



American Geosciences Institute Written Testimony

**Testimony Submitted by
American Geosciences Institute**
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**To the United States Senate Committee on Appropriations
Subcommittee on Commerce, Justice, Science, and Related Agencies**

**Regarding the National Science Foundation, National Oceanic and Atmospheric
Administration, National Institute of Standards and Technology, National Aeronautics and
Space Administration, and the Office of Science and Technology Policy**

April 30, 2018

Thank you for this opportunity to provide the perspective of the American Geosciences Institute (AGI) on fiscal year (FY) 2019 appropriations for geoscience programs within the Subcommittee's jurisdiction.

AGI applauds Congress for successfully negotiating and passing the Bipartisan Budget Act of 2018 and the Consolidated Appropriations Act, 2018. We are grateful to the Members of Congress and congressional staff who crafted this significant legislation. The FY 2018 appropriations bill creates a robust baseline for future budgets, and AGI supports sustained funding increases for science agencies.

AGI supports critical earth science research conducted by the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the National Institute of Standards and Technology (NIST), and the National Aeronautics and Space Administration (NASA). Cutting-edge research on the Earth system – its resources and complex geologic, marine, atmospheric, and hydrologic processes that sustain life and the economy – has fueled economic growth, mitigated loss of life and property, and improved our quality of life. All of these agencies carry out vital, mission-focused geoscience research and education, and participate in interagency collaborations with the U.S. Geological Survey (USGS), the Department of Energy, and other federal, state, tribal, and local agencies on topics ranging from emergency planning and response to anticipating water availability. The Earth system is highly complex and interconnected – geoscience information supported and developed by these agencies is vital for decision making at all levels of government and by the private sector. In addition, AGI supports the vital educational programs of these agencies that build the geoscience workforce and public trust in the geosciences to foster creative solutions for the nation.

AGI respectfully requests at least \$8.45 billion funding for NSF, including robust support of the Geosciences Directorate. AGI supports \$6.2 billion for NOAA, \$1.3 billion for NIST, \$2 billion for NASA Earth Science programs, \$5.6 million for OSTP, and continued statistical data collection at the Department of Commerce.

AGI appreciates the difficult choices that Congress faces in developing the FY 2019 budget. Investing in our nation's future workforce, in our scientific and Earth monitoring infrastructure, and in research and development that feeds innovation will reinforce the United States' role as the global leader. We respectfully request that this Subcommittee maintains its commitment to a strong future for the nation by funding critical scientific research, infrastructure, data collection, and educational programs at the agencies under your jurisdiction.

AGI is a nonprofit federation of 52 scientific and professional societies representing more than 260,000 geoscientists across the nation who work in industry, academia, and government. Founded in 1948 under a directive of the National Academy of Sciences, AGI provides information services to geoscientists, serves as a voice of shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources, resilience to natural hazards, and the health of the environment.

National Science Foundation

Research across all areas of science and engineering contributes knowledge and understanding about many societal issues ranging from homeland security to cyberinfrastructure, and it produces revolutionary and often unforeseen breakthroughs. Basic research provides information that is used to improve people's quality of life: it is the foundation for a dynamic and innovative economy, and it strengthens the security of the nation. NSF not only provides core funding and essential infrastructure for basic research: it also supports the education and training of the next generation coming into our nation's workforce.

AGI believes that investment in NSF programs, where funding is allocated based on scientific merit and competitive peer review, will pay important dividends in maintaining U.S. dominance in science and technology far into the future. AGI applauds Congress for increasing NSF's budget for FY 2018. **AGI supports funding of \$8.45 billion for NSF in FY 2019.**

NSF Geosciences Directorate: The Geosciences Directorate (GEO) is the principal source of federal support for academic geoscientists and their students who seek to improve understanding of the Earth and the processes that sustain and support life and human well-being. The GEO Directorate provides about 64 percent of federal funding for basic geoscience research at academic institutions and supports indispensable research infrastructure and instrumentation. Geoscience researchers study natural hazards, including earthquakes, tornadoes, hurricanes, drought, solar storms, and all aspects of the air, water, ice, and rocks that define our environment and provide the raw materials for economic prosperity.

GEO research supports the entire geoscience community, which includes petroleum geologists, geotechnical engineers, ocean and atmospheric scientists, hydrogeologists, economic geologists, soil scientists, natural hazards specialists, and other experts whose work interacts with the Earth system. Most geoscientists work in the private sector, at state and federal agencies, or as consultants. The GEO Directorate helps universities build a skilled workforce to meet the economic, safety, and environmental needs of the nation. Research funded by GEO is contributing to the U.S. energy boom, to our understanding of the land-ocean interface, and to fundamental understanding of Earth processes that impact health and safety.

NSF's Office of Polar Programs (OPP) funds basic research in the Arctic and Antarctic and manages all U.S. activities in Antarctica as a single, integrated program. The polar regions are the focus of intense scientific and political interest as new navigation routes are opening access to resources and presenting security challenges. NSF-funded research and infrastructure are helping United States decision-makers understand environmental conditions in extreme environments, develop polar technology, and construct data-driven strategic and security policies. AGI encourages robust funding for the Antarctic Infrastructure Modernization for Science program.

