

Kate Marvel, PhD
Research physical scientist
Writing in my personal capacity

March 13, 2026

Dear National Science Foundation leadership,

I am writing in my personal capacity to express my views regarding the proposed “restructuring” and potential dismantlement of the National Center for Atmospheric Research (NCAR). I am extremely concerned that this will harm research and innovation in the United States, as well as impacting our country’s ability to lead and set the agenda for global research.

NCAR is a crown jewel of American science

As an Earth systems scientist, my field has been immeasurably enhanced by NCAR research. The Community Earth System Model is a gold standard computational model, and the attention paid to community outreach and portability means that CESM has enabled groundbreaking research far outside the walls of the NCAR Mesa lab. I stress that this is not “duplicative” research, but additional insights enabled by NCAR products that humanity would otherwise go without. Other advances developed at NCAR include the Large Ensemble, which has enabled a paradigm shift in our ability to separate the effects of external radiative forcing from internal system variability.

The Earth is not compartmentalized

Any proposed “breaking up” of NCAR ignores both the fundamental interconnectedness of the Earth system and the nature of modern-day science. The many tools researchers use are more powerful when they are integrated. How is it possible to understand and prepare for current and future extreme weather events without historical reconstructions to place them in context, present-day observations to see what’s happening, computer models to elucidate the underlying physics, and data analysis to see the big picture? And the planet itself does not respect disciplinary boundaries: to understand wildfire, for instance, we must understand fuel and moisture availability, precursor weather conditions, and smoke formation and transport, among other things. I am at a loss to imagine what may be gained from breaking apart an institution with deep experience bringing together a wealth of knowledge to understand our home world.

NCAR leadership matters

The multi-disciplinary excellence collected at NCAR plays a fundamental role in shaping research both in the US and globally. The advances made at NCAR have led to improvements in our ability to predict and prepare for severe weather events, saving lives and preventing catastrophic economic damage. NCAR research and tools are crucial for many economic sectors as they adapt to shifting future conditions. Sixty years of investment in NCAR has paid for itself many times over: in helping our agricultural sector anticipate weather conditions and water availability, our insurance sector accurately price risk, and our utilities provide us with steady electricity and clean water. It is unimaginable to me that we would squander these benefits to “restructure” NCAR for no clearly articulated reason.

Atmospheric research for the future

The laws of physics do not discriminate with regard to political affiliation, and if the atmospheric composition changes so as to trap more of the infrared radiation leaving the Earth surface, the planetary energy balance will change. Our ability to understand what this extra energy- more than a watt for every square meter of surface- means is contingent on an

appreciation of the planet as an integrated system. In the future NCAR can and should provide leadership and agenda-setting research on pressing research questions: how do we anticipate and prepare for compound extreme events? What feedback processes and disruptions to the carbon cycle might we expect? How can state-of-the-art tools like AI, machine learning, increased computing power, and novel observing systems help us make better short- and long-term predictions? Metrics of success should include not only published research but also the compounded science enabled by NCAR tools and expertise. The NCAR lab leads the world in developing capabilities that others can easily deploy, training the next generation of outstanding scientists, and integrating research across disciplines. In the future it must continue to do so.

Sincerely,
Kate Marvel
in my personal capacity