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 budget request of $7.373 billion for NSF, $859.75 million for NIST, and $1.785 billion for Earth Science at NASA plus $5.3 billion for NOAA.

AGI is a nonprofit federation of 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.

**NSF**: AGI supports an overall budget of $7.373 billion for NSF. AGI greatly appreciates Congress’s support for science and technology in recent appropriations and through the America COMPETES Reauthorization Act of 2010. 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. About 63 percent of support for university-based geosciences research comes from this directorate and more than 14,600 people will be directly supported through GEO in FY 2013 with thousands of others deriving support indirectly.

The President’s request for FY 2013 asks for $264 million for Atmospheric and Geospace Sciences, $189 million for Earth Sciences, $362 million for Ocean Sciences and $91 million for Integrative and Collaborative Education and Research (ICER) within GEO. Much of the geosciences research budget is for understanding that is critical for current national needs, such as water and mineral resources, energy resources, environmental issues, climate change, and mitigation of natural hazards. AGI asks the Subcommittee to strongly support these funding levels.

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 the public, government and private sector. 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. Research funding continues to help the Gulf coast recover environmentally and economically.

Among the major facilities that NSF supports, the Academic Research Fleet would receive $73 million, EarthScope Operations would receive $26 million, Incorporated Research Institutions for Seismology (IRIS) would receive $11 million, Ocean Drilling Activities would receive $39 million, the Ocean Observatories Initiative would receive $40 million, and the National Center for Atmospheric Research (NCAR) would receive $92 million. AGI strongly supports robust and steady funding for infrastructure and operation and maintenance of these major facilities.

NSF’s Office of Polar Programs (OPP) 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. OPP’s funding helps support researchers and students, the U.S. military, and the private sector. OPP is estimated to directly support almost 3,325 people in FY 2013 and thousands of others indirectly. AGI supports the President’s request of $449.7 million for this important program.

**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 Fellowships (GRF) and the Research Experiences for
Undergraduates (REU) within NSF’s Education and Human Resources 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. Support for geoscience research and education is necessary to stay competitive and to wisely manage our natural resources.

**NOAA:** AGI supports a budget of $5.3 billion for NOAA, which is consistent with the request of other stakeholders and more than the President’s request of $5.061 billion. 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 agriculture, transportation, tourism and energy sectors while NexRad radar has prevented more than 330 fatalities and 7,800 injuries from tornadoes since the early 1990s. The additional request of AGI and stakeholders would bring NWS, OAR and NOS back to FY2010 levels, while supporting non-procurement needs in NESDIS.

**NIST:** We support the President’s request of $860 million for NIST in fiscal year 2013. Basic research at NIST, conducted by Earth scientists and geotechnical engineers, is used by the public and private sector on a daily basis. The research conducted and the
information gained is essential for understanding climate change and natural hazards in order to build resilient communities and stimulate economic growth with reduced impact from risk. In particular, we support Measurements and Standards to Support Increased Energy Efficiency and Reduced Environmental Impact and Measurements and Standards to Support Advanced Infrastructure Delivery and Resilience. Energy efficiency and reduced environmental impact research will improve the health of our planet and reduce energy costs. The 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 2012. 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 the President’s request of $1.785 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. The requested increase for fiscal year 2013 and proposed increases for future years are wise and well-planned investments that benefit everyone.

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. Linda Rowan can be reached at 703 379 2480 ext. 228 (voice), 703 379 7563 (fax), rowan@agiweb.org, or 4220 King Street, Alexandria VA 22302-1502.