

19 May 2017

The Honorable Thad Cochran
S-128, The Capitol
Washington, D.C. 20510

The Honorable Patrick Leahy
S-146A, The Capitol
Washington, D.C. 20510

The Honorable Rodney Frelinghuysen
H-305, The Capitol
Washington, D.C. 20515

The Honorable Nita Lowey
1016 Longworth House Office Building
Washington, D.C. 20515

Dear Chairman Cochran, Vice-Chairman Leahy, Chairman Frelinghuysen, and Ranking Member Lowey:

On behalf of the American Geophysical Union (AGU) and its 60,000 Earth and space scientist members, we thank you for all your hard work to complete the FY17 appropriations process and provide strong funding for America's scientific enterprise. Sustained and robust funding is imperative to ensure that our nation's federal science agencies can continue their important work of advancing American innovation, which stimulates jobs and the economy, safeguards America's national security, and promotes public health and wellness in our communities.

As you begin work on the FY18 process, we urge you to continue supporting our nation's scientific enterprise, which repeatedly proves to be a lucrative investment for America.

National Aeronautics and Space Administration

We urge you to continue the strong pace of growth at National Aeronautics and Space Administration (NASA) by appropriating \$20.5 billion for the agency in FY18. As part of that funding, we request that you appropriate \$5.9 billion for NASA's Science Mission Directorate and provide equitable increases in funding for all of NASA's science missions including Earth Science, Planetary Science, and Heliophysics. NASA has always been a multi-mission agency, with each mission complementing the others. Overall, science is a key backbone of NASA's work.

NASA's Earth Science Mission is critical for our life here on Earth, helping weather forecasters and other researchers produce accurate weather forecasts and predict natural hazards; retailers to decide the timing and content of the merchandise they should stock; oil companies to decide where to drill; the military to enhance their geospatial knowledge of foreign territories; and farmers to know when and what to plant. Given the important applications of Earth science missions to life here on Earth, we're concerned that Earth science received flat funding in the FY17 Omnibus.

We urge the committee to provide an increase in funding for NASA Earth science in FY18. This year, the National Research Council will complete the second Earth Science Decadal survey, outlining the steps for NASA to make the next great leaps in science. Additionally, our understanding of our own planet is inextricably linked to our study of the universe and other planets, from finding sites on Earth that are analogous to the terrain of other planets, to

understanding the evolution and composition of planets. Providing sustained and robust funding for Earth Science will enable us to make progress towards this vision.

We greatly appreciate Congress' strong continued support of NASA's Planetary Science Mission and 13% increase for the mission in the FY17 Omnibus. We urge the committee to continue investing in planetary science to pursue the priorities outlined in the Planetary Science Decadal Survey. Strong funding will allow ongoing support of important missions such as the Mars Rover 2020 as well as the Europa mission. Additionally, we urge the committee to prioritize the Research and Analysis program, which allows NASA to pursue new planetary science missions alongside existing scientific endeavors and provides opportunities for the next generation of principal investigators.

We also appreciate the almost 4.5% increase for NASA's Heliophysics Mission in the FY17 Omnibus. We urge the committee to continue providing robust for this research that will greatly strengthen our ability to mitigate and prepare for the threat of space weather. It's estimated that a severe space weather event could disable our electric grid for anywhere from 4-10 years. Such an event would be detrimental not only to our national security but to our way of life. Our ability to forecast space weather is approximately 60 years behind our ability to forecast weather here on Earth; sustained and strong funding for heliophysics will enable us to close this knowledge gap.

We also urge the committee to continue to support NASA's Education office, including the Space Grant program. NASA provides unique STEM education opportunities and training that are vital to develop the next generation of NASA engineers, scientists, and innovators.

National Oceanic and Atmospheric Administration

AGU requests that Congress appropriate \$6.1 billion for the National Oceanic and Atmospheric Administration (NOAA) in FY18, a 7% increase over the FY17 appropriated level for NOAA. Because the agency received a 2% decrease in the FY17 Omnibus bill, a 7% increase in funding for NOAA would both restore these cuts and provide the resources for NOAA to continue to pursue and develop world-class research and products. This level of funding would also allow align with National Academy of Science recommendation that a 5% annual increase in funding for our science agencies is necessary to ensure that America is a competitive and innovative leader in science.

