland security, reduce public health risks, sustain living marine resources, evaluate effectiveness of ocean and coastal policies, and provide information to raise public awareness of oceans.

#### LEGISLATIVE HISTORY

S. 361 was introduced in the Senate by Senator Snowe on February 10, 2005, with Senators Kerry, Stevens, Inouye, and Collins as original co-sponsors. Senators Lautenberg, Sarbanes, Lott, and Cantwell subsequently co-sponsored the bill. The bill was referred to the Senate Committee on Commerce, Science, and Transportation. On March 10, 2005, the bill was considered by the Committee in open Executive Session. The Committee, without objection, ordered S. 361 be reported as introduced.

#### ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

*S. 361—Ocean and Coastal Observation Systems Act of 2005*

Summary: S. 361 would direct the National Ocean Research Leadership Council to develop and operate an integrated coastal and ocean observation system, including ocean monitoring, data analysis, public education, and research. For this purpose, the bill would authorize the appropriation of whatever amounts are necessary for fiscal years 2006 through 2010. The council, which was established in 1996, includes the National Oceanic and Atmospheric Administration (NOAA), the Navy, the National Science Foundation (NSF), the National Aeronautics and Space Administration, the U.S. Coast Guard, and other federal agencies.

The costs of carrying out the requirements of S. 361 are uncertain because the parameters of the observation system, including public education and research, have not been determined by the council and because it is difficult to predict how many of the necessary programs would be funded and implemented in the absence of this legislation. Based on available information and assuming appropriation of the necessary amounts, CBO estimates that implementing S. 361 would cost the federal government \$80 million in 2006 and \$1.8 billion over the 2006–2010 period. (An additional \$355 million would be spent in 2011). We estimate that enacting the bill would not affect direct spending or revenues.

S. 361 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimated cost to the Federal government: The estimated budgetary impact of S. 361 is shown in the following table. For this estimate, CBO assumes that the amounts necessary to carry out S. 361 will be appropriated for each fiscal year and that outlays will follow historical spending patterns for similar activities. This estimate is based on information provided by NOAA, the U.S. Commission on Ocean Policy, and other federal agencies and nonprofit organizations. The costs of this legislation fall within budget functions 050 (national defense), 250 (general science, space, and technology), 300 (natural resources and environment), and 400 (transportation).

	By fiscal year, in millions of dollars—				
	2006	2007	2008	2009	2010
CHANGES IN SPENDING SUBJECT TO APPROPRIATION					
Estimated Authorization Level .....	175	325	425	575	675
Estimated Outlays .....	80	240	390	500	610

Basis of estimate: Based on projections and timetables developed by the U.S. Commission on Ocean Policy, CBO estimates that developing the infrastructure for a fully integrated coastal and ocean observation system would require about \$200 million over the next two years and that such a system would cost about \$600 million annually to operate by 2010. Finally, based on the cost of similar ocean science programs, we estimate that an additional \$75 million annually would be needed for related research and public education, also beginning in 2006. CBO estimates that total spending to carry out these activities would be about \$80 million in fiscal year 2006 and about \$1.8 billion over the 2006–2010 period. Most of these amounts would be spent by NOAA.

CBO expects that much of the spending to develop and operate the coastal and ocean observing system could occur even in the absence of this legislation. For fiscal year 2005, Congress appropriated more than \$70 million to NOAA for activities similar to those authorized by S. 361, in addition to amounts that the agency receives each year for previously established observing and assessment projects. Other agencies such as the Navy and the NSF also received appropriations in 2005 for ongoing programs related to ocean observing.

Intergovernmental and private-sector impact: S. 361 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

Estimate prepared by: Federal costs: Deborah Reis; impact on state, local, and tribal governments: Marjorie Miller; impact on the private sector: Jean Talarico.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

#### REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported:

#### NUMBER OF PERSONS COVERED

The reported bill requires the development of a national, integrated ocean and coastal observation system that will collect, compile, and make available data on ocean conditions. It does not authorize any new regulations and therefore will not subject any individuals or businesses to new regulations.

#### ECONOMIC IMPACT

Section 7 of the reported bill authorizes “such sums as may be necessary” for the development and implementation of the national ocean and coastal observation system. Considering the potential cost savings and economic return on a fully functional ocean and coastal observation system, the funding levels ultimately enacted are not expected to have an inflationary impact on the nation’s economy.

#### PRIVACY

The reported bill will not have any adverse impact on the personal privacy of individuals.

#### PAPERWORK

S. 361 would not impose any new paperwork requirements on private citizens, businesses, or other entities that do not choose to participate in a regional ocean and coastal observation association; representatives of entities choosing to participate in these associations may be subject to some additional paperwork requirements.

## SECTION-BY-SECTION ANALYSIS

*Section 1. Short title*

This section provides the title of the bill, the “Ocean and Coastal Observation System Act of 2005”.

*Section 2. Findings and purposes*

This section provides 11 findings related to ocean and coastal observations and states, as the 4 purposes of the bill (1) developing and maintaining an integrated ocean and coastal observing system; (2) implementing related research, development, and education programs; (3) implementing data and information management systems to support collection and dissemination of collected data; and (4) establishing regional observation systems to address local needs for ocean and coastal information.

