

108TH CONGRESS
1ST SESSION

H. R. 1578

To promote and coordinate global change research, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 2, 2003

Mr. UDALL of Colorado introduced the following bill; which was referred to the Committee on Science, and in addition to the Committees on the Budget, and International Relations, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To promote and coordinate global change research, 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 “Global Change Re-
5 search and Data Management Act of 2003”.

TITLE I—GLOBAL CHANGE RESEARCH

SEC. 101. FINDINGS AND PURPOSE.

(a) FINDINGS.—The Congress makes the following findings:

(1) Industrial, agricultural, and other human activities, coupled with an expanding world population, are contributing to processes of global change that are significantly altering the Earth habitat.

(2) Such human-induced changes, in conjunction with natural fluctuations, may lead to significant alterations of world climate patterns. Over the next century, these changes could adversely effect world agricultural and marine production, coastal habitability, biological diversity, human health, global social and political stability, and global economic activity.

(3) Developments in interdisciplinary Earth sciences, global observing systems, and satellite and computing technologies make possible significant scientific understanding of global changes and their effects, and have resulted in the significant expansion of environmental data and information.

(4) Development of effective policies to prevent, mitigate, and adapt to global change will rely on im-

1 improvement in scientific understanding of global envi-
2 ronmental processes and on development of informa-
3 tion that is of use to decisionmakers at the local, re-
4 gional, and national levels.

5 (5) Although the United States Global Change
6 Research Program has made significant contribu-
7 tions to understanding Earth's climate and the an-
8 thropogenic influences on Earth's climate and its
9 ecosystems, that Program has not produced suffi-
10 cient information to meet the expressed needs of de-
11 cisionmakers.

12 (6) Predictions of future climate conditions for
13 specific regions have considerable uncertainty and
14 are unlikely to be confirmed in a time period nec-
15 essary to inform decisions on land, water, and re-
16 source management. However, improved under-
17 standing of global change should be used to assist
18 decisionmakers in the development of policies to en-
19 sure that ecological, social, and economic systems
20 are resilient under a variety of plausible climate fu-
21 tures.

22 (7) In order to most effectively meet the needs
23 of decisionmakers, both the research agenda of the
24 United States Global Change Research Program and
25 its implementation must be informed by continuous

1 feedback from documented users of information gen-
2 erated by the Program.

3 (b) PURPOSE.—The purpose of this title is to provide
4 for the continuation and coordination of a comprehensive
5 and integrated United States observation and research
6 program which will assist the Nation and the world to un-
7 derstand, assess, predict, and respond to the effects of
8 human-induced and natural processes of global change.

9 **SEC. 102. DEFINITIONS.**

10 For purposes of this title—

11 (1) the term “global change” means human-in-
12 duced or natural changes in the global environment
13 (including alterations in climate, land productivity,
14 oceans or other water resources, atmospheric chem-
15 istry, biodiversity, and ecological systems) that may
16 alter the capacity of the Earth to sustain life;

17 (2) the term “global change research” means
18 study, monitoring, assessment, prediction, and infor-
19 mation management activities to describe and under-
20 stand—

21 (A) the interactive physical, chemical, and
22 biological processes that regulate the total
23 Earth system;

24 (B) the unique environment that the Earth
25 provides for life;

1 (C) changes that are occurring in the
2 Earth system; and

3 (D) the manner in which such system, en-
4 vironment, and changes are influenced by
5 human actions;

6 (3) the term “interagency committee” means
7 the interagency committee established under section
8 103;

9 (4) the term “Plan” means the National Global
10 Change Research Plan developed under section 105;
11 and

12 (5) the term “Program” means the United
13 States Global Change Research Program established
14 under section 104.

15 **SEC. 103. INTERAGENCY COOPERATION AND COORDINA-**
16 **TION.**

17 (a) ESTABLISHMENT.—The President shall establish
18 an interagency committee to ensure cooperation and co-
19 ordination of all Federal research activities pertaining to
20 processes of global change for the purpose of increasing
21 the overall effectiveness and productivity of Federal global
22 change research efforts. The interagency committee shall
23 include representatives of both agencies conducting global
24 change research and agencies with authority over re-
25 sources likely to be affected by global change.

