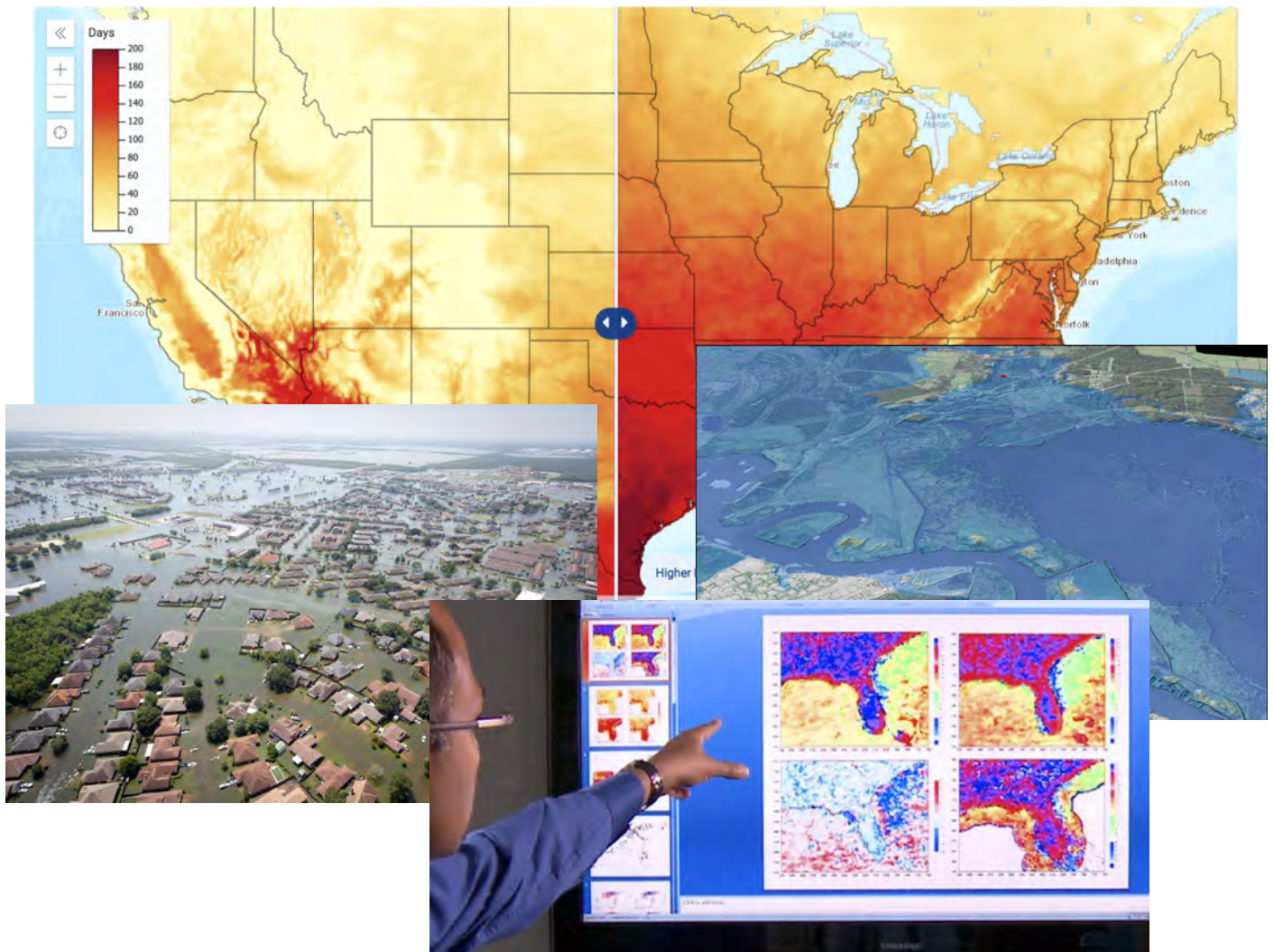


# Advancing the Nation's Geospatial Capabilities To Promote Federal, State, Local, and Tribal Climate Planning and Resilience

A Report to the National Climate Task Force



October 2021

## Federal Geographic Data Committee, Reston, Virginia: 2021

For more information on the Federal Geographic Data Committee

World Wide Web: <https://www.fgdc.gov/>

E-mail: [fgdc@fgdc.gov](mailto:fgdc@fgdc.gov)

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Cover Images, clockwise from top:

Screenshot of the Climate Explorer. Image courtesy of the National Oceanic and Atmospheric Administration (NOAA).

Simulation of flooding from Hurricane Harvey in Port Neches, Texas, using inundation data and high water marks provided by the U.S. Geological Survey (USGS) (<https://doi.org/10.5066/F7VH5N3N>). Image courtesy of Cindy Thatcher, USGS.

NOAA National Weather Service expert discussing climate outlooks for the Florida region that are used by Tampa Bay Water to help inform their utility's operations. Photograph courtesy of Kurt Mann, NOAA.

Hurricane Harvey led to widespread flooding and knocked out power to 300,000 customers in Texas in 2017, with cascading effects on critical infrastructure facilities, such as hospitals, water and wastewater treatment plants, and refineries. The photograph shows Port Arthur, Texas, on August 31, 2017—6 days after Hurricane Harvey made landfall along the Gulf Coast. Photograph courtesy of Staff Sgt. Daniel J. Martinez, U.S. Air National Guard.

EO 14008. Executive Order on Tackling the Climate Crisis at Home and Abroad Section 211(d). "... the Secretary of the Interior and the Deputy Director for Management of the Office of Management and Budget, in their capacities as the Chair and Vice-Chair of the Federal Geographic Data Committee, shall assess and provide to the Task Force a report on the potential development of a consolidated Federal geographic mapping service that can facilitate public access to climate-related information that will assist Federal, State, local, and Tribal governments in climate planning and resilience activities."