*Section 3. Definitions*

This section defines the terms “Council” as the National Ocean Research Leadership Council (NORLC); “Observation Systems”; the “National Oceanographic Partnership Program” (NOPP); and the “Interagency Program Office” as Ocean.US, described in section 4(d).

*Section 4. Integrated ocean and coastal observing system*

(a) ESTABLISHMENT.—This subsection directs the President, acting through the Council, to establish and maintain an integrated system of ocean and coastal observation, analysis and modeling. This system is to provide long-term, continuous, quality controlled data and information for the timely monitoring and prediction of changes in ocean and coastal environments that impact socio-economic and ecological systems. The purposes of the system include improving the health of the Nation’s coasts, oceans, and Great Lakes, protecting lives and livelihoods from natural and manmade hazards, supporting national defense and homeland security, understanding the effects of human activities and natural variability on oceans and coasts, measuring, explaining, and predicting environmental change, providing for the sustainable protection and use of ocean and coastal resources, providing a scientific basis for ecosystem-based management should Congress mandate it, educating the public about the oceans and Great Lakes, tracking and understanding climate change, supporting commercial use of oceans and coasts, and continuously improving ocean and coastal observation systems.

(b) SYSTEM ELEMENTS.—This subsection specifies that the observation system includes the following 5 elements: (1) a national ocean and coastal observing program, including the Nation’s contribution to the Global Earth Observing System of Systems; (2) a network of regional associations to manage regional observation programs; (3) a data management and communication system for timely integration and dissemination of data and information products; (4) a research and development program under the guidance of the Council; and (5) an outreach, education, and training program augmenting existing programs such as the National Sea Grant College Program and Center for Ocean Sciences Education Excellence.

(c) COUNCIL FUNCTIONS.—This subsection specifies that the Council shall perform oversight for design and implementation of the observing system; plan, budget, and set standards for the system in consultation with regional associations; coordinate with other Earth Observation activities; coordinate and administer research, development, and education programs in support of ocean and coastal observation; establish pilot projects to develop improved technology and methods for ocean observation; support institutional mechanisms for infrastructure capitalization; provide support for and representation on United States delegations to international meetings on ocean and coastal observation; and coordinate activities with other nations.

(d) INTERAGENCY PROGRAM OFFICE.—This subsection directs the Council to establish an Interagency Program Office, to be known as Ocean.US, responsible for observing program planning and coordination. The Interagency Program Office shall prepare annual and long-term design and implementation plans. These plans shall promote collaboration between Federal agencies and regional associations and identify a core set of variables to be measured by all systems. The office shall coordinate agency priorities and budgets, including budgets for regional associations; set and refine data and communication standards and protocols in consultation with Federal agencies and regional associations; develop a process for certification and review of regional associations; and establish an external technical committee to provide biennial review of the systems.

(e) LEAD FEDERAL AGENCY.—This subsection names NOAA as the lead Federal agency for the program and specifies that NOAA shall coordinate system implementation, operation, and improvement; establish administrative procedures for allocation of funds; implement and maintain elements of the system; migrate scientific and technological advances to operational use in the system; integrate and extend existing programs and pilot projects into the system; and certify regional associations according to subsection (f).

(f) REGIONAL ASSOCIATIONS OF OCEAN AND COASTAL OBSERVATION SYSTEMS.—This subsection describes 5 prerequisites for certification of regional associations and authorizes NOAA to carry out certification activities. In order to be eligible for certification a regional association is required to (1) demonstrate appropriate organizational structure to implement and manage an ocean and coastal observing system; (2) operate under a business plan that conforms to the standards set by the Council in subsection (d); (3) provide data and information products for multiple users in their region; (4) work with governmental entities to provide timely warnings, education, and outreach to the public; and (5) meet the certification standards approved by the Council in subsection (d).

(g) CIVIL LIABILITY.—For purposes of determining liability, any ocean and coastal observing system that is carrying out this Act and is a designated part of a certified regional association shall be considered to be part of NOAA.

#### *Section 5. Research and development and education*

This section directs the Council to establish research, development, and education programs, including National Oceanographic Partnership Program projects, on basic research to advance knowl-

edge of ocean and coastal systems and to improve operational products used in observation systems, focused research to aid understanding of the relationship between oceans and coasts and human activities, large scale computing resources and research to advance modeling of ocean and coastal processes, and public education and outreach programs on ocean and coastal environments that integrate ongoing activities such as the National Sea Grant College Program and the Center for Ocean Science Education Excellence.

*Section 6. Interagency financing*

This section specifies that agencies represented on the Council are allowed to participate in interagency financing to carry out programs under this Act.

*Section 7. Authorization of appropriations*

This section authorizes “such sums as may be necessary” for implementing the systems and programs authorized by this Act during fiscal years 2006 through 2010. This section further specifies that at least 50 percent of sums appropriated for implementation of the observation system be allocated to certified regional associations and that all appropriated funds be available until expended.

*Section 8. Reporting requirement*

This section requires the President, acting through the Council, to report on activities, evaluation, and recommendations of programs established in sections 4 and 5 no later than March 31, 2010.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee states that the bill as reported would make no change to existing law.