

AVIATION WEATHER IMPROVEMENT ACT

SEPTEMBER 21, 2023.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. LUCAS, from the Committee on Science, Space, and Technology, submitted the following

R E P O R T

[To accompany H.R. 3915]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 3915) to improve the National Weather Service’s forecasting of turbulence and acquisition of aviation weather data, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

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The amendment is as follows:
Strike all that follows after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the “Aviation Weather Improvement Act”.

SEC. 2. AVIATION WEATHER AND DATA INNOVATION.

(a) PROGRAM.—The Director of the National Weather Service shall maintain an airborne observation program (in this section referred to as the “program”) for the acquisition of atmospheric sensor data and the deployment, in partnership with the weather enterprise, of critical atmospheric sensors.

(b) ACTIVITIES.—The program shall include activities that carry out the following:

(1) Procurement of weather data available from commercial aircraft, as determined by the Director of the National Weather Service.

(2) Acquisition of additional vertical profile observations that provide spatial and temporal density, as determined by the Director.

(3) Analysis of procured data when incorporated into the National Oceanic and Atmospheric Administration’s unified forecast system in order to provide improved forecast information for aircraft.

(c) BUDGET.—The Director of the National Weather Service shall, not less frequently than annually, submit to Congress a proposed budget corresponding with the activities described in subsection (b), including an analysis of such activities that can be complemented by National Oceanic and Atmospheric Administration aircraft.

(d) AUTHORIZATION OF APPROPRIATIONS.—From amounts made available to Operations, Research, and Facilities of the National Oceanic and Atmospheric Administration, there is authorized to be appropriated up to \$10,000,000 for each of fiscal years 2024 through 2028 to carry out this section.

(e) DEFINITION.—In this section, the term “weather enterprise” has the meaning given such term in section 2 of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8501).

SEC. 3. AVIATION WEATHER AND TURBULENCE FORECASTING COORDINATION.

(a) IN GENERAL.—The Director of the National Weather Service shall include turbulence events or phenomena, icing conditions, or other phenomena in the forecasting capabilities of the National Weather Service’s Aviation Weather Center, and deliver operational forecasts with consistent, timely, and accurate weather and turbulence information for the airspace system and the protection of lives and property.

(b) COORDINATION.—In carrying out subsection (a), the Director of the National Weather Service shall—

(1) give consideration to recommendations from the Administrator of the Federal Aviation Administration in furtherance of section 44720 of title 49, United States Code; and

(2) improve weather and turbulence forecasting capabilities by—

(A) designating or establishing within the Federal Government an interagency working group to determine weather and environmental data or observation requirements, needs, and potential solutions related to aviation weather and turbulence modeling or forecasting;

(B) identifying current and future potential data gaps related to turbulence events or phenomena that can—

(i) identify or inform route specific flight planning; and

(ii) be supplemented or filled by commercial aviation tools;

(C) transitioning research initiatives and pilot programs, including a pilot program of instrumentation for observing greenhouse gases and other atmospheric factors deployed on commercial aircraft and supporting the evaluation of a sustained observing network using such platforms, into operations that improve the forecasting missions of the Aviation Weather Center;

(D) developing and deploying improved probabilistic aviation weather forecast guidance technology; and

(E) updating interagency agreements, as appropriate, including to address reimbursable agreements.

SEC. 4. NEXT GENERATION AVIATION RESEARCH.

Paragraph (3) of section 102(b) of the Weather Research and Forecasting Innovation Act of 2017 (15 U.S.C. 8512(b)), is amended—

(1) by redesignating subparagraphs (F) and (G) as subparagraphs (G) and (H), respectively; and

(2) by inserting after subparagraph (E) the following new subparagraph:

“(F) aviation weather phenomena, including atmospheric composition and turbulence, to improve scientific understanding and forecast capabilities for the airspace system;”.

PURPOSE AND SUMMARY

H.R. 3915, the Aviation Weather Improvement Act, improves the National Weather Service’s forecasting of turbulence and acquisition of aviation weather data.

BACKGROUND AND NEED FOR LEGISLATION

Every year in the United States, about 65,000 flights experience moderate turbulence and 5,500 flights report severe turbulence. The injuries and damages resulting from this turbulence cost U.S. airlines about \$500 million each year.

The Aviation Weather Improvement Act will improve all aspects of aviation weather forecasting and prediction by authorizing the National Weather Service (NWS) to acquire commercial data and partner with the U.S. weather enterprise to deploy critical atmospheric sensors. As demonstrated by the Commercial Weather Data Pilot Program authorized in the Weather Research and Forecasting Innovation Act of 2017, NOAA can successfully procure weather data from the commercial sector and improve weather modeling as a result.

