

# **The Weather Act Reauthorization Act of 2023**

## Section-by-Section

### ***Section 1: Short Title; Table of Contents***

States the short title of the bill and includes the table of contents for the bill.

### ***Section 2: Definitions.***

Defines the terms “seasonal,” “State,” “subseasonal,” “Under Secretary,” “weather enterprise,” “weather data,” and “weather industry” to have the same meaning as in the Weather Research and Forecasting Innovation Act of 2017.

## **Title I – Reauthorization of the Weather Research and Forecasting Innovation Act of 2017**

### ***Section 101: Public Safety Priority.***

Amends the Weather Act of 2017 to ensure that the National Oceanic and Atmospheric Administration (NOAA) remains focused on providing accurate and timely weather forecasts that protect lives and property and enhance the national economy.

### ***Section 102: United States Weather Research and Forecasting.***

Amends the Weather Act of 2017 with authorization of appropriations for NOAA’s Office of Oceanic and Atmospheric Research to carry out the activities of this bill through four accounts: weather laboratories and cooperative institutes; the United States Weather Research Program; tornado, severe storm, and next generation radar research; and the joint technology transfer initiative.

The amounts authorized to be appropriated are a 1% annual increase from the FY 22 appropriated amount.

### ***Section 103: Verification of the Origins of Rotation in Tornadoes Experiment (VOTEX).***

Amends the Tornado Warning Improvement and Extension Program as established by the Weather Act of 2017. Specifically, this section expands the goals of the program to improve the effectiveness and timeliness of tornado forecasts, predictions, and warnings by optimizing lead times, transitioning to warn-on-forecast, and updating the system to rate the severity of tornadoes in collaboration with local communities and emergency managers.

### ***Section 104: Hurricane Forecasting Improvement Program.***

Amends the Hurricane Forecast Improvement Project as established by the Weather Act of 2017. Specifically, this section builds on the progress made through the project by establishing it as a long-term program which will incorporate social, behavioral, risk, and communication science into probabilistic modeling, forecasting, and response guidance.

***Section 105: Tsunami Warning, Education, and Research.***

Amends the Tsunami Forecasting and Warning Program as established and modified by the Tsunami Warning, Education, and Research Act of 2017 within the Weather Act of 2017. Specifically, this section directs NOAA to align the analytic techniques and methodologies of the two existing tsunami warning centers in Hawaii and Alaska. Additionally, this section extends authorization of appropriations which had expired in 2021.

***Section 106: Observing System Planning.***

Amends the Weather Act of 2017 to ensure NOAA is focused on Federal systems when developing the prioritized list of observation data requirements that are necessary for weather forecasting capabilities to protect life and property. This section also requires NOAA to compare costs and schedule of Federal and private sector supplemental options when meeting these capabilities.

Additionally, this section directs NOAA to submit a report to Congress analyzing the technicalities, schedule, and cost benefits of a polar-orbiting environmental satellite in the early morning orbit.

***Section 107: Observing System Simulation Experiments.***

Amends the Weather Act of 2017 to ensure NOAA assesses the capabilities and costs of current or experimental commercial systems capabilities when conducting required assessments of major Government-owned or Government-leased operational observing systems. Additionally, this section removes the priority placed on experiments for systems that have already been completed.

***Section 108: Computing Resources Prioritization.***

Amends the Weather Act of 2017 by inserting Rep. Max Miller's H.R. 1715, which establishes a joint research initiative with the Department of Energy to conduct proof of concept weather forecasts and models on high performance or quantum computers and using cloud computing.

Additionally, this section directs NOAA to leverage artificial intelligence and machine learning technologies, as well as establish Centers of Excellence for public-private partnerships to address current and future mission needs, including workforce development.

This section also removes the requirement for NOAA to deliver a triennial report on computing infrastructure and inserts an updated report requirement on estimating the specific needs, timeline, and strategy for joint NOAA-DOE activities that advance high-resolution numerical weather prediction models.

