

118TH CONGRESS  
1ST SESSION

# H. R. 3966

To accelerate subseasonal to seasonal prediction skills related to precipitation forecasts for water management in the western United States, improve atmospheric river forecasts across the country, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

JUNE 9, 2023

Mr. MIKE GARCIA of California (for himself and Mr. OBERNOLTE) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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## A BILL

To accelerate subseasonal to seasonal prediction skills related to precipitation forecasts for water management in the western United States, improve atmospheric river forecasts across the country, 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.**

4 This Act may be cited as the “Improving Atmos-  
5 pheric River Forecasts Act”.

1 **SEC. 2. SUBSEASONAL TO SEASONAL FORECASTING PILOT**  
2 **PROJECTS.**

3 (a) IMPROVING SUBSEASONAL AND SEASONAL FORE-  
4 CASTS.—Subsection (h) of section 1762 of the Food Secu-  
5 rity Act of 1985 (15 U.S.C. 8521) is amended to read  
6 as follows:

7 “(h) SUBSEASONAL TO SEASONAL FORECASTING  
8 PILOT PROJECTS.—

9 “(1) ESTABLISHMENT.—The Under Secretary  
10 shall establish at least one pilot project within the  
11 U.S. Weather Research Program of the Oceanic and  
12 Atmospheric Research office of the National Oceanic  
13 and Atmospheric Administration to support im-  
14 proved subseasonal to seasonal precipitation fore-  
15 casts for water management in the western United  
16 States.

17 “(2) OBJECTIVES.—In carrying out this sub-  
18 section, the Under Secretary shall ensure that a  
19 pilot project under paragraph (1) addresses key  
20 science challenges to improving forecasts and devel-  
21 oping related products described in subsection (c)  
22 for water management in the western United States,  
23 including the following:

24 “(A) Improving model resolution, both hor-  
25 izontal and vertical, to resolve issues associated  
26 with mountainous terrain, such as intensity of

1 precipitation and relative fraction of rain versus  
2 snow precipitation.

3 “(B) Improving fidelity in modeling of—  
4 “(i) the atmospheric boundary layer in  
5 mountainous regions; and  
6 “(ii) atmospheric rivers.

7 “(C) Resolving challenges in predicting  
8 winter atmospheric circulation and storm  
9 tracks, including periods of blocked versus  
10 unblocked flow over the eastern North Pacific  
11 Ocean and western United States.

12 “(D) Advancing scientific understanding of  
13 the roles of atmospheric rivers in subseasonal to  
14 seasonal precipitation, and developing tools to  
15 predict periods of active or inactive atmospheric  
16 river landfalls and inland penetration over the  
17 western United States.

18 “(3) ACTIVITIES.—A pilot project under this  
19 subsection shall include activities that carry out the  
20 following:

21 “(A) Best implement recommendations of  
22 the National Weather Service’s 2019 Report,  
23 entitled ‘Subseasonal and Seasonal Forecasting  
24 Innovation: Plans for the Twenty-First Cen-  
25 tury’.

1           “(B) Achieve measurable objectives for  
2           operational forecast improvement.

3           “(C) Engage with, and leverage the re-  
4           sources of, institutions of higher education (as  
5           such term is defined in section 101 of the High-  
6           er Education Act of 1965 (20 U.S.C. 1001))  
7           with experience in western precipitation science,  
8           as well as entities within the National Oceanic  
9           and Atmospheric Administration in existence as  
10          of the date of the enactment of this subsection,  
11          including the Western Regional Climate Center  
12          and the National Centers for Environmental In-  
13          formation.

14          “(D) Are carried out in coordination with  
15          the Assistant Administrator for the Office of  
16          Oceanic and Atmospheric Research and the Di-  
17          rector of the National Weather Service.

18          “(4) AUTHORIZATION OF APPROPRIATIONS.—  
19          From amounts made available to Operations, Re-  
20          search, and Facilities at the National Oceanic and  
21          Atmospheric Administration, there is authorized to  
22          be appropriated \$15,000,000 for each of fiscal years  
23          2024 through 2028 to carry out this subsection.

1           “(5) SUNSET.—The authority under this sub-  
2           section shall terminate on the date that is five years  
3           after the date of the enactment of this subsection.”

4   **SEC. 3. ATMOSPHERIC RIVERS FORECAST IMPROVEMENT**  
5           **PROGRAM.**

6           (a) IN GENERAL.—The Under Secretary, in collabo-  
7           ration with the United States weather industry and aca-  
8           demic partners, shall establish an atmospheric river fore-  
9           cast improvement program (in this section referred to as  
10          the “program”).

11          (b) GOAL.—The goal of the program shall be to re-  
12          duce through the development and extension of accurate,  
13          effective, and actionable forecasts and warnings the loss  
14          of life and economic losses from atmospheric rivers, in-  
15          cluding by—

16                (1) establishing quantitative atmospheric river  
17                forecast skill metrics; and

18                (2) developing methods to categorize the inten-  
19                sity of atmospheric rivers.

20          (c) INNOVATIVE OBSERVATIONS AND MODELING.—  
21          The Under Secretary shall ensure the program periodically  
22          examines, tests, and evaluates the value of incorporating  
23          innovative observations, such as observations from crewed  
24          or uncrewed aircraft, novel airborne and satellite-based  
25          snowpack measurements, ocean buoys data, soil moisture

1 monitoring systems, reservoir storage data, observations  
2 from mesonets, or other emerging technologies, with re-  
3 spect to the improvement of atmospheric river forecasts,  
4 predictions, and warnings.

5 (d) PROGRAM PLAN.—Not later than 180 days after  
6 the date of the enactment of this Act, the Assistant Ad-  
7 ministrator for Oceanic and Atmospheric Research, in co-  
8 ordination with the Director of the National Weather  
9 Service, shall develop a plan that details the specific re-  
10 search, development, data acquisition, and technology  
11 transfer activities, as well as corresponding resources and  
12 timelines, necessary to achieve the goals of the program  
13 under subsection (b).

14 (e) ANNUAL BUDGET FOR PLAN SUBMITTAL.—After  
15 the development of the plan pursuant to subsection (d),  
16 the Under Secretary, acting through the Assistant Admin-  
17 istrator for Oceanic and Atmospheric Research, and in co-  
18 ordination with the Director of the National Weather  
19 Service, shall, not less frequently than annually, submit  
20 to Congress a proposed budget corresponding with the ac-  
21 tivities identified in such plan.

22 (f) DEFINITIONS.—In this section, the terms “Under  
23 Secretary” and “weather industry” have the meanings  
24 given such terms in section 2 of the Weather Research

1 and Forecasting Innovation Act of 2017 (15 U.S.C.  
2 8501).

