AGI Fiscal Year 2011 Testimony to the Senate Commerce, Justice, Science, and Related Agencies Appropriations Subcommittee

Testimony Submitted by
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American Geological Institute
in support of Fiscal Year 2011 Appropriations for the
National Science Foundation, National Oceanic and Atmospheric Administration, National Institute of Standards and Technology and the National Aeronautics and Space Administration

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To the Chairwoman and Members of the Subcommittee:

The American Geological Institute (AGI) supports fundamental 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 Earth, energy and the environment has fueled economic growth, mitigated losses and sustained our quality of life. The Subcommittee's leadership in expanding the federal investment in basic 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 a total budget of $7.424 billion for NSF; $919 million for NIST, $5.554 billion for NOAA, and $1.802 billion for Earth Science at NASA**.

AGI is a nonprofit federation of 46 geoscientific and professional societies representing more than 120,000 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 and interaction with the environment.

NSF: AGI applauds the President's request for an overall budget of $7.424 billion for NSF and the Administration's commitment to science. AGI greatly appreciates Congress's support for science and technology in recent appropriations and through the America COMPETES Act of 2007 as well as the American Recovery and Reinvestment Act of 2009. The forward-looking investments in NSF are fiscally responsible and will pay important dividends in future development and innovation that drives economic growth, especially in critical areas of sustainable and economic natural resources and

reduced risks from natural hazards. The investments 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 ultimately sustain and transform life on this planet. About 63 percent of support for university-based geosciences research comes from this directorate.

The President's request for FY 2011 asks for $281 million for Atmospheric Sciences, $199 million for Earth Sciences, $378 million for Ocean Sciences and $98 million for Innovative 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 climate change, water and mineral resources, energy resources, environmental issues and mitigation of natural hazards. AGI asks the Subcommittee to strongly support these essential investments.

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 information and understanding that is used by researchers and managers in the public, government and private sector. Among the major facilities, the Academic Research Fleet would receive $77 million, EarthScope Operation would receive $26 million, Incorporated Research Institutions for Seismology (IRIS) would receive $12.73 million, Ocean Drilling Activities would receive $46 million, and the National Center for Atmospheric Research would receive $108 million. AGI strongly supports robust and steady funding for infrastructure and operation and maintenance of these major facilities.

Now is the time to boost geosciences research and education to fill the draining pipeline of skilled geoscientists and geo-engineers working in the energy and mining industries; the construction industry; the environmental industry; the academic community; K-12 education; and in government, such as the United States Geological Survey as well as state and local government natural resource and emergency management agencies.

NSF Support for Earth Science Education: Congress can improve the nation's scientific literacy by supporting the full integration of Earth science information into mainstream science education at the K-12 and college levels. AGI supports the Math and Science Partnership (MSP) program, a competitive peer-reviewed grant program that funds only the highest quality proposals at NSF. The NSF's MSP program focuses on modeling, testing and identification of high-quality math and science activities whereas the Department of Education MSP program does not. The NSF and Department of Education MSP programs are complementary and are both necessary to continue to reach the common goal of providing world-class science and mathematics education to elementary and secondary school students.

Improving geoscience education to levels of recognition similar to other scientific disciplines is important because:

- 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.

- 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 the President's request for increased funding for NOAA for a total budget of $5.554 billion. AGI supports the requested increases for the National Weather Service for analysis, modeling and upgrading of observing systems; for the Oceanic and Atmospheric Research program; and for the National Environment Satellite, Data and Information Service. All three programs are critical for understanding and mitigating natural and human-induced hazards in the Earth system while sustaining our natural resources. AGI continues to support the implementation of the U.S. Ocean Action Plan of 2004 and believes the funding requests are consistent with the recommendations of the plan.

NIST: We applaud the President's request for an increase in research and related funding for NIST in fiscal 2011 for a total budget of $919 million. Basic research at NIST is conducted by Earth scientists and geotechnical engineers and used by Earth scientists, geotechnical engineers and many others 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 strongly support increases for Measurements and Standards for the Climate Change Science Program, Disaster Resilient Structures and Communities and the National Earthquake Hazards Reduction Program (NEHRP). The climate change research

will improve the accuracy of climate change measurements, may reduce satellite costs and may help to guide climate change policy. The hazards 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 NEHRP, but has received only a small portion of authorized and essential funding in the past. AGI strongly supports a doubling of the NIST budget over 5 to 7 years as authorized in the America COMPETES Act of 2007, so that core research functions at NIST are maintained, while needed funding for climate change and hazards are provided.

NASA: AGI supports the vital Earth observing programs within NASA. AGI strongly supports the requested budget of $1.8002 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. In addition some satellites need to be launched at a particular time and in a particular sequence to meet mission objectives. The requested increase for fiscal 2011 and proposed increases for future years are wise and well-planned investments and AGI requests the support of the Subcommittee for this budget outline.

I 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. I 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.