

AGI Fiscal Year 2014 Testimony to the Senate Commerce, Justice, Science, and Related Agencies Appropriations Subcommittee

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American Geosciences Institute
in support of Fiscal Year 2014 Appropriations for the
National Science Foundation, National Oceanic and Atmospheric Administration, National
Institute of Standards and Technology, and the National Aeronautics and Space Administration

U.S. Senate
Subcommittee on Commerce, Justice, Science, and Related Agencies Appropriations
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To the Chairwoman and Members of the Subcommittee:

The American Geosciences Institute (AGI) supports Earth science research sustained 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). Frontier research on the Earth, energy, and the environment has fueled economic growth, mitigated losses, and sustained our quality of life. The Subcommittee's leadership in supporting geoscience-based research is even more critical as our nation competes with rapidly developing countries, such as China and India, for energy, mineral, air, and water resources. Our nation needs skilled 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 supports the President's requests for FY 2014 of \$7.626 billion for NSF, \$928 million for NIST, and \$1.85 billion for Earth Science at NASA, plus \$5.45 billion for NOAA.**

AGI is a nonprofit federation of 48 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.

NSF: AGI supports an overall budget of \$7.626 billion for NSF. The forward-looking investments in NSF are fiscally responsible and will pay important dividends in future development that drives economic growth, especially in critical areas of sustainable and economic natural resources and reduced risks from natural hazards. Support for science will save jobs, create new jobs, support students, and provide training for a twenty-first century workforce.

NSF Geosciences Directorate: The Geosciences Directorate (GEO) is the principal source of federal support for academic Earth scientists and their students who are seeking to understand the processes that sustain and transform life on this planet. Approximately 60 percent of support for basic research in the geosciences at academic institutions comes from this directorate.

AGI asks the Subcommittee to fund the President's request for \$267 million for Atmospheric and Geospace Sciences, \$191 million for Earth Sciences, \$377 million for Ocean Sciences, \$465 million for Polar Programs, and \$94 million for Integrative and Collaborative Education and Research (ICER) within GEO. Much of NSF's geosciences research budget supports investigations that are critical for current national needs, such as water and mineral resources, energy resources, environmental issues, climate change, and mitigation of natural hazards.

GEO supports infrastructure and operation and maintenance costs for cutting-edge facilities that are essential for basic and applied research. Ultimately, the observations and data provide knowledge that is used by researchers and professionals in both the public and private sectors. GEO research and infrastructure helps drive economic growth in a sustainable manner. Geoscience-based research tools and academic expertise helped to end the BP Deepwater Horizon oil spill, saving billions of dollars for industry and untold costs to the environment.

Within GEO, Polar Programs (PLR) funds basic research in the Arctic and Antarctica that helps the United States maintain strategic plans, international efforts, security goals, natural resource assessments, cutting-edge polar technology developments, and environmental stewardship of extreme environs. PLR's funding helps support researchers and students, the U.S. military, and the private sector. PLR is estimated to directly support more than 3,000 people in FY 2014 and thousands of others indirectly.

AGI strongly supports robust and steady funding for infrastructure and operation and maintenance of GEO's major facilities, including the Academic Research Fleet, Seismological Facilities for the Advancement of Geosciences and EarthScope (SAGE), Geodetic Facilities for the Advancement of Geoscience and EarthScope (GAGE), International Ocean Discovery Program (IODP), the Ocean Observatories Initiative, and the National Center for Atmospheric Research (NCAR).

NSF Support for Earth Science Education: Congress can grow the depleted geosciences workforce; stimulate economic growth in the energy, natural resources and environmental sectors; and improve natural resource literacy by supporting the full integration of Earth science information into mainstream science education at the K-12 and higher education levels. AGI strongly supports the Math and Science Partnerships (MSP), the Graduate Research Fellowship Program (GRFP), and the Research Experiences for Undergraduates (REU) within NSF's Education and Human Resources (EHR) Division. These programs are effective in building a science and engineering workforce for the twenty-first century.

