I

117TH CONGRESS
1ST SESSION

H. R. 1438

To establish a national integrated flood information system within the National Oceanic and Atmospheric Administration, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 26, 2021

Ms. SHERRILL (for herself, Ms. ROSS, Ms. NORTON, Mr. PASCRELL, Ms. JOHNSON of Texas, Mr. CRIST, Mr. FITZPATRICK, Mr. SIRES, and Ms. MOORE of Wisconsin) introduced the following bill; which was referred to the Committee on Science, Space, and Technology, and in addition to the Committees on Natural Resources, and Transportation and Infrastructure, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

---

A BILL

To establish a national integrated flood information system within the National Oceanic and Atmospheric Administration, 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; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''Flood Level Observation, Operations, and Decision Support Act'' or the ''FLOODS Act''.

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

SEC. 2. DEFINITIONS.

In this Act:

(1) STATE.—The term ''State'' means each State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Virgin Islands of the United States, and any other territory or possession of the United States.

(2) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the National Oceanic and Atmospheric Administration.

SEC. 3. NATIONAL INTEGRATED FLOOD INFORMATION SYSTEM.

(a) IN GENERAL.—The Administrator shall establish a system, to be known as the ''National Integrated Flood Information System'', to better inform and provide for more timely decision making to reduce flood-related effects and costs.

(b) SYSTEM FUNCTIONS.—The Administrator, through the National Integrated Flood Information System, shall—

(1) provide an effective flood early warning system that—

(A) collects and integrates information on the key indicators of floods and flood impacts, including streamflow, reservoir release and diversion, precipitation, soil moisture, snow water equivalent, land cover, and evaporative demand;

(B) makes usable, reliable, and timely forecasts of floods;

(C) assesses the severity of flood conditions and effects;

(D) issues flood watches and warnings when necessary;

(E) provides information described in subparagraph (A), forecasts described in subparagraph (B), and assessments described in sub-

paragraph (C) at the national, regional, and local levels, as appropriate; and

(F) communicates flood forecasts, flood conditions, and flood impacts to public and private entities engaged in flood planning, preparedness, response, and post-event flood extent including—

(i) decision makers at the Federal, State, local, and Tribal levels of government;

(ii) the private sector; and

(iii) the public;

(2) provide timely data, information, and products that reflect differences in flood conditions among localities, regions, watersheds, and States;

(3) coordinate and integrate, through interagency agreements as practicable, Federal research and monitoring in support of the flood early warning information system provided under paragraph (1);

(4) use existing forecasting and assessment programs and partnerships;

(5) make improvements in seasonal precipitation and temperature, subseasonal precipitation and temperature, and flood water prediction; and

(6) continue ongoing research and monitoring activities relating to floods, including research activities relating to—

(A) the prediction, length, severity, and impacts of floods and improvement of the accuracy, timing, and specificity of flash flood warnings;

(B) the role of extreme weather events and climate variability in floods; and

(C) how water travels over and through surfaces.

(c) PARTNERSHIPS.—The Administrator, through the National Integrated Flood Information System, may—

(1) engage with the private sector to improve flood monitoring, forecasts, land and topography data, and communication, if the Administrator determines that such engagement is appropriate, cost effective, and beneficial to the public and decision makers described in subsection (b)(1)(F)(i);

(2) facilitate the development of 1 or more academic cooperative partnerships to assist in carrying out the functions of the National Integrated Flood Information System described in subsection (b);

(3) use and support monitoring by citizen scientists, including by developing best practices to fa-

cilitate maximum data integration, as the Administrator considers appropriate;

(4) engage with, and leverage the resources of, entities within the National Oceanic and Atmospheric Administration in existence as of the date of the enactment of this Act, such as the National Weather Service with respect to forecast and warning functions, the National Integrated Drought Information System, the Regional Climate Center, and the National Mesonet Program, to improve coordination of water monitoring, forecasting, and management; and

(5) engage with and support water monitoring by the United States Geological Survey—

(A) to improve the availability and continuity of streamflow data at critical locations through the deployment of Rapid Deployment Gages and the flood-hardening of at-risk streamflow gages; and

(B) to increase storm surge monitoring data through the deployment of additional storm surge sensors.

(d) CONSULTATION.—In developing and maintaining the National Integrated Flood Information System, the Administrator shall consult with relevant Federal, State,

local, and Tribal government agencies, research institutions, and the private sector.

