

**Headquarters**

Two Brattle Square, 6<sup>th</sup> Floor  
Cambridge, MA 02138  
617-547-5552

**Washington, DC**

1825 K St. NW, Suite 800  
Washington, DC 20006  
202-223-6133

**West Coast**

2001 Addison St., Suite 200  
Berkeley, CA 94704  
510-843-1872

**Midwest**

200 E. Randolph St., Suite 5151  
Chicago, IL 60601  
312-578-1750

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Brian Stone

Acting Director, National Science Foundation

2415 Eisenhower Avenue

Alexandria, VA 22314

Via email to [NSF\\_NCAR@nsf.gov](mailto:NSF_NCAR@nsf.gov)

Re: Response to NSF Dear Colleague Letter—Intent to Restructure Critical Weather Infrastructure

The Union of Concerned Scientists (UCS) submits this response to the National Science Foundation’s (NSF) Dear Colleague Letter (DCL) regarding the restructuring of the NSF National Center for Atmospheric Research (NCAR).

As one of the leading science advocacy organizations in the country, UCS has joined former directors of NCAR and the University Corporation for Atmospheric Research (UCAR), and scientists and scientific organizations across the country, in raising significant concerns with this plan. Through partnerships with hundreds of other organizations, mobilization of the 23,000 members of our Science Network, and advocacy by our 500,000 supporters, our nearly 250 scientists, analysts, policy experts, organizers, and communicators put rigorous, independent science into action, developing solutions and advocating for a healthy, safe, and just future. The work done at NCAR, as well as that done by scientists and experts who receive training there, is vital to that future.

The premise of this DCL, that NCAR’s core activities should be restructured, is inconsistent with NSF’s statutory mission, the [cooperative agreement model](#) used to operate NCAR, and the decades of demonstrated national benefits that NCAR provides through public investments. This is clearly an attack on science to serve the political purposes of the White House through the Office of Management and Budget (OMB). Less than three years ago, NSF [renewed the cooperative agreement](#) grant with UCAR through 2028 with full support and no expressed objections or hesitations. Yet the DCL is questioning the very premise of that agreement.

The political motivations behind this DCL are clearly apparent and come at the direct behest of OMB Director Russell Vought, who [called for](#) NCAR’s dismantling in a statement on Dec 16, 2025. As scientists, we take great exception to his egregious claim that NSF NCAR is a source of “climate alarmism”—nothing could be further from the truth, as this institution is [crucial](#) for providing bedrock, cutting-edge weather, ocean, space weather, earth, and climate science to help protect people and our national defense and economy.

**Further, it is deeply disingenuous for NSF to solicit public input regarding *its intent* to restructure NCAR while that restructuring *is already underway* with NSF’s [recent announcement](#) of the transfer of the NCAR-Wyoming Supercomputer to an unknown third-party operator.** This is inconsistent with NSF’s [December 17, 2025 statement](#) stating NSF would publish a DCL that informs the agency’s follow-on actions, which specifically include “options to transfer stewardship of the NCAR-Wyoming Supercomputer to an appropriate operator” and “divest of or transfer the two NSF aircraft that NCAR manages and operates.” The [current DCL](#) states that the NSF is in fact *not seeking input* on the supercomputer and the aircraft, making the matter a *fait accompli*. This deeply harmful action is happening despite NSF fully understanding, as stated in your [FY26 Budget Request to Congress](#), that the seamless functioning of operational, observational and computational capacities is crucial for research related to the enormously complex earth system, including atmospheric, space, climate, and ocean research. In addition, the NSF’s budget request (Page 103) states that under NCAR “continued operation of the NCAR-Wyoming Supercomputer Center will support the integration,

analysis, and modeling of large data sets.” Overall, we are deeply concerned by this move and question whether NSF is putting forward the DCL in good faith.

**We adamantly oppose the transfer of the NCAR-Wyoming Supercomputer and NSF-NCAR aircraft. They must be kept at NCAR.**

UCS will not be submitting expressions of interest for alternative management and operational models on NCAR because they do not serve the public interest. **The only expression of interest we *vehemently advocate for* is that NCAR should remain intact as a unified, federally supported research and user facility under the management and operations of UCAR, the manager of NCAR since its inception in 1960.**

Our responses to the specific questions in the DCL are below:

- 1. Management and operations of ALL of NCAR’s activities, (e.g., space, weather, climate, ocean) should be kept at NCAR with UCAR management and in partnership with other NSF investments and facilities.**

NCAR’s contributions to atmospheric, ocean, space, and climate science are not isolated programs, but rather interdependent components of a unified, national research infrastructure. [Over six decades](#), NCAR has provided the scientific foundations that enabled transformative improvements in forecasting, hazard preparedness, and fundamental Earth system understanding. These advances arise from the intersection of long-term observations, cutting-edge modeling systems, computational infrastructure, and collaborative science, rather than discrete, stand-alone activities.

The nation’s ability to predict high-impact weather events, such as hurricanes, floods, and severe thunderstorms, has improved markedly because of this integrative model. A National Academies assessment estimated that gains in forecast skill attributable to sustained research yield more than [\\$30 billion per year](#) in economic value through reduced losses and enhanced decision-making. These benefits extend beyond economic impacts: improved forecasts and warnings also save lives by enabling earlier evacuations and emergency planning. Making weather forecasts [50% more accurate](#) alone would save over 2,000 lives each year in the United States. The improvements in hurricane track prediction, storm-scale forecasting, and flood risk modeling that drive these societal benefits are rooted in decades of continuous research that spans NCAR’s weather, climate, and earth-system portfolios.

NCAR scientists have [contributed tools and methods](#) that have been operationalized by federal partners, including [air turbulence and microburst research](#) that is now used by the Federal Aviation Administration for [flight safety](#); [environmental intelligence](#) through contracts with numerous Department of Defense entities to enhance our national security and military readiness; state-of-the-art [hurricane](#) and [space weather](#) instruments that have improved hurricane and space weather forecasts for the National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration; and [next-generation agricultural weather forecast systems](#) developed in partnership with the U.S. Department of Agriculture that provide readily available information for farmers, support the agricultural economy and enhance food security. These operational partnerships reflect a sustained research-to-operations continuum that is only possible within a stable, integrated institutional framework.

NCAR’s ability to operate in this manner, and to generate sustained public value for national defense, economic resilience, and public safety, stems from its long-standing management by [UCAR](#), a non-profit consortium of more than 120 universities. This management model ensures community oversight, broad scientific participation, and shared access to infrastructure that no single university, agency, or private entity could independently sustain. Unified management under UCAR preserves the integration, workforce continuity, and collaborative capacity that are essential to maintaining U.S. leadership in atmospheric and Earth system science.

**2. The NCAR Mesa Lab is an iconic architectural and critical research infrastructure that should NOT be transferred to a different entity for private or public use.**

The Mesa Laboratory was [designed and completed](#) by renowned architect I. M. Pei in 1967 as a permanent home for the nation's atmospheric research enterprise. Its construction was made possible through [approval by the Boulder City Council](#) and community agreements that reflected a shared understanding: *the facility would serve as a national public scientific institution dedicated to atmospheric research and education*. The City of Boulder was assured that the open space and natural landscape surrounding NCAR would be [preserved](#).

Transferring ownership of the facility for private use raises significant concerns. The NCAR Mesa Lab is a *public-facing institution*, hosting numerous [educational programs](#), community events, [public tours](#), and visits by students, educators, and policymakers across the country. These activities are a product of public investments and taxpayer dollars. Transfer of the facility for private use would substantially alter the purpose of this storied structure, and raise legitimate concerns on the continued open access, educational engagement, and stewardship of the surrounding landscape that the NCAR Mesa Lab has provided to Americans for 60 years.

Handing over the Mesa Laboratory to a different operator for public use would also raise significant concerns. The facility was approved and constructed to serve the mission of NCAR. Reassigning the facility to another public entity would fundamentally alter NCAR's collaborative, community-serving mission. The laboratory currently houses numerous NCAR scientific staff, specialized laboratories, computational resources, and training programs that support education, workforce development, and community access to atmospheric and earth science tools. These capabilities are deeply integrated with NCAR's broader research activities and management model through UCAR.

**3. The National Center for Atmospheric Research activities and capabilities are unique and not replicable under alternative operational structures.**

NCAR represents a uniquely integrated institutional model that cannot be reproduced through dismantlement, privatization, or short-term management arrangements. Its value lies not only in the unique tools it maintains, but in the management structure, workforce continuity, community stewardship, and long-term scientific integration that sustain those tools.

NCAR serves as the long-term steward of core community modeling systems that underpin U.S. atmospheric research and operational forecasting that cannot be replicated elsewhere. For example, the [Weather Research and Forecasting \(WRF\) model](#), developed and maintained through a multi-institutional collaboration led by NCAR, [provides the dynamical core and physics framework](#) that underlies NOAA's High-Resolution Rapid Refresh (HRRR) forecasting system, an operational model used for real-time forecasting of weather and extreme weather events. NCAR scientists and engineers contribute to the [ongoing maintenance](#) of WRF's dynamical solver, physical parameterizations (including microphysics, boundary layer, and radiation schemes), data assimilation interfaces, and user support infrastructure. These components require continuous testing, version control, documentation, and scientific validation and are utilized nationwide.

Similarly, the [Model for Prediction Across Scales \(MPAS\)](#), developed and stewarded at NCAR, represents a next-generation modeling framework designed to enable seamless global-to-regional simulation. MPAS is a significant research advancement because, unlike WRF, it can be used for both numerical weather prediction and climate research. NOAA recently announced MPAS would be used as the dynamical core for its next generation of forecast models, under its Unified Forecast System. Further development of this model is critical for the U.S. to remain competitive in weather and climate prediction, as other weather and climate modeling centers around

the world have already developed a similar unified model. We need an integrated NCAR between weather and climate communities to continue developing this next-generation model which can advance our prediction capabilities of extreme weather events and climate impacts.

Hydrologic forecasting provides another example. The National Water Model, operationally run by NOAA's National Weather Service, incorporates modeling advances that emerged from [NCAR-supported research](#) in coupled atmosphere–hydrology systems, land-surface modeling, and ensemble prediction. Improvements in flood forecasting skill and streamflow prediction accuracy reflect decades of iterative research, field experimentation, and model coupling supported by NCAR's integrated environment. Today, the model is used in more than 3,800 locations serving nearly 3 million people.

NCAR plays an [indispensable role](#) in national workforce development and scientific training, a core mission of the NSF. Through model user support, training workshops, collaborative programs, graduate and postdoctoral mentoring, and open-access documentation, NCAR lowers barriers to STEM entry for K-12 schools, universities, and early-career researchers nationwide. This broad participation model ensures that sophisticated atmospheric and space weather observational and modeling tools remain accessible as public scientific infrastructure rather than confined to a limited set of institutions or commercial entities. No single university, private company, or federal agency replicates this nationally distributed workforce training and professional development for the earth sciences.

The uniqueness of NCAR resides in the integrated structure that sustains community science, operational advancement, workforce development, and open governance simultaneously. Altering that structure risks permanent loss of institutional capacity that cannot be reconstructed simply by reallocating assets or contracts.

**4. The suggested premise that transformative potential for observational platforms is constrained by NCAR's current structure is unsupported by evidence.**

Transformative atmospheric research depends on long-term data continuity, integrated modeling frameworks, shared computational infrastructure, and coordinated observational strategies. Dismantling components of NCAR would risk reducing interoperability, weakening community access, and impairing the continuity necessary for innovation. Privatizing components of NCAR risks placing crucial information behind paywalls that could be challenging for researchers and the public to access. The most transformative outcome would be strengthened, stable investment in NCAR as an integrated national research center.

NCAR and its [Earth Observing Laboratory](#) (EOL) operate a number of observational facilities that support weather and climate research. In addition to NCAR's [aircraft](#), NCAR operates the NSF [Lower Atmosphere Observing Facilities](#) lab, the [Mauna Loa Solar Observatory](#), the [Fabry-Perot upper atmospheric winds observing network](#), and the Atmospheric Chemistry Observations and Modeling lab. These facilities generate data that are an essential component of climate and weather research and forecasting capabilities throughout the country.

Through the EOL, NCAR also provides leadership and technical expertise for [field research campaigns](#). Over the last half century, EOL has supported campaigns observing the Earth's oceans, atmosphere, and land surface, advancing scientific understanding of the climate system. The EOL has worked with both academia and government agencies, providing staff expertise in project planning and preparation, as well as operating NCAR's facilities and field instruments.

Additionally, NCAR maintains an extensive collection of observational datasets through EOL and the [Geoscience Data Exchange](#) (formerly the Research Data Archive.) This includes data archives from more than 400 field campaigns, meteorological and oceanographic observations, operational and reanalysis model outputs, and remote sensing datasets.

- 5. No, there are no other concepts for management and operations of NCAR activities that NSF should consider. The DCL does not provide evidence of systemic performance failure, fiscal mismanagement, or mission drift that would justify reconsidering the cooperative agreement model under which NCAR has successfully operated for decades.**

NCAR was intentionally established under the cooperative agreement with UCAR to serve as a nationally governed research center that provides shared scientific infrastructure, observational and modeling capabilities, workforce development, and broadening participation opportunities for the earth science community that no single university could do on its own. Through multiple past solicitations and mid-term reviews using a robust merit review process, the NSF has reaffirmed the existing management and operations of NCAR under UCAR. The existing structure and community-centric research model through decades of public investment have benefited not only the broader scientific community but also the American public through significant advancements in weather forecasting, understanding the earth-climate system, space weather forecasting, food security, national defense and military readiness, and public safety.

NSF should utilize the existing framework and governance structure of NCAR under the management and operations of UCAR to facilitate accountability, transparency, and improvement of NCAR, as NSF has done through past mid-term reviews. These adjustments under the existing cooperative agreement would not require structural dismantlement or fragmentation. Maintaining NCAR as an integrated national research center remains the most effective management model for sustaining long-term scientific discoveries and societal benefits for the nation.

- 6. There should not be a restructured atmospheric research center, and the NSF already maintains high-caliber performance expectations and evaluation mechanisms, which is in large part why NCAR and its management are successful.** The archived [solicitation for the competition to manage NCAR](#) that led to the current cooperative agreement clearly states that the awardee of NCAR would be responsible for:
- a. Operating and maintaining the NCAR buildings and facilities
  - b. Developing and incorporating new facilities
  - c. Plans for future new initiatives
  - d. Recruiting, developing, and retaining a highly competent and diverse workforce
  - e. Sustaining an innovative and vigorous program of basic and applied research in support of atmospheric, geospace, and related sciences.

UCAR, the current awardee of NCAR, was evaluated against these expectations during the merit review process and the most recent cooperative agreement review. NSF determined that UCAR's proposal for continued management of NCAR met these criteria and extended the cooperative agreement for an additional five-year award period beginning October 1, 2023. As NSF stated in its [FY 2025 Budget Request to Congress](#) (Research Infrastructure – 97), "The UCAR proposal for continued oversight and management of NCAR was approved following extensive merit review and NSF and National Science Board deliberation."

Given that NSF recently reaffirmed the effectiveness of the existing management structure through its own review and award process, the rationale for restructuring NCAR is unclear and unfounded. The existing performance framework already provides NSF with the tools necessary to evaluate oversight, accountability, scientific productivity, workforce development, and long-term strategic planning.

***In summary***, NCAR represents one of the most successful models of federally supported scientific infrastructure in the United States. For more than six decades, NCAR has advanced Earth and space sciences, strengthened national weather forecasting capabilities, supported research-to-operations innovation, and trained generations of scientists through a uniquely collaborative, community-governed structure. The cooperative agreement between NSF and UCAR was intentionally designed to sustain these national capabilities, and NSF's own recent

review reaffirmed the effectiveness of this model. NSF and the DCL do not provide evidence that would justify dismantling or restructuring NCAR. ***UCS strongly urges NSF to preserve NCAR as an intact national research center under the existing pre-December 2025 cooperative agreement structure***, recognizing that dismantling or fragmenting this proven model would undermine one of the nation’s most important scientific institutions.

Comments submitted on behalf of the Union of Concerned Scientists by:



Carlos Martinez, PhD  
Senior Climate Scientist  
Climate and Energy Program  
Union of Concerned Scientists



