Testimony of the

**Geological Society of America**

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Regarding the

**U.S. Geological Survey**

FY 2023 Budget

to the

**United States House of Representatives**

Committee on Appropriations
Subcommittee on Interior, Environment, and Related Agencies

March 10, 2022

**Summary**

The Geological Society of America (GSA) recommends that Congress provide $1.85 billion in annual appropriations for the U.S. Geological Survey (USGS) in Fiscal Year 2023. As one of our Nation's key science agencies, the USGS plays a vital role in understanding and documenting mineral and energy resources that underpin economic growth; researching and monitoring potential natural hazards that threaten U.S. and international security; informing communities about the impacts of a changing climate; determining and assessing water quality and availability; and assessing risk of COVID-19 spread to new species. Approximately two thirds of the USGS budget is allocated for research and development. In addition to supporting the science activities and decisions of the Department of the Interior, this research is used by communities across the nation to make informed decisions in land-use planning, emergency response, natural resource management, engineering, and education. GSA believes that it is important to grow the USGS budget in order to address past shortfalls in staffing, facilities, and research, given the importance of its many activities that protect lives and property, contribute to national security, and enhance the quality of life.

*The Geological Society of America (GSA) is a scientific society with members from academia, government, and industry in more than 100 countries. Through its meetings, publications, and programs, GSA enhances the professional growth of its members and promotes the geosciences in the service of humankind. GSA encourages cooperative research among earth, life, planetary, and social scientists, fosters public dialogue on geoscience issues, and supports all levels of earth science education.*

The Geological Society of America (GSA) thanks the Committee for recognizing the importance of the work of the U.S. Geological Society (USGS) to protect lives, property, and national security, and to stimulate economic growth. GSA urges Congress to provide USGS $1.85 billion in Fiscal Year 2023. This increase will allow the USGS to implement new initiatives, maintain the base funding for critical research and monitoring, fill vacant positions, and address deferred maintenance on existing facilities. This investment will ensure that the USGS is able to respond to 21st- century challenges with 21st-century science and technology.

**U.S. Geological Survey Contributions to National Security, Health, and Welfare**

The USGS is one of the nation's premier science agencies, with a distinctive capacity to engage interdisciplinary teams of experts to gather data, conduct research, and develop integrated decision-support tools. USGS research is used by communities across the nation to make informed decisions in land-use planning, emergency response, natural resource management, engineering, and education. USGS research addresses many of society's greatest challenges for national security, health, and welfare. Several are highlighted below.

**Natural Hazards**

Natural hazards are a major cause of fatalities and economic losses. NOAA found that in 2021 alone, there were 20 weather/climate disaster events with losses greater than $1 billion including, 11 severe storms, four tropical cyclones, one drought, one winter storm event, two flooding events, and one wildfire that resulted in a cost of $145 billion and 688 deaths, making it the third-costliest year on record. Additionally, 2021 is the seventh consecutive year in which 10 or more billion-dollar weather/climate events impacted the U.S. An improved scientific understanding of geologic and atmospheric hazards will reduce future losses by informing effective planning and mitigation. GSA urges Congress to continue supporting efforts for USGS to modernize and upgrade its natural hazards monitoring and warning systems, including additional 3-D elevation mapping and earthquake early warning systems, while maintaining fundamental research and monitoring.

Decision makers in many sectors rely upon USGS data to respond to natural hazards. For example, USGS volcano monitoring provides data to enable decisions to ensure aviation safety. Similarly, the USGS plays a key role in the National Tsunami Hazard Mitigation Program by tracking tsunami sources using seismic data as part of a collaborative effort to increase preparedness, reduce impacts, and issue warnings.

USGS is a key partner in obtaining data necessary to predict severe space weather events, which affect the electric power grid, satellite communications, and navigation systems. The Promoting Research and Observations of Space Weather to Improve the Forecasting of Tomorrow Act (PROSWIFT Act), which was signed into law in October of 2020, highlights a path forward for USGS research to meet these objectives. In addition, the new Space Weather Advisory Group established by the PROSWIFT Act will conduct a comprehensive survey to identify the research, observations, forecasting, and modeling advances required to improve space weather products.

GSA recommends adequate funding to implement recently-enacted hazards-related legislation. For example, the National Landslide Preparedness Act, signed into law in January 2021, expanded the USGS Landslide Hazards Program and authorized a 3D elevation program to

update and coordinate the collection of elevation data across the country using enhanced, high-resolution surveys. Directives to USGS include identifying, mapping, assessing, and researching landslide hazards, responding to landslide events, and developing landslide guidelines for geoscientists, emergency management personnel, and land-use decision-makers.