(e) COOPERATION FROM OTHER FEDERAL AGENCIES.—Each Federal agency shall cooperate as appropriate with the Administrator in carrying out this section.

SEC. 4. OBSERVATIONS AND MODELING FOR TOTAL WATER PREDICTION.

(a) PARTNERSHIPS.—

(1) IN GENERAL.—The Administrator shall establish partnerships with 1 or more institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)) to evaluate observations that would improve total water prediction.

(2) PRIORITY OBSERVATIONS.—In establishing partnerships under paragraph (1), the Administrator shall prioritize partnerships to evaluate observations from uncrewed aerial systems.

(b) MAINTAINED OBSERVATIONS.—If the Administrator determines that incorporating additional observations improves total water prediction, the Administrator shall, to the extent practicable, continue incorporating those observations.

(c) MODELING IMPROVEMENTS.—The Administrator shall advance geographic coverage, resolution, skill, and

efficiency of coastal oceanographic modeling, including efforts that improve the coupling of and interoperability between hydrological models and coastal ocean models.

(d) GEOSPATIAL DATA.—The Administrator shall advance the development of models to vertically transform geospatial data into a common system for use as the Federal standard for surveys and mapping, and engage with the United States Geological Survey to collaborate and implement the National Hydrography Datasets as the geospatial underpinning of the system, and to collaborate and implement the National Hydrography Infrastructure to improve discovery and access to flood and other water-related information.

SEC. 5. SERVICE COORDINATION HYDROLOGISTS AT RIVER FORECAST CENTERS OF THE NATIONAL WEATHER SERVICE.

(a) DESIGNATION OF SERVICE COORDINATION HYDROLOGISTS.—

(1) IN GENERAL.—The Director of the National Weather Service (in this section referred to as the ''Director'') shall designate at least 1 service coordination hydrologist at each River Forecast Center of the National Weather Service.

(2) PERFORMANCE BY OTHER EMPLOYEES.—Performance of the responsibilities outlined in this

section is not limited to the service coordination hydrologist position.

(b) PRIMARY ROLE OF SERVICE COORDINATION HYDROLOGISTS.—The primary role of the service coordination hydrologist shall be to carry out the responsibilities required by this section.

(c) RESPONSIBILITIES.—

(1) IN GENERAL.—Subject to paragraph (2), consistent with the analysis described in section 409 of the Weather Research and Forecasting Innovation Act of 2017 (Public Law 115–25; 131 Stat. 112), and in order to increase impact-based decision support services, each service coordination hydrologist designated under subsection (a) shall, with respect to hydrology—

(A) be responsible for providing service to the geographic area of responsibility covered by the River Forecast Center at which the service coordination hydrologist is employed to help ensure that users of products and services of the National Weather Service can respond effectively to improve outcomes from flood events;

(B) liaise with users of products and services of the National Weather Service, such as the public, academia, media outlets, users in the

hydropower, transportation, recreation, and agricultural communities, and forestry, land, fisheries, and water management interests, to evaluate the adequacy and usefulness of the products and services of the National Weather Service;

(C) collaborate with such River Forecast Centers and Weather Forecast Offices and Federal, State, local, and Tribal government agencies as the Director considers appropriate in developing, proposing, and implementing plans to develop, modify, or tailor products and services of the National Weather Service to improve the usefulness of such products and services;

(D) engage in interagency partnerships with Federal, State, local, and Tribal government agencies to explore the use of forecast-informed reservoir operations to reduce flood risk;

(E) ensure the maintenance and accuracy of flooding call lists, appropriate office flooding policy or procedures, and other flooding information or dissemination methodologies or strategies; and

(F) work closely with Federal, State, local, and Tribal emergency and floodplain manage-

ment agencies, and other agencies relating to disaster management, to ensure a planned, coordinated, and effective preparedness and response effort.

(2) OTHER STAFF.—The Director may assign a responsibility set forth in paragraph (1) to such other staff as the Director considers appropriate to carry out such responsibility.

(d) ADDITIONAL RESPONSIBILITIES.—

(1) IN GENERAL.—Subject to paragraph (2), a service coordination hydrologist designated under subsection (a) may, with respect to hydrology—

(A) work with a State agency to develop plans for promoting more effective use of products and services of the National Weather Service throughout the State;

(B) identify priority community preparedness objectives;

(C) develop plans to meet the objectives identified under subparagraph (B); and

(D) conduct flooding event preparedness planning and citizen education efforts with and through various State, local, and Tribal government agencies and other disaster management-related organizations.