Additionally, while the NWS’s Aviation Weather Center provides some turbulence tools and services, it is primarily focused on “potentially hazardous weather conditions” which can exclude specific events. This information is primarily communicated in the form of AIRMETs and SIGMETs, which cover large geographic areas with broad warnings and potential conditions, not flight specific routes.

The Aviation Weather Improvement Act addresses these issues by codifying the inclusion of turbulence events or phenomena in the operation forecasting capabilities of the Aviation Weather Center. Through the updated mission and coordination directed by H.R. 3915, the Aviation Weather Center will determine weather and environmental data or observation requirements, needs, and potential solutions to turbulence forecasting, as well as identify data gaps that can inform route specific flight planning or be filled by commercial aviation tools.

LEGISLATIVE HISTORY

H.R. 3915 was introduced on June 6, 2023, by Representative McCormick (R-GA) and is cosponsored by Rep. Stevens (D-MI).

On July 27, 2023, the Committee on Science, Space, and Technology met to consider H.R. 3915. Rep. McCormick offered an amendment in the nature of a substitute, which made minor changes resulting from input provided by the Federal Aviation Administration and the National Oceanic and Atmospheric Administration. The amendment passed by voice vote. Chairman Lucas moved that Committee favorably report the bill, H.R. 3915, as amended, to the House of Representatives with the recommendation that the bill be approved. The motion was agreed to by a vote of 35–0.

SECTION-BY-SECTION

Section 1. Short title

The short title of this legislation is the “Aviation Weather Improvement Act.”

Section 2. Aviation Weather and Data Innovation

This section directs the National Weather Service (NWS) to establish an airborne observation program for the acquisition of atmospheric sensor data and the deployment, in partnership with the weather enterprise, of critical atmospheric sensors. Specifically, this section directs the NWS to procure weather data available from commercial aircraft and analyze that data when incorporated into NOAA's unified forecast system.

This section also requires the NWS to submit an annual proposed budget to Congress corresponding to these activities and authorizes \$10,000,000 from amounts appropriated to NOAA for each fiscal year 2024 through 2028.

Section 3. Aviation Weather and Turbulence Forecasting Coordination

This section directs the National Weather Service to include turbulence events or phenomena, icing conditions, and other phenomena in the forecasting capabilities of the Aviation Weather Center. It also directs the Aviation Weather Center to deliver operational forecasts with consistent, timely, and accurate weather and turbulence information for the airspace system.

This section also ensures that the NWS considers recommendations made by the Federal Aviation Administration regarding weather and turbulence forecasting capabilities. The NWS is directed to identify current and future potential data gaps related to turbulence and fill those gaps with commercial aviation tools.

Section 4. Next Generation Aviation Research

This section amends the Weather Research and Forecasting Innovation Act of 2017 by inserting aviation weather phenomena research into the list of activities conducted by NOAA's Office of Oceanic and Atmospheric Research.

RELATED COMMITTEE HEARINGS

On March 28, 2023, the Subcommittee on Environment held a hearing entitled *Reauthorizing the Weather Act: Data and Innovation for Predictions*. Members and witnesses discussed the importance of and need for commercial weather data, including in aviation, to improve Federal forecasting and modeling capabilities.

Witnesses:

- Mr. Richard Jenkins, Founder & CEO, Sairdrone, Inc.
- Ms. Meredith Bell, Atmospheric Program Manager, FLYHT Inc.
- Dr. Antonio J. Busalacchi Jr, President, University Corporation for Atmospheric Research.
- Mr. Michael Eilts, General Manager, Weather and Earth Intelligence, Spire Global.

COMMITTEE CONSIDERATION

On July 27, 2023, the Committee met in open session and ordered reported favorably the bill, H.R. 3915, as amended, by a recorded vote of 35 yeas to 0 nays, a quorum being present.

ROLL CALL VOTES

Clause 3(b) of rule XIII requires the Committee to list the record votes on the motion to report legislation and amendments thereto. The following reflects the record votes taken during the Committee consideration:

House Committee on Science, Space, and Technology
 118th Congress
 Full Committee Markup