The FGDC approved this report on September 29, 2021. The FGDC member agencies are listed below.

**FGDC Chair: Department of the Interior\***

**FGDC Vice Chair: Office of Management and Budget**

- |  |  |
|--|--|
| Department of Agriculture*                   | General Services Administration*               |
| Department of Commerce*                      | Library of Congress                            |
| Department of Education*                     | National Aeronautics and Space Administration* |
| Department of Energy*                        | National Archives and Records Administration   |
| Department of Health and Human Services*     | National Geospatial-Intelligence Agency        |
| Department of Homeland Security*             | National Science Foundation                    |
| Department of Housing and Urban Development* | Office of Personnel Management                 |
| Department of Justice*                       | Small Business Administration                  |
| Department of Labor*                         | Smithsonian Institution                        |
| Department of State*                         | Social Security Administration                 |
| Department of Transportation*                | Tennessee Valley Authority                     |
| Department of Treasury*                      | U.S. Agency for International Development      |
| Department of Veterans Affairs*              | U.S. Environmental Protection Agency           |
| Federal Communications Commission            |  |

\*Agencies identified as "covered agencies" under the Geospatial Data Act of 2018.

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# Advancing the Nation's Geospatial Capabilities To Promote Federal, State, Local, and Tribal Climate Planning and Resilience

## A Report to the National Climate Task Force

### I. Introduction

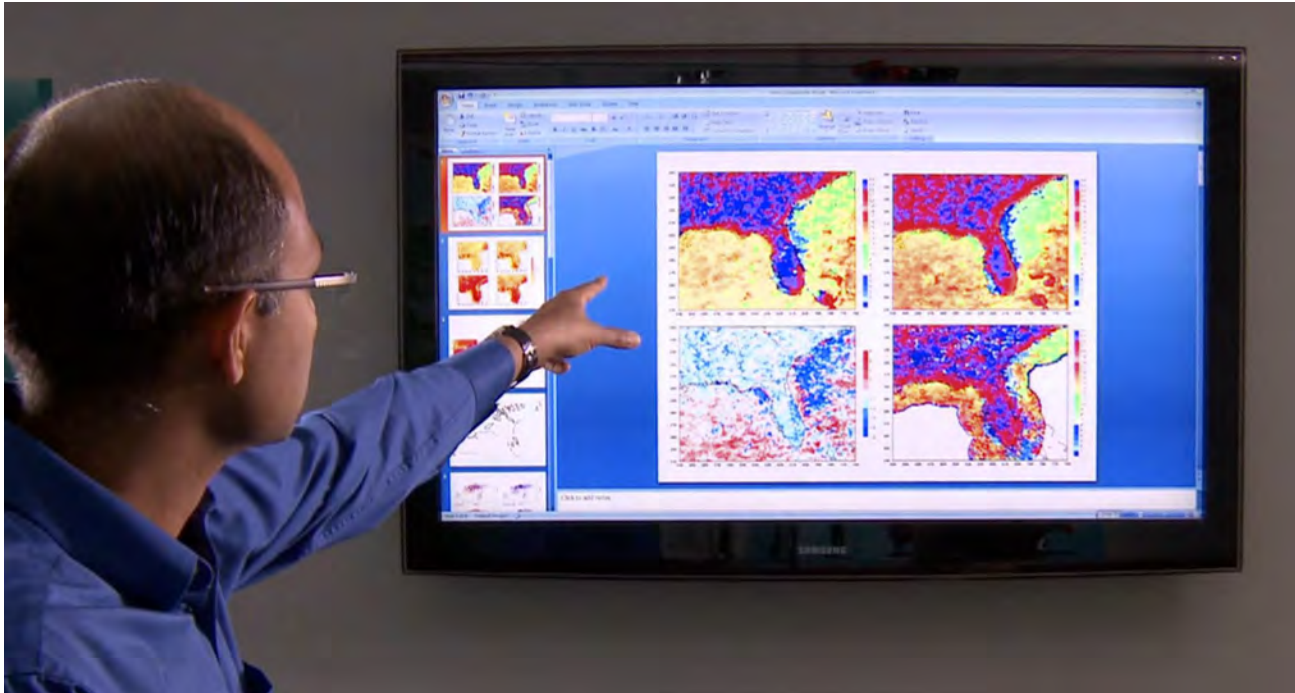
Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," calls for the development of two companion reports. This, the second of the two reports, discusses the potential development of a consolidated Federal geographic mapping service that can facilitate public access to climate-related information to assist Federal, State, local, and Tribal governments in their local, national, and international climate planning and resilience activities. This report uses the term "collaborative" mapping service instead of "consolidated" mapping service to better reflect the integrated roles and participation of Federal agencies and non-Federal constituents in providing climate-related and other geospatial data and services.

Geospatial data, maps, and services help users understand and address challenges at local, national, and global scales in the context of their local geography. One such challenge is the climate crisis, a problem whose solution is a national imperative that requires a whole-of-government and whole-of-society approach. The crisis caused by global climate change has many varied and interrelated facets, and numerous government agencies and nongovernmental organizations are producing data and products to understand the influences of, and the solutions needed to mitigate the different aspects of, this crisis.

Geospatial data services and analysis alone cannot inform and provide solutions to all the challenges posed by climate change. However, sharing data and information is essential for climate planning and resilience and necessitates a coordinated effort by data providers, data users, and decision makers to develop their data-sharing capabilities. There is an active and growing climate ecosystem of scientists, planners, analysts, and decisionmakers focusing on this issue. This community spans the government, nongovernment, and academic sectors. Geospatial data and services are key climate planning and resilience tools used throughout the climate community for understanding and predicting problem areas and preparing and implementing responses.

