

119TH CONGRESS
1ST SESSION

H. R. 2770

To direct the use of artificial intelligence by National Oceanic and Atmospheric Administration to adapt to extreme weather, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 9, 2025

Mr. SCOTT FRANKLIN of Florida introduced the following bill; which was referred to the Committee on Science, Space, and Technology

A BILL

To direct the use of artificial intelligence by National Oceanic and Atmospheric Administration to adapt to extreme weather, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “Transformational Artificial intelligence to Modernize the
6 Economy against Extreme Weather and Wildfires Act” or
7 the “TAME Extreme Weather and Wildfires Act”.

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

- Sec. 1. Short title; table of contents.
- Sec. 2. Definitions.
- Sec. 3. Earth system forecasting and information delivery.
- Sec. 4. Advanced artificial intelligence applications for weather and information delivery.
- Sec. 5. Technical assistance on use of artificial intelligence weather models.
- Sec. 6. Fire environment modeling program.
- Sec. 7. Partnerships for transformational innovation.
- Sec. 8. Federal Government workforce expertise.
- Sec. 9. Data access.

1 **SEC. 2. DEFINITIONS.**

2 In this Act:

3 (1) ARTIFICIAL INTELLIGENCE.—

4 (A) IN GENERAL.—The term “artificial in-

5 telligence” means a machine-based system that

6 can, for a given set of human-defined objectives,

7 make predictions, recommendations, or deci-

8 sions influencing real or virtual environments,

9 including by using machine-based and human-

10 based inputs—

11 (i) to abstract such objectives into

12 models through analysis in an automated

13 manner; and

14 (ii) to use model inferences to gen-

15 erate information or formulate options for

16 action.

17 (B) INCLUSIONS.—The term “artificial in-

18 telligence” includes machine learning, neural

19 networks, and natural language processing.

1 (2) ARTIFICIAL INTELLIGENCE WEATHER
2 MODEL.—The term “artificial intelligence weather
3 model” means a weather model based primarily on
4 artificial intelligence to project future Earth system
5 conditions based on machine learning from an Earth
6 system reanalysis dataset.

7 (3) CURATE.—The term “curate” means to col-
8 lect, maintain, and update periodically a dataset—

9 (A) to ensure and document its quality;
10 and

11 (B) to provide metadata on its provenance.

12 (4) NUMERICAL WEATHER MODEL.—The term
13 “numerical weather model” means a weather model
14 based primarily on coupled Earth system processes
15 and that uses numerical computation to forecast fu-
16 ture Earth system conditions.

17 (5) OBSERVATIONAL DATA.—The term “obser-
18 vational data” means data from actual observations
19 of environmental conditions, including remote sens-
20 ing and in situ platforms.

21 (6) OPEN LICENSE.—The term “open license”
22 has the meaning given that term in section 3502(21)
23 of title 44, United States Code.

24 (7) REFORECAST ANALYSIS.—The term “refore-
25 cast analysis” means the assessment of a numerical

1 weather model or artificial intelligence weather
2 model by comparing model output and observational
3 data over a period of time in the past.

4 (8) **SYNTHETIC DATA.**—The term “synthetic
5 data” means data produced from a model or statis-
6 tical method in order to fill gaps in observational
7 data.

8 (9) **TRAINING DATASET.**—The term “training
9 dataset” means a dataset used to train an artificial
10 intelligence model.

11 (10) **UNDER SECRETARY.**—The term “Under
12 Secretary” means the Under Secretary of Commerce
13 for Oceans and Atmosphere.

14 (11) **WEATHER ENTERPRISE.**—The term
15 “weather enterprise” has the meaning given such
16 term in section 2 of the Weather Research and
17 Forecasting Innovation Act of 2017 (15 U.S.C.
18 8501).

