

The Honorable Lamar Smith, Chairman  
The Honorable Eddie Bernice Johnson, Ranking Member  
House Committee on Science, Space, and Technology  
2321 Rayburn House Office Building  
Washington, D.C. 20515

21 April 2015

Dear Chairman Smith and Ranking Member Johnson:

The undersigned geoscience organizations and our tens of thousands of Earth and space scientist members urge you to recognize that investment in geoscience research and education is essential to the prosperity and well-being of the United States and its citizens. We believe H.R. 1806 critically underfunds the National Science Foundation's (NSF) Geosciences Directorate (GEO) and disregards the societal benefits of earth, ocean, atmospheric, and polar research.

The America COMPETES Acts of 2007 and 2010 provided the necessary foundation to maintain the United States' worldwide leadership in geoscience research, and now is the time for the 114<sup>th</sup> Congress to build on those efforts by continuing to recognize the value of this science field. NSF's geoscience research leads to a better understanding of, and technology to provide for, critical national needs, such as water and mineral resources, energy independence, environmental issues, Earth's climate and ocean system, and mitigation of natural hazards.

The devastating droughts in the western United States highlight our dependence on water. GEO-funded research addresses major gaps in our understanding of water availability, quality, and dynamics, and the impact of both a changing and variable climate, as well as human activity, on the water system. Increased public investment is needed to improve the scientific understanding of water resources, including improved representation of geological, biological, and ecological systems, for informed decision-making. The new NSF initiative "Innovations at the Nexus of Food, Energy, and Water" highlights the important linkages and research needs between these systems.

Mineral resources are essential to modern civilization, and a thorough understanding of their distribution, consequences of their use, and the potential effects of mineral supply disruption is important for sound public policy. GEO supports research to improve the understanding of the structure, composition, and evolution of the Earth and the processes that govern the formation and behavior of the Earth's materials. This research contributes to a better understanding of the natural distribution of mineral and energy resources for future exploration to help lessen our dependence on foreign sources. GEO research also contributes the foundational knowledge necessary to develop new technologies for sustainable production of mineral and energy resources.

When microscopic algae populations explode, they create harmful algal blooms commonly called "red tide". Toxic algae can lead to illness or death in humans and marine life, and even non-toxic blooms damage ecosystems, fisheries and recreation facilities. These blooms cost the U.S. economy at least \$82 million dollars per year. The Geosciences Directorate supports projects seeking innovative ways to detect and mitigate the damage caused by red tide, thereby protecting coastal communities and U.S. consumers.

Natural hazards – including earthquakes, tornadoes, volcanic eruptions, wildfires, and landslides – are a major cause of fatalities and economic losses. Recent natural disasters, including

destructive landslides in Washington, Colorado, and Kentucky; earthquakes in California; and lava flows in Hawaii, provide unmistakable evidence that the United States remains susceptible to overwhelming losses. Landslides alone, which occur in every state, cause more than \$1 billion in damage each year. NSF funds research that improves our understanding of these geologic hazards and will reduce future losses through better forecasts of their occurrence, which allows for effective planning and mitigation in these areas.

GEO is the primary U.S. supporter of fundamental research in the polar regions. The Arctic and Antarctic are highly sensitive ecosystems and provide integral evidence to changes in the Earth system. Polar regions are also unique natural laboratories, and a range of research can be undertaken only there. For example, the extremely dry atmosphere over the South Pole acts as a window for astrophysical study of the origins of the universe, and the atmospheric chemistry recorded in ice cores provides another window into Earth's past.

For these reasons, we oppose the cuts to the NSF Geosciences Directorate in H.R. 1806. However, we remain committed to working with the House Science, Space, and Technology Committee to pass a reauthorization bill for NSF that aligns with the objectives of the 2007 and 2010 America COMPETES Acts as well as the goals and needs of the U.S. scientific enterprise.

America's economic competitiveness, public safety, and national security rely on our commitment to invest in the geosciences. Our organizations urge you to modify the America COMPETES Reauthorization Act of 2015 and set forth a vision to spur science innovation and growth that recognizes the vital role of geoscience research and education in achieving this mandate.

Sincerely,

American Association of Petroleum Geologists  
American Geophysical Union  
American Geosciences Institute  
American Institute of Professional Geologists  
Association for the Sciences of Limnology and Oceanography  
Association of American State Geologists  
Clay Minerals Society  
Consortium for Ocean Leadership  
Geological Society of America  
National Association of Geoscience Teachers  
National Cave and Karst Research Institute  
National Ground Water Association  
Paleontological Research Institution  
Paleontological Society  
Seismological Society of America  
SEPM (Society for Sedimentary Geology)  
Society for Mining, Metallurgy, and Exploration, Inc.  
Society of Independent Professional Earth Scientists  
Soil Science Society of America  
United States Permafrost Association