***Section 109: Earth Prediction Innovation Center.***

Amends the Weather Act of 2017 to modernize and improve the activities and mission of the Earth Prediction Innovation Center (EPIC). Specifically, this section directs EPIC to develop a community weather research model that is open source for testing and incorporates promising improvements from the weather industry.

Additionally, this section directs NOAA to establish a data lake that maintains and consolidates an updated collection of data and metadata that can be used in numerical weather prediction and EPIC models.

***Section 110: Satellite Architecture Planning.***

Amends the Weather Act of 2017 to ensure that NOAA maintains a fleet of space-based observation platforms that prioritize the development of products or services tailored to meet NOAA's mission through a mix of government, academic, commercial section, and international partnerships. This section also ensures that the existing National Centers for Environmental Information provide long-term archives and access to all data and metadata.

Additionally, this section removes the requirement for an annual report on the Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) program and a completed independent study, while extending until 2030 the existing requirement for an annual report on the use of additional transaction authority.

***Section 111: Improving Uncrewed Activities.***

Amends the Weather Act of 2017 to ensure that uncrewed aircraft and marine systems are included in weather data research and development carried out by the United States Weather Research Program.

***Section 112: Interagency Council for Advancing Meteorological Services.***

Amends the Weather Act of 2017 to update and refine the focus of the Interagency Council for Advancing Meteorological Services (ICAMS) that is chartered under the authority of the Office of Science and Technology Policy. Specifically, this section ensures ICAMS is the formal mechanism by which Federal departments and agencies coordinate implementation of policies and practices with the goal of United States global leadership in meteorological services.

Additionally, this section directs ICAMS to maintain a data inventory of Federal meteorological observations, as well as annually solicit updated information from private sector entities regarding current or near future sources of such data. This section also allows member departments and agencies of ICAMS to provide reimbursable financial support to the coordinating office.

***Section 113: Ocean Observations.***

Amends the Integrated Coastal and Ocean Observation System Act by directing NOAA to establish a pilot program to contract with research or commercial ship operators for data collection in order to assess the viability of a global network to supplement the Integrated Coastal and Ocean Observation System.

***Section 114: Consolidation of Reports.***

Removes the requirement of 7 different out-of-date or completed reports.

## **Title II – Enhancing Federal Weather Forecasting and Innovation**

### ***Section 201: Weather Innovation for the Next Generation.***

Inserts the text of Rep. Randy Feenstra’s H.R. 3764, which establishes a research, development, test, and evaluation program to ensure the continued performance of weather radar capabilities. Specifically, this section requires NOAA to identify, evaluate, and test technologies or solutions that improve radar coverage and performance, including by mitigating the impacts of obstructions.

### ***Section 202: Next Generation Radar.***

Inserts the text of Rep. Rick Crawford’s H.R. 4575, which directs NOAA to develop a plan to replace the Next Generation Weather Radar (NEXRAD) of the National Weather Service. This section requires NOAA to take action to implement the NEXRAD replacement plan by the end of Fiscal Year 2040 and give Congress periodic updates.

Additionally, this section gives NOAA the authority to utilize and contract with third party entities to fill radar data voids and supplement weather radar coverage by acquiring data, services, and technologies.

### ***Section 203: Data Voids in Highly Vulnerable Areas of the United States.***

Inserts part of Rep. Thomas Kean’s H.R. 4069, which directs NOAA, in coordination with FEMA, to address weather observation gaps in under-observed, underserved, or highly vulnerable areas of the United States. Specifically, this section directs NOAA and FEMA to establish an interagency partnership to support pilot projects that accelerate coordination and use of localized data and communications in infrastructure and emergency management.

### ***Section 204: Atmospheric Rivers Forecast Improvement Program.***

Inserts part of Rep. Mike Garcia’s & Rep. Jay Obernolte’s H.R. 3966, which establishes an atmospheric river forecast improvement program to develop tools and improved forecast products, including quantitative forecast skill metrics, that advance accurate, effective, and actionable forecasts and warnings that reduce the loss of life or property from atmospheric rivers.

