

113TH CONGRESS  
1ST SESSION

# H. R. 2413

To prioritize and redirect NOAA resources to a focused program of investment on near-term, affordable, and attainable advances in observational, computing, and modeling capabilities to deliver substantial improvement in weather forecasting and prediction of high impact weather events, such as tornadoes and hurricanes, and for other purposes.

---

## IN THE HOUSE OF REPRESENTATIVES

JUNE 18, 2013

Mr. BRIDENSTINE (for himself, Mr. SMITH of Texas, Mr. STEWART, and Mr. HARRIS) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

---

## A BILL

To prioritize and redirect NOAA resources to a focused program of investment on near-term, affordable, and attainable advances in observational, computing, and modeling capabilities to deliver substantial improvement in weather forecasting and prediction of high impact weather events, such as tornadoes and hurricanes, 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 “Weather Forecasting  
3 Improvement Act of 2013”.

4 **SEC. 2. PUBLIC SAFETY PRIORITY.**

5 In accordance with the critical responsibility of  
6 NOAA to ensure and enhance the provision of data, fore-  
7 casts, and warnings for the protection of life and property  
8 and the enhancement of the national economy, the Under  
9 Secretary shall make these weather-related activities the  
10 top priority in the planning and management of programs  
11 within all relevant line offices.

12 **SEC. 3. WEATHER RESEARCH AND FORECASTING INNOVA-**  
13 **TION.**

14 (a) PROGRAM.—The Assistant Administrator for  
15 OAR shall undertake a program to develop improved un-  
16 derstanding of and forecast capabilities for atmospheric  
17 events, placing priority on developing more accurate and  
18 timely warnings and forecasts of high impact weather  
19 events that endanger life and property.

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

22 (1) Improving the fundamental understanding  
23 of weather consistent with section 2, including  
24 boundary layer and other atmospheric processes.

25 (2) Research and development, and transfer of  
26 knowledge, technologies, and applications to the

1 NWS and other appropriate agencies and entities,  
2 including the American weather industry and aca-  
3 demic partners, related to—

4 (A) advanced radar technologies, including  
5 those emphasizing rapid, fine-scale sensing of  
6 the boundary layer and the use of innovative,  
7 dual-polarization, phased-array technologies;

8 (B) aerial weather observing systems;

9 (C) high performance computing and infor-  
10 mation technology networks;

11 (D) advanced forecast modeling that im-  
12 proves the timing, track, and intensity forecasts  
13 of severe storms and related phenomena, such  
14 as storm surge, including through—

15 (i) more effective use of existing, and  
16 the development of new, regional and na-  
17 tional cloud-resolving models; and

18 (ii) enhanced global models;

19 (E) observing system simulation experi-  
20 ments as described in section 7;

21 (F) atmospheric chemistry and interactions  
22 essential to accurately characterizing atmos-  
23 pheric composition and predicting meteorolog-  
24 ical processes, including cloud microphysical,  
25 precipitation, and atmospheric electrification

1 processes to more effectively understand their  
2 role in severe weather; and

3 (G) additional sources of weather data and  
4 information, including commercial observing  
5 systems.

6 (3) A technology transfer initiative, carried out  
7 jointly and in coordination with the Assistant Ad-  
8 ministrator for Weather Services, and in cooperation  
9 with the American weather industry and academic  
10 partners, to ensure continuous development and  
11 transition of the latest scientific and technological  
12 advances into NWS operations.

13 (c) ACADEMIC RESEARCH.—In carrying out the pro-  
14 gram under this section, the Assistant Administrator for  
15 OAR shall collaborate with and support the academic  
16 weather research community, including by making funds  
17 available to institutions of higher education through com-  
18 petitive grants and contracts.

19 **SEC. 4. TORNADO WARNING EXTENSION PROGRAM.**

20 (a) IN GENERAL.—In carrying out section 3, the As-  
21 sistant Administrator for OAR shall establish a tornado  
22 warning extension program.

23 (b) GOAL.—The goal of such program shall be to de-  
24 velop and extend accurate tornado forecasts and warnings

1 beyond 1 hour in order to reduce loss of life, injury, and  
2 damage to the economy.