1 (b) FUNCTIONS OF THE INTERAGENCY COM-
2 MITTEE.—The interagency committee shall—

3 (1) serve as the forum for developing the Plan
4 and for overseeing its implementation;

5 (2) serve as the forum for developing the vul-
6 nerability assessment under section 107;

7 (3) ensure cooperation among Federal agencies
8 with respect to global change research activities;

9 (4) work with academic, State, industry, and
10 other groups conducting global change research, to
11 provide for periodic public and peer review of the
12 Program;

13 (5) cooperate with the Secretary of State in—

14 (A) providing representation at inter-
15 national meetings and conferences on global
16 change research in which the United States
17 participates; and

18 (B) coordinating the Federal activities of
19 the United States with programs of other na-
20 tions and with international global change re-
21 search activities;

22 (6) work with appropriate Federal, State, re-
23 gional, and local authorities to ensure that the Pro-
24 gram is designed to produce information needed to
25 develop policies to reduce the vulnerability of the

1 United States and other regions to global change;
2 and

3 (7) identify additional decisionmaking groups
4 that may use information generated through the
5 Program.

6 **SEC. 104. UNITED STATES GLOBAL CHANGE RESEARCH**
7 **PROGRAM.**

8 The President shall establish an interagency United
9 States Global Change Research Program to improve un-
10 derstanding of global change, to respond to the informa-
11 tion needs of communities and decisionmakers, and to pro-
12 vide periodic assessments of the vulnerability of the United
13 States and other regions to global change. The Program
14 shall be implemented in accordance with the Plan.

15 **SEC. 105. NATIONAL GLOBAL CHANGE RESEARCH PLAN.**

16 (a) IN GENERAL.—The President shall develop a Na-
17 tional Global Change Research Plan for implementation
18 of the Program. The Plan shall contain recommendations
19 for global change research. The President shall submit the
20 Plan to the Congress within 1 year after the date of enact-
21 ment of this Act, and shall submit a revised Plan at least
22 once every 4 years thereafter. In the development of each
23 Plan, the President shall conduct a formal assessment
24 process to determine the needs of appropriate Federal,
25 State, regional, and local authorities and other interested

1 parties regarding the types of information needed by them
2 in developing policies to reduce society's vulnerability to
3 global change and shall utilize these assessments in devel-
4 oping the Plan.

5 (b) CONTENTS OF THE PLAN.—The Plan shall—

6 (1) establish, for the 10-year period beginning
7 in the year the Plan is submitted, the goals and pri-
8 orities for Federal global change research which
9 most effectively advance scientific understanding of
10 global change and provide information of use to
11 Federal, State, regional, and local authorities in the
12 development of policies relating to global change;

13 (2) describe specific activities, including efforts
14 to determine user information needs, research activi-
15 ties, data collection and data analysis requirements,
16 assessment of model predictability, participation in
17 international research efforts, and information man-
18 agement, required to achieve such goals and prior-
19 ities;

20 (3) identify relevant programs and activities of
21 the Federal agencies that contribute to the Program
22 directly and indirectly;

23 (4) set forth the role of each Federal agency in
24 implementing the Plan;

1 (5) consider and utilize, as appropriate, reports
2 and studies conducted by Federal agencies, the Na-
3 tional Research Council, or other entities;

4 (6) make recommendations for the coordination
5 of the global change research activities of the United
6 States with such activities of other nations and
7 international organizations, including—

8 (A) a description of the extent and nature
9 of international cooperative activities;

10 (B) bilateral and multilateral efforts to
11 provide worldwide access to scientific data and
12 information; and

13 (C) improving participation by developing
14 nations in international global change research
15 and environmental data collection;

16 (7) detail budget requirements for Federal glob-
17 al change research activities to be conducted under
18 the Plan;

19 (8) catalog the type of information identified by
20 appropriate Federal, State, regional, and local deci-
21 sionmakers needed to develop policies to reduce soci-
22 ety's vulnerability to global change and indicate how
23 the planned research will meet these decisionmakers'
24 information needs; and

1 (9) identify the observing systems currently em-
2 ployed in collecting data relevant to global change
3 research and prioritize additional observation sys-
4 tems that may be needed to ensure adequate data
5 collection and monitoring of global change.

6 (c) RESEARCH ELEMENTS.—The Plan shall include
7 at a minimum the following research elements:

8 (1) Global measurements, establishing world-
9 wide to regional scale observations prioritized to un-
10 derstand global change and to meet the information
11 needs of decisionmakers on all relevant spatial and
12 time scales.

13 (2) Information on economic and demographic
14 trends that contribute to changes in the Earth sys-
15 tem and that influence society's vulnerability to
16 global change.

17 (3) Development of indicators and baseline
18 databases to document global change, including
19 changes in species distribution and behavior, extent
20 of glaciations, and changes in sea level.

21 (4) Studies of historical changes in the Earth
22 system, using evidence from the geological and fossil
23 record.