(2) OTHER STAFF.—The Director may assign a responsibility set forth in paragraph (1) to such other staff as the Director considers appropriate to carry out such responsibility.

(e) PLACEMENT WITH STATE AND LOCAL EMERGENCY AND FLOODPLAIN MANAGERS.—

(1) IN GENERAL.—In carrying out this section, the Director may place a service coordination hydrologist designated under subsection (a) with a State or local emergency or floodplain manager, if the Director determines that such placement is necessary or convenient to carry out this section.

(2) TREATMENT.—If the Director determines that the placement of a service coordination hydrologist with a State or local emergency or floodplain manager under paragraph (1) is near a River Forecast Center of the National Weather Service, such placement shall be treated as designation of the service coordination hydrologist at such River Forecast Center for purposes of subsection (a).

SEC. 6. IMPROVING NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION COMMUNICATION OF FUTURE FLOOD RISKS AND HAZARDOUS FLASH FLOOD EVENTS.

(a) ASSESSMENT OF FLASH FLOOD WATCHES AND WARNINGS.—

(1) IN GENERAL.—Not later than 2 years after the date of the enactment of this Act, the Administrator shall—

(A) conduct an assessment of—

(i) the flash flood watches and warnings of the National Weather Service; and

(ii) the information delivery to support preparation and responses to floods; and

(B) submit to Congress a report on the findings of the Administrator with respect to the assessment required by subparagraph (A).

(2) ELEMENTS.—The assessment required by paragraph (1)(A) shall include the following:

(A) An evaluation of whether the watches, warnings, and information described in paragraph (1)(A)—

(i) effectively communicate risk to the general public;

(ii) inform action to prevent loss of life and property;

(iii) inform action to support flood preparation and response; and

(iv) deliver information in a manner designed to lead to appropriate action.

(B) Subject to subsection (b)(2), such recommendations as the Administrator may have for—

(i) legislative and administrative action to improve the watches and warnings described in paragraph (1)(A)(i); and

(ii) such research as the Administrator considers necessary to address the focus areas described in paragraph (3).

(3) FOCUS AREAS.—The assessment required by paragraph (1)(A) shall focus on the following areas:

(A) Ways to communicate the risks posed by hazardous flash flood events to the public that are most likely to result in informed decision making regarding the mitigation of those risks.

(B) Ways to provide actionable geographic information to the recipient of a watch or warn-

ing for a flash flood, including partnering with emergency response agencies, as appropriate.

(C) Evaluation of information delivery to support the preparation for and response to floods.

(4) CONSULTATION.—In conducting the assessment required by paragraph (1)(A), the Administrator shall consult with—

(A) individuals in the academic sector, including individuals in the field of social and behavioral sciences;

(B) other weather services;

(C) media outlets and other entities that distribute the watches and warnings described in paragraph (1)(A)(i);

(D) floodplain managers and emergency planners and responders, including State, local, and Tribal emergency management agencies;

(E) other government users of the watches and warnings described in paragraph (1)(A)(i), including the Federal Highway Administration; and

(F) such other Federal agencies as the Administrator determines rely on watches and

warnings regarding flash floods for operational decisions.

(5) NATIONAL ACADEMY OF SCIENCES.—The Administrator shall engage with the National Academy of Sciences, as the Administrator considers necessary and practicable, including by contracting with the National Research Council to review the scientific and technical soundness of the assessment required by paragraph (1)(A), including the recommendations under paragraph (2)(B).

(6) METHODOLOGIES.—In conducting the assessment required by paragraph (1)(A), the Administrator shall use such methodologies as the Administrator considers are generally accepted by the weather enterprise, including social and behavioral sciences.

(b) IMPROVEMENTS TO FLASH FLOOD WATCHES AND WARNINGS.—

(1) IN GENERAL.—Based on the assessment required by subsection (a)(1)(A), the Administrator shall make such improvements to the watches and warnings described in that subsection as the Administrator considers necessary—

(A) to improve the communication of the risks posed by hazardous flash flood events; and

(B) to provide actionable geographic information to the recipient of a watch or warning for a flash flood.