### ***Section 205: Coastal Flooding and Storm Surge Forecast Improvement Program.***

Inserts part of Rep. Thomas Kean’s H.R. 4069, which establishes a coastal flooding and storm surge forecast improvement program to improve understanding and capacity for real-time operational prediction of coastal flooding, including high tide flooding, and storm surge events. Specifically, this section directs NOAA to use innovative observations and modeling to develop probabilistic estimates for use in long-term planning and risk management by States, Tribal governments, localities, and emergency managers.

### ***Section 206: Aviation Weather and Data Innovation.***

Inserts the text of Rep. Rich McCormick’s H.R. 3915, which establishes an airborne observation program for the acquisition of atmospheric sensor data and the deployment of critical

atmospheric sensors. Specifically, this section directs NOAA to procure weather data from commercial aircraft and analyze such data when incorporated into the unified forecast system.

Additionally, this section directs the National Weather Service to include turbulence events, icing conditions, or other related phenomena in the forecasting capabilities of the Aviation Weather Center. In carrying out these activities, the NWS is authorized to designate an existing or establish a new interagency working group, identify current or future data gaps related to turbulence, and update interagency agreements.

***Section 207: NESDIS Joint Venture Partnership Transition Program.***

Authorizes NOAA's National Environmental Satellite, Data, and Informative Service, in consultation with NASA, to administer broad agency announcements and contracting mechanisms to support a joint venture partnership program that engages with the private sector, academia, and other Federal departments and agencies to transition awards from research and study phases into demonstration. This section includes a total of \$20M in authorization of appropriations for these activities.

***Section 208: Advanced Weather Interactive Processing System.***

Directs the National Weather Service to develop a strategy to transition operations of the Advanced Weather Interactive Processing System – the system required to produce watches, warnings, and forecasts at every Weather Forecast Office – to an operational cloud-based environment. This section requires NWS to take actions to ensure the transition strategy is completed by the end of Fiscal Year 2030.

**Title III – Commercial Weather and Environmental Observations**

***Section 301: Commercial Data Program.***

Codifies the Commercial Data Program at NOAA to expand on activities related to obtaining a broad variety of weather and environmental data and services from the private sector for operational use. This section directs NOAA to maintain a Data Governance Committee within its Observing System Council for the purpose of ensuring coordinated and uniform processes for commercial data acquisitions. This section also establishes an Ombudsman position in NOAA's Office of Research, Transition, and Applications to serve as a liaison between commercial data providers and NOAA.

Additionally, this section authorizes the appropriation of \$100M for each Fiscal Year 2024 through 2028 to acquire surface-based, airborne-based, space-based, and coastal- and ocean-based data, metadata, and services for operational use. This section includes a Sense of Congress that NOAA should enter contracts or agreements with private sector providers to expend all amounts appropriated in a fiscal year.

***Section 302: Commercial Data Pilot Program.***

Modifies the existing commercial data pilot program to be a testing program within the Commercial Data Program. Directs the Pilot Program to engage with external partners and

providers to test and evaluate all sources and types of observation services, imagery, products, and data. The Pilot Program is also directed to test, develop, and publish within 180 days shared standards and methodologies for quality, use, licensing, and attribution of observation services and data.

Additionally, this section authorizes NOAA to enter into pilot contracts with private sector entities capable of providing observation services and data in a manner that allows NOAA to calibrate and evaluate such services and data for use in modeling and forecasting activities. This section specifies that if a pilot contract is assessed to be viable, accurate, and cost-effective, the Commercial Data Program shall enter into a contract to acquire such data or services.

This section authorizes appropriations for the Pilot Program at not less than 15% of the total amount appropriated to the Commercial Data Program each fiscal year.

