



## Written Testimony American Geosciences Institute

### 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, and National Aeronautics and Space Administration

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Thank you for this opportunity to provide the American Geosciences Institute's perspective on fiscal year (FY) 2016 appropriations for geoscience programs within the Subcommittee's jurisdiction.

The American Geosciences Institute (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, energy, and the environment has fueled economic growth, mitigated losses, and improved our quality of life. Our nation needs skilled and innovative geoscientists to help explore, assess, and develop Earth's resources in a strategic, sustainable, and environmentally sound manner and to help understand, evaluate, and reduce our risks to hazards. **AGI recognizes our nation's financial challenges and also the necessity for steady growth and investment in science and technology for the future.**

**AGI respectfully requests \$1.372 billion for the Geoscience Directorate at NSF and \$1.947 billion for NASA Earth Science programs. AGI supports the President's request for \$5.982 billion for NOAA and \$1.12 billion for NIST.**

AGI is a nonprofit federation of about 50 geoscientific and professional societies representing more than 250,000 geologists, geophysicists, and other Earth scientists. Founded in 1948, AGI provides information services to geoscientists, serves as a voice for 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 hazards, and the health of the environment.

## **National Science Foundation**

**AGI supports the President's request for \$7.724 billion for NSF.** These important investments in the future of our nation are the seed capital necessary to support the progress of science and engineering which underpins modern society and produces revolutionary—and some as yet unforeseen—breakthroughs. Basic research such as this provides knowledge that is used to improve people's quality of life, creates a dynamic and innovative economy, and strengthens the security of the country.

NSF not only provides core funding and essential infrastructure for basic research, but also supports the education and training of the next generation of the workforce. AGI believes that investment in NSF programs, where research is funded based on competitive, scientific merit and peer review, will pay important dividends in maintaining U.S. dominance in science and technology long into the future.

**NSF Geosciences Directorate:** AGI is disappointed that the President's request for a 4.7 percent increase for the Geoscience Directorate (GEO) falls short of his NSF-wide request for a 5.2 percent increase, especially when GEO funding had already been cut in FY 2015. **AGI respectfully asks the Subcommittee to provide the Geosciences Directorate with \$1,372 million for FY 2016** to keep the Directorate on par with the proposed NSF-wide increase of 5.2 percent.

The Geosciences Directorate (GEO) is the principal source of federal support for academic earth scientists and their students who seek to understand the Earth and the processes that sustain and transform life on this planet. The Geosciences Directorate provides about 61 percent of federal funding for basic geoscience research at academic institutions. According to NSF data, the Directorate distributes about 1,600 new awards annually and expects about 15,900 people to participate in GEO activities in FY 2016, while also supporting indispensable research infrastructure and instruments.

The GEO Directorate plays a significant role in NSF's cross-foundational initiatives, such as the Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) and Prediction of and Resilience against Extreme Events (PREEVENTS) activities. These exciting projects integrate information from a range of disciplines to address pressing, socially-relevant issues. The geosciences play a large role in INFEWS, providing raw data and information on fossil, nuclear, and renewable energies; the quantity, quality, and distribution of water supplies; and the characteristics, health, and stability of soils and the critical zone where earth, biological, and human systems intersect. Additionally, geohazards such as earthquakes and landslides are a significant component of PREEVENTS. This NSF-wide initiative has the potential to improve predictability and risk assessments associated with geohazards, which help build resilience to natural and manmade disasters. These investments in pre-disaster research and mitigation will provide an excellent return on investment, both in monetary and social terms. **AGI supports**

**funding of \$14.78 million for INFEWS and \$23.50 million for PREEVENTS in the Geoscience Directorate and particularly stress the importance of the Earth Science Division to this work.**

NSF's Division of Polar Programs (PLR) 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 the United States understand environmental conditions in extreme environments, develop polar technology, and construct data-driven strategic and security policies. AGI suggests a minimum of \$450 million for the Division of Polar Programs.

NSF funds facilities that enable researchers to access locations, data, and technologies that serve the overall research community. AGI strongly supports robust and steady funding for infrastructure and the operation and maintenance of major facilities, including the Academic Research Fleet, Geodetic and Seismological Facilities for the Advancement of Geosciences and EarthScope (GAGE and SAGE), Ocean Drilling Activities, the Ocean Observatories Initiative, and the National Center for Atmospheric Research (NCAR).

***Directorate for Education and Human Resources:*** Support for geoscience education within NSF not only helps us meet the demand for a competitive, skilled workforce, but also supports an informed citizenry prepared to make well-informed decisions about the management of our planet and its resources. Outreach and education are important at all levels from K-12 through graduate and should include formal and informal outlets to facilitate lifelong learning. **AGI strongly supports funding for geoscience education at all levels and particularly supports programs to diversify the geoscience student population and workforce.** The INCLUDES (Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science) initiative should focus funds and attention on this important workforce issue. AGI urges Congress to fund programs in NSF's Directorate for Education and Human Resources, including NSF Scholarships in STEM, Graduate Research Fellowships, Climate Change Education, Research Experiences for Undergraduates, and Advancing Informal STEM Education.

## **National Oceanic and Atmospheric Administration**

Geoscientists rely on NOAA for much of the data and long-term monitoring 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 (OAS), National Ocean Service (NOS), and the National Environment Satellite, Data and Information Service (NESDIS) programs provide the data necessary for understanding and mitigating these events, as well as sustaining our natural resources. **AGI supports the President's request for \$5.982 billion for NOAA and hopes that the subcommittee will continue to support these crucial initiatives.**

## **National Institute of Standards and Technology**

Earth scientists and geotechnical engineers 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. The research conducted and the information gained is essential for understanding natural hazards, identifying the infrastructure needed to build strong communities, and stimulating economic growth. **AGI strongly supports the President's request for \$1.12 billion for NIST.**

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 and essential funding in the past. **AGI supports the reauthorization and funding of the National Earthquake Hazards Reduction Program (NEHRP) in this Congress.**

## **National Aeronautics and Space Administration**

NASA's current fleet of Earth-observing satellites provides the data necessary to understand our dynamic planet. These satellites such as the Advanced Earth Observing Satellite and the Landsat series provide information critical to research and life-sustaining functions like weather forecasting, emergency service response and planning, and tracking ash plumes or oil spills that disrupt the economy and the environment. Geoscientists use Landsat data to monitor, predict, and help land managers to address drought, wildfires, changes in vegetation, and other changes to the Earth's surface. **We strongly support the President's request for \$1.947 billion for NASA Earth Science and the NASA/USGS Sustainability Land Imaging Architecture Study Team, which is examining options for continuing Landsat-compatible observations into the future.**

Thank you for the opportunity to present this testimony to the Subcommittee. If you would like any additional information for the record, please contact Maeve Boland at 703-379-2480, ext. 228 voice, 703-379-7563 fax, [mboland@agiweb.org](mailto:mboland@agiweb.org), or 4220 King Street, Alexandria VA 22302-1502.