Improving geoscience education, one of the goals of NSF-EHR, to levels of recognition similar to other scientific disciplines is important in the following ways:

- Geoscience offers students subject matter that has direct application to their lives and the world around them, including energy, minerals, water, and environmental stewardship. **All students should be required to take a geoscience course in primary and secondary school.**

- Geoscience exposes students to a range of interrelated scientific disciplines. It is an excellent vehicle for integrating the theories and methods of chemistry, physics, biology, and mathematics. A robust geoscience course would make an excellent capstone for applying lessons learned from earlier class work.
- Geoscience awareness is a key element in reducing the impact of natural hazards on citizens – hazards that include earthquakes, volcanic eruptions, hurricanes, tornadoes, and floods. Informal geoscience education that leads to reducing risks and preparing for natural events should be a life-long goal.
- Geoscience provides the foundation for tomorrow’s leaders in research, education, utilization, and policy making for Earth’s resources and our nation’s strategic, economic, sustainable, and environmentally sound natural resources development. There are not enough U.S.-trained geoscientists to meet current demand and the gap is growing, as shown in the recent National Academies report, *Emerging Workforce Trends in the U.S. Energy and Mining Industries: A Call to Action*. Support for geoscience research and education is necessary to stay competitive and to wisely manage our natural resources.

NOAA: AGI supports the President’s request for \$5.45 billion for NOAA. We hope the Subcommittee will continue to support the National Weather Service (NWS), Oceanic and Atmospheric Research (OAR), National Ocean Service (NOS), and the National Environment Satellite, Data and Information Service (NESDIS). These programs are critical for understanding and mitigating natural and human-induced hazards in the Earth system while sustaining our natural resources. These programs prevent billions of dollars of losses, keep the private and public sectors growing, and save lives. For example, drought forecasts are worth up to \$8 billion to the farming, transportation, tourism, and energy sectors while NexRad radar has prevented more than 330 fatalities and 7,800 injuries from tornadoes since the early 1990s.

NIST: We support the President’s request for \$928 million for NIST in fiscal year 2014. Basic research at NIST is conducted by Earth scientists and geotechnical engineers and used by the public and private sectors on a daily basis. The research conducted and the information gained is essential for understanding natural hazards and for identifying the infrastructure needed to build resilient communities and stimulate economic growth. Advanced infrastructure research will help to reduce the estimated average of \$52 billion in annual losses caused by floods, fires, and earthquakes.

NIST is the lead agency for the **National Earthquake Hazard Reduction Program (NEHRP)**, but has received only a small portion of authorized and essential funding in the past. AGI strongly supports the reauthorization of the National Earthquake Hazards Reduction Program (NEHRP) in this Congress. We hope the appropriations subcommittee will continue to support this effective and cohesive program, even if the authorizing legislation takes more time to complete. NEHRP is an excellent example of how to coordinate different entities for the safety and security of all. NEHRP develops effective practices and policies for earthquake loss reduction and accelerates their implementation; improves techniques for reducing earthquake vulnerabilities of facilities and systems; improves earthquake hazards identification and risk

assessment methods and their use; and improves the understanding of earthquakes and their effects.

NASA: AGI supports the vital Earth observing programs within NASA. **AGI supports funding of \$1.85 billion for Earth Science programs within the Science Mission Directorate at NASA.** The investments are needed to implement the priorities of the National Academies *Earth Science and Applications from Space* Decadal Survey. NASA needs to maintain its current fleet of Earth-observing satellites, launch the next tier and accelerate development of the subsequent tier of missions. The observations and understanding about our dynamic Earth gained from these missions is critical and needed as soon as possible. Earth observations are used every day, not just for research, but for critical information to aid society in mundane tasks, like weather forecasting and emergency services, such as tracking volcanic ash plumes or oil spills that disrupt the economy and the environment.

We applaud the successful launch and ongoing operational testing of the NASA-US Geological Survey Landsat Data Continuity Mission. This program, soon to be renamed **Landsat 8**, will continue the 40-year Landsat record of land imaging and we support requested funding of \$2.2 million for this mission. We also strongly support the newly created Land Imaging project, which will develop new capabilities to continue and extend Landsat records. Please support the President's request for **\$30 million for the initial phase of Land Imaging**.

We appreciate this opportunity to provide testimony to the Subcommittee and would be pleased to answer any questions or to provide additional information for the record. Maeve Boland can be reached at (703) 379 2480 ext. 228 (voice), (703) 379 7563 (fax), mboland@agiweb.org, or 4220 King Street, Alexandria VA 22302-1502.