The first report called for under Executive Order 14008, Section 211(d), was developed by the National Oceanic and Atmospheric Administration (NOAA), the Federal Emergency Management Agency (FEMA), and the Office of Science and Technology Policy (OSTP). That report, "[Opportunities for Expanding and Improving Climate Information and Services for the Public](#)," discusses opportunities for expanding and improving climate information and services for the public and includes a description of the ecosystem of data providers, data users, and decision makers mentioned above. The report outlines a plan to work across governmental agencies and with users and partners to develop robust climate-related services, data, and information products and to implement effective delivery mechanisms for climate services that leverage geospatial data, products, and services.





National Oceanic and Atmospheric Administration (NOAA) National Weather Service expert discussing climate outlooks for the Florida region. These outlooks, which are from the U.S. Climate Resilience Toolkit, are used by Tampa Bay Water to help inform the utility's operations. Photograph courtesy of Kurt Mann, NOAA.

The second report (this document) called for under Executive Order 14008, Section 211(d), was developed by member agencies of the Federal Geographic Data Committee (FGDC). It focuses on the role that the Federal Government plays in providing shared, collaborative mapping services and how the FGDC can potentially enhance these services to leverage the accessibility and usability of climate and other key data for the benefit of users. Together, these two reports and their authoring communities provide a roadmap for how the Federal Government can leverage its unique data-gathering and analytic capabilities in the climate realm to deliver useful and actionable climate information to those who need it, particularly disadvantaged communities that are most affected by climate change.

## A. The Value of Geospatial Information

During the past 30 years, scientists have made great strides in expanding their capacity to observe, monitor, model, research, and understand Earth's climate systems. Public and private sector organizations have significantly expanded and evolved the utility, accessibility, and interoperability of their data and information systems. The steady rise in computational capacity, the emergence of the Internet, and the advent of sophisticated software and technologies for accessing geospatial and time-series data have put a world of information on the map and at one's fingertips. In a matter of milliseconds, almost anyone anywhere can search, gather, and display maps and charts of weather, climate, environmental, economic, demographic, and many other types of information from a wide range of governmental, nongovernmental, and commercial sources. Everyday users across the globe use phones, navigation tools, search engines, and a myriad of publicly and privately developed data and applications. Particularly noteworthy is the rapid progress made during the past decade by commercial and governmental agencies in enhancing and expanding the Nation's use of geospatial data and geospatial information systems (GISs). With today's technology and data, users can monitor drought, improve hurricane forecasts, better respond to wildfires, mitigate flood impacts, design smart cities, and measure land-use changes across the globe.

Freely available digital geospatial data and mapping services are among the most critical tools the Nation can use to meet these challenges. Communities and individuals need these data at the local level, near to where they live, work, and recreate.

Open spatial data services provide communities, government, and the private sector with equitable access to data and information they can use to create collaborative and interoperable maps and visualizations to understand, address, and contribute to overcoming the challenges resulting from climate change.

The national geospatial community has the opportunity and responsibility to further strengthen the geospatial “building blocks” needed to provide increased and equitable access to and understanding of Federal data for local, regional, national, and global geographies so citizens and communities can make informed decisions and act. These geospatial data represent local, regional, national, and global locations and influences. The opportunity exists now to build on and add to the wealth of tools, resources, and expertise within agencies and the private sector.

As the usability and utility of geospatial data and services have evolved and improved over the past decade, so, too, have applied uses of these services across multiple domains of expertise. Today, Federal agencies disseminate a wealth of data and provide numerous mapping, visualization, and analysis tools for public use. However, in the context of local and sector-specific decision making, user feedback indicates that it remains difficult for planners, policy leaders, and the public to discover, understand, integrate, and analyze data from Federal agencies and other open data and services. As part of addressing issues of equity and environmental justice, all open data should be equally accessible to a broad and diverse set of users who have varying levels of training and skills; it is not sufficient for the collected data to serve only those who have the resources and knowledge needed to locate, understand, and apply the complex mix of disparate datasets to local issues. Stakeholders should be able to find and access the best-available geospatial data, interpret the data, and integrate the data into their applications of choice to support local planning, sustainability programs, and engineering efforts.

## B. Today’s Federal Data and Tools Landscape

The Open Government Data Act requires all Federal agencies to publish open data and provide data inventories to the public. During the past 10 years, the emergence of Data.gov, the GeoPlatform, the U.S. Climate Resilience Toolkit, the Partnership for Resilience and Preparedness (PRoP), the U.S. Climate Atlas, and other government, nongovernmental, and commercial websites has improved the public’s ability to find and use Federal agencies’ data and information.

The FGDC is committed to building upon these successes and making geospatial data and mapping services more discoverable, interoperable, and easier to use by the climate community and by other issue-focused communities, decision makers, the public, and private sector solution providers for reuse and innovation.