(2) REQUIREMENTS REGARDING RECOMMENDATIONS.—In conducting the assessment required by subsection (a)(1)(A), the Administrator shall ensure that any recommendation under subsection (a)(2)(B) that the Administrator considers a major change—

(A) is validated by social and behavioral science using a generalizable sample;

(B) accounts for the needs of various demographics, vulnerable populations, and geographic regions;

(C) responds to the needs of Federal, State, local, and Tribal government partners and media partners; and

(D) accounts for necessary changes to federally operated watch and warning propagation and dissemination infrastructure and protocols.

(c) DEFINITIONS.—In this section:

(1) WATCH; WARNING.—

(A) IN GENERAL.—Except as provided in subparagraph (B), the terms ''watch'' and ''warning'', with respect to a hazardous flash flood event, mean products issued by the Na-

tional Oceanic and Atmospheric Administration, intended for use by the general public—

(i) to alert the general public to the potential for or presence of the event; and

(ii) to inform action to prevent loss of life and property.

(B) EXCLUSION.—The terms ''watch'' and ''warning'' do not include technical or specialized meteorological and hydrological forecasts, outlooks, or model guidance products.

(2) WEATHER ENTERPRISE.—The term ''weather enterprise'' has the meaning given that term in section 2 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8501).

SEC. 7. FRESHWATER MONITORING ALONG THE COAST.

(a) DATA AVAILABILITY ASSESSMENT.—The Administrator shall assess the availability of short- and long-term data on large-scale freshwater flooding into oceans, bays, and estuaries, including data on—

(1) flow rate, including discharge;

(2) conductivity;

(3) oxygen concentration;

(4) nutrient load;

(5) water temperature; and

(6) sediment load.

(b) DATA NEEDS ASSESSMENT.—The Administrator shall assess the need for additional data to assess and predict the effect of the flooding and freshwater discharge described in subsection (a).

(c) INVENTORY OF DATA NEEDS.—Based on the assessments required by subsections (a) and (b), the Administrator shall create an inventory of data needs with respect to the flooding and freshwater discharge described in subsections (a) and (b).

(d) PLANNING.—In planning for the collection of additional data necessary for ecosystem-based modeling of the effect of the flooding and freshwater discharge described in subsections (a) and (b), the Administrator shall use the inventory created under subsection (c).

SEC. 8. TORNADO WARNING IMPROVEMENT.

Section 103 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8513) is amended—

(1) by redesignating subsections (c) and (d) as subsections (d) and (e), respectively; and

(2) by inserting after subsection (b) the following:

''(c) INNOVATIVE OBSERVATIONS.—The Administrator shall ensure that the program periodically examines

the value of incorporating innovative observations, such as acoustic or infrasonic measurements, observations from phased array radars, and observations from mesonets, with respect to the improvement of tornado forecasts, predictions, and warnings.''.

SEC. 9. HURRICANE FORECAST IMPROVEMENT PROGRAM.

Section 104(b) of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8514(b)) is amended—

(1) in paragraph (2), by striking ''; and'' and inserting a semicolon;

(2) in paragraph (3), by striking the period at the end and inserting ''; and''; and

(3) by adding at the end the following:

''(4) evaluating and incorporating, as appropriate, innovative observations, including acoustic or infrasonic measurements.''.

SEC. 10. WEATHER AND WATER RESEARCH AND DEVELOPMENT PLANNING.

Section 105(2) of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8515(2)) is amended by inserting ''and flood-event'' after ''operational weather''.

SEC. 11. FORECAST COMMUNICATION COORDINATORS.

Section 1762(f)(1) of the Food Security Act of 1985 (15 U.S.C. 8521(f)(1)) is amended, in the second sentence, by striking ''may'' and inserting ''shall''.

SEC. 12. IMPROVING PRECIPITATION FREQUENCY ESTIMATES.

(a) IN GENERAL.—The Administrator shall—

(1) not later than 5 years after the date of enactment of this title and not less than every 5 years thereafter, update precipitation frequency estimates for the United States, such that each update includes at least one precipitation frequency atlas that incorporates assumptions of non-stationarity;

(2) develop products targeted at users of this data in support of the mission of the National Oceanic and Atmospheric Administration;

(3) make publicly available, in a searchable, interoperable format, all precipitation frequency estimate studies developed by the National Oceanic and Atmospheric Administration that the Administrator has the legal right to redistribute and that are deemed to be at an appropriate stage of development on an internet website of the National Oceanic and Atmospheric Administration; and

(4) ensure all precipitation frequency estimate data, products, and supporting documentation and

metadata are preserved, curated, and served by the National Oceanic and Atmospheric Administration, as appropriate.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Oceanic and Atmospheric Administration to carry out this section $3,500,000 for each of fiscal years 2022 through 2030.