3 (c) PROGRAM PLAN.—Within 180 days after the date  
4 of enactment of this Act, the Assistant Administrator for  
5 OAR, in consultation with the Assistant Administrator for  
6 Weather Services, shall issue a program plan that details  
7 the specific research, development, and technology trans-  
8 fer activities, as well as corresponding resources and  
9 timelines, necessary to achieve the program goal.

10 (d) BUDGET FOR PLAN.—Following completion of  
11 the plan, the Under Secretary shall transmit annually to  
12 Congress a proposed budget corresponding to the activities  
13 identified in the plan.

14 **SEC. 5. WEATHER RESEARCH AND DEVELOPMENT PLAN-**  
15 **NING.**

16 Not later than 6 months after the date of enactment  
17 of this Act, and annually thereafter, the Assistant Admin-  
18 istrator for OAR, in coordination with the Assistant Ad-  
19 ministrator for Weather Services and the Assistant Ad-  
20 ministrator for NESDIS, shall issue a plan to restore  
21 United States leadership in weather modeling, prediction,  
22 and forecasting that—

23 (1) describes weather technology goals, objec-  
24 tives, and progress of NOAA for the program estab-  
25 lished under section 3;

1           (2) identifies and prioritizes specific research  
2           and development activities and the associated mile-  
3           stones necessary to achieve such goals and objec-  
4           tives;

5           (3) describes how the program will collaborate  
6           with stakeholders from institutions of higher edu-  
7           cation and industry in support of program goals and  
8           objectives; and

9           (4) identifies, through consultation with the Na-  
10          tional Science Foundation, research necessary to en-  
11          hance the integration of social science knowledge  
12          into weather forecast and warning processes, includ-  
13          ing to improve the credible communication of threat  
14          information necessary to enable improved severe  
15          weather planning on the part of individuals and  
16          communities.

17 **SEC. 6. OBSERVING SYSTEM PLANNING.**

18          The Under Secretary shall—

19               (1) develop and maintain a prioritized list of  
20               observation data requirements necessary to ensure  
21               weather forecasting capabilities to protect life and  
22               property to the maximum extent practicable;

23               (2) undertake ongoing systematic evaluations of  
24               the combination of observing systems, data, and in-  
25               formation needed to meet the requirements devel-

1       oped under paragraph (1), assessing various options  
2       to maximize observational capabilities and their cost-  
3       effectiveness;

4               (3) identify current and potential future data  
5       gaps in observing capabilities related to the require-  
6       ments under paragraph (1); and

7               (4) determine a range of options to address  
8       gaps identified under paragraph (3).

9       **SEC. 7. OBSERVING SYSTEM SIMULATION EXPERIMENTS.**

10       (a) **IN GENERAL.**—In support of the requirements of  
11       section 6, the Assistant Administrator for OAR shall un-  
12       dertake OSSEs to quantitatively assess the relative value  
13       and benefits of observing capabilities and systems. Tech-  
14       nical and scientific OSSE evaluations—

15               (1) may include assessments of the impact of  
16       observing capabilities on—

17                       (A) global weather prediction;

18                       (B) hurricane track and intensity fore-  
19       casting;

20                       (C) tornado warning times and accuracy;

21       and

22                       (D) prediction of mid-latitude severe local  
23       storm outbreaks; and

24               (2) should be conducted in cooperation with  
25       other appropriate entities within NOAA, other Fed-

1 eral agencies, the American weather industry, and  
2 academic partners.

3 (b) REQUIREMENTS.—OSSEs shall quantitatively—

4 (1) determine the potential impact of proposed  
5 space-based, sub-orbital, and in-situ observing sys-  
6 tems on analyses and forecasts;

7 (2) evaluate and compare observing system de-  
8 sign options; and

9 (3) assess the relative capabilities and costs of  
10 various observing systems and combinations of ob-  
11 serving systems in providing data necessary to pro-  
12 tect life and property.