## Creating New Tools to Empower Climate-Smart Communities

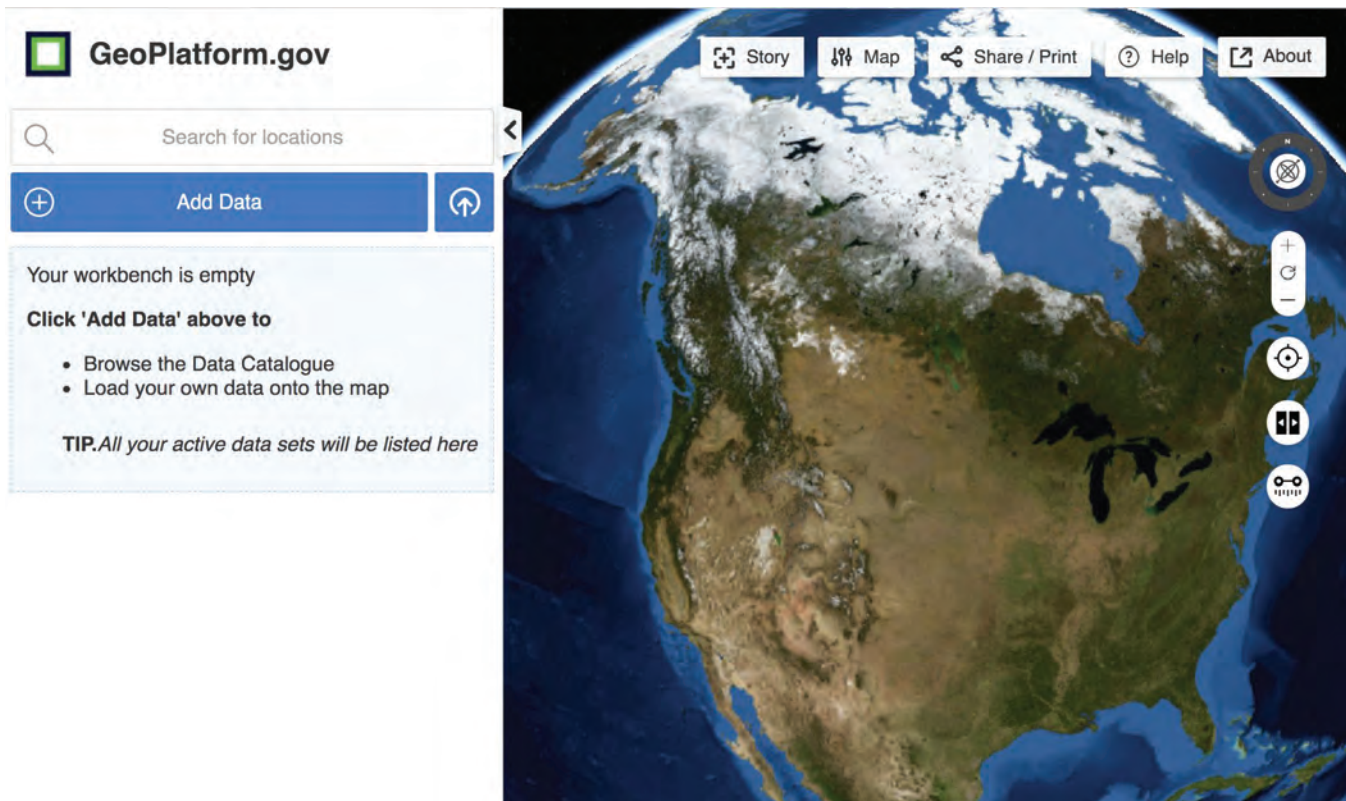
As communities plan for increasingly frequent and severe impacts from climate change, decision makers need relevant, usable data and information at their fingertips. However, it can be difficult to find and synthesize the data that fit their local needs from among the many Federal agency datasets and resources. To address this problem, NOAA and the FGDC Office of the Secretariat, in partnership with the U.S. Census Bureau, brought together teams of commercial innovators to be included in NOAA’s Climate-Smart Communities Challenge. In August 2021, this project launched a 12-week [product development sprint](#) to create new data mapping tools that will provide decision makers with information to fit their needs and accelerate equitable resilience-building across the Nation. The teams are challenged to build world-class applications and technologies that make it easy for local governments, particularly those in underserved regions most vulnerable to the impacts of climate change, to quickly identify and integrate relevant Federal climate datasets with their own local information. Such tools can work with the collaborative Federal mapping service and will support the development of climate resilience plans to help communities nationwide be better prepared for and able to respond to the increasing impacts of climate change. NOAA’s Climate-Smart Communities challenge is part of [The Opportunity Project](#), hosted by the Census Bureau.

The FGDC will continue to collaborate with the Federal Chief Data Officers Council (CDOC) and Data.gov on the continuing development of the GeoPlatform, and on the development and utilization of new practices and technologies that will improve the user experience and enhance the usability of Federal data. These may include streamlining metadata standards and cataloging practices, artificial intelligence, machine readability, automated discovery and use of data with spatial features with data with spatial attributes for spatial analysis and presentation, and adapting policies to encourage participation by all agencies.

### C. Role of the Federal Geographic Data Committee

The Geospatial Data Act of 2018 (GDA) (43 USC § 46) establishes the FGDC as “the lead entity in the executive branch for the development, implementation, and review of policies, practices, and standards relating to geospatial data.” The Secretary of the Interior chairs the FGDC and the Director of the Office of Management and Budget (OMB) is the vice chair. The committee is composed of representatives from 18 U.S. Federal departments and agencies and provides leadership, coordination, direction, and oversight of the Federal geospatial activities. The FGDC Office of the Secretariat provides administrative support, strategic planning, funding, and technical support to the FGDC. The FGDC coordinates external activities with all levels of government, tribes, academia, nonprofit groups, and the private sector through the FGDC’s advisory body, the National Geospatial Advisory Committee (NGAC).