1 (5) Assessments of predictability using quan-
2 titative models of the Earth system to simulate glob-
3 al and regional environmental processes and trends.

4 (6) Focused research initiatives to understand
5 the nature of and interaction among physical, chem-
6 ical, biological, and social processes related to global
7 change.

8 (7) Focused research initiatives to determine
9 and then meet the information needs of appropriate
10 Federal, State, and regional decisionmakers.

11 (d) INFORMATION MANAGEMENT.—The Plan shall
12 incorporate, to the extent practicable, the recommenda-
13 tions relating to data acquisition, management, and
14 archiving made by the interagency climate and other glob-
15 al change data management working group established
16 under section 203.

17 (e) NATIONAL ACADEMY OF SCIENCES EVALUA-
18 TION.—The President shall enter into an agreement with
19 the National Academy of Sciences under which the Acad-
20 emy shall—

21 (1) evaluate the scientific content of the Plan;

22 and

23 (2) recommend priorities for future global
24 change research.

1 (f) NATIONAL GOVERNORS ASSOCIATION EVALUA-
2 TION.—The President shall seek to enter into an agree-
3 ment with the National Governors Association Center for
4 Best Practices under which that Center shall—

5 (1) evaluate the utility to State, local, and re-
6 gional decisionmakers of each Plan and of the antici-
7 pated and actual information outputs of the Pro-
8 gram for development of policies to reduce vulner-
9 ability to global change; and

10 (2) recommend priorities for future global
11 change research.

12 (g) PUBLIC PARTICIPATION.—In developing the
13 Plan, the President shall consult with academic, State, in-
14 dustry, and environmental groups and representatives.
15 Not later than 90 days before the President submits the
16 Plan, or any revision thereof, to the Congress, a summary
17 of the proposed Plan shall be published in the Federal
18 Register for a public comment period of not less than 60
19 days.

20 **SEC. 106. BUDGET COORDINATION.**

21 (a) IN GENERAL.—The President shall provide gen-
22 eral guidance to each Federal agency participating in the
23 Program with respect to the preparation of requests for
24 appropriations for activities related to the Program.

1 (b) CONSIDERATION IN PRESIDENT'S BUDGET.—The
2 President shall identify in each annual budget request sub-
3 mitted to the Congress under section 1105 of title 31,
4 United States Code, those items in each agency's annual
5 budget which are elements of the Program.

6 **SEC. 107. VULNERABILITY ASSESSMENT.**

7 Within 1 year after the date of enactment of this Act,
8 and at least once every 4 years thereafter, the President
9 shall submit to the Congress an assessment which—

10 (1) integrates, evaluates, and interprets the
11 findings of the Program and discusses the scientific
12 uncertainties associated with such findings;

13 (2) based on indicators and baselines developed
14 under section 105(c)(3), as well as other measure-
15 ments, analyzes changes to the natural environment,
16 land and water resources, and biological diversity
17 in—

18 (A) major geographic regions of the United
19 States; and

20 (B) other continents;

21 (3) analyzes the effects of global change, includ-
22 ing the changes described in paragraph (2), on agri-
23 culture, energy production and use, transportation,
24 human health and welfare, and human social and
25 economic systems, including providing information

1 about the differential impacts on specific geographic
2 regions within the United States, on people of dif-
3 ferent income levels within those regions, and for
4 rural and urban areas within those regions;

5 (4) analyzes the vulnerability of different geo-
6 graphic regions of the world to global change, in-
7 cluding analyses of the implications of global change
8 for international assistance, population displacement,
9 and national security; and

10 (5) analyzes the adoption rates of policies and
11 technologies available to reduce the vulnerability of
12 society to global change with an evaluation of the
13 market and policy barriers suppressing their adop-
14 tion in the United States.

15 **SEC. 108. POLICY ASSESSMENT.**

16 Not later than 1 year after the date of enactment
17 of this Act, and at least once every 3 years thereafter,
18 the President shall submit to the Congress a policy assess-
19 ment which—

20 (1) documents current policy options being uti-
21 lized by Federal, State, and local governments to
22 mitigate or adapt to the effects of global change;

23 (2) evaluates the realized and anticipated effec-
24 tiveness of those current policy options in addressing
25 global change; and

1 (3) identifies and evaluates additional policy op-
2 tions for mitigating or adapting to the effects of
3 global change.

