

Mr. Charles F. Bolden, Jr.
Administrator
National Aeronautics and Space Administration
300 E St SW, Suite 9J24
Washington, DC 20546

July 2, 2013

Dear Administrator Bolden:

The student researchers in the area of Heliophysics and the Sun-Earth connection **strongly oppose** NASA's proposed budget cuts to the Heliophysics Division, which are in **direct opposition to the recommendations of the NRC Decadal Survey**.

The constantly growing scope of industries susceptible to the effects of the Sun-Earth connection (known as space weather) goes from the ground up, ranging from commercial farming to telecommunications. As our nation and the world become increasingly dependent on space technology, the economic significance of the effects of space weather becomes apparent. In April 2013, the White House Office of Science and Technology Policy released a report entitled, *Space Weather Observing Systems: Current Capabilities and Requirements for the Next Decade*, which listed some of the potential costs that would be associated with a single severe geomagnetic storm. They include \$50-\$100 billion to the satellite industry alone, as well as \$1-2 trillion to the infrastructure that supports the national power grid. The report justly concludes that space weather poses significant risk to "critical capabilities that have significant economic and security impacts" for our nation.

Understanding of the effects of the Sun-Earth connection is interconnected with almost all realms of scientific research dealing with space and geophysics, meaning the research within the Heliophysics Division is a crucial complement to the research ongoing in all other Divisions of the Science Mission Directorate. Additionally, since the technological advancements and missions being investigated in the Aeronautics, Human Exploration and Operations, and Space Technology Mission Directorates are all susceptible to the effects of space weather, the work of the Heliophysics Division is as critical to NASA itself as it is to the nation.

With this perspective, the significance of high-quality and well-funded research into the dynamics of the Sun-Earth connection cannot be overstated. The 2008 NRC report, *Severe Space Weather Events*, emphasizes that the potential cost and damage to our national infrastructure and industry "can be minimized by having a robust capability to monitor, model, and predict what is happening in the space environment." This is exactly the focus of the Space Weather Prediction Center (SWPC) at NOAA. However, the efforts and abilities of SWPC and the growth of our scientific understanding of space weather rely on the data, analysis, and modeling developments funded across the country and around the world by the NASA Heliophysics Division.

Unfortunately, cuts to the NASA Heliophysics Division's budget threaten to severely impede the growth and evolution of all research areas that address the Sun-Earth connection. As student researchers from around the nation and world, we represent the future of our field(s) and the scientific leaders of our generation. Cuts like those seen in the FY2013/2014 budget jeopardize the health of our research community and limit the opportunities for us to learn, grow, and succeed in this field.

Following an agency update from NASA at the 2013 Geospace Environment Modeling (GEM) Summer Workshop, we feel now is a critical time for our concerns to be voiced. We feel it is imperative that NASA follows the recommendations of the NRC Decadal Survey, namely continuing support for the "Heliophysics Systems Observatory" (HSO), implementation of the DRIVE program (with an emphasis on reestablishing the GSRP fellowship program), accelerating and expanding the Heliophysics Explorer Program, and enabling effective Space Weather and Climatology (SWaC) capabilities.

Respectfully yours,

Cc: Dr. John Holdren, Director, Office of Science & Technology Policy
Henry Kelly, Principal Assistant Director for Environment and Energy, Office of Science and
Technology Policy
Tammy Dickinson, Senior Policy Analyst, Office of Science and Technology Policy
Peter Colohan, Senior Policy Analyst, Office of Science and Technology Policy
Tom Armstrong, Executive Director, U.S. Global Change Research Program
Dr. John Grunsfeld, Associate Administrator, Science Mission Directorate
Victoria Elsbernd, Acting Division Director, Heliophysics Division