



Dr. Charles Bolden
Dr. John Grunsfeld
Dr. Victoria Elsbernd
NASA Headquarters
Suite 2R40
Washington, DC 20546-000

2122 Snee Hall
Ithaca, NY 14853 USA
Telephone: +1 607 255 0630
Telefax: +1 607 254 4780
e-mail: dlh37@cornell.edu

8/12/2013

To our NASA leadership,

We the CEDAR steering committee are charged with guiding the scientific program that supports hundreds of geophysicists, faculty, professionals and students, at a number of research universities and institutions around the nation, with strong international partnerships and collaborations. CEDAR stands for Coupling, Energetics and Dynamics of Atmospheric Regions, and our scientific interests extend from the lower atmosphere to space. We are writing to remark on the current Science Mission Directorate (SMD) plans for the NASA Heliophysics program and the subsequent impacts of the current plan on the nation's research efforts in solar and space physics and the nascent field of space weather.

NASA Heliophysics, like NSF's Geospace Section that supports CEDAR, has been tasked with implementing several recommendations of the National Research Council's Decadal Survey for Solar and Space Physics. Recent changes in the NASA Heliophysics budget for 2013, 2014, and projected beyond show there will be great difficulty in implementing many, if not all, of those recommendations. The flat budget, combined with a number of unprecedented liens that do not directly support Heliophysics' activities, signal a troubling disconnect between growing national needs and the reduced capability to meet them.

Borrowing from the National Academy of Science's (NAS) language, the primary recommendation of the Decadal Survey was for Heliophysics to "Complete the Current Program." However, the drive to complete the current program (e.g. Magnetospheric Multiscale, Solar Probe Plus, Solar Orbiter) with a shrinking budget is rapidly driving any realization of the other Decadal recommendations out to the next decade. This has been shown in the recent Roadmap budget forecasts. NSF efforts in space science benefit directly from NASA's national lead on geospace science investigations which are clearly being curtailed.

The selection rate of small research and instrument development grants is already smaller in Heliophysics than any other SMD division. This R&D is the real key to the future, focusing the science

goals of future missions on the true scientific need while reducing risk, cost and mass of future instrument implementations. The risk inherent in the cutting-edge nature of such instrument development R&D is not compatible with major missions, but is easily integrated with smaller NASA endeavors like sounding rockets and CubeSats. The pressure of these shrinking budgets on NSF's own programs that broadly support the same scientific endeavors will clearly be felt.

Finally, NASA's role in implementing any new Space Weather initiatives is moribund. Many of NASA's research missions have become operational sensors in their extended mission, and the Decadal Survey identifies a number of ways for this scenario to be continued and improved. NSF is particularly involved with this and is bringing back a Space Weather program element in close coordination with CEDAR, GEM, and the solar-focused SHINE. But NSF relies on data from space missions from NASA, and Explorers, Solar Terrestrial Probes, and Living With a Star missions, which are all seeing major delays.

The accomplishment of key science objectives for the next decade with important overtones for society's utilization of space depends upon funding that supports the comprehensive science plan articulated by the Decadal Survey. The continuation of a flat budget that does not account even for inflation, let alone the increases in rates at research universities and NASA's industrial partners, and that does not respond to the NAS recommendations for the future science missions in solar and space physics, reduces NSF's ability to respond accordingly. CEDAR is very concerned that this "new normal" heralds the reduction of our national capabilities at a time when such capabilities are vital. We urge you to find solutions that will allow NASA Heliophysics to pursue the key science challenges of the next decade now.

Sincerely,

2013 CEDAR Steering Committee:

Timothy Duly, University of Illinois
Gregory Earle, Virginia Polytechnic Institute
David Hysell, Cornell University, 2013 chair
Thomas Immel, University of California, Berkeley
Farzad Kamalabadi, University of Illinois
Anthony Mannucci, Jet Propulsion Laboratory
Tomoko Matsuo, University of Colorado/ NOAA
Robert McCoy, University of Alaska Fairbanks
Ian McCrea, Rutherford Appleton Laboratory
Aaron Ridley, University of Michigan
Joshua Semeter, Boston University
Leda Sox, Utah State University
Sharon Vadas, Northwest Research Associates
Qian Wu, National Center for Atmospheric Research