The FGDC is responsible for advancing the National Spatial Data Infrastructure (NSDI) Strategic Plan.<sup>1</sup> The GDA defines the NSDI as “...the technology, policies, criteria, standards, and employees necessary to promote geospatial data sharing throughout the Federal, State, Tribal, and local governments, and the private sector (including nonprofit organizations and institutions of higher education)” (43 USC § 2801(13)). FGDC member agencies maintain the U.S. National Geospatial Data Assets (NGDAs) and mapping services, which are the core data components and critical “building blocks” of the NSDI. In accordance with the GDA, the NGDAs are organized into 18 themes, including a “Climate and Weather” theme, which includes key national climate-related datasets.



Screenshot of the GeoPlatform. Courtesy of the Department of the Interior.



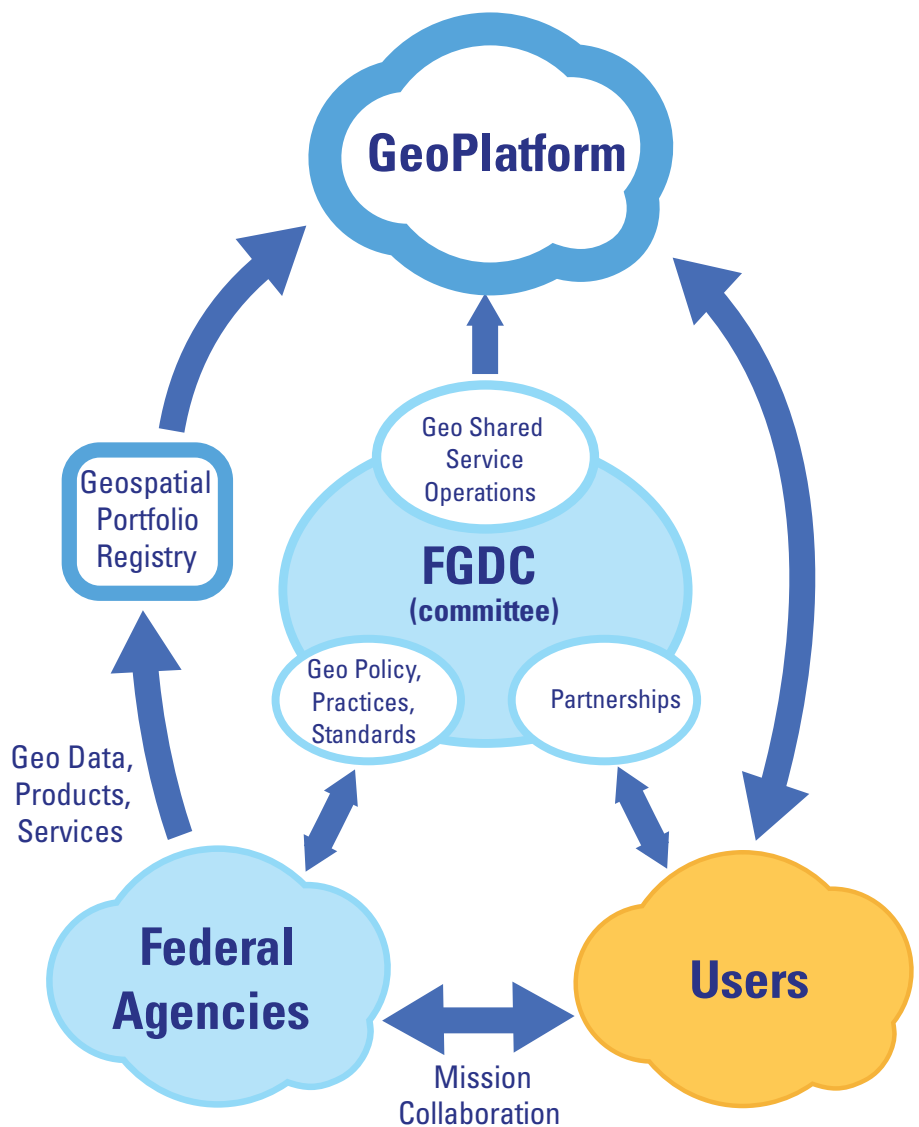
Although the FGDC includes representatives from 18 U.S. Federal departments and agencies, not all agencies that have or use climate-related geospatial data are members of the FGDC under the GDA. For example, the U.S. Environmental Protection Agency (EPA), a strong geospatial leader, is not a covered agency under the GDA. As noted below, this report recommends that all Federal departments and agencies that manage or use climate-related geospatial data engage and coordinate with the FGDC to support and implement the collaborative Federal mapping service envisioned in this report.

#### D. Role of the GeoPlatform

The GDA requires the FGDC to operate the Federal GeoPlatform ([www.geoplatform.gov](http://www.geoplatform.gov)), a shared Federal service that provides public access to Federal agencies' geospatial data. The GeoPlatform provides search, discovery, viewing, and community collaboration services for Federal geospatial data and services registered in the GeoPlatform, in concert with the Federal data catalog, Data.gov. The GeoPlatform serves a critical, central role in helping Federal Government agencies make their key datasets broadly available in open GIS formats to support geospatial mapping and analysis. Access to the most current and authoritative data is essential for local climate resilience planners and decision makers.

The GeoPlatform serves a foundational role as a collaborative Federal geographic mapping service, complementing capabilities of the FGDC member agencies. This open service provides reliable access to trusted data and mapping services from Federal agencies and helps users efficiently find and use these services to support their climate and other mission needs (44 USC § 3502(20)).

Users from all sectors can go to the GeoPlatform to search for, discover, and access trusted data from across the Federal agencies. The broader network of users, vendors, service providers, scientists, and software companies involved in providing climate information leverage these open data services in combination with their own data, code, and applications. The GeoPlatform provides open, reliable access to GIS data, engendering trust in and increasing the usage of the agencies' data. Concurrently, the GeoPlatform decreases the effort required to leverage these data to build climate resilience and for other purposes. Mission-driven public and



The GeoPlatform is maintained by the Federal Geographic Data Committee (FGDC) to provide access to the Federal portfolio of interoperable geospatial data, products, and services developed by agencies.

private entities—including many Federal agencies—integrate data made available through the GeoPlatform with data from other levels of government, the private sector, nonprofit groups, and academia to develop specific climate impact and climate resilience solutions.

