

Calendar No. 596

117TH CONGRESS
2^D SESSION

S. 3053

To amend the Weather Research and Forecasting Innovation Act of 2017 to require the Administrator of the National Oceanic and Atmospheric Administration to develop a plan and national guidance document to improve precipitation estimates, and for other purposes.

IN THE SENATE OF THE UNITED STATES

OCTOBER 21, 2021

Mr. BOOKER (for himself and Mr. WICKER) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

DECEMBER 7, 2022

Reported by Ms. CANTWELL, with an amendment

[Strike out all after the enacting clause and insert the part printed in *italic*]

A BILL

To amend the Weather Research and Forecasting Innovation Act of 2017 to require the Administrator of the National Oceanic and Atmospheric Administration to develop a plan and national guidance document to improve precipitation estimates, 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Providing Research
3 and Estimates of Changes In Precipitation Act” or the
4 “PRECIP Act”.

5 **SEC. 2. AMENDMENT TO THE WEATHER RESEARCH AND**
6 **FORECASTING INNOVATION ACT OF 2017 TO**
7 **IMPROVE FEDERAL PRECIPITATION INFOR-**
8 **MATION.**

9 (a) IN GENERAL.—The Weather Research and Fore-
10 casting Innovation Act of 2017 (15 U.S.C. 8501 et seq.)
11 is amended by adding at the end the following:

12 **“TITLE VI—IMPROVEMENT OF**
13 **FEDERAL PRECIPITATION IN-**
14 **FORMATION**

15 **“SEC. 601. STUDY ON PRECIPITATION ESTIMATION.**

16 “(a) IN GENERAL.—Not later than 90 days after the
17 date of the enactment of the PRECIP Act, the Adminis-
18 trator, in consultation with other Federal agencies as ap-
19 propriate, shall seek to enter an agreement with the Na-
20 tional Academies under which the National Academies
21 shall—

22 “(1) conduct a study on the state of practice
23 and research needs for precipitation estimation, in-
24 cluding probable maximum precipitation estimation;
25 and

1 “(2) not later than 2 years after the date on
2 which such agreement is finalized—

3 “(A) submit to the Committee on Com-
4 merce, Science, and Transportation of the Sen-
5 ate and the Committee on Science, Space, and
6 Technology of the House of Representatives a
7 report on the results of the study conducted
8 under paragraph (1); and

9 “(B) make the report submitted under
10 subparagraph (A) publicly available on a
11 website.

12 “(b) REPORT ON STUDY.—The report submitted
13 under subsection (a)(2)(A) shall include the following:

14 “(1) An examination of the current state of
15 practice for precipitation estimation at scales appro-
16 priate for the needs of decisionmakers, and rationale
17 for further evolution of that field.

18 “(2) An evaluation of best practices for precipi-
19 tation estimation that—

20 “(A) are based on the best available
21 science, including assumptions of non-station-
22 arity; and

23 “(B) can be utilized by the user commu-
24 nity.

25 “(3) A framework for—

1 “(A) the development of a national guid-
2 ance document for estimating extreme precipi-
3 tation; and

4 “(B) evaluation of the strengths and chal-
5 lenges of the full spectrum of approaches for
6 such estimation, including for probable max-
7 imum precipitation studies.

8 “(4) A description of existing research needs in
9 the field of precipitation estimation in order to mod-
10 ernize current methodologies and incorporate the
11 best available science.

12 “(5) A description of in-situ, airborne, and
13 space-based observation requirements that could en-
14 hance precipitation estimation and development of
15 models, including an examination of the use of geo-
16 graphic information systems and geospatial tech-
17 nology for integration, analysis, and visualization of
18 precipitation data.

19 “(6) A recommended plan for a Federal re-
20 search and development program, including speci-
21 fications for costs, timeframes, and responsible agen-
22 cies for addressing identified research needs.

23 “(7) An analysis of the respective roles in pre-
24 cipitation estimation of various Federal agencies;

1 academia, State, tribal, territorial, and local govern-
 2 ments, and other public and private stakeholders.

3 ~~“(8) Recommendations for data management to~~
 4 ~~promote long-term needs such as enabling retrospec-~~
 5 ~~tive analyses and data discoverability, interoper-~~
 6 ~~ability, and reuse.~~

7 ~~“(9) Recommendations for how data and serv-~~
 8 ~~ices from the entire enterprise can be best leveraged~~
 9 ~~by the Federal Government.~~

10 ~~“(10) Such other topics as the Administrator or~~
 11 ~~the National Academies consider appropriate.~~

12 ~~“(e) AUTHORIZATION OF APPROPRIATIONS.—There~~
 13 ~~is authorized to be appropriated to the National Oceanic~~
 14 ~~and Atmospheric Administration \$1,500,000 to carry out~~
 15 ~~the study under this section.~~