**Energy and Minerals**

As articulated in the Energy Policy Act of 2020, there is a vital need to understand the abundance and distribution of critical mineral resources, as well as the geologic processes that form them, both within the United States and globally. Achieving this goal will require continually expanding collection and analysis of geological, geochemical, and geophysical data. Specifically, GSA supports building upon the allocation of $167 million through the bipartisan Infrastructure bill to establish the Energy and Minerals Research Facility on the Colorado School of Mines campus, which will replace deteriorating laboratories across the U.S. used by the USGS to work on energy and critical minerals. The facility will also support the expansion of STEM talent and increase diversity through student engagement and workforce development.

GSA supports increases in minerals science, research, information, data collection and analysis that will allow for more economic and environmental management and utilization of minerals. In addition, GSA supports increases in funding for research to better understand domestic sources of energy, including conventional and unconventional oil and gas and renewables. GSA appreciates congressional support for the EarthMRI program, which will provide new resources and leverage current data to accelerate geological and geophysical mapping, identify critical mineral sites for further scientific review, among other safety, security, scientific, and industrial uses. The mapping has a central focus on both minerals still in the ground and minerals that may be reprocessed from legacy mine waste, and will also provide important data for abandoned mine remediation and for understanding other natural resources. GSA appreciates investments made it in the bipartisan Infrastructure Bill that will accelerate the expansion of the program by providing an additional $64 million annually for five years.

**Water Resources**

Improved understanding of the quantity, quality, distribution, and use of water resources through monitoring, assessment, research, and delivery of actionable information by the USGS and associated partners is necessary to ensure adequate and safe water resources for the health and welfare of society. For example, the USGS national network of stream gages provides key data for the weekly U.S. Drought Monitor Maps and classifications. Improved representation of geological, biological, and ecological systems—including underlying physical and chemical processes and their interactions—is needed. In addition to maintaining current monitoring capabilities, new hydrologic data are required to improve the reliability and reduce the uncertainty of scientific analyses that support water resources management and policy decisions.

**Climate Change**

USGS research on climate impacts is used by local policymakers and resource managers to make sound decisions based on the best possible science. In addition to fundamental, long-term climate change research, the USGS provides scientific information necessary to anticipate, monitor, and adapt to the effects of climate change at regional and local levels, allowing communities to make smart, cost-effective decisions. Much of this work operates through the network of nine regional

Climate Adaptation Centers (CASC). For example, the Alaska CASC has conducted research on the relationship between wildfire and other ecological disturbances, such as drought, which will help resource managers plan for and adapt to the evolving threat that fire poses to humans, infrastructure, and ecosystems. Across the country, the Southeast CASC is using artificial intelligence to predict flood damage changes in response to rising sea levels, and the Northeast CASC recently conducted a study showing that small channels developed to facilitate drainage in salt marshes may help mitigate sea level rise and restore vegetation.

**Core Science Systems, Facilities, and Science Support**

Activities from hazard monitoring to mineral forecasts are supported by Core Science Systems, Facilities, and Science Support. These programs and services, such as geologic mapping, data preservation, and satellite observation, provide critical information, data, and infrastructure that underpin the research of the USGS. Stagnant funding has created backlogs in the hiring of new scientists; increased investment is needed to fill these critical roles. These investments will also allow for the recruitment and training of a diverse STEM pipeline, paving the way for increased diversity, equity, inclusion, and accessibility within the field of Earth sciences.

GSA appreciates the committee's recent investments in Facilities, including the creation of the Energy and Mineral Research Facility, and encourages continued investment to address deferred maintenance issues. GSA also recommends long-term funding and support for the USGS library, which is used by both federal scientists and external researchers. The Library houses more than 1.5 million volumes and more than three million maps, photographs and field records, with much of the information unique to the USGS or available from very sources worldwide.

The Landsat satellites have amassed the largest archive of remotely sensed land data in the world, a tremendously important resource for natural resource exploration, land use planning, and assessing water resources, the impacts of natural disasters, and global agriculture production. On September 27, 2021, the NASA/USGS Landsat program launched its ninth satellite in its 50 year program that will operate in tandem with Landsat 8 and replace Landsat 7. GSA supports interagency efforts for future support of Landsat.

Thank you for the opportunity to provide testimony about the U.S. Geological Survey. For additional information or to learn more about the Geological Society of America – including GSA Position Statements on climate change, water resources, mineral and energy resources, natural hazards, and public investment in Earth science research – please visit www.geosociety.org or contact GSA's Director for Geoscience Policy Kasey White at kwhite@geosociety.org.