A centralized pool of national geoscience infrastructure is an efficient way to achieve the maximum return on investment and to ensure that the nation has the equipment and expertise needed to respond rapidly to opportunities and emergencies. AGI strongly supports robust and steady funding for infrastructure, operation, and maintenance of major facilities, including the Academic Research Fleet, the continuation of the important geodetic, seismic, and related geophysical functions in the GAGE and SAGE multi-user facilities, Ocean Discovery Program, the Ocean Observatories Initiative, and the National Center for Atmospheric Research (NCAR).

AGI respectfully asks the Subcommittee to provide at least \$6.6 billion to NSF's Research and Related Activities with appropriate distribution to GEO.

NSF Directorate for Education and Human Resources: AGI's *Status of the Geoscience Workforce Report 2016* predicts a shortfall of approximately 90,000 geoscientists by 2024. NSF funding for geoscience education is essential to develop the competitive, skilled workforce that can fill this predicted gap in areas of vital national interest including jobs in the energy and natural resource sectors. Geoscience education also creates an informed citizenry prepared to make well-founded decisions about our planet and its resources. Outreach and education are important at all levels from K-12 through graduate-level education and should include formal and informal outlets to facilitate lifelong learning. **AGI strongly encourages funding for geoscience education at all levels and particularly supports programs to diversify the geoscience student population and workforce, such as the NSF INCLUDES initiative.**

Department of Commerce

National Oceanic and Atmospheric Administration: Geoscientists rely on NOAA for much of the data and long-term monitoring tools that enable research and rapid response for events such as hurricanes, drought, marine oil spills, and a range of coastal phenomena. The National Weather Service (NWS), Oceanic and Atmospheric Research (OAR), National Ocean Service (NOS), National Environment Satellite, Data and Information Service (NESDIS), and Office of Marine and Aviation Operations (OMAO) programs provide the data necessary to understand and mitigate these events and to sustain our natural resources. Extreme weather events cause major impacts throughout the country, triggering coastal erosion, landslides, and flooding. AGI supports increased, dedicated funding for NWS to support landslide hazard assessments and to reduce losses from landslides and other ground failures. We also recommend continued funding for the National Sea Grant College program, which supports applied research, education, and communication of marine and coastal science, and NOAA's Office of Education.

AGI supports \$6.2 billion for NOAA and respectfully requests that the Subcommittee continue to support NOAA's observation, analysis, and research initiatives.

National Institute of Standards and Technology: Earth scientists and geotechnical engineers well-versed in the geosciences conduct basic research at NIST that is used by the public and private sectors to build resilient communities and stimulate economic growth. NIST research and information is essential for understanding natural hazards, identifying the infrastructure needed to build strong communities, and stimulating economic growth.

NIST is the lead agency for the National Earthquake Hazard Reduction Program (NEHRP), an interagency program responsible for the efficient coordination of research and resources to understand and mitigate earthquakes, but has received only a small portion of authorized funding in the past. **AGI strongly supports \$1.2 billion for NIST and urges Congress to reauthorize and fully fund the National Earthquake Hazards Reduction Program (NEHRP).**

Bureau of Economic Analysis and Census Bureau: AGI relies on key information from the Bureau of Economic Analysis and the Census Bureau, including the American Community Survey, when developing our analyses of the geoscience workforce. **AGI respectfully asks Congress to maintain your support for continued, consistent statistical data collection.**

National Aeronautics and Space Administration

NASA's fleet of Earth-observing satellites provides the data necessary to understand our dynamic planet. Scientists, farmers, industry professionals, and emergency managers rely heavily on this data gathered from space to support Earth and space weather predictions, to detect and monitor emergency situations such as volcanic eruptions, oil spills, and droughts, and to understand the links between ocean, atmosphere, land, and biological systems.

Other government agencies as well as the private sector use NASA information intensively for decision making. NASA supports important NOAA and USGS missions. For instance, geoscientists have used observations from Landsat satellites since 1972 to monitor, predict, and react to drought, wildfires, and other changes to the Earth's surface. We ask Congress to please continue to support the Landsat program.

AGI strongly supports continuation of the NASA Earth Science program, which received flat funding in FY 2018 despite an increase for the overarching NASA Science program. Satellites and remote sensing provide unique information about the Earth's air, ice, water, land, and biological systems – information that is essential for well-informed decision making by government and the private sector. **AGI recommends \$2 billion for NASA Earth Science to ensure the continued collection, preservation, and dissemination of long-term, consistent datasets. AGI also supports sustained funding for NASA's Office of Education to ensure education and outreach that inspires students and informs the nation about our planet.**

Office of Science and Technology Policy

The President must have the best possible advice on the science and technology that underpin the nation's prosperity and security. **We ask Congress to please support \$5.6 million for OSTP.**

Thank you for the opportunity to present this testimony to the Subcommittee. If you would like additional information for the record, please contact Anna Normand at 703-379-2480 ext. 220, anormand@americangeosciences.org, or 4220 King Street, Alexandria, VA 22302-1502.