

(A) advanced radar, radar networking technologies, and other ground-based technologies, including those emphasizing rapid, fine-scale sensing of the boundary layer and lower troposphere, and the use of innovative, dual-polarization, phased-array technologies;

(B) aerial weather observing systems;

(C) high performance computing and information technology and wireless communication networks;

(D) advanced numerical weather prediction systems and forecasting tools and techniques that improve the forecasting of timing, track, intensity, and severity of high impact weather, including through—

(i) the development of more effective mesoscale models;

(ii) more effective use of existing, and the development of new, regional and national cloud-resolving models;

(iii) enhanced global weather models; and

(iv) integrated assessment models;

(E) quantitative assessment tools for measuring the impact and value of data and observing systems, including Observing System Simulation Experiments (as described in section 8517 of this title), Observing System Experiments, and Analyses of Alternatives;

(F) atmospheric chemistry and interactions essential to accurately characterizing atmospheric composition and predicting meteorological processes, including cloud microphysical, precipitation, and atmospheric electrification processes, to more effectively understand their role in severe weather; and

(G) additional sources of weather data and information, including commercial observing systems.

(4) A technology transfer initiative, carried out jointly and in coordination with the Director of the National Weather Service, and in cooperation with the United States weather industry and academic partners, to ensure continuous development and transition of the latest scientific and technological advances into operations of the National Weather Service and to establish a process to sunset outdated and expensive operational methods and tools to enable cost-effective transfer of new methods and tools into operations.

(5) Advancing weather modeling skill, reclaiming and maintaining international leadership in the area of numerical weather prediction, and improving the transition of research into operations by—

(A) leveraging the weather enterprise to provide expertise on removing barriers to improving numerical weather prediction;

(B) enabling scientists and engineers to effectively collaborate in areas important for improving operational global numerical weather prediction skill, including model development, data assimilation techniques, systems architecture integration, and computational efficiencies;

(C) strengthening the National Oceanic and Atmospheric Administration's ability to

undertake research projects in pursuit of substantial advancements in weather forecast skill;

(D) utilizing and leverage existing resources across the National Oceanic and Atmospheric Administration enterprise; and

(E) creating a community global weather research modeling system that—

(i) is accessible by the public;

(ii) meets basic end-user requirements for running on public computers and networks located outside of secure National Oceanic and Atmospheric Administration information and technology systems; and

(iii) utilizes, whenever appropriate and cost-effective, innovative strategies and methods, including cloud-based computing capabilities, for hosting and management of part or all of the system described in this subsection.

(c) Extramural research

(1) In general

In carrying out the program under this section, the Assistant Administrator for Oceanic and Atmospheric Research shall collaborate with and support the non-Federal weather research community, which includes institutions of higher education, private entities, and nongovernmental organizations, by making funds available through competitive grants, contracts, and cooperative agreements.

(2) Sense of Congress

It is the sense of Congress that not less than 30 percent of the funds for weather research and development at the Office of Oceanic and Atmospheric Research should be made available for the purpose described in paragraph (1).

(d) Annual report

Each year, concurrent with the annual budget request submitted by the President to Congress under section 1105 of title 31 for the National Oceanic and Atmospheric Administration, the Under Secretary shall submit to Congress a description of current and planned activities under this section.

(Pub. L. 115-25, title I, §102, Apr. 18, 2017, 131 Stat. 92; Pub. L. 115-423, §4(a), Jan. 7, 2019, 132 Stat. 5456; Pub. L. 117-263, div. J, title CVI, §10601(c)(8), Dec. 23, 2022, 136 Stat. 3997.)

Editorial Notes

AMENDMENTS

2022—Subsec. (b)(4), (5). Pub. L. 117-263 redesignated par. (4) relating to advancing weather modeling skill as (5).

2019—Subsec. (b)(4). Pub. L. 115-423 added par. (4) relating to advancing weather modeling skill.