16 ~~**“SEC. 602. IMPROVING PROBABLE MAXIMUM PRECIPITA-**~~
 17 ~~**TION ESTIMATES.**~~

18 ~~“(a) IN GENERAL.—Not later than 90 days after the~~
 19 ~~date on which the National Academies makes publicly~~
 20 ~~available the report under section 601, the Administrator,~~
 21 ~~shall, in consideration of the recommendations included in~~
 22 ~~the report and in consultation with relevant partners, in-~~
 23 ~~cluding users of the data, develop a plan to—~~

24 ~~“(1) not later than 6 years after the completion~~
 25 ~~of the report submitted under section 601 and not~~

1 less frequently than once every 10 years thereafter;
2 update probable maximum precipitation estimates
3 for the United States, such that each update in-
4 cludes estimates that incorporate assumptions of
5 non-stationarity;

6 “(2) coordinate with partners to conduct re-
7 search in the field of extreme precipitation esti-
8 mation, in accordance with the research needs iden-
9 tified in the report submitted under section 601;

10 “(3) make publicly available, in a searchable,
11 interoperable format, all probable maximum precipi-
12 tation studies developed by the National Oceanic and
13 Atmospheric Administration that the Administrator
14 has the legal right to redistribute and considers to
15 be at an appropriate state of development on an
16 internet website of the National Oceanic and Atmos-
17 pheric Administration; and

18 “(4) ensure all probable maximum precipitation
19 estimate data, products, and supporting documenta-
20 tion and metadata developed by the National Oee-
21 anie and Atmospheric Administration are preserved,
22 curated, and served by the National Oceanic and At-
23 mospheric Administration, as appropriate.

24 “(b) NATIONAL GUIDANCE DOCUMENT FOR THE DE-
25 VELOPMENT OF PROBABLE MAXIMUM PRECIPITATION

1 ESTIMATES.—The Administrator, in collaboration with
 2 Federal agencies, State, territorial, tribal and local gov-
 3 ernments, academia, and other partners the Administrator
 4 considers appropriate, shall develop a national guidance
 5 document that—

6 “(1) provides best practices that can be fol-
 7 lowed by Federal and State regulatory agencies, pri-
 8 vate meteorological consultants, and other users that
 9 perform probable maximum precipitation studies;

10 “(2) considers the recommendations included in
 11 the report submitted under section 601;

12 “(3) facilitates review of probable maximum
 13 precipitation studies by regulatory agencies;

14 “(4) provides confidence in regional and site-
 15 specific probable maximum precipitation estimates;
 16 and

17 “(5) includes such other topics as the Adminis-
 18 trator considers appropriate.

19 “(c) PUBLICATION.—Not later than 2 years after the
 20 date on which the National Academies makes publicly
 21 available the report under section 601, the Administrator
 22 shall make publicly available the national guidance docu-
 23 ment developed under subsection (b) on an internet
 24 website of the National Oceanic and Atmospheric Admin-
 25 istration.

1 “(d) **UPDATES.**—The Administrator shall update the
 2 national guidance document developed under subsection
 3 (b) not less frequently than once every 10 years after the
 4 publication of the document under subsection (c) and
 5 make such updates publicly available in accordance with
 6 such subsection.

7 “(e) **AUTHORIZATION OF APPROPRIATIONS.**—There
 8 are authorized to be appropriated to the National Oceanic
 9 and Atmospheric Administration to carry out this section
 10 amounts as follows:

11 “(1) \$13,000,000 for fiscal year 2022.

12 “(2) \$14,000,000 for fiscal year 2023.

13 “(3) \$14,000,000 for fiscal year 2024.

14 “(4) \$2,000,000 for fiscal year 2025.

15 “(5) \$2,000,000 for fiscal year 2026.

16 “(6) \$2,000,000 for fiscal year 2027.

17 **“SEC. 603. DEFINITIONS.**

18 “**In this title:**

19 “(1) **ADMINISTRATOR.**—The term ‘Adminis-
 20 trator’ means the Under Secretary of Commerce for
 21 Oceans and Atmosphere and the Administrator of
 22 the National Oceanic and Atmospheric Administra-
 23 tion.

1 “(2) NATIONAL ACADEMIES.—The term ‘Na-
2 tional Academies’ means the National Academies of
3 Sciences, Engineering, and Medicine.

4 “(3) UNITED STATES.—The term ‘United
5 States’ means, collectively, each State of the United
6 States, the District of Columbia, the Commonwealth
7 of Puerto Rico, American Samoa, Guam, the Com-
8 monwealth of the Northern Mariana Islands, the
9 Virgin Islands of the United States, and any other
10 territory or possession of the United States.”.

