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110TH CONGRESS
1ST SESSION

H. R. 1832

To establish the National Hurricane Research Initiative to improve hurricane preparedness, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 29, 2007

Ms. ROS-LEHTINEN (for herself, Mr. BOYD of Florida, Mr. BILIRAKIS, Mr. MACK, Mr. BUCHANAN, Mr. KELLER of Florida, and Mr. LINCOLN DIAZ-BALART of Florida) introduced the following bill; which was referred to the Committee on Science and Technology

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A BILL

To establish the National Hurricane Research Initiative to improve hurricane preparedness, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''National Hurricane Research Initiative Act of 2007''.

SEC. 2. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term ''Director'' means the Director of the National Science Foundation.

(2) UNDER SECRETARY.—The term ''Under Secretary'' means the Under Secretary for Oceans and Atmosphere of the Department of Commerce.

SEC. 3. NATIONAL HURRICANE RESEARCH INITIATIVE.

(a) REQUIREMENT TO ESTABLISH.—The Under Secretary and the Director shall establish an initiative known as the National Hurricane Research Initiative for the purposes described in subsection (b).

(b) PURPOSES.—The purposes of the National Hurricane Research Initiative shall be to set research objectives based on the findings of the January 12, 2007, National Science Board report entitled ''Hurricane Warning: The Critical Need for National Hurricane Initiative''—

(1) to make recommendations to the National Science Board based on such research;

(2) to assemble the expertise of the science and engineering capabilities of the United States through a multi-agency effort that is focused on—

(A) improving a better understanding of hurricane prediction, intensity, and mitigation on coastal populations;

(B) infrastructure; and

(C) the natural environment; and

(3) to make grants to eligible entities to carry out research in the following areas:

(A) PREDICTING HURRICANE INTENSIFICATION.—Research to improve understanding of—

(i) rapid intensity change in storms, relationships among storm size, motion, and intensity;

(ii) the internal dynamics of hurricanes; and

(iii) the manner in which hurricanes interact with the environment.

(B) UNDERSTANDING AIR-SEA INTERACTIONS.—Research to improve understanding of theories of air-sea interaction that are common to the strong wind and high wave conditions associated with hurricanes, and cases in which the air-sea interface beneath hurricanes vanishes and is replaced by an emulsion, including theoretical theories, observational theories, and modeling.

(C) PREDICTING STORM SURGE, RAINFALL, AND INLAND FLOODING FROM HURRICANES AND TROPICAL STORMS.—Research to understand and model rainfall and flooding from hurricanes, including probabilistic modeling and mapping of storm surge risk.

(D) HURRICANE MODIFICATION.—Basic research for modifying hurricanes to reduce the intensity or alter the movement of hurricanes by human intervention, including research to improve understanding of the potential effects of hurricane modification on precipitation and fresh water supply, as well as on climate.

(E) IMPROVED OBSERVATION OF HURRICANES AND TROPICAL STORMS.—Research to improve hurricane and tropical storm observation through mobile radars, Global Positioning System technology, unmanned aerial vehicles, and ground-based and aerial wireless sensors to improve understanding of the complex nature of storms.

(F) ASSESSING VULNERABLE INFRASTRUCTURE.—Research to develop a national engineering assessment of coastal infrastructure, including infrastructure related to levees, seawalls, drainage systems, bridges, water and sewage utilities, power, and communications, to determine the level of vulnerability of such infrastructure to damage from a hurricane.

(G) INTERACTION OF HURRICANES WITH ENGINEERED STRUCTURES.—Research to im-

prove understanding of the impacts of hurricanes and tropical storms on buildings, structures, and housing combined with modeling essential for guiding the creation of improved building designs and construction codes in locations particularly vulnerable to hurricanes.

(H) RELATIONSHIP BETWEEN HURRICANES, CLIMATE, AND NATURAL ECOSYSTEMS.—Research to improve the understanding of the complex relationships between hurricanes and climate, including research to determine the most effective methods to use observational information to examine the impacts on ecosystems over long and short periods of time.

(I) TECHNOLOGIES FOR DISASTER RESPONSE AND RECOVERY.—Research to improve emergency communication networks for government agencies and nongovernment entities and to improve communications between such networks during disaster response and recovery, including cyber-security during disaster situations and the ability to improve damage assessments during storms.