Bill # HR 3915

Motion to report HR 3915 to the House, as amended

Majority	Aye	No	Present
Frank Lucas, Oklahoma	1		
Bill Posey, Florida	1		
Randy Weber, Texas	1		
Brian Babin, Texas	1		
Jim Baird, Indiana	1		
Daniel Webster, Florida			
Mike Garcia, California	1		
Stephanie Bice, Oklahoma			
Jay Obernolte, California	1		
Chuck Fleischmann, Tennessee	1		
Darrell Issa, California	1		
Rick Crawford, Arkansas	1		
Claudia Tenney, New York	1		
Ryan Zinke, Montana			
Scott Franklin, Florida	1		
Dale Strong, Alabama	1		
Max Miller, Ohio	1		
Rich McCormick, Georgia	1		
Mike Collins, Georgia	1		
Brandon Williams, New York			
Tom Kean, New Jersey	1		
Minority	Aye	No	Present
Zoe Lofgren, California	1		
Suzanne Bonamici, Oregon	1		
Haley Stevens, Michigan	1		
Jamaal Bowman, New York	1		
Deborah Ross, New Carolina	1		
Eric Sorensen, Illinois	1		
Andrea Salinas, Oregon	1		
Val Foushee, North Carolina	1		
Kevin Mullin, California	1		
Jeff Jackson, North Carolina	1		
Emilia Sykes, Ohio	1		
Maxwell Frost, Florida	1		
Yadira Caraveo, Colorado	1		
Summer Lee, Pennsylvania	1		
Jennifer McClellan, Virginia	1		
Ted Lieu, California	1		
Sean Casten, Illinois	1		
Paul Tonko	1		
Total	35	0	

Date: 7/27/23

Result?	Agreed To: [X]		
	Not Agreed To: []		
	Withdrawn: []		
<i>Voice Vote</i>	<i>Ayes</i>	<i>Nays</i>	<i>Present</i>
	35	0	

APPLICATION OF LAW TO THE LEGISLATIVE BRANCH

The Committee finds that H.R. 3915 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

STATEMENT OF OVERSIGHT FINDINGS AND RECOMMENDATIONS OF THE COMMITTEE

In compliance with clause 3(c)(1) of rule XIII and clause (2)(b)(1) of rule X, the Committee's oversight findings and recommendations are reflected in the descriptive portions of this report.

STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause (3)(c)(4) of rule XIII, the goal of H.R. 3915 is to improve the National Weather Service's forecasting of turbulence and acquisition of aviation weather data.

DUPLICATION OF FEDERAL PROGRAMS

Pursuant to clause 3(c)(5) of rule XIII, the Committee finds that no provision of H.R. 3915 establishes or reauthorizes a program of the Federal Government known to be duplicative of another Federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or identified in the most recent Catalog of Federal Domestic Assistance.

FEDERAL ADVISORY COMMITTEE ACT

The Committee finds that the legislation does not establish or authorize the establishment of an advisory committee within the definition of section 5(b) of the Federal Advisory Committee Act.

UNFUNDED MANDATE STATEMENT

The Committee adopts as its own the estimate of Federal mandates prepared by the Director of the Congressional Budget Office pursuant to section 423 of the Unfunded Mandates Reform Act.

EARMARK IDENTIFICATION

Pursuant to clauses 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 3915 does not include any congressional earmarks, limited tax benefits, or limited tariff benefits.

COMMITTEE COST ESTIMATE

Pursuant to clause 3(d)(1) of rule XIII, the Committee adopts as its own the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974. At the time this report was filed, the estimate was not available.

NEW BUDGET AUTHORITY, ENTITLEMENT AUTHORITY, AND
TAX EXPENDITURES

Pursuant to clause 3(c)(2) of rule XIII, the Committee finds that H.R. 3915 would result in no new or increased budget authority, entitlement authority, or tax expenditures or revenues.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

Pursuant to clause 3(c)(3) of rule XIII, at the time this report was filed, the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974 was not available.

CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, and existing law in which no change is proposed is shown in roman):

**WEATHER RESEARCH AND FORECASTING INNOVATION
ACT OF 2017**

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**TITLE I—UNITED STATES WEATHER RE-
SEARCH AND FORECASTING IM-
PROVEMENT**

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SEC. 102. WEATHER RESEARCH AND FORECASTING INNOVATION.

(a) PROGRAM.—The Assistant Administrator for the Office of Oceanic and Atmospheric Research shall conduct a program to develop improved understanding of and forecast capabilities for atmospheric events and their impacts, placing priority on developing more accurate, timely, and effective warnings and forecasts of high impact weather events that endanger life and property.

(b) PROGRAM ELEMENTS.—The program described in subsection (a) shall focus on the following activities:

(1) Improving the fundamental understanding of weather consistent with section 101, including the boundary layer and other processes affecting high impact weather events.

(2) Improving the understanding of how the public receives, interprets, and responds to warnings and forecasts of high impact weather events that endanger life and property.

(3) Research and development, and transfer of knowledge, technologies, and applications to the National Weather Service and other appropriate agencies and entities, including the United States weather industry and academic partners, related to—

(A) advanced radar, radar networking technologies, and other ground-based technologies, including those empha-

sizing 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 107), Observing System Experiments, and Analyses of Alternatives;

(F) *aviation weather phenomena, including atmospheric composition and turbulence, to improve scientific understanding and forecast capabilities for the airspace system;*

[(F)] (G) 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)] (H) 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, United States Code, for the National Oceanic and Atmospheric Administration, the Under Secretary shall submit to Congress a description of current and planned activities under this section.

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