§ 8512a. Learning excellence and good examples from new developers

(a) Definitions

In this section:

(1) Administration

The term “Administration” means the National Oceanic and Atmospheric Administration.

(2) Administrator

The term “Administrator” means the Under Secretary of Commerce for Oceans and Atmosphere and Administrator of the National Oceanic and Atmospheric Administration.

(3) Earth Prediction Innovation Center

The term “Earth Prediction Innovation Center” means the community global weather research modeling system described in paragraph (5)(E) of section 8512(b) of this title.

(4) Model

The term “model” means any vetted numerical model and associated data assimilation of the Earth’s system or its components—

- (A) developed, in whole or in part, by scientists and engineers employed by the Administration; or
- (B) otherwise developed, in whole or in part, using Federal funds.

(5) Open license

The term “open license” has the same meaning given such term in section 3502(21) of title 44.

(6) Operational model

The term “operational model” means any model that has an output used by the Administration for operational functions.

(7) Suitable model

The term “suitable model” means a model that meets the requirements described in paragraph (5)(E)(ii) of section 8512(b) of this title, as determined by the Administrator.

(b) Purposes

The purposes of this section are—

- (1) to support innovation in modeling by allowing interested stakeholders to have easy and complete access to operational model codes and to other models, as the Administrator determines appropriate; and
- (2) to use vetted innovations arising from access described in paragraph (1) to improve modeling by the Administration.

(c) Plan and implementation of plan to make certain models and data available to the public**(1) In general**

The Administrator shall develop and implement a plan to make available to the public, at no cost and with no restrictions on copying, publishing, distributing, citing, adapting, or otherwise using under an open license, the following:

- (A) Operational models developed by the Administration.
- (B) Models that are not operational models, including experimental and developmental models, as the Administrator determines appropriate.
- (C) Applicable information and documentation for models described in subparagraphs (A) and (B), including a description of intended model outputs.
- (D) Subject to subsection (f), all data owned by the Federal Government and data that the Administrator has the legal right to redistribute that are associated with models made available to the public pursuant to the

plan and used in operational forecasting by the Administration, including—

- (i) relevant metadata; and
- (ii) data used for operational models used by the Administration as of December 23, 2022.

(2) Accommodations

In developing and implementing the plan under paragraph (1), the Administrator may make such accommodations as the Administrator considers appropriate to ensure that the public release of any model, information, documentation, or data pursuant to the plan do¹ not jeopardize—

- (A) national security;
- (B) intellectual property or redistribution rights, including under titles 17 and 35;
- (C) any trade secret or commercial or financial information subject to section 552(b)(4) of title 5;
- (D) any models or data that are otherwise restricted by contract or other written agreement; or
- (E) the mission of the Administration to protect lives and property.

(3) Priority

In developing and implementing the plan under paragraph (1), the Administrator shall prioritize making available to the public the models described in paragraph (1)(A).

(4) Protections for privacy and statistical information

In developing and implementing the plan under subsection (a), the Administrator shall ensure that all requirements incorporated into any models described in paragraph (1)(A) ensure compliance with statistical laws and other relevant data protection requirements, including the protection of any personally identifiable information.

(5) Exclusion of certain models

In developing and implementing the plan under paragraph (1), the Administrator may exclude models that the Administrator determines will be retired or superseded in fewer than 5 years after December 23, 2022.

(6) Platforms

In carrying out paragraphs (1) and (2), the Administrator may use government servers, contracts or agreements with a private vendor, or any other platform consistent with the purpose of this title.²

(7) Support program

The Administrator shall plan for and establish a program to support infrastructure, including telecommunications and technology infrastructure of the Administration and the platforms described in paragraph (6), relevant to making operational models and data available to the public pursuant to the plan under subsection (a).

(8) Omitted**(d) Requirement to review models and leverage innovations**

The Administrator shall—

¹ So in original. Probably should be “does”.

² See References in Text note below.

