

weather forecast and warning processes, including to improve the communication of threat information necessary to enable improved severe weather planning and decision-making on the part of individuals and communities.

(Pub. L. 115–25, title I, §105, Apr. 18, 2017, 131 Stat. 95.)

#### § 8516. Observing system planning

The Under Secretary shall—

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

(2) consistent with section 8517 of this title, utilize Observing System Simulation Experiments, Observing System Experiments, Analyses of Alternatives, and other appropriate assessment tools to ensure continuous systemic evaluations of the observing systems, data, and information needed to meet the requirements of paragraph (1), including options to maximize observational capabilities and their cost-effectiveness;

(3) identify current and potential future data gaps in observing capabilities related to the requirements listed under paragraph (1); and

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

(Pub. L. 115–25, title I, §106, Apr. 18, 2017, 131 Stat. 95.)

#### § 8517. Observing System Simulation Experiments

##### (a) In general

In support of the requirements of section 8516 of this title, the Assistant Administrator for Oceanic and Atmospheric Research shall undertake Observing System Simulation Experiments, or such other quantitative assessments as the Assistant Administrator considers appropriate, to quantitatively assess the relative value and benefits of observing capabilities and systems. Technical and scientific Observing System Simulation Experiment evaluations—

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

(A) global weather prediction;

(B) hurricane track and intensity forecasting;

(C) tornado warning lead times and accuracy;

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

(E) prediction of storms that have the potential to cause extreme precipitation and flooding lasting from 6 hours to 1 week; and

(2) shall be conducted in cooperation with other appropriate entities within the National Oceanic and Atmospheric Administration, other Federal agencies, the United States weather industry, and academic partners to ensure the technical and scientific merit of results from Observing System Simulation Experiments or other appropriate quantitative assessment methodologies.

##### (b) Requirements

Observing System Simulation Experiments shall quantitatively—

(1) determine the potential impact of proposed space-based, suborbital, and in situ observing systems on analyses and forecasts, including potential impacts on extreme weather events across all parts of the Nation;

(2) evaluate and compare observing system design options; and

(3) assess the relative capabilities and costs of various observing systems and combinations of observing systems in providing data necessary to protect life and property.

##### (c) Implementation

Observing System Simulation Experiments—

(1) shall be conducted prior to the acquisition of major Government-owned or Government-leased operational observing systems, including polar-orbiting and geostationary satellite systems, with a lifecycle cost of more than \$500,000,000; and

(2) shall be conducted prior to the purchase of any major new commercially provided data with a lifecycle cost of more than \$500,000,000.

##### (d) Priority Observing System Simulation Experiments

###### (1) Global Navigation Satellite System Radio Occultation

Not later than 30 days after April 18, 2017, the Assistant Administrator for Oceanic and Atmospheric Research shall complete an Observing System Simulation Experiment to assess the value of data from Global Navigation Satellite System Radio Occultation.

###### (2) Geostationary hyperspectral sounder global constellation

Not later than 120 days after April 18, 2017, the Assistant Administrator for Oceanic and Atmospheric Research shall complete an Observing System Simulation Experiment to assess the value of data from a geostationary hyperspectral sounder global constellation.

##### (e) Results

Upon completion of all Observing System Simulation Experiments, the Assistant Administrator shall make available to the public the results an assessment<sup>1</sup> of related private and public sector weather data sourcing options, including their availability, affordability, and cost-effectiveness. Such assessments shall be developed in accordance with section 50503 of title 51.

(Pub. L. 115–25, title I, §107, Apr. 18, 2017, 131 Stat. 96.)

#### § 8518. Computing resource efficiency improvement and annual report

##### (a) Computing resources

###### (1) In general

In acquiring computing capabilities, including high performance computing technologies and supercomputing technologies, that enable the National Oceanic and Atmospheric Administration to meet its mission requirements,

<sup>1</sup> So in original.

the Under Secretary shall, when appropriate and cost-effective, assess and prioritize options for entering into multi-year lease agreements for computing capabilities over options for purchasing computing hardware outright.

**(2) Acquisition**

In carrying out the requirements of paragraph (1), the Under Secretary shall structure multi-year lease agreements in such a manner that the expiration of the lease is set for a date on or around—

(A) the expected degradation point of the computing resources; or

(B) the point at which significantly increased computing capabilities are expected to be available for lease.