SEC. 13. INTERAGENCY COORDINATING COMMITTEE ON WATER MANAGEMENT.

(a) ESTABLISHMENT.—There is established a committee, to be known as the ''Interagency Coordinating Committee on Water Management'' (in this section referred to as the ''Committee'').

(b) MEMBERSHIP.—The Committee shall be composed of the following members:

(1) The Administrator.

(2) The Assistant Secretary for Water and Science of the Department of the Interior.

(3) The head of each of the following:

(A) The Federal Emergency Management Agency.

(B) The Army Corps of Engineers.

(C) The National Science Foundation.

(D) The Office of Science and Technology Policy.

(E) The Council on Environmental Quality.

(F) The Department of Energy.

(G) The Department of Agriculture.

(H) Any other Federal agency, as the co-chairs consider appropriate.

(c) CO-CHAIRS.—The Committee shall be co-chaired by the Secretary of the Interior and the Administrator of the Environmental Protection Agency.

(d) MEETINGS.—The Committee shall meet not less frequently than once each year at the call of the co-chairs.

(e) GENERAL PURPOSE AND DUTIES.—The Committee shall ensure that agencies across the Federal Government that engage in water-related matters, including water storage and supplies, water quality and restoration activities, water infrastructure, transportation on United States rivers and inland waterways, and water forecasting, work together where such agencies have joint or overlapping responsibilities to—

(1) improve interagency coordination by Federal agencies on water resource management and water-related infrastructure issues;

(2) coordinate existing water-related Federal task forces, working groups, and other formal cross-agency initiatives, as appropriate;

(3) designate and consolidate repositories responsible for archiving and managing water-related matters;

(4) improve interagency coordination of data management, access, modeling, and visualization with respect to water-related matters;

(5) conduct integrated planning for Federal investments in water-related infrastructure; and

(6) support workforce development and efforts to recruit, train, and retain professionals to operate and maintain essential water facilities in the United States.

(f) CROSS-AGENCY PRIORITY RESEARCH NEEDS.—Not later than 1 year after the date of the enactment of this Act, the Committee shall develop and submit to Congress a list of research needs that includes needs for cross-agency research and coordination.

SEC. 14. HYDROLOGIC RESEARCH FELLOWSHIP PROGRAM.

(a) DEFINITIONS.—In this section:

(1) DECISION SUPPORT SERVICES.—The term ''decision support services'' means information, including data and refined products, that supports water resources-related decision-making processes.

(2) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the

meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(b) HYDROLOGIC RESEARCH FELLOWSHIP PROGRAM.—

(1) ESTABLISHMENT.—The Administrator shall establish a hydrologic research fellowship program (in this section referred to as the ''program'') for qualified individuals.

(2) QUALIFIED INDIVIDUAL.—For purposes of this section, a qualified individual is an individual who is—

(A) a citizen of the United States; and

(B) enrolled in a research-based graduate program, at an institution of higher education, in a field that advances the research priorities developed by the Administrator under paragraph (7), such as—

(i) hydrology;

(ii) earth sciences;

(iii) atmospheric sciences;

(iv) computer sciences;

(v) engineering;

(vi) environmental sciences;

(vii) geosciences;

(viii) urban planning; or

(ix) related social sciences.

(3) AWARD GUIDELINES.—Fellowships under the program shall be awarded pursuant to guidelines established by the Administrator.

(4) SELECTION PREFERENCE.—In selecting qualified individuals for participation in the program, the Administrator, acting through the Director, shall give preference to applicants from Historically Black Colleges and Universities and Minority-Serving Institutions.

(5) PLACEMENT.—The program shall support the placement of qualified individuals in positions within the executive branch of the Federal Government where such individuals can address and advance the research priorities developed by the Administrator under paragraph (7).

(6) FELLOWSHIP TERM.—A fellowship under the program shall be for a period of up to 2 years.

(7) FELLOWSHIP RESEARCH PRIORITIES.—The Administrator in consultation with representatives from the United States Geological Survey, the Federal Emergency Management Agency, and the Army Corps of Engineers, as appropriate, shall develop and publish priorities for the conduct of research by fellows, which may include the following:

(A) Advance the collaborative development of a flexible community-based water resources modeling system.

