AGI Fiscal Year 2010 Testimony to the House Commerce, Justice, Science, and Related Agencies Appropriations Subcommittee

Testimony Submitted by
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American Geological Institute
in support of Fiscal Year 2010 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 Chairman 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 billion for NSF; $584 million for Scientific and Technical Research and Services at NIST (as authorized in the America COMPETES Act); $5 billion for NOAA; and $18.7 billion for NASA.**

AGI would also like to thank Congress and particularly the House and this Subcommittee for its support for science and technology in the American Recovery and Reinvestment Act of 2009 and the FY 2009 appropriations. AGI believes that such forward-looking investments in tight fiscal times will pay important dividends in future development and innovation that drives economic growth, especially in critical areas of sustainable and economic natural resources. The investments will also save jobs, create new jobs, support students and provide sorely needed training for a twenty first century workforce.

AGI is a nonprofit federation of 45 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 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.
Motivation for Investments in Geoscience: Our nation is at a critical crossroad where we must deal with the intersection of acute needs, such as energy resources, climate change, water resources, mineral resources, soil resources and vital ecosystems, at a time when our national economy has stalled. To jumpstart the economy and the workforce, we need to sustain and efficiently use our natural resources and cost-effectively improve our quality of life and quality of the environment, while reducing risks from natural hazards.

AGI prepared a 2008 document entitled Critical Needs for the Twenty First Century: The Role of the Geosciences that lists seven critical needs followed by policy actions to help the nation meet these needs (available online at www.agiweb.org/gap/trans08.html). With a burgeoning human population, rising demand for natural resources and a changing climate, it is critical to more fully integrate Earth observations and Earth system understanding into actions for a sustainable world. The document explains ways in which NSF, NASA, NOAA and NIST can meet these needs and work more effectively on shared objectives, with other federal agencies and with the states.

Unfortunately, only a small fraction of K-12 students in public schools have the opportunity to take a geoscience class, even though most are naturally curious about the Earth, environment and energy. An even smaller fraction of students at institutions of higher education major in the geosciences, partly because they have not taken a geoscience class before college. This has led to growing gaps in the number of professional geoscientists and skilled technical assistants available to replace an aging workforce plus to populate new areas of workforce growth in alternative energy and climate change mitigation for example.

AGI has prepared a report on the status of geoscience education and the geoscience workforce in the United States that documents the gaps in education and workforce (available online at www.agiweb.org/workforce/reports.html). A part of the solution to these gaps is investments in geoscience research and development and geoscience education within NSF, NASA, NOAA, NIST and other federal programs.

**NSF:** AGI applauds the President’s request for an overall budget of $7 billion for NSF. Such an investment will allow NSF to support a robust Geosciences Directorate and a strong program in geoscience education.

**NSF Geosciences Directorate:** The Geosciences Directorate, which includes atmospheric sciences, earth sciences and ocean sciences, is the principal source of federal support for academic geoscientists and their students.

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 would encourage the investments for the Geosciences Directorate to focus on funding research, which means providing essential support to the faculty, staff, post-
doctoral researchers, graduate students and undergraduate students at universities and other educational/research institutions across the nation. Now is the time to boost geoscience research and education to fill the draining pipeline of skilled geoscientists and geo-engineers working in the energy industry; the construction industry, particularly on levees and dams; the environmental industry; the academic community, particularly on understanding natural hazards and the sustainability of our natural resources; the primary federal Earth science agencies, such as the United States Geological Survey; and in all areas of education.

**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 NSF’s Math and Science Partnership (MSP) program, a competitive peer-reviewed grant program that funds research on effective methods to teach science at K-12 grade levels.

Improving geoscience education 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.

- Geoscience exposes students to a diverse range of interrelated scientific disciplines. It is an excellent vehicle for integrating the theories and methods of chemistry, physics, biology, and mathematics.

- 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. For example, lives were saved in the tragic Indian Ocean tsunami by a 12 year old girl who understood the warning signs of an approaching tsunami and warned others to seek higher ground because she learned about tsunamis in a geoscience class.

- 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.

**NOAA:** AGI and many stakeholders support a total budget for NOAA of $5 billion for FY 2010. NOAA cannot support its core mission services including weather and severe storm forecasting, spill response, ocean observing, habitat restoration and conservation, and research on climate change, fisheries, and coastal and marine ecosystems without a more robust budget. NOAA needs additional investments for the National Weather Service for analysis, modeling and upgrading of observing systems and additional increases for the National Environment Satellite, Data and Information Service for the development of the Geostationary Operational Environmental Satellite (GOES-R) and the National Polar-Orbiting Operational Environmental Satellite System (NPOESS).
Both satellite systems will maintain a global view of the planet to continuously watch for atmospheric triggers of severe weather conditions such as tornadoes, flash floods, hailstorms, and hurricanes.

NIST: 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 protected.

NASA: AGI supports the vital Earth observing programs within NASA. Currently the topography of Mars has been measured at a more comprehensive and higher resolution than Earth’s surface. While AGI is excited about space exploration, we firmly believe that NASA’s Earth observing program is effective and essential to solving global to regional puzzles about Earth systems, such as how much and at what rate is the climate changing. AGI strongly supports an increase of $910 million over five years for the Earth sciences division at NASA to initiate the first two Earth science missions and start planning on three additional missions recommended in the National Academies Earth science decadal survey. This funding outlook does not come close to meeting the $500 million annual increase recommended by the National Academies decadal survey report to bring the program back to its fiscal year 2000 funding level and enable the decadal recommendations, but it is a good start in tough economic times.

AGI urges the Subcommittee to return spending levels for Earth science within NASA to FY2000 levels (eliminating a 30 percent cut from 2001 to 2007) over time and implement the priorities of the National Academies Earth Science and Applications from Space Decadal Survey.

Thank you for the opportunity to present this testimony to the Subcommittee. If you would like any additional information for the record, please contact Linda Rowan, Director of Government Affairs at 703-379-2480, ext. 228 voice, 703-379-7563 fax, rowan@agiweb.org, or 4220 King Street, Alexandria VA 22302-1502.