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## **National Oceanic and Atmospheric Administration (NOAA): Resources for Responding to Disasters and its Role in Homeland Security**

August 18, 2005

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# National Oceanic and Atmospheric Administration (NOAA): Resources for Responding to Disasters and Its Role in Homeland Security

## Summary

After the September 11, 2001 terrorist attacks, officials at the National Oceanic and Atmospheric Administration (NOAA) exercised their emergency response capabilities to serve a broader national anti-terrorist and homeland security effort. To justify their efforts, they cited statutory authority and functions that aid in preparing for and responding to possible terrorists acts in the marine environment and airborne (chemical/biological) threats. NOAA's Administrator stated that scientific expertise, remote sensing technologies, advanced systems for severe weather forecast and warning, the NOAA Corps of Commissioned Officers, maritime law enforcement agents, and the NOAA Fleet of marine research and survey vessels and aircraft put the agency at the forefront of national efforts to prepare for, respond to, and recover from terrorist acts.

Congress is considering legislation to establish a single permanent authority for NOAA, which is currently authorized by over 200 individual laws. Proponents of a single authority, or a NOAA *organic act*, have suggested that dedicated emergency funds, in addition to annual appropriations, could help NOAA respond more effectively to terrorist acts and other disasters without impeding its operations or interrupting scientific research activities. Opponents of a dedicated funding stream say that reprogramming budget authority, when needed, has worked thus far. This report will be updated as warranted.

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# National Oceanic and Atmospheric Administration (NOAA): Resources for Responding to Disasters and its Role in Homeland Security

## Introduction

NOAA operates under statutory authority to warn the public about severe weather, hazardous atmospheric conditions, and unsafe seas.<sup>1</sup> The duties NOAA undertakes as part of its routine mission include: (1) protecting the public from disasters, (2) maintaining a healthy marine environment for humans and other living creatures, and (3) supporting a robust U.S. economy by providing weather services. Although these duties may not appear to relate to combating terrorism, many experts say that they are vital for effective homeland security, nonetheless. If the United States were confronted with contamination of the atmosphere or marine environments, NOAA would be among those federal agencies participating in emergency response and recovery. NOAA's weather operations and air quality research would be important in forecasting the dispersion of microbes or lethal gases released in the atmosphere, whether accidental or intentional. The NOAA Commissioned Officer Corps (NOAA Corps), along with personnel from other federal agencies, conducts search and rescue for victims of marine and air disasters and provides environmental hazard response and recovery services. After the 2001 terrorist attacks on New York City and Washington, DC, Congress requested that NOAA provide plans to strengthen efforts aimed at identifying possible maritime security threats and to explain how such efforts would coordinate with the nascent White House Office of Homeland Security.

The Federal Emergency Management Agency (FEMA) of the Emergency Preparedness and Response Directorate (EPRD) of the Department of Homeland Security (DHS), the Coast Guard, the Environmental Protection Agency (EPA), the Department of Defense (DOD), NOAA, and state and local emergency managers perform interrelated roles in preparing for and responding to terrorist acts. NOAA's role has not always been evident, however.<sup>2</sup>

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<sup>1</sup> 51<sup>st</sup> Cong., 1<sup>st</sup> sess., "An act to...transfer the Weather Service to the Department of Agriculture," Oct. 1, 1890 at [<http://www.history.noaa.gov/legacy/act4.html>], accessed July 28, 2005.

<sup>2</sup> For more information on FEMA's response to terrorism and disasters see CRS Report RS22023, *Organization and Mission of the Emergency Preparedness and Response Directorate: Issues During the 109th Congress*, by Keith A. Bea.

NOAA stakeholders such as the fishery industry, the scientific research community, state and local coastal protection agencies, and national transportation network officials have encouraged Members of the 109<sup>th</sup> Congress to consider the need for dedicated funding in light of current agency programs, operations, and resources that assist in: (1) identifying and warning of the presence of terrorist acts, (2) searching for and rescuing victims, and (3) prosecuting terrorist activities in U.S. navigable waterways.