## II. Potential Enhancements to the GeoPlatform Shared Services Model

The FGDC member agencies provide annual funding to the Department of the Interior for base operations to support delivery of geospatial data and services through the GeoPlatform shared service. Given the large volume of important climate-related information that is being gathered by the Federal Government, however, now is an opportune time to evaluate whether the GeoPlatform’s backbone services can be improved. Key topics include whether (1) agencies are registering relevant Federal datasets in the GeoPlatform in a timely and efficient manner; (2) the GeoPlatform is providing access to Federal data to its many users in “findable,” “accessible,” “interoperable,” and “reusable” ways; and (3) the GeoPlatform model could be modified or expanded to provide additional capabilities (which could include software, services, or tools) that could assist agencies and, potentially, outside information service providers, in providing specialized climate information products. Each of these three areas for potential enhancements are described further below.

### A. The Incorporation of Federal Datasets into the GeoPlatform

As a general matter, the creation and Congressional validation of the GeoPlatform has elevated the importance that agencies attach to the work of preparing and delivering Federal datasets into the GeoPlatform system. The FGDC devotes ongoing attention to this core responsibility.

The GeoPlatform has more than 28,000 registered users and on average generates more than 400,000 visits per month on the main site. The GeoPlatform does not require users to have an account, so the number of unique users is greater than the number of registered users. More than 39 Federal programs use the GeoPlatform’s pay-for-service geospatial cloud-hosting capabilities, including programs within the Department of Agriculture, the Department of Homeland Security, the Department of the Interior, the Department of Transportation, the EPA, the National Geospatial-Intelligence Agency, and the U.S. Army Corps of Engineers (USACE).

There are many examples of where the GeoPlatform supports geospatial programs across the Federal landscape through partnerships, collaboration, and reuse. To illustrate, FEMA delivers its new Risk Map through the GeoPlatform and uses GeoPlatform services for emergency response capabilities. The National Park Service generates and delivers their award-winning national park maps, and the USACE manages all its civil works geospatial products, such as National Levee data and the National Inventory of Dams, through the GeoPlatform. The National Aeronautics and Space Administration (NASA) maintains the GeoPlatform’s Resilience community as well. The U.S. Geological Survey developed and hosts recreational trails data that provides existing trail data from Federal, State, county, and local sources to organizations to evaluate the best routes to create an interconnected network. The application uses existing trail networks as well as elevation data to help plan trail routes. The prototype National Address Database is hosted on the GeoPlatform and provides local- and State-sourced address data integrated by the Department of Transportation and served through the GeoPlatform cloud infrastructure.

Although the FGDC has had continued success in fostering its core mission of incorporating Federal Government datasets into the GeoPlatform, it is unfortunate that a few Federal agencies that manage or use climate-related geospatial data—including, notably, the EPA—were not specified as FGDC covered agencies under the GDA. These agencies are longstanding and productive partners that have participated in the GeoPlatform’s shared services model, but it would be useful to formalize the relationships between agencies that are not FGDC member agencies under the GDA but that work closely with the FGDC. Accordingly, this report recommends consideration of an OMB memorandum or other guidance

(such as adding language to OMB Circular A–16) that would administratively include these agencies as members of the FGDC, with an expectation that they will participate fully in FGDC activities, register their geospatial data and services with the GeoPlatform, and help implement FGDC initiatives that seek to improve the operation and delivery of mapping services across the Federal Government. Participation would be in accordance with the agencies’ statutory authorities and missions to ensure alignment with mandated data safeguards, protections, and other restrictions.

## B. Making Federal Data More Findable, Accessible, Interoperable, and Reusable

The FGDC, in collaboration with the NGAC (which is the FGDC’s advisory body) and other non-Federal representatives, developed the NSDI Strategic Plan that includes the NSDI’s guiding principles. One of these principles is to “Ensure that geospatial data are current, accurate, open, standards-based, findable, accessible, interoperable, and reusable.” This principle is integrated with the plan’s goal 2, “Advance the maturity of, accelerate the acquisition of, and expand the sources of National Geospatial Data Assets to ensure that they are findable, accessible, interoperable, and reusable.”

Federal agencies have been working in recent years to improve common processes to make datasets used in GIS mapping applications more findable, accessible, interoperable, and reusable. They have been guided in this regard by the input from the many public and private partners who rely on the availability of Federal datasets to generate informative and accurate GIS-based mapping products. The NGAC issued a paper in 2020—titled “Advancing the National Spatial Data Infrastructure Through Public-Private Partnerships and Other Innovative Partnerships”<sup>2</sup>—which identified best practices for partnerships and emphasized the importance of collaborating with other sectors within the broader geospatial mapping and information ecosystem.

For these reasons, it is essential that the delivery of Federal mapping services be guided by “findable,” “accessible,” “interoperable,” and “reusable” principles. Substantial progress is being made on these fronts, as discussed below.



National Environmental Modeling and Analysis Center (NEMAC) personnel using the Climate Explorer to show a model projection of a possible future climate scenario in the United States as compared to the 30-year observed average from 1961–1990. Photograph courtesy of NEMAC and the University of North Carolina–Asheville.