19 **SEC. 3. EARTH SYSTEM FORECASTING AND INFORMATION**
20 **DELIVERY.**

21 (a) **IN GENERAL.**—Not later than two years after the
22 date of the enactment of this Act, the Under Secretary,
23 in consultation with the Secretary of Energy, the Adminis-
24 trator of the National Aeronautics and Space Administra-
25 tion, the Director of the National Science Foundation, any

1 appropriate Federal Advisory Committee, and such other
2 technical experts as the Under Secretary considers appro-
3 priate, shall develop and curate comprehensive weather
4 forecasting training datasets with relevant Earth system
5 data, quality information, and metadata necessary for
6 weather forecasting dataset that develops a long-term
7 record of past weather in support of the following:

8 (1) Furthering the understanding of weather,
9 water, and space weather modeling and data.

10 (2) Advancing the science of weather fore-
11 casting, including seasonal and subseasonal fore-
12 casting.

13 (3) Developing artificial intelligence weather
14 forecasting applications.

15 (b) USE OF EXISTING DATASETS.—In order to speed
16 the development of the weather forecasting training
17 dataset required under subsection (a), the Under Sec-
18 retary shall assess, and to the greatest extent practicable
19 build on, existing weather forecasting training datasets of
20 the Federal Government.

21 (c) ARTIFICIAL INTELLIGENCE WEATHER MODEL.—

22 (1) IN GENERAL.—In carrying out this section,
23 the Under Secretary, in consultation with any appro-
24 priate Federal Advisory Committees, may develop
25 and test a global weather model based on artificial

1 intelligence, to be referred to as an “artificial intel-
2 ligence weather model”.

3 (2) WEATHER READY NATION.—In coordination
4 with the activities carried out under paragraph (1),
5 the Under Secretary may explore using artificial in-
6 telligence to enhance the dissemination of informa-
7 tion and evaluation of effectiveness for improved
8 public understanding, preparedness, and resilience.

9 (3) REPORTS.—Not later than two years after
10 the date of the enactment of this Act and not less
11 frequently than annually thereafter, the Under Sec-
12 retary shall submit to the Committee on Commerce,
13 Science, and Transportation of the Senate and the
14 Committee on Science, Space, and Technology of the
15 House of Representatives a report on the activities
16 conducted under paragraph (1).

17 (d) COOPERATIVE INSTITUTES AND CONTRACTING
18 AUTHORITY.—In carrying out this section, subject to the
19 availability of appropriations, the Under Secretary may
20 competitively award contracts and funding opportunities,
21 increase the scope of existing cooperative institutes of the
22 National Oceanic and Atmospheric Administration, or
23 competitively award a new cooperative institute.

24 (e) ENVIRONMENTAL IMPACT.—The Under Secretary
25 shall develop and disseminate best practices to minimize

1 environmental impacts from the use of artificial intel-
2 ligence to carry out this section.

3 (f) CONTINUED SUPPORT FOR OBSERVATIONS, BASIC
4 RESEARCH, AND NUMERICAL WEATHER MODELS.—Not-
5 withstanding the requirements of this section, the Under
6 Secretary shall continue to support and advance the activi-
7 ties of the National Oceanic and Atmospheric Administra-
8 tion carry out the following:

9 (1) Collect and acquire traditional and novel ob-
10 servational data relevant for artificial intelligence
11 and numerical weather models.

12 (2) Advance research on the Earth system and
13 numerical weather models.

14 (3) Develop and advance numerical Earth sys-
15 tem modeling for predictions.

16 (4) Develop weather model data post-processing
17 techniques.

18 (5) Improve data assimilation techniques.

19 **SEC. 4. ADVANCED ARTIFICIAL INTELLIGENCE APPLICA-**
20 **TIONS FOR WEATHER AND INFORMATION DE-**
21 **LIVERY.**

22 The Under Secretary shall explore advanced applica-
23 tions of artificial intelligence to improve weather forecasts
24 and information delivery, such as by carrying out the fol-
25 lowing:

1 (1) Improving data assimilation techniques.

2 (2) Using artificial intelligence weather models
3 to quickly emulate running numerical weather mod-
4 els to assess and improve the confidence in and reli-
5 ability of weather forecasts and information delivery.

6 (3) Improving impact-based decision support to
7 communities for greater societal benefits based on
8 weather forecasts.