(1) consistent with the mission of the Earth Prediction Innovation Center, periodically review innovations and improvements made by persons not employed by the Administration as Federal employees to the operational models made available to the public pursuant to the plan under subsection (c)(1) in order to improve the accuracy and timeliness of forecasts of the Administration; and

(2) if the Administrator identifies an innovation for a suitable model, develop and implement a plan to use the innovation to improve the model.

(e) Report on implementation

(1) In general

Not later than 2 years after December 23, 2022, the Administrator shall submit to the appropriate congressional committees a report on the implementation of this section that includes a description of—

(A) the implementation of the plan required by subsection (c);

(B) the process of the Administration under subsection (d)—

(i) for engaging with interested stakeholders to learn what innovations those stakeholders have found;

(ii) for reviewing those innovations; and

(iii) for operationalizing innovations to improve suitable models; and

(C) the use of any Federal financial assistance, including under section 3719 of this title² or the Crowdsourcing and Citizen Science Act (15 U.S.C. 3724), in order to facilitate and incentivize the sharing of externally developed improvements for testing, evaluation, validation, and application to further improve the mission of the Administration, and any other Administration priorities.

(2) Appropriate congressional committees defined

In this subsection, the term “appropriate congressional committees” means—

(A) the Committee on Commerce, Science, and Transportation and the Committee on Appropriations of the Senate; and

(B) the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives.

(f) Protection of national security interests

(1) In general

Notwithstanding any other provision of this section, for models developed in whole or in part with the Department of Defense, the Administrator, in consultation with the Secretary of Defense, as appropriate, shall withhold any model or data if the Administrator or the Secretary of Defense determines doing so to be necessary to protect the national security interests of the United States.

(2) Rule of construction

Nothing in this section shall be construed to supersede any other provision of law governing the protection of the national security interests of the United States.

(g) Authorization of appropriations

There is authorized to be appropriated to carry out this section \$2,000,000 for each of fiscal years 2023 through 2027.

(Pub. L. 117-263, div. J, title CVI, §10601, Dec. 23, 2022, 136 Stat. 3995.)

Editorial Notes

REFERENCES IN TEXT

This title, referred to in subsec. (c)(6), means title CVI of div. J of Pub. L. 117-263, which enacted this section and amended section 8512 of this title.

Section 3719 of this title, referred to in subsec. (e)(1)(C), was in the original “section 24 of the Stevenson-Wydler Technology Innovation Act of 1990” and was translated as reading “section 24 of the Stevenson-Wydler Technology Innovation Act of 1980”, to reflect the probable intent of Congress.

The Crowdsourcing and Citizen Science Act, referred to in subsec. (e)(1)(C), is section 402 of title IV of Pub. L. 114-329, Jan. 6, 2017, 130 Stat. 3019, which is classified to section 3724 of this title.

CODIFICATION

Section was enacted as part of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, and not as part of the Weather Research and Forecasting Innovation Act of 2017 which comprises this chapter.

Section is comprised of section 10601 of div. J of Pub. L. 117-263. Subsec. (c)(8) of section 10601 of div. J of Pub. L. 117-263 amended section 8512 of this title.

§ 8513. Tornado warning improvement and extension program

(a) In general

The Under Secretary, in collaboration with the United States weather industry and academic partners, shall establish a tornado warning improvement and extension program.

(b) Goal

The goal of such program shall be to reduce the loss of life and economic losses from tornadoes through the development and extension of accurate, effective, and timely tornado forecasts, predictions, and warnings, including the prediction of tornadoes beyond 1 hour in advance.

(c) Innovative observations

The Under Secretary 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.

(d) Program plan

Not later than 180 days after April 18, 2017, the Assistant Administrator for Oceanic and Atmospheric Research, in coordination with the Director of the National Weather Service, shall develop a program plan that details the specific research, development, and technology transfer activities, as well as corresponding resources and timelines, necessary to achieve the program goal.

(e) Annual budget for plan submittal

Following completion of the plan, the Under Secretary, acting through the Assistant Admin-