### Make It Easier for Users to Find Relevant Federal Climate Mapping Data (Findable)

Finding appropriate data requires users to determine which dataset is best for their needs and which Federal Government website hosts it. The number of options can leave planners and decisionmakers frustrated and confused about which data source to use. To guide end-users to appropriate data, the FGDC will continue to work with Federal agencies to provide technical guidance for implementing climate metadata that emphasizes the scope, limitations, and intended use of the datasets. The FGDC will also assist Federal agencies to make dataset guidelines more accessible and easier to understand. Finally, the FGDC will focus on making GeoPlatform records available in formats used by commercial search providers to enhance the public’s ability to find relevant data through commonly used search engines.

The FGDC member agencies will also solicit input on mapping services and search requirements from current and potential users through continuing outreach to the climate resilience and other communities. Agencies will, in turn, provide user feedback to the FGDC and the GeoPlatform development team to inform improvements in the usability and interoperability of the GeoPlatform

together with emerging new cloud-based data and mapping services. Sustained engagement by FGDC member agencies with users will help ensure that requirements are being met and that the GeoPlatform is continuously adapting and improving as needs evolve.

### **Migrate Relevant Federal Data to Open-Access Cloud Environments and Deliver These Data in Open Formats (Accessible)**

For the past several years, the U.S. Government has required open access to reliable Federal data, mapping, and analysis services to underpin and enable a full network of decision-support services to be developed at scale, benefiting disadvantaged communities and the entire user community. The Federal agency members of the FGDC have been working with open standards organizations and private sector cloud providers to facilitate greater access to Federal geospatial data and services on cloud platforms. The Federal community is seeking to learn from such agencies as NASA and NOAA that already have formed public-private partnerships to further leverage the reach of Federal open-access resources onto commercial cloud platforms.

### **Increase the Interoperability of Federal Mapping Data So Others Can Easily Integrate the Data With Their Own Data (Interoperable)**

The FGDC member agencies, in collaboration with the open science and open standards communities, are interested in developing mapping services that are more understandable by humans and machines. This enables users to analyze Federal climate data using their local mapping information and applications. Improved interoperability increases the equitable access to the underlying meaning and appropriate uses of Federal mapping data. As noted above, Federal agencies strive to make their data and mapping services fully open (44 USC § 3502(20)) by leveraging relevant open standards and associated best practices to facilitate their interoperability with cloud-based technologies, artificial intelligence, and machine-learning and machine-readable approaches (44 USC § 3502(18)).

### **Make It Easier to Understand and Use Relevant Data and Tools (Reusable)**

The use of freely available, well-documented climate data services enables the software industry, academia, and other users to understand the differences among the available climate datasets. Well-documented data can be used and reused many times to develop climate applications and research at lower cost while increasing consistency in the use of data to inform climate decisions.

### **Potential Enhancements to the GeoPlatform's Findability, Accessibility, Interoperability, and Reusability**

With the Administration's focus on gathering new climate data and making it usable by a broad spectrum of data analysts and providers, inside and outside the Federal Government, now is an opportune time to take a fresh look at the current GeoPlatform and related operations from the perspective of Federal GIS data findability, accessibility, interoperability, and reusability principles. This report recommends a review to evaluate the current state and potential enhancements to the GeoPlatform's findability, accessibility, interoperability, and reusability services (see details below).

## **C. Potential Expansion of Collaborative Federal Mapping Services**

The rapidly evolving availability of climate data and the extensive number of mission-specific climate applications produced by agencies and outside providers raises a question about opportunities for the Federal Government to provide additional collaborative mapping services to users in and outside the Federal Government. Currently, the FGDC primarily serves a coordinating function and the GeoPlatform has limited and fixed operational resources provided by member agencies.