11 (b) CONFORMING AMENDMENT.—The table of con-
12 tents in section 1(b) of the Weather Research and Fore-
13 casting Innovation Act of 2017 (Public Law 115–25, 131
14 Stat. 91) is amended by adding at the end the following:

“TITLE VI—IMPROVEMENT OF FEDERAL PRECIPITATION
INFORMATION

“Sec. 601. Study on precipitation estimation.

“Sec. 602. Improving probable maximum precipitation estimates.

“Sec. 603. Definitions.”.

15 **SECTION 1. SHORT TITLE.**

16 *This Act may be cited as the “Providing Research and*
17 *Estimates of Changes In Precipitation Act” or the*
18 *“PRECIP Act”.*

1 **SEC. 2. AMENDMENT TO THE WEATHER RESEARCH AND**
 2 **FORECASTING INNOVATION ACT OF 2017 RE-**
 3 **LATING TO IMPROVING FEDERAL PRECIPITA-**
 4 **TION INFORMATION.**

5 (a) *IN GENERAL.*—*The Weather Research and Fore-*
 6 *casting Innovation Act of 2017 (15 U.S.C. 8501 et seq.) is*
 7 *amended by adding at the end the following:*

8 **“TITLE VI—IMPROVING FEDERAL**
 9 **PRECIPITATION INFORMATION**

10 **“SEC. 601. STUDY ON PRECIPITATION ESTIMATION.**

11 “(a) *IN GENERAL.*—*Not later than 90 days after the*
 12 *date of enactment of the PRECIP Act, the Administrator,*
 13 *in consultation with other Federal agencies as appropriate,*
 14 *shall seek to enter an agreement with the National Acad-*
 15 *emies—*

16 “(1) *to conduct a study on the state of practice*
 17 *and research needs for precipitation estimation, in-*
 18 *cluding probable maximum precipitation estimation;*
 19 *and*

20 “(2) *to submit, not later than 24 months after*
 21 *the date on which such agreement is finalized, to the*
 22 *Committee on Science, Space, and Technology of the*
 23 *House of Representatives and the Committee on Com-*
 24 *merce, Science, and Transportation of the Senate,*
 25 *and make publicly available on a website, a report on*
 26 *the results of the study under paragraph (1).*

1 “(b) *STUDY.*—*The report under subsection (a) shall in-*
 2 *clude the following:*

3 “(1) *An examination of the current state of prac-*
 4 *tice for precipitation estimation at scales appropriate*
 5 *for decisionmaker needs, and rationale for further evo-*
 6 *lution of this field.*

7 “(2) *An evaluation of best practices for precipi-*
 8 *tation estimation that are based on the best-available*
 9 *science, include considerations of non-stationarity,*
 10 *and can be utilized by the user community.*

11 “(3) *A framework for—*

12 “(A) *the development of a National Guid-*
 13 *ance Document for estimating extreme precipita-*
 14 *tion in future conditions; and*

15 “(B) *evaluation of the strengths and chal-*
 16 *lenges of the full spectrum of approaches, includ-*
 17 *ing for probable maximum precipitation studies.*

18 “(4) *A description of existing research needs in*
 19 *the field of precipitation estimation in order to mod-*
 20 *ernize current methodologies and consider non-*
 21 *stationarity.*

22 “(5) *A description of in-situ, airborne, and*
 23 *space-based observation requirements, that could en-*
 24 *hance precipitation estimation and development of*
 25 *models, including an examination of the use of geo-*

1 *graphic information systems and geospatial tech-*
2 *nology for integration, analysis, and visualization of*
3 *precipitation data.*

4 “(6) *A recommended plan for a Federal research*
5 *and development program, including specifications*
6 *for costs, timeframes, and responsible agencies for ad-*
7 *ressing identified research needs.*

8 “(7) *An analysis of the respective roles in pre-*
9 *cipitation estimation of various Federal agencies,*
10 *academia, State, tribal, territorial, and local govern-*
11 *ments, and other public and private stakeholders.*

12 “(8) *Recommendations for data management to*
13 *promote long-term needs such as enabling retrospec-*
14 *tive analyses and data discoverability, interoper-*
15 *ability, and reuse.*

16 “(9) *Recommendations for how data and services*
17 *from the entire enterprise can be best leveraged by the*
18 *Federal Government.*

19 “(10) *A description of non-Federal precipitation*
20 *data, its accessibility by the Federal Government, and*
21 *ways for National Oceanic and Atmospheric Admin-*
22 *istration to improve or expand such datasets.*

23 “(c) *AUTHORIZATION OF APPROPRIATIONS.—There is*
24 *authorized \$1,500,000 to the National Oceanic and Atmos-*
25 *pheric Administration to carry out this study.*