***Section 303: Contracting Authority and Avoidance of Duplication.***

Authorizes NOAA to enter into year-long or multiyear contracts, partner or contract with multiple observation service or data providers simultaneously and utilize any other authorities like transaction agreements to enter innovative partnerships with the private sector.

Additionally, this section directs NOAA to avoid duplication with NASA and other Federal departments and agencies by coordinating all contracts and partnership with private sector data providers and, to the maximum extent possible, execute all contracts through the Commercial Data Program. This section directs NOAA to ensure that other Federal departments and agencies utilizing services or data through the Program fairly compensate NOAA or the private sector entity providing such service or data.

***Section 304: Data Assimilation, Management, and Sharing Practices.***

Directs NOAA to consider the use of commercial cloud technologies to host and transmit data and metadata acquired by the Commercial Data Program. This section gives NOAA the authority to partner with other Federal departments or agencies to collocate data with joint utility. This section also directs NOAA to ensure that the long-term management, maintenance, and stewardship of acquired data is conducted by the National Centers for Environmental Information and made available to the U.S. weather enterprise in accordance with contract permissions and redistribution terms.

Additionally, this section establishes a program to test, advance, and implement data assimilation methods, including through the use of artificial intelligence, machine learning, and next-generation algorithms. This section also directs NOAA to establish a consortium of institutions of higher education to address critical research challenges for data assimilation and foster a growing data assimilation workforce.

This section requires NOAA to enter into an agreement with a non-Federal entity to conduct a study on data practices and management needs at NOAA, including recommendations on data infrastructure.

***Section 305: Clerical Amendment.***

Updates the table of contents in the Weather Act of 2017 to reflect the addition of the new sections in this Title.

**Title IV – Communicating Weather to the Public**

***Section 401: Definitions.***

Defines the terms “hazardous weather or water events,” “institution of higher education,” “NOAA weather radio,” “public cloud,” “watch,” and “warning.”

***Section 402: Hazardous Weather or Water Event Risk Communication.***

Requires NOAA maintain and improve a system by which risks of hazardous weather or water events are communicated to the public with the goal of informing response to prevent loss of life or property. Establishes a program to use social, behavioral, risk, communication, and economic sciences to simplify, improve, and develop metrics for the communication of hazardous events.

***Section 403: Hazard Communication Research and Engagement.***

Requires NOAA to maintain a program to modernize the development and communication of probabilistic hazard information. Requires the program to improve the social, behavioral, economic, risk, and communication sciences used to communicate hazardous events, including by voluntary collection of data.

Additionally, this section establishes a pilot program with one or more eligible institutions to test the effectiveness of implementing such research into operations with respect to tornado hazard communications.

***Section 404: National Weather Service Communications Improvement.***

Inserts the text of Rep. Randy Feenstra’s H.R. 1496, which directs the National Weather Service to replace their instant messaging service, known as NWSChat, with a public cloud-based platform. This section authorizes the appropriation of \$3M each year until 2027 to conduct this activity.

***Section 405: NOAA Weather Radio Modernization.***

Inserts the text of Rep. Stephanie Bice’s H.R. 1482, which directs NOAA to maintain, expand, and modernize the NOAA Weather Radio (NWR) system that broadcasts weather information across 90% of the United States and its territories. This section directs NOAA to upgrade telecommunications infrastructure, accelerate software upgrades, develop backup options, and consult with relevant stakeholders in order to ensure NWR meets its maximum performance potential and coverage remains valuable to the public.

***Section 406: Post-storm Surveys and Assessments.***

Directs NOAA to perform one or more post-storm surveys or assessments following every hazardous weather or water event determined to be of sufficient societal importance by the

NOAA Administrator. Requires that post-storm surveys and assessments are done in coordination with Federal, State, local, and Tribal governments, and the data obtained is made available to the public as soon as practicable.

Additionally, this section exempts post-storm surveys and assessments from the Paperwork Reduction Act, which will save NWS an estimated 9 months per each new survey it designs.