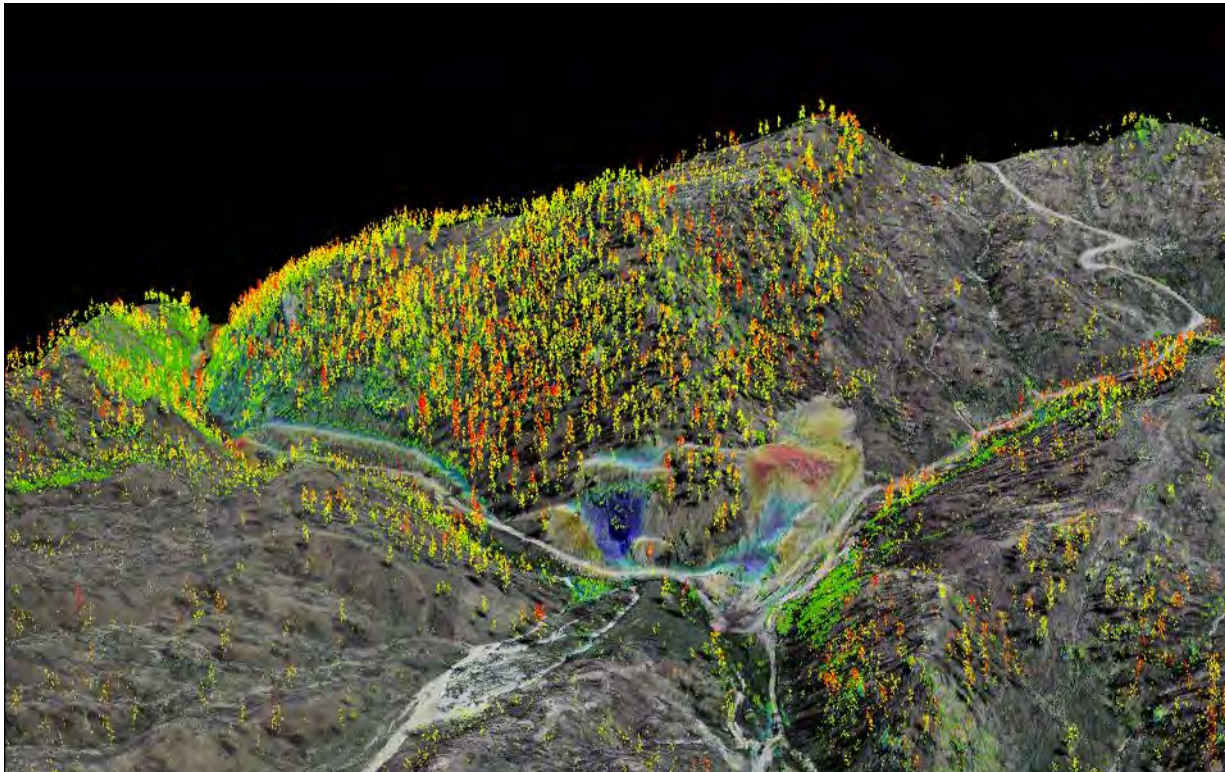


Image showing loss of canopy cover and changes in topography caused by post-fire landslides and erosion in the Cheesman Lake, Colorado, area. Image courtesy of Jason Stoker, U.S. Geological Survey.

To illustrate, the FGDC could facilitate the identification, documentation, curation, and mapping of the most needed Federal data and an expanded collaborative operational capability that may include additional geospatial expertise. For example, the FGDC member agencies could identify the highest value climate data for inclusion in the OMB Circular A-16, Weather and Climate Data Theme based on the user communities' requirements. The FGDC member agencies could then prioritize collaborative mapping services that leverage previous agency investments and operational capabilities to build out collaborative climate data and mapping services. These services could be updated regularly to ensure that accurate scientific information is available to everyone, with a focus on serving users communities, particularly disadvantaged communities, as emphasized in the first report.

Whether to expand Federal collaborative mapping services by providing more operational capabilities—which could include software, services, or tools—to member agencies and outside parties presents an important and timely question. In recent years, several Federal agencies and many outside providers have stepped up their institutional capabilities to combine datasets from source agencies, discovered through the GeoPlatform, with many other available mapping resources to produce specialized information products that serve a variety of user communities.

## Recommended Followup

As noted above, the Administration's focus on gathering new climate data and making it usable by a broad spectrum of data analysts and providers, inside and outside the Government, makes it an opportune time to take a fresh look at the current GeoPlatform and related operations from the perspective of Federal GIS data findability, accessibility, interoperability, and reusability principles. Accordingly, this report recommends that the chair and vice chair of the FGDC commission a focused 120-day review that evaluates the FGDC's core activities and explores potential enhancements that would improve current services and operations. This report recommends that the review also evaluates the pros and cons of potentially expanding

the operational capabilities of the FGDC to provide additional collaborative Federal mapping services, and that it develops a set of options that considers both maintaining the FGDC's current scope and scale and expanding its capacity, including addressing how each option can leverage existing and developing climate data initiatives across the Government. Together, the proposed review would examine opportunities to enable the delivery of potential additional services, such as—

- Registering climate and climate-related data (for example, base maps and feature data) in the GeoPlatform and establishing repeatable and automated processes for registry, testing, and services updates.
- Improving the GeoPlatform's interfaces, the user experience, and the usability of provided data and services.
- Providing outreach and assistance to climate services users of the GeoPlatform.
- Identifying policies, practices, and technical issues to improve collaborative Federal mapping services, propose and implement solutions, and establish clear requirements and processes to coordinate services between the GeoPlatform, Data.gov, and agency services portals.
- Pursuing the creation of innovative public-private partnerships to supplement Federal investments in geospatial climate data and information products as well as other data and information products.

### III. Conclusion

Executive Order 14008 is an urgent call to action to address and plan for the effects of climate change. Open digital geospatial data and mapping services are among the most critical tools the Nation can use to meet these challenges, and the Federal Government plays a key role in providing shared, collaborative mapping services. This report describes how the FGDC might use the GeoPlatform and other tools, in collaboration with non-Federal partners, to enhance the accessibility and usability of climate and other key data for the benefit of users.

The collaborative Federal geographic mapping service envisioned in this report will provide robust capabilities by building on the GeoPlatform and services infrastructure. The recommendations in this report—to consider an OMB memorandum or other guidance to reinforce agency participation in the FGDC, and to commission a focused review to evaluate the potential expansion of FGDC operational capabilities—will provide the basis to effectively advance a collaborative and sustainable Federal mapping service.

The two companion reports called for in Section 211(d) of Executive Order 14008—the report prepared by NOAA, FEMA, and the OSTP on improving climate information and services, and this report on the development of a consolidated (collaborative) Federal geographic mapping service—provide a roadmap for how the Federal Government can leverage its unique data-gathering and analytic capabilities to deliver useful and actionable climate information to those who need it, particularly disadvantaged communities that are disproportionately affected by climate change.

### References Cited

- <sup>1</sup>Federal Geographic Data Committee, 2020, National Spatial Data Infrastructure Strategic Plan 2021–2024: Reston, Virginia, Federal Geographic Data Committee, 17 p., accessed September 24, 2021, at <https://www.fgdc.gov/nsdi-plan/nsdi-strategic-plan-2021-2024.pdf>.
- <sup>2</sup>National Geospatial Advisory Committee, 2020, Advancing the National Spatial Data Infrastructure through public-private partnerships and other innovative partnerships: Washington, DC, National Geospatial Advisory Committee, accessed September 24, 2021, at <https://www.fgdc.gov/ngac/meetings/december-2020/ngac-paper-advancing-the-nsdi-through-public.pdf>.

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