AMERICAN METEOROLOGICAL SOCIETY
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KEITH L. SEITTER, EXECUTIVE DIRECTOR
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7 May 2015

Dear Senator:

As noted in the "View and Estimates" report of the House Committee on Science, Space, and Technology, released on February 20, 2015:

> "The Committee recognizes the importance of making appropriate investments in science and technology basic research and STEM education in order that America remain a world leader in scientific and technical innovation that spurs our economy."

Sustained investment in *all* science is crucial to our societal and economic advancement. In particular, the geosciences contribute to jobs and innovation, create the foundation for our nation's economic activity, reduce the impacts of natural hazards, support public health, and help us understand the world we live in and our connection to it. Our nation's standing in the world today rests, in part, upon geosciences research that stretches back to our founding. The imperatives that drove our interest in the geosciences historically are still salient today, and our future success depends on extending this legacy.

We urge you to continue our nation's history of strong investments in science, including science to understand the Earth system (i.e., the geosciences). We further urge you to allow federal agencies to determine funding priorities across scientific fields based on scientific merit. This allows funding decisions to take advantage of existing resources and capabilities, build new areas of expertise over time, and enable discoveries that require sustained investments and scientific efforts.

The Value of Geosciences

The geosciences contribute to a strong economy, help ensure public safety, promote community and individual wellbeing, and enhance understanding of Earth as a complex and interconnected system.

Our economy and national livelihood are grounded, in part, on knowledge and understanding developed through geosciences research. Our earliest investments in science reflect this. For example, the Survey of the Coast was established in 1807 to assess the navigability of harbors that are critical to trade. Historic expeditions, like those of Lewis and Clark and Zebulon Pike, captured the nation's imagination and provided an initial analysis of the natural resources on which our fledgling nation was built.

Since those early days, the nation's economy has prospered, with geosciences research providing our nation with the capability for efficient extraction of natural resources, reliable weather forecasts that enable safe air travel and efficient shipping, and the provision of clean drinking water. Our future depends on continuing this legacy of scientific inquiry and research in the geosciences. For example, improving our skill at seasonal forecasting will help energy companies to plan for and meet consumer demand, farmers to adjust for variations in seasonal rainfall, and cities to prepare for temperature extremes.

Furthermore, investments in the geosciences are critical for saving lives and ensuring the safety of our nation. For example, our ability to predict the weather is based on geosciences research. A blizzard in 1888, known as the "Children's Blizzard," killed over 200 people because they were caught unawares. In contrast, the late January snowstorm that struck New York and New England with two to three feet of snow, high winds, and surging tides resulted in *zero* deaths because of the long lead time of the warnings.

Similarly, deaths from tornadoes have greatly decreased because of significant improvements in scientific understanding, technology, and infrastructure. Consider the huge EF4 tornado that hit Rochelle and Fairdale, Illinois, on April 9, 2015. With winds estimated at 200 mph, the tornado leveled large portions of both communities. Lives were saved because forecasts alerted residents to the potential for severe weather as much as five days in advance and because tornado warnings were issued with sufficient time to allow residents to seek shelter. While there was still a tragic loss with 2 dead and 22 injured, we need only look back a few decades to see examples of similar tornadoes with death and injury tolls far greater.

The opportunity for other advances as a result of geosciences research is staggering. Steady and sustained geosciences funding will enable improved intensity forecasts of hurricanes threatening coastal regions, development of better strategies for communicating risk and uncertainty in forecasts, a decrease in the false alarm rate for tornados, and better prediction of heavy precipitation events like the one that caused the devastating floods along Colorado's Front Range in 2013. Improved understanding of climate variability and change will help us avoid negative impacts and take advantage of emerging opportunities. And there are many more innovations and advancements from geosciences research that we will only be able to realize with strong Congressional support for geosciences funding

The geosciences also have broader impacts on human health and wellbeing. The discovery of the ozone hole and its causes, and subsequent worldwide coordinated efforts to address it, is one of our greatest scientific success stories. Our improved understanding of the chemical, physical, and dynamical atmospheric processes that produce acid rain and smog contributes to better air quality and public health. And hydrologic research helps us ensure a sustained supply of high quality water to all of our citizens, something nearly unheard of throughout human history.

Finally, the geosciences have profoundly altered our understanding of the world on which we live. Research on stratospheric ozone and climate change revealed complex connections within the Earth system that were previously unknown. We now know that humans can significantly alter the basic functioning of our world and that we are an essential part of the Earth system itself — one of the most profound realizations of the 20th century.

For all of these reasons and more, we urge you to continue our nation's proud tradition of strong and sustained investments in the geosciences. In return, as scientists, we will continue to devote ourselves to improving the health and wellbeing of our great nation through transparent and meritorious science, advancing our understanding of Earth and our relationship with it.

Sincerely,

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