4 **SEC. 109. ANNUAL REPORT.**

5 Each year at the time of submission to the Congress
6 of the President's budget request, the President shall sub-
7 mit to the Congress a report on the activities conducted
8 pursuant to this title, including—

9 (1) a summary of the achievements of the Pro-
10 gram during the period covered by the report;

11 (2) an analysis of the progress made toward
12 achieving the goals of the Plan; and

13 (3) a list of the State, local, and regional deci-
14 sionmakers identified as potential users of the infor-
15 mation generated through the Program and a de-
16 scription of the consultations with this community
17 coordinated through the work of the interagency
18 committee.

19 **SEC. 110. RELATION TO OTHER AUTHORITIES.**

20 The President shall ensure that relevant research ac-
21 tivities of the National Climate Program, established by
22 the National Climate Program Act (15 U.S.C. 2901 et
23 seq.), are considered in developing national global change
24 research efforts.

1 **SEC. 111. REPEAL.**

2 The Global Change Research Act of 1990 (15 U.S.C.
3 2921 et seq.) is repealed.

4 **TITLE II—CLIMATE AND OTHER**
5 **GLOBAL CHANGE DATA MAN-**
6 **AGEMENT**

7 **SEC. 201. FINDINGS AND PURPOSES.**

8 (a) FINDINGS.—The Congress makes the following
9 findings:

10 (1) Federal agencies have a primary mission to
11 manage and archive climate and other global change
12 data obtained through their research, development,
13 or operational activities.

14 (2) Maintenance of climate and global change
15 data records is essential to present and future stud-
16 ies of the Earth’s atmosphere, biogeochemical cycles,
17 and climate.

18 (3) Federal capabilities for the management
19 and archiving of these data have not kept pace with
20 advances in satellite and other observational tech-
21 nologies that have vastly expanded the type and
22 amount of information that can be collected.

23 (4) Proposals and plans for expansion of global
24 observing networks should include plans for the
25 management of data to be collected and budgets re-

1 flecting the cost of support for management and
2 archiving of data.

3 (b) PURPOSES.—The purposes of this title are to es-
4 tablish climate and other global change data management
5 and archiving as Federal agency missions, and to establish
6 Federal policies for managing and archiving climate and
7 other global change data.

8 **SEC. 202. DEFINITIONS.**

9 For purposes of this title—

10 (1) the term “metadata” means information de-
11 scribing the content, quality, condition, and other
12 characteristics of climate and other global change
13 data, compiled, to the maximum extent possible, con-
14 sistent with the requirements of the “Content Stand-
15 ard for Digital Geospatial Metadata” (FGDC–STD–
16 001–1998) issued by the Federal Geographic Data
17 Committee, or any successor standard approved by
18 the working group; and

19 (2) the term “working group” means the inter-
20 agency climate and other global change data man-
21 agement working group established under section
22 203.

1 **SEC. 203. INTERAGENCY CLIMATE AND OTHER GLOBAL**
2 **CHANGE DATA MANAGEMENT WORKING**
3 **GROUP.**

4 (a) ESTABLISHMENT.—The President shall establish
5 an interagency climate and other global change data man-
6 agement working group to make recommendations for co-
7 ordinating Federal climate and other global change data
8 management and archiving activities.

9 (b) MEMBERSHIP.—The working group shall include
10 the Administrator of the National Aeronautics and Space
11 Administration, the Administrator of the National Oceanic
12 and Atmospheric Administration, the Secretary of Energy,
13 the Secretary of Defense, the Director of the National
14 Science Foundation, the Director of the United States Ge-
15 ological Survey, the Archivist of the United States, the
16 Administrator of the Environmental Protection Agency,
17 the Secretary of the Smithsonian Institution, or their des-
18 ignees, and representatives of any other Federal agencies
19 the President considers appropriate.

20 (c) REPORTS.—Not later than 1 year after the date
21 of enactment of this Act, the working group shall transmit
22 a report to the Congress containing the elements described
23 in subsection (d). Not later than 3 years after the initial
24 report under this subsection, and not later than once every
25 4 years subsequent to that, the working group shall trans-
26 mit reports updating the previous report. In preparing re-

1 ports under this subsection, the working group shall con-
2 sult with expected users of the data collected and archived
3 by the Program.