13 (c) IMPLEMENTATION.—OSSEs—

14 (1) shall be conducted prior to the acquisition  
15 of major Government-owned or Government-leased  
16 operational observing systems, including polar-orbit-  
17 ing and geostationary satellite systems;

18 (2) shall be conducted prior to the purchase of  
19 any new commercially provided data critical to fore-  
20 cast accuracy and may be conducted on existing ob-  
21 serving systems;

22 (3) shall be conducted within 2 years after the  
23 date of enactment of this Act for any existing com-  
24 mercially provided observing system data contract in  
25 excess of \$15 million; and



1           (4) may be conducted on existing observing sys-  
2           tems where such data costs NOAA in excess of \$20  
3           million.

4           (d) RESULTS.—All OSSE results shall be publicly re-  
5           leased and fully considered by NOAA for implementation.

6           **SEC. 8. COMPUTING RESOURCES PRIORITIZATION REPORT.**

7           Not later than 6 months after the date of enactment  
8           of this Act, and annually thereafter, the NOAA Chief In-  
9           formation Officer, in coordination with the Assistant Ad-  
10          ministrators for OAR and the Assistant Administrator for  
11          Weather Services, shall issue a plan for high performance  
12          computing support of its advanced research and oper-  
13          ational weather prediction models that—

14               (1) assures that NOAA aggressively pursues the  
15               newest, fastest, and most cost effective high per-  
16               formance computing technologies in support of its  
17               weather prediction mission;

18               (2) assures a balance between the research re-  
19               quirements to develop the next generation of re-  
20               gional and global models and its highly reliable oper-  
21               ational models;

22               (3) takes advantage of advanced development  
23               concepts to make its next generation weather pre-  
24               diction models available in beta-test mode to  
25               NOAA's operational forecasters, the American

1 weather industry, and its partners in academic and  
2 government research; and

3 (4) identifies opportunities to reallocate existing  
4 advanced computing resources from lower priority  
5 uses to improve operational weather prediction.

6 **SEC. 9. COMMERCIAL WEATHER DATA.**

7 (a) AMENDMENT.—Section 60161 of title 51, United  
8 States Code, is amended by adding at the end the fol-  
9 lowing: “This prohibition shall not extend to—

10 “(1) the purchase of weather data through con-  
11 tracts with commercial providers; or

12 “(2) the placement of weather satellite instru-  
13 ments on cohosted government or private payloads.”.

14 (b) REPORT.—Within 6 months after the date of en-  
15 actment of this Act, the Under Secretary shall submit to  
16 the Committee on Science, Space, and Technology of the  
17 House of Representatives and the Committee on Com-  
18 merce, Science, and Transportation of the Senate a report  
19 assessing the range of commercial opportunities for ob-  
20 taining space-based weather observations, including the  
21 cost-effectiveness of these opportunities, and providing a  
22 plan for procuring data from these non-governmental  
23 sources.

24 **SEC. 10. DEFINITIONS.**

25 In this Act:

1           (1) NESDIS.—The term “NESDIS” means  
2 the National Environmental Satellite, Data, and In-  
3 formation Service.

4           (2) NOAA.—The term “NOAA” means the Na-  
5 tional Oceanic and Atmospheric Administration.

6           (3) NWS.—The term “NWS” means the Na-  
7 tional Weather Service.

8           (4) OAR.—The term “OAR” means the Office  
9 of Oceanic and Atmospheric Research.

10           (5) OSSE.—The term “OSSE” means the Ob-  
11 serving System Simulation Experiment.

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

15 **SEC. 11. AUTHORIZATION OF APPROPRIATIONS.**

16       Out of funds made available for operations, research,  
17 and facilities in OAR, there are authorized to be appro-  
18 priated for each of fiscal years 2014 through 2017—

19           (1) \$100,000,000 to carry out section 3, of  
20 which—

21               (A) \$80,000,000 is authorized for weather  
22 laboratories and cooperative institutes; and

23               (B) \$20,000,000 is authorized for weather  
24 and air chemistry research programs; and

1           (2) \$20,000,000 for the joint technology trans-  
2           fer initiative described in section 3(b)(3).