9 **SEC. 5. TECHNICAL ASSISTANCE ON USE OF ARTIFICIAL IN-**
10 **TELLIGENCE WEATHER MODELS.**

11 (a) IN GENERAL.—The Under Secretary shall regu-
12 larly inventory and assess major non-Federal Government
13 artificial intelligence weather models in order to provide
14 the following:

15 (1) Technical evaluation and assistance on
16 using such models.

17 (2) Best practices on providing forecasts based
18 on outputs from both artificial intelligence weather
19 models and numerical weather models, or a combina-
20 tion thereof.

21 (3) Support for forecasters and social scientists
22 to test and evaluate the use and effectiveness of arti-
23 ficial intelligence models, including within National
24 Oceanic and Atmospheric Administration testbeds.

1 (4) Support for emergency managers to make
2 operational decisions based on outputs from both ar-
3 tificial intelligence weather models and numerical
4 weather models, or a combination thereof.

5 (b) REFORECAST ANALYSIS.—

6 (1) IN GENERAL.—The Under Secretary shall
7 support the development of a common framework for
8 the assessment of numerical weather models and ar-
9 tificial intelligence weather models through refore-
10 cast analysis and related methodologies as the
11 Under Secretary considers appropriate.

12 (2) BEST PRACTICES.—In carrying out this
13 subsection, the Under Secretary may develop and
14 disseminate best practices in collaboration with the
15 following:

16 (A) The National Institute for Standards
17 and Technology.

18 (B) The National Aeronautics and Space
19 Administration.

20 (C) The National Science Foundation.

21 (D) The Department of Energy.

22 (E) Academic and research institutions.

23 (F) The private sector.

24 (3) REPORT ON USE OF ANALYSIS TO IMPROVE
25 MODELS.—Not later than one year after the date of

1 the enactment of this Act, the Under Secretary shall
2 submit to the Committee on Commerce, Science, and
3 Transportation of the Senate and the Committee on
4 Science, Space, and Technology of the House of
5 Representatives a report on the feasibility of using
6 reforecast analysis techniques to improve seasonal
7 and subseasonal models.

8 (c) WEATHER FORECAST OFFICES.—In carrying out
9 this section, the Under Secretary shall provide technical
10 assistance, best practices, and support required under sub-
11 section (a) through weather forecast offices of the Na-
12 tional Oceanic and Atmospheric Administration.

13 (d) INDEPENDENT STUDY ON THE IMPACTS OF ARTI-
14 FICIAL INTELLIGENCE WEATHER, WATER, AND SPACE
15 WEATHER MODELS.—The Under Secretary may enter
16 into an agreement with the National Academy of Sciences
17 or any other entity determined appropriate by the Under
18 Secretary to assess the impacts of artificial intelligence
19 weather models on the weather enterprise and make rec-
20 ommendations to improve the integration of such models
21 in operational forecasting.

22 **SEC. 6. FIRE ENVIRONMENT MODELING PROGRAM.**

23 (a) IN GENERAL.—Not later than one year after the
24 date of the enactment of this Act, the Under Secretary,
25 in coordination with the Secretary of the Interior, the Sec-

1 retary of Agriculture, and the Secretary of Homeland Se-
2 curity, and in consultation with the Administrator of the
3 National Aeronautics and Space Administration, the Sec-
4 retary of Energy, the Director of the National Science
5 Foundation, any appropriate Federal advisory committees,
6 and such other technical experts as the Under Secretary
7 considers appropriate, shall develop a program to use arti-
8 ficial intelligence to analyze available observational data
9 and synthetic data on the built and natural environments
10 in order to carry out the following:

11 (1) Warn at-risk communities, firefighters, and
12 other responders, including by integrating social
13 science informed research and development.

14 (2) Predict and detect wildfires to the max-
15 imum extent practicable.

16 (3) Forecast wildland and built environment
17 fire propagation and potential impacts based on an
18 analysis of the elements influencing fire behavior,
19 weather conditions, terrain, and observations of the
20 fire environment.