***Section 407: GAO Report on Alert Dissemination for Hazardous Weather or Water Events.***

Requires the Government Accountability Office (GAO) to submit to Congress a report examining the information technology infrastructure of NOAA and the system for public notification regarding hazardous weather or water events. Specifically, this section requires the report to identify secondary and tertiary fail-safe measures, assess collaborations that could reduce delays in notification, and analyze the source and extent of public notification delays.

***Section 408: Data Collection Management and Protection.***

Authorizes NOAA to collect social, behavioral, and economic data, including through purchase or partnership collections, related to communications and public response to hazardous weather or water events. Requires that such data is collected and managed within all legal, regulatory, and contractual obligations and in accordance with all relevant laws. This section also directs NOAA to establish a central repository system for such data.

Additionally, this section directs NOAA to develop methods that reduce the likelihood of unauthorized tampering with online public notifications, such as digital watermarks.

**Title V – Improving Weather Information for Agriculture and Water Management**

***Section 501: Weather and Climate Information in Agriculture and Water Management.***

Inserts the text of Rep. Jim Baird’s H.R. 3802 and part of Rep. Mike Garcia’s & Rep. Jay Obernolte’s H.R. 3966, which direct NOAA to establish not fewer than 2 pilot projects to support improved subseasonal to seasonal precipitation forecasts for agriculture and water management. Specifically, these pilot projects are directed to improve operational model resolution and achieve measurable objective for operational forecast improvement. This section also removes a completed report requirement on NOAA’s plans and goals for subseasonal and seasonal forecasts.

Additionally, this section reauthorizes the National Weather Service’s existing involvement in providing agricultural and silvicultural weather and climate information. This section authorizes the appropriation of \$45M for each fiscal year through 2028 for these activities and pilot projects.

***Section 502: National Integrated Drought Information System.***

Inserts part of Rep. Mike Collins’ H.R. 4373, which reauthorizes and updates the National Integrated Drought Information System (NIDIS). Specifically, this section directs NIDIS to advance and deploy next generation drought monitoring technologies and transition existing



drought products to probabilistic forecasts. This section extends the authorization of appropriations for the NIDIS at an annual increase of \$0.5M through Fiscal Year 2028.

***Section 503: National Mesonet Program.***

Inserts the text of Rep. Stephanie Bice's H.R. 2995, which codifies and authorizes the National Mesonet Program. Specifically, the National Mesonet Program is directed to obtain observations in all geographic environments and increase the quantities of boundary-layer data to improve numerical weather prediction performance.

Additionally, this section gives the National Mesonet Program the authority to provide financial and technical assistance to State, Tribal, private, and academic entities seeking to build, expand, or upgrade the equipment or capacity of a mesonet system. Before financial assistance is provided, the entity must enter into an agreement to provide data to the Program and allow the Program to verify the operational value and cost of such data.

This section also ensures that the Program has an active advisory committee of subject matter experts to make recommendations on the identification, implementation, procurement, and tracking of data needed to supplement the Program. The advisory committee is required to include expertise from one or more institutions of higher education and regularly report to Congress.

***Section 504: National Coordinated Soil Moisture Monitoring Network.***

Inserts part of Rep. Mike Collins' H.R. 4373, which requires the development, deployment, and maintenance of a soil moisture monitoring network within the National Integrated Drought Information System. Eliminates the requirement for a completed report on the strategy to develop such a network.

***Section 505: National Water Center.***

Reauthorizes the activities of the National Water Center and designates the Center as NOAA's primary center in collaborating and coordinating water research and operational activities with other Federal centers and networks. Additionally, this section ensures that the National Water Center is a component of the National Centers for Environmental Prediction in line with all of NOAA's other centers.

***Section 506: Satellite Transfers Report.***

Requires the Department of Commerce to report to Congress on the Department's authorities and policies, as well as government-wide policies, related to transferring any portion of weather satellite systems to another Federal agency or department. The report is required to include a summary of any plans the Department of Commerce has to transfer existing or future weather satellite systems.