1 **“SEC. 602. IMPROVING PROBABLE MAXIMUM PRECIPITA-**
 2 **TION ESTIMATES.**

3 “(a) *IN GENERAL.*—Not later than 90 days after the
 4 date on which the National Academies makes public the re-
 5 port under section 601, the Administrator, in consideration
 6 of the report recommendations, shall consult with relevant
 7 partners, including users of the data, on the development
 8 of a plan to—

9 “(1) not later than 6 years after the completion
 10 of such report and not less than every 10 years there-
 11 after, update probable maximum precipitation esti-
 12 mates for the United States, such that each update
 13 considers non-stationarity;

14 “(2) coordinate with partners to conduct re-
 15 search in the field of extreme precipitation esti-
 16 mation, in accordance with the research needs identi-
 17 fied in such report;

18 “(3) make publicly available, in a searchable,
 19 interoperable format, all probable maximum precipi-
 20 tation studies developed by the National Oceanic and
 21 Atmospheric Administration that the Administrator
 22 has the legal right to redistribute and deemed to be
 23 at an appropriate state of development on an internet
 24 website of the National Oceanic and Atmospheric Ad-
 25 ministration; and

1 “(4) *ensure all probable maximum precipitation*
 2 *estimate data, products, and supporting documenta-*
 3 *tion and metadata developed by the National Oceanic*
 4 *and Atmospheric Administration are preserved,*
 5 *curated, and served by the National Oceanic and At-*
 6 *mospheric Administration, as appropriate.*

7 “(b) *NATIONAL GUIDANCE DOCUMENT FOR THE DE-*
 8 *VELOPMENT OF PROBABLE MAXIMUM PRECIPITATION ESTI-*
 9 *MATES.—The Administrator, in collaboration with Federal*
 10 *agencies, State, territorial, Tribal and local governments,*
 11 *academia, and other partners the Administrator deems ap-*
 12 *propriate, shall develop a National Guidance Document*
 13 *that—*

14 “(1) *provides best practices that can be followed*
 15 *by Federal and State regulatory agencies, private me-*
 16 *teorological consultants, and other users that perform*
 17 *probable maximum precipitation studies;*

18 “(2) *considers the recommendations provided in*
 19 *the National Academies study under section 601;*

20 “(3) *facilitates review of probable maximum pre-*
 21 *cipitation studies by regulatory agencies; and*

22 “(4) *provides confidence in regional and site-spe-*
 23 *cific probable maximum precipitation estimates.*

24 “(c) *PUBLICATION.—Not later than 2 years after the*
 25 *date on which the National Academies makes public the re-*

1 port under section 601, the Administrator shall make pub-
 2 licly available the National Guidance Document under sub-
 3 section (b) on an internet website of the National Oceanic
 4 and Atmospheric Administration.

5 “(d) *UPDATES.*—The Administrator shall update the
 6 National Guidance Document not less than once every 10
 7 years after the publication of the National Guidance Docu-
 8 ment under subsection (c) and publish such updates in ac-
 9 cordance with such subsection.

10 “(e) *FUNDING.*—Amounts available to carry out this
 11 section shall be derived from existing funds otherwise appro-
 12 priated to the Administrator.

13 **“SEC. 603. DEFINITIONS.**

14 “In this title:

15 “(1) *ADMINISTRATOR.*—The term ‘Adminis-
 16 trator’ means the Under Secretary of Commerce for
 17 Oceans and Atmosphere and Administrator of the Na-
 18 tional Oceanic and Atmospheric Administration.

19 “(2) *NATIONAL ACADEMIES.*—The term ‘National
 20 Academies’ means the National Academies of
 21 Sciences, Engineering, and Medicine.

22 “(3) *UNITED STATES.*—The term ‘United States’
 23 means, collectively, each State of the United States,
 24 the District of Columbia, the Commonwealth of Puer-
 25 to Rico, American Samoa, Guam, the Commonwealth

1 *of the Northern Mariana Islands, the Virgin Islands*
 2 *of the United States, and any other territory or pos-*
 3 *session of the United States.”.*

4 ***(b) CONFORMING AMENDMENT.***—*Section 1(b) of the*
 5 *Weather Research and Forecasting Innovation Act of 2017*
 6 *(15 U.S.C. 8501 note) is amended in the table of contents*
 7 *by adding at the end the following:*

“TITLE VI—IMPROVING FEDERAL PRECIPITATION INFORMATION

“Sec. 601. Study on precipitation estimation.

“Sec. 602. Improving probable maximum precipitation estimates.

“Sec. 603. Definitions.”.

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To amend the Weather Research and Forecasting Innovation Act of 2017 to require the Administrator of the National Oceanic and Atmospheric Administration to develop a plan and national guidance document to improve precipitation estimates, and for other purposes.

DECEMBER 7, 2022

Reported with an amendment