**(3) Pilot programs**

**(A) In general**

In order to more efficiently and effectively meet the mission requirements of the National Oceanic and Atmospheric Administration, the Under Secretary may create 1 or more pilot programs for assessing new or innovative information and technology capabilities and services.

**(B) Program requirements**

Any program created under paragraph (3) shall assess only those capabilities and services that—

(i) meet or exceed the standards and requirements of the National Oceanic and Atmospheric Administration, including for processing speed, cybersecurity, and overall reliability; or

(ii) meet or exceed, or are expected to meet or exceed, the performance of similar, in-house information and technology capabilities and services that are owned and operated by the National Oceanic and Atmospheric Administration prior to the establishment of the pilot program.

**(C) Authorization of appropriations**

There is authorized to be appropriated, out of funds appropriated to the National Environmental Satellite, Data, and Information Service, to carry out this paragraph \$5,000,000 for fiscal year 2019, \$10,000,000 for fiscal year 2020, and \$5,000,000 for each of fiscal years 2021 through 2023, to remain available until expended.

**(b) Reports**

Not later than 1 year after January 7, 2019, and triennially thereafter until the date that is 6 years after the date on which the first report is submitted, the Under Secretary, acting through the Chief Information Officer of the National Oceanic and Atmospheric Administration and in coordination with the Assistant Administrator for Oceanic and Atmospheric Research and the Director of the National Weather Service, shall produce and make publicly available a report that explains how the Under Secretary intends—

(1) to continually support upgrades to pursue the fastest, most powerful, and cost-effective high performance computing technologies in support of its weather prediction mission;

(2) to ensure a balance between the research to operations requirements to develop the

next generation of regional and global models as well as highly reliable operational models;

(3) to take advantage of advanced development concepts to, as appropriate, make next generation weather prediction models available in beta-test mode to operational forecasters, the United States weather industry, and partners in academic and Government research;

(4) to use existing computing resources to improve advanced research and operational weather prediction;

(5) to utilize non-Federal contracts to obtain the necessary expertise for advanced weather computing, if appropriate;

(6) to utilize cloud computing; and

(7) to create a long-term strategy to transition the programming language of weather model code to current and broadly-used coding language.

(Pub. L. 115–25, title I, §108, Apr. 18, 2017, 131 Stat. 97; Pub. L. 115–423, §5(a), Jan. 7, 2019, 132 Stat. 5457.)

**Editorial Notes**

AMENDMENTS

2019—Pub. L. 115–423 amended section generally. Prior to amendment, section related to annual report on computing resources prioritization.

**§ 8519. Authorization of appropriations**

**(a) In general**

There are authorized to be appropriated to the Office of Oceanic and Atmospheric Research to carry out this subchapter—

(1) \$136,516,000 for fiscal year 2019, of which—

(A) \$85,758,000 is authorized for weather laboratories and cooperative institutes;

(B) \$30,758,000 is authorized for weather and air chemistry research programs; and

(C) \$20,000,000 is authorized for the joint technology transfer initiative described in section 8512(b)(4) of this title;

(2) \$148,154,000 for fiscal year 2020, of which—

(A) \$87,258,000 is authorized for weather laboratories and cooperative institutes;

(B) \$40,896,000 is authorized for weather and air chemistry research programs; and

(C) \$20,000,000 is authorized for the joint technology transfer initiative described in section 8512(b)(4) of this title;

(3) \$150,154,000 for fiscal year 2021, of which—

(A) \$88,758,000 is authorized for weather laboratories and cooperative institutes;

(B) \$41,396,000 is authorized for weather and air chemistry research programs; and

(C) \$20,000,000 is authorized for the joint technology transfer initiative described in section 8512(b)(4) of this title;

(4) \$152,154,000 for fiscal year 2022, of which—

(A) \$90,258,000 is authorized for weather laboratories and cooperative institutes;

(B) \$41,896,000 is authorized for weather and air chemistry research programs; and

(C) \$20,000,000 is authorized for the joint technology transfer initiative described in section 8512(b)(4) of this title; and

(5) \$154,154,000 for fiscal year 2023, of which—