## **NOAA and Disaster Detection, Preparedness, and Mitigation**

Part of NOAA's mission is regulating and supporting the U.S. maritime economy, as protector of the health of the marine environment, performer of research and development, and promoter of commercial marine resources. NOAA provides the tools and regulatory direction to assist commercial entities that extract food, chemicals, minerals, and biological raw materials from the ocean. It aids industries that transport goods and people by water and air and regulates aspects of marine recreational safety. Through the National Weather Service, NOAA is the lead federal agency for collecting meteorological data and issuing severe weather forecasts and warnings. The agency's internationally renowned atmospheric scientists research and assess aspects of air quality, the physical dynamics of weather and climate, and conditions in and characteristics of the upper reaches of Earth's atmosphere.

**NOAA Research and Satellite Observations.** NOAA's National Environmental Satellite Data and Information Service (NESDIS) operates two geostationary satellites and a suite of four polar orbiting remote sensing environmental satellites. These satellites carry instruments used for environmental observation, search and rescue, and disaster assessment. They relay atmospheric, oceanic, land-based environmental, and weather data to NOAA facilities that perform scientific analysis and archive them. Satellite data and imagery can be used to detect, track, and provide warning to the public about potentially hazardous environmental situations. In FY2002, Congress provided NESDIS with emergency supplemental appropriations to improve security of data management operations, physical security at satellite control facilities, and critical back up systems and to enforce remote sensing data-licensing rules which control access to and dissemination of data.<sup>3</sup>

**Weather Service Operations.** U.S. Department of Homeland Security (DHS) officials have speculated that disruptive terrorist acts could be perpetrated in or enabled by adverse meteorological conditions, e.g. blizzards, hurricanes, floods, and drought. NOAA's National Weather Service (NWS) forecasts and warns of severe weather and natural disasters for public safety and to support an uninterrupted flow of U.S. commerce. NOAA climate services are provided for U.S. agricultural production and long-term planning and development. The NWS Weather Radio (NWR) network served as the backbone for developing a national emergency communications "NOAA Weather All Hazards Network." DHS officials say the new

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<sup>3</sup> P.L. 109-13, Emergency Supplemental Appropriations for FY2005, included funding for U.S. tsunami early warning system upgrades. See also CRS Report RS22109, *National Oceanic and Atmospheric Administration (NOAA) Budget for FY2006: President's Request, Congressional Appropriations, and Related Issues*.

system will alert the public to take evasive action if any kind of disaster might strike.<sup>4</sup> Also, NWS forecasts weather conditions for U.S. military operations, commercial aviation, the maritime industry, and marine recreation. The NWS U.S. Weather Research Program has devised computer-based models for meteorologists to improve forecasting skills, for developing flood warning systems, and for tracking hurricane landfall and moisture intensity.

**Atmospheric Dispersion.** NOAA's Air Quality program operates air sensing instruments that can identify the presence of airborne chemical and biological releases, as well as the quality of the air generally. These data are relayed to NOAA facilities and other federal agency programs for analysis. NOAA's resident atmospheric scientists forecast the potential dispersion of airborne contaminants.<sup>5</sup> The NWS, EPA, DHS (FEMA), DOD, and the National Security Administration will collaborate on a coordinated response if there are chemical or biological releases into the atmosphere.

**Commerce and Transportation.** DHS officials say that the consequences of the events of September 11, 2001 can be seen in the long-term depression of international financial markets and short-term paralysis of commercial aviation. Leaders of commerce have maintained that NOAA weather and climate services are vital for sustaining a functional U.S. economy, which is highly dependent upon a mobile transportation network, whether in adverse weather or during natural or terrorist-induced disasters. The NWS works with the Department of Transportation (DOT) and U.S. business and industry representatives through the Department of Commerce's Office of the Federal Coordinator for Meteorological Services and Supporting Research by conducting logistical exercises for planning and responding to various situations that affect the mobility of major transport systems such as ships, motor carriers, railroads, and aircraft.<sup>6</sup> NWS meteorologists work with state and local emergency managers to identify transportation corridors for evacuating populations rapidly and moving goods during extreme weather. Also, NWS assists DOT in guiding air, land, and water transport away from hazardous environmental conditions. It also assists FEMA with minimizing disruption of lifelines and critical services, e.g., hospitals, fire, police, and with guiding first responders to where they are needed most.