(B) Apply artificial intelligence and machine learning capabilities to advance existing hydrologic modeling capabilities.

(C) Support the evolution and integration of hydrologic modeling within an Earth Systems Modeling Framework.

(D) Improve visualizations of hydrologic model outputs.

(E) Advance the state of coupled freshwater and saltwater modeling and forecasting capabilities.

(F) Advance understanding and process representation of water quality parameters.

(G) Advance the assimilation of in-situ and remotely sensed observations and data.

(H) Support the integration of social science to advance decision support services.

(I) Develop methods to study groundwater sustainability and estimate the efficiency of recharge management.

(c) DIRECT HIRING.—

(1) AUTHORITY.—During fiscal year 2021 and any fiscal year thereafter, the head of any Federal agency may appoint, without regard to the provisions of subchapter I of chapter 33 of title 5, United States Code, other than sections 3303 and 3328 of that title, to a position with the Federal agency a recipient of a fellowship under the program who—

(A) earned a degree from a program described in subsection (b)(2)(B);

(B) successfully fulfilled the requirements of the fellowship within the executive branch of the Federal Government; and

(C) meets qualification standards established by the Office of Personnel Management.

(2) EXERCISE OF AUTHORITY.—The direct hire authority provided by this subsection shall be exercised with respect to an individual described in paragraph (1) not later than 2 years after the date on which the individual completed the fellowship under the program.

SEC. 15. IDENTIFICATION AND SUPPORT OF CONSISTENT, FEDERAL SET OF FORWARD-LOOKING, LONG-TERM METEOROLOGICAL INFORMATION.

(a) DEFINITIONS.—In this section:

(1) EXTREME WEATHER.—The term ''extreme weather'' includes observed or anticipated severe and unseasonable atmospheric conditions, including drought, heavy precipitation, hurricanes, tornadoes and other windstorms (including derechos), large hail, extreme heat, extreme cold, flooding, sustained temperatures or precipitation that deviate substantially from historical averages, and any other weather event that the Administrator determines qualifies as extreme weather.

(2) LONG-TERM.—The term ''long-term'' shall have such meaning as the Administrator, in consultation with the Director of the National Institute of Standards and Technology, considers appropriate for purposes of this section.

(3) OTHER ENVIRONMENTAL TRENDS.—The term ''other environmental trends'' means wildfires, coastal flooding, inland flooding, land subsidence, rising sea levels, and any other challenges relating to changes in environmental systems over time that the Administrator determines qualify as environmental challenges other than extreme weather.

(b) IDENTIFICATION AND SUPPORT OF CONSISTENT, FEDERAL SET OF FORWARD-LOOKING, LONG-TERM METEOROLOGICAL INFORMATION.—The Administrator shall

identify, and support research that enables, a consistent, Federal set of forward-looking, long-term meteorological information that models future extreme weather events, other environmental trends, projections, and up-to-date observations, including mesoscale information as determined appropriate by the Administrator.

SEC. 16. GAP ANALYSIS ON AVAILABILITY OF SNOW-RELATED DATA TO ASSESS AND PREDICT FLOOD AND FLOOD IMPACTS.

(a) IN GENERAL.—The Administrator, in consultation with the Department of Agriculture, the Department of the Interior, and the Army Corps of Engineers, shall conduct an analysis of gaps in the availability of snow-related data to assess and predict floods and flood impacts, including data on the following:

(1) Snow water equivalent.

(2) Snow depth.

(3) Snowpack temperature.

(4) Snow and mixed-phase precipitation.

(5) Snow melt.

(6) Rain-snow line.

(7) Soil moisture.

(b) REPORT.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall submit to the Committee on Commerce, Science, and Trans-

portation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report on—

(1) the findings of the gap analysis required by subsection (a); and

(2) opportunities for additional collaboration among Federal agencies to collect snow-related data to better assess and predict floods and flood impacts.

SEC. 17. AVAILABILITY TO THE PUBLIC OF FLOOD-RELATED DATA.

(a) IN GENERAL.—The Administrator shall make flood-related data available to the public on the website of the National Oceanic and Atmospheric Administration.

(b) COST.—The Administrator may make the data under subsection (a) freely accessible or available at a cost that does not exceed the cost of preparing the data.

○