21 (4) Detect, monitor, and forecast smoke and
22 other hazards associated with wildfires.

23 (b) TRAINING DATASET.—In carrying out this sec-
24 tion, the Under Secretary may acquire observational data
25 and synthetic data on the built and natural environments

1 collected across the United States to develop and curate
2 a related artificial intelligence-ready training dataset for
3 purposes of training the artificial intelligence used in fur-
4 therance of this section.

5 (c) DATA ACQUISITION.—In carrying out this section,
6 the Under Secretary may enter into contracts to acquire
7 relevant data referred to in this section.

8 (d) WEATHER INTEGRATION.—In carrying out this
9 section, the Under Secretary shall integrate outputs from
10 weather and other environmental models and observational
11 data and synthetic data referred to in subsection (a).

12 (e) ENVIRONMENTAL IMPACT.—The Under Secretary
13 shall develop and disseminate best practices to minimize
14 environmental impacts from the use of artificial intel-
15 ligence to carry out this section.

16 **SEC. 7. PARTNERSHIPS FOR TRANSFORMATIONAL INNOVA-**
17 **TION.**

18 (a) IN GENERAL.—The Under Secretary shall explore
19 novel structures for partnerships with private entities and
20 academic entities for transformative innovation in weather
21 forecasting and other environmental forecasts in order to
22 carry out the following:

23 (1) Further the understanding of weather,
24 water, wildfires, and space weather, and associated
25 societal impact.

1 (2) Advance the science of weather and water
2 forecasting, including seasonal and subseasonal fore-
3 casting.

4 (3) Develop, evaluate, and transition artificial
5 intelligence weather, water, and hazard forecasting
6 applications for operations.

7 (b) CO-INVESTMENT.—In carrying out this section,
8 subject to applicable law, the Under Secretary shall con-
9 sider and adopt novel co-investment strategies with the
10 private sector and academic sector, including the fol-
11 lowing:

12 (1) Non-Federal Government contributions to
13 resource and support high-risk, high-return research
14 and development in environmental forecasting, data
15 science, artificial intelligence, and related fields.

16 (2) Shared rights to intellectual property from
17 research and development activities under this sec-
18 tion.

19 (3) Other approaches to sharing resources and
20 results under this section.

21 **SEC. 8. FEDERAL GOVERNMENT WORKFORCE EXPERTISE.**

22 (a) IN GENERAL.—The Under Secretary, to the max-
23 imum extent practicable, shall develop, recruit, and sus-
24 tain a professional workforce for weather forecasting ap-
25 plications of artificial intelligence.

1 (b) COLLABORATION.—The Under Secretary shall le-
2 verage robust public-private partnership models to collabo-
3 rate with private sector experts and provide employees
4 with access to training, experience, and long-term develop-
5 ment of workforce and infrastructure in order to utilize
6 artificial intelligence to improve weather forecasts.

7 **SEC. 9. DATA ACCESS.**

8 (a) IN GENERAL.—The Under Secretary may make
9 available to the public, as the Under Secretary determines
10 appropriate, at no cost and with no restrictions on copy-
11 ing, publishing, distributing, citing, adapting, or otherwise
12 using under an open license, any data or code developed
13 under this Act.

14 (b) ACCOMMODATIONS.—The Under Secretary may
15 make such accommodations as the Under Secretary con-
16 siderers appropriate to ensure that the public release of any
17 model, information, documentation, or data pursuant to
18 this Act does not jeopardize any of the following:

19 (1) National security.

20 (2) Intellectual property or redistribution
21 rights, including under titles 17 and 35, United
22 States Code.

23 (3) Any trade secret or commercial or financial
24 information subject to section 552(b)(4) of title 5,
25 United States Code.

1 (4) Any models or data that are otherwise re-
2 stricted by contract or other written agreement.

3 (5) The mission of the National Oceanic and
4 Atmospheric Administration to protect lives and
5 property.

6 (c) RULE OF CONSTRUCTION.—Nothing in this Act
7 may be construed to supersede any other provision of law
8 governing the protection of the national security interests
9 of the United States.

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