4 (d) CONTENTS.—The reports and updates required
5 under subsection (c) shall—

6 (1) include recommendations for the establish-
7 ment, maintenance, and accessibility of a catalog
8 identifying all available climate and other global
9 change data sets;

10 (2) identify climate and other global change
11 data collections in danger of being lost and rec-
12 ommend actions to prevent such loss;

13 (3) identify gaps in climate and other global
14 change data and recommend actions to fill those
15 gaps;

16 (4) identify effective and compatible procedures
17 for climate and other global change data collection,
18 management, and retention and make recommenda-
19 tions for ensuring their use by Federal agencies and
20 other appropriate entities;

21 (5) develop and propose a coordinated strategy
22 for funding and allocating responsibilities among
23 Federal agencies for climate and other global change
24 data collection, management, and retention;

1 (6) make recommendations for ensuring that
2 particular attention is paid to the collection, man-
3 agement, and archiving of metadata;

4 (7) make recommendations for ensuring a uni-
5 fied and coordinated Federal capital investment
6 strategy with respect to climate and other global
7 change data collection, management, and archiving;

8 (8) evaluate the data record from each observ-
9 ing system and make recommendations to ensure
10 that delivered data are free from time-dependent bi-
11 ases and random errors before they are transferred
12 to long-term archives; and

13 (9) evaluate optimal design of observation sys-
14 tem components to ensure a cost-effective, adequate
15 set of observations detecting and tracking global
16 change.

17 **TITLE III—INTERNATIONAL CO-**
18 **OPERATION IN GLOBAL**
19 **CHANGE RESEARCH**

20 **SEC. 301. FINDINGS AND PURPOSES.**

21 (a) FINDINGS.—The Congress makes the following
22 findings:

23 (1) Pooling of international resources and sci-
24 entific capabilities will be essential to a successful
25 international global change program.

1 (2) While international scientific planning is al-
2 ready underway, there is currently no comprehensive
3 intergovernmental mechanism for planning, coordi-
4 nating, or implementing research to understand
5 global change and to mitigate possible adverse ef-
6 fects.

7 (3) An international global change research
8 program will be important in building future con-
9 sensus on methods for reducing global environmental
10 degradation.

11 (4) The United States, as a world leader in en-
12 vironmental and Earth sciences, should help provide
13 leadership in developing and implementing an inter-
14 national global change research program.

15 (b) PURPOSES.—The purposes of this title are to—

16 (1) promote international, intergovernmental
17 cooperation on global change research;

18 (2) involve scientists and policymakers from de-
19 veloping nations in such cooperative global change
20 research programs; and

21 (3) promote international efforts to provide
22 technical and other assistance to developing nations
23 which will facilitate improvements in their domestic
24 standard of living while minimizing damage to the
25 global or regional environment.

1 **SEC. 302. INTERNATIONAL DISCUSSIONS.**

2 (a) GLOBAL CHANGE RESEARCH.—The President
3 shall direct the Secretary of State to initiate discussions
4 with other nations leading toward international protocols
5 and other agreements to coordinate global change research
6 activities. Such discussions should include the following
7 issues:

8 (1) Allocation of costs in global change research
9 programs, especially with respect to major capital
10 projects.

11 (2) Coordination of global change research
12 plans with those developed by international organiza-
13 tions such as the International Council on Scientific
14 Unions, the World Meteorological Organization, and
15 the United Nations Environment Program.

16 (3) Establishment of global change research
17 centers and training programs for scientists, espe-
18 cially those from developing nations.

19 (4) Development of innovative methods for
20 management of international global change research,
21 including the use of new or existing intergovern-
22 mental organizations for the coordination or funding
23 of global change research.

24 (5) Establishment of international offices to
25 disseminate information useful in identifying, pre-

1 venting, mitigating, or adapting to the possible ef-
2 fects of global change.

3 (b) ENERGY RESEARCH.—The President shall direct
4 the Secretary of State (in cooperation with the Secretary
5 of Energy, the Secretary of Commerce, the United States
6 Trade Representative, and other appropriate Federal
7 agents) to initiate discussions with other nations leading
8 toward an international research protocol for cooperation
9 on the development of energy technologies which have
10 minimally adverse effects on the environment. Such dis-
11 cussions should include the following issues:

12 (1) Creation of an international cooperative
13 program to fund research related to energy effi-
14 ciency and conservation, solar and other renewable
15 energy sources, and passively safe and diversion-re-
16 sistant nuclear reactors.

17 (2) Creation of an international cooperative
18 program to develop low-cost energy technologies
19 which are appropriate to the environmental, eco-
20 nomic, and social needs of developing nations.

21 (3) Exchange of information concerning envi-
22 ronmentally safe energy technologies and practices,
23 including those described in paragraphs (1) and (2).

1 **SEC. 303. GLOBAL CHANGE RESEARCH INFORMATION OF-**
2 **FICE.**

3 The President shall establish an Office of Global
4 Change Research Information to disseminate to foreign
5 governments, businesses, and institutions, as well as the
6 citizens of foreign countries, scientific research and other
7 information available in the United States which would be
8 useful in preventing, mitigating, or adapting to the effects
9 of global change.

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