(J) EVACUATION PLANNING.—Research to improve the manner in which hurricane-related information is provided to, and utilized by, the public and government officials, including research to assist officials of State or local government in determining the circumstances in which evacuations are required and in carrying out such evacuations.

(K) COMPUTATIONAL CAPABILITY.—Research to improve understanding of the efficient utility of multiple models requiring sharing and inter-operability of databases, computing environments, networks, visualization tools, and analytic systems beyond what is currently available for transitioning hurricane research assets into operational practice and to provide access to robust computational facilities beyond the facilities normally accessible by the civilian research community for the hurricane research enterprise, including data acquisition and modeling capability during hurricane events.

(c) COOPERATION WITH OTHER AGENCIES.—The Under Secretary and the Director shall cooperate with the head of each appropriate Federal agency or department, research institute, university, and disaster-response or

nongovernmental organization to utilize the expertise and capabilities of such entity to carry out the purposes of the National Hurricane Research Initiative, including cooperation with the heads of the following entities:

(1) The National Aeronautics and Space Administration.

(2) The National Institute of Standards and Technology.

(3) The Department of Homeland Security, including the Federal Emergency Management Agency.

(4) The Department of Energy.

(5) The Defense Advanced Research Project Agency.

(6) The Environmental Protection Agency.

(7) The United States Geological Survey.

(8) The Army Corps of Engineers.

(d) COORDINATION.—The White House Office of Science and Technology Policy, through the National Science and Technology Council, shall coordinate the activities carried out by the United States related to the National Hurricane Research Initiative as a formal program with a well defined organizational structure and execution plan.

(e) GRANTS.—

(1) AUTHORITY.—The Under Secretary and the Director may award grants to appropriate government agencies or departments or nongovernmental entities to carry out the purposes described in subsection (b).

(2) BEST PRACTICES.—The Under Secretary and the Director shall develop and make available to the public a description of best practices to be used to carry out a project with a grant awarded under this subsection.

(f) RESEARCH SEMINARS AND FORUMS.—The Under Secretary and the Director shall carry out a series of national seminars and forums that assemble a broad collection of scientific disciplines to direct researchers to work collaboratively to carry out the purposes described in subsection (b).

(g) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $285,000,000 for each of the fiscal years 2008 through 2018 to carry out this section.

SEC. 4. NATIONAL INFRASTRUCTURE DATABASE.

(a) REQUIREMENT TO ESTABLISH.—The Under Secretary and the Director shall establish a National Infrastructure Database for the purposes of—

(1) cataloging and characterizing the physical, social, and natural infrastructure in order to provide a baseline for developing standards, measuring modification, and determining loss;

(2) providing information to Federal, State, and local government officials to improve information public policy related to hurricanes and tropical storms; and

(3) providing data to researchers to improve their ability to measure hurricane impacts, separate such impacts from other effects, both natural and anthropogenic, make effective recommendations for improved building codes and urban planning practices, and develop effective procedures for responding to infrastructure disruption.

(b) DATABASE REQUIREMENTS.—The National Infrastructure Database shall be a virtual, cyber environment that uses existing capabilities and facilities, and establishes new capabilities and facilities, as appropriate, to provide an interoperable environment and the necessary metadata and other resources needed by users of that Database.

(c) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $20,000,000 for each of the fiscal years 2008 through 2018 to carry out this section.

SEC. 5. NATIONAL HURRICANE RESEARCH MODEL.

(a) REQUIREMENT TO ESTABLISH.—The Under Secretary and the Director shall develop a National Hurricane Research Model to conduct integrative research and to facilitate the transfer of research knowledge to operational applications, including linking relevant theoretical, physical, and computational models from atmospheric, oceanic, economic, sociological, engineered infrastructure, and ecologic fields, conducting experimental research to understand the extensive complexities of hurricanes, and obtaining measurable results in a comprehensive framework suitable for testing end-to-end integrative systems.

(b) SYSTEM REQUIREMENTS.—The National Hurricane Research Model shall be a physically distributed and highly coordinated working environment in which research from the National Hurricane Research Initiative can be experimentally substantiated using suitable quantitative metrics, and where a culture of interaction and collaboration can further be promoted, including in the areas of—

(1) facilities and cyberinfrastructure;

(2) software integration; and

(3) fixed mobile data collection platforms and data provisioning systems.

(c) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $130,000,000 for each of

the fiscal years 2008 through 2018 to carry out this section.

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