**International Weather Programs.** The NOAA Center(s) for Environmental Prediction (NCEPs) assimilate complex numerical weather data collected globally. (One module of NCEP is the National Hurricane Center/Tropical Prediction Center.) Pending analysis of those data, NCEP generates "central forecast guidance" and issues warnings of rapidly changing atmospheric conditions over large geographic

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<sup>4</sup> "NOAA Weather Radio" at [<http://www.nws.noaa.gov/nwr>], accessed July 28, 2005.

<sup>5</sup> Darak, Ed, "Another Face of War: Weathering the New Agents of Destruction." *Weatherwise*, May/June 2005: 23-26.

<sup>6</sup> U.S. Dept. of Commerce, NOAA, Office of the Federal Coordinator for Meteorological Services and Supporting Research, *Weather Information for Surface Transport*, Report FCM-R18-2002 (Washington, DC: Dec. 2002). NOAA's statutory responsibilities for aviation forecasting are governed by 44 U.S.C. §44270.

regions.<sup>7</sup> Linked by telecommunications with international weather bureaus, NCEP meteorologists disseminate weather forecasts globally in near real-time.<sup>8</sup> NCEP also assists the “U.S. National Hazards Information Strategy” and the Global Disaster Information Network (GDIN), managed by NESDIS and its partners, the U.S. Geological Survey (USGS), DOD, and DHS.<sup>9</sup>

**U.S. Port Security.** The NOAA National Ocean Service (NOS) operates a real-time, computer modeling system, NOAA PORTS (physical oceanographic real time system), which can emulate the physical environment in and around several major U.S. seaports.<sup>10</sup> Integrated with NOS tidal gauge and water-level networks, NOAA PORTS contributes to the safe conduct of marine transportation in harbors and coastal areas. These tidal gauges can also detect unusual oceanic disturbances, such as underwater explosions or rapid sea level change. NOS considers tidal gauges useful for detecting possible tsunamis.<sup>11</sup>

## **NOAA and Disaster Response and Recovery**

FEMA, NOAA, and global emergency agencies work closely together in responding to natural- and human-induced disasters.<sup>12</sup> As part of DHS, FEMA leads the U.S. response for natural and man-made environmental disasters which can be accidental or intentional.<sup>13</sup> DHS experts say that rapid and effective emergency response after a natural disaster or terrorist attack can be critical to saving lives.

**The NOS Office of Response and Recovery (OR&R).** NOAA’s role in disaster response is to provide the scientific expertise for confronting a possible situation, assessing the consequences, and helping marine ecosystems recover. Marine and coastal area disasters can result from accidents, such as oil tanker spills, or intentional human acts. The NOS Office of Response and Recovery (OR&R) has confronted maritime disasters that have threatened or harmed humans, wildlife, and

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<sup>7</sup> For further information on NCEP, see [<http://wwwt.ncep.noaa.gov>], accessed July 28, 2005.

<sup>8</sup> Department of Commerce, NOAA, Office of the Federal Coordinator for Meteorology, *The Federal Plan for Meteorological Services and Supporting Research*, Appendix B: “World Weather Program,” FCM P1-2004, p. 223-228 (Washington, DC: October 2004).

<sup>9</sup> See “US Disaster Information Network” at [<http://www.us-din.org>], accessed July 28, 2005.

<sup>10</sup> The National Ocean Service’s Physical Oceanographic Real-Time System® website is found at [<http://www.co-ops.nos.noaa.gov/>], accessed July 28, 2005.

<sup>11</sup> For information on U.S. tsunami early warning capabilities, see CRS Report RL32739, *Tsunamis: Monitoring, Detection, and Early Warning Systems*, by Wayne A. Morrissey.

<sup>12</sup> FEMA was created by former President Carter under Executive Order #12148. It is authorized by Title II of the Stafford Act (42 U.S.C. §5121). FEMA is tasked with responding to, planning for, recovering from and mitigating against disasters.

<sup>13</sup> The former independent agency became part of the Department of Homeland Security in March 2003 (Sect. 503, P.L. 107-296; 6 U.S.C. §313).

coastal and estuarine habitats. The OR&R is authorized by CERCLA and other statutes to respond to such disasters.<sup>14</sup>

**Search and Rescue.** NOAA's Search and Rescue Satellite-Aided Tracking (SARSAT) program began in 1982 as the U.S. contribution to an international, collaborative operation for search and rescue called "COSPAS." Today, COSPAS-SARSAT, so named because NOAA satellites carry payloads of other foreign governments, assists in locating downed aircraft and distressed or sunken marine vessels, rescues those stranded or missing on land or at sea, and recovers lost property.<sup>15</sup> NOAA was designated lead agency for COSPAS in 1988. NESDIS personnel operate SARSAT mission control where search and rescue is coordinated and orders dispatched. Currently, there are seven SARSAT ground receiving sites that "listen" for distress signals on dedicated radio frequencies around the globe.<sup>16</sup>

**The NOAA Corps.** Founded in 1970, NOAA's Commissioned Officers Corps (NOAA Corps) evolved from the U.S. Coastal Geodetic Survey that was established by President Thomas Jefferson in 1807.<sup>17</sup> Operating under NOAA's Office of Marine and Aviation Operations, the modern NOAA Corps is comprised of 299 research scientists who are aircraft and marine fleet pilots, divers, and engineers. Some are assigned to perform marine services for NOS navigation programs, such as nautical charting and hydrological surveys on inland navigable waterways, along coasts, and in the open ocean. The NOAA Corps has been a "first responder" to some marine and air disasters in U.S. coastal regions while operating in the vicinity of the disaster. It participated in rescue and recovery operations after the downing of TWA Flight 800 out of New York City in 1996 and the disappearance of the plane piloted by John F. Kennedy, Jr. off Cape Cod, MA in 2001.

**The NOAA Fleet.** NOAA has a fleet of 18 active marine vessels which serve as platforms for collecting data used for NOS hydrological surveys, NOAA scientific research, and NOAA Fisheries regulatory enforcement. Its air fleet consists of 13 aircraft, including two P-3 Orion hurricane-hunters, a Gulf Stream IV jet, and a sea plane, among others. The air fleet is used predominantly for meteorological operations and atmospheric research, but on occasion for search and rescue. NOAA also has two submersible vessels which are used for deep ocean exploration and sometimes to locate and salvage submerged wreckage.<sup>18</sup>

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<sup>14</sup> The Comprehensive Environmental Response Compensation and Liability Act of 1980 (42 U.S.C. § 9601 et seq).

<sup>15</sup> COSPAS includes four countries: the United States, Canada, France and Russia.

<sup>16</sup> U.S. Department of Commerce, "NOAA Satellites Aid in 36 U.S. Rescues Through April 2005," *NOAA News*, May 5, 2005, at [<http://www.sarsat.noaa.gov>], accessed July 28, 2005.

<sup>17</sup> The NOAA Corps has a website at [<http://www.noaacorps.noaa.gov/about/about.html>], accessed July 28, 2005.

<sup>18</sup> U.S. Department of Commerce, NOAA, *FY2006 Budget Summary*, Feb 7, 2005, pp. 64-65.



## Emergency Response Funding

NOAA officials have argued for a dedicated source of annual funding for emergency training, planning, and coordinating joint response strategies with other federal agencies. In lieu of a separate funding stream, some NOAA officials have suggested funding provided through FEMA's Disaster Relief Fund to reimburse the agency for infrequent services. NOAA lacks authority to receive repayments for services, except in cases specified in law. Government officials concerned with reducing federal spending have argued that NOAA provision of emergency assistance has been successful through reprogramming of annual appropriations in the past. However, those who argue for a dedicated source of funding attribute former "successes" in large part to generous presidential budgets and appropriations during historical periods of sustained economic growth and budget surplus and also to emergency supplemental appropriations.

In the aftermath of September 11, 2001, NOAA provided activities and services for purposes not previously authorized by Congress. These included: (1) NESDIS and NOS collaboration to generate electronic coastal ocean maps to aid in U.S. port security; (2) use of NESDIS satellite imagery and aerial photography to assess damage and assist emergency managers in evacuating populations in and around lower Manhattan; (3) special NWS forecasts of atmospheric conditions affecting rescue and recovery efforts at the Pentagon and in Lower Manhattan; and (4) reassignment of NOAA Fisheries Office of Law Enforcement (OLE) personnel deputized by the FBI and U.S. Marshals to conduct criminal investigations, recovery operations, off-shore security detail in the northeast, and to serve as marshals on civilian aircraft.<sup>19</sup>

NOAA officials at the National Data Buoy Center (NBDC) have stated that one of the greatest consequences for agency operations, after the terrorist attacks, was its loss of shared activities with the U.S. Coast Guard. Then an agency of DOT, the Coast Guard used to assist NOAA by transporting marine data buoys great distances for servicing or deployment. The primary concern of NBDC being the potential deterioration of the NOAA buoy network and the loss of important environmental data, officials stated that NOAA would need to make up the difference in funding, manpower, and equipment which are required to operate the program as Congress intended. Prior to September 11, 2001, NOAA's Acting Administrator testified to the importance of the Coast Guard to the marine program, "The deployment schedule for a buoy varies from 1 — 2 years and can depend on the type of buoy, availability of a Coast Guard ship to deliver the buoy, production capacity at the National Data Buoy Center, and marine weather in the deployment area."<sup>20</sup>

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<sup>19</sup> Donald Wemley, NOAA, Office of Climate, Water, and Weather Services, "NOAA's Capabilities to Support Homeland Security," presentation to the Federal Committee on Meteorological Services and Supporting Research (Silver Spring, MD: Nov. 16, 2001).

<sup>20</sup> 107<sup>th</sup> Cong., U.S. Senate Committee on Commerce, Science, and Transportation, "Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations for Fiscal Year 2002" (S.Hrg. 107-325, May 15, 2001, p. 197). Oral testimony of Scott B. Gudes, Acting Administrator for NOAA.

## Conclusion

NOAA has provided various resources for preparing for, detecting, and responding to disasters, natural or otherwise, and terrorist attacks. Looking to the future, some NOAA officials are concerned that reductions in discretionary funding could not only hinder the agency's homeland security role, as envisioned by the Bush Administration, but also customary programs and activities. Recent budget authority provided to NOAA for homeland security has been provided through emergency appropriations or by reprogramming the agency's budgets. However, emergency appropriations funded activities can also be victim to changing budget priorities, if not eventually "annualized" (adopted in the agency's regular budget). In addition, NOAA officials venture that programs and activities that are not authorized by Congress are likely targets of discretionary funding cuts. When P.L. 105-567, the NOAA Authorization Act of 1992, was enacted on October 29, 1992, it was the last time the agency was "authorized as a whole."<sup>21</sup> Finally, lacking necessary tools, facilities, and personnel to sustain emergency preparedness and response-related programs, NOAA officials are concerned that a resulting need to reprogram funds could compromise the agency's traditional research and operations mission that are not related to homeland security.

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<sup>21</sup> Actually, the law authorized most programs within jurisdiction of the House and Senate science committee. See CRS report RS22109, *National Oceanic and Atmospheric Administration (NOAA) Budget for FY2006: President's Request, Congressional Appropriations, and Related Issues*.