NOAA's wide array of products and services play a unique and irreplaceable role in serving the American people. Our coasts represent an enormous contribution to our economy – more than half of all Americans live along our coasts, over 2.8 million jobs are in ocean-dependent industries, and the insured value of coastal property now exceeds \$10 trillion. NOAA plays a unique role in supporting these coastal economies by monitoring fisheries, restoring habitats, observing coastal conditions, and providing data to decision makers. In addition, weather and climate sensitive industries account for an overwhelming majority of the U.S. GDP, and the value of daily weather forecasts is estimated at \$11.4 billion annually. These jobs, properties, and communities all require NOAA data to prepare, respond, and mitigate against natural and manmade hazards. When

planning for drought, flood, tornadoes, blizzards, hurricanes, and beyond, we have NOAA to thank for continuing to improve accuracy, monitoring, and warning time when it matters most.

Our weather, climate, and ocean systems can't work independently of one another, and our understanding of these systems shouldn't either. From satellites and weather operations, to fisheries and coastal management, every facet of NOAA serves a purpose essential to the nation. Robust funding support to protect and support these programs, will help to safeguard the health and safety of millions of lives.

National Science Foundation

We urge the committee to provide \$8 billion in funding for the National Science Foundation (NSF) for FY18. We were pleased to see an increase in funding for NSF in the FY17 Omnibus, specifically increased funding for an additional regional class research vessel. We remain concerned, however, that funding for NSF's research and related accounts remained flat. This account, which encompasses the individual Directorates is the largest funder of research and the related education opportunities at our nation's college and universities. Specifically, NSF's Directorate for Geosciences (GEO) funds 46% of basic academic geoscience research. This funding is vital to ensure that we retain the next generation of scientists and innovators by providing them with the support and opportunities they need to pursue both graduate degrees in STEM fields and early career grants.

Additionally, NSF Directorates support research infrastructure and centers that enable transformative science, including LIGO's discovery of gravitational waves. For example, GEO supports the International Ocean Discovery Program, helping scientists to answer important science questions about our oceans and develop new tools and technology for ocean drilling, and the U.S. Arctic and Antarctic Facilities and Logistics Program, through which the U.S. has maintained a 60-year uninterrupted Antarctic presence.

United States Geological Survey

AGU requests \$1.2 billion for the United States Geological Survey (USGS) in FY18, a 9% increase over FY17. While AGU was pleased to see that USGS received a 2% funding increase in the FY17 Omnibus, USGS has been historically strained by a large workload and too few resources. As we face unprecedented challenges, such as demand for limited energy, vulnerability to natural hazards, and need for clean water, a substantial funding increase for USGS will allow the agency to maximize support for the nation's environmental, economic, and national security.

The USGS is uniquely positioned to provide information and inform responses to these challenges. With the distinct capacity to deploy interdisciplinary teams of experts to gather data, conduct research, and develop decision support tools, the USGS delivers timely assessments of mineral and energy resources, reduces risks from natural and human-induced hazards, and ensures accurate assessments of our water quality and quantity.

An investment of \$1.2 billion in FY18 will allow the USGS to sustain current efforts in scientific discovery and innovation and to make strategic investments that will produce the vital energy geologic, and environmental knowledge needed by decision-makers across the country.

Department of Energy

We urge you to support strong funding for the Department of Energy's (DOE) research endeavors by providing \$5.56 billion for DOE's Office of Science, a 3% increase over FY17 enacted levels, and \$325 million for DOE's Advanced Research Project Agency - Energy (ARPA-E) program. Investments at this level will help to fortify America's leadership in energy research and development and support cutting-edge technology to transform our nation's energy landscape.

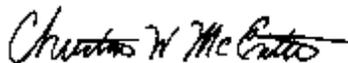
As the largest supporter of basic research in the physical sciences, DOE's Office of Science provides competitive grants that support 25,000 researchers at all careers levels, and provides these researchers –from academia to Fortune 500 companies – access to resources and user facilities to advance our knowledge and foster energy innovations. The Office of Science operates at the forefront of discovery – leading to more than 20 Nobel prizes in the last fifteen years alone; continued and robust funding is crucial for them to continue this work.

We greatly appreciate Congress' continued support of the ARPA-E program with a 5% increase in the FY17 Omnibus Appropriations Bill (Omnibus). Robust investments in ARPA-E promote our nation's security and stimulates jobs and the economy. ARPA-E bridges the gap between research and the commercial market, encouraging the development and deployment of transformative energy technology. By providing researchers and small businesses the tools and resources for high-risk, high reward projects in the energy space not traditionally funded by the private sector, we are investing in America's energy security and our future.

We urge you to consider prioritizing science in FY18 by providing robust funding at the levels we have requested for NASA, NOAA, NSF, USGS, and DOE. AGU and its members stand ready to work with you as you craft the FY18 Appropriations bills. We look forward to collaborating with you to advance America's scientific enterprise.

Sincerely,

Christine McEntee



CEO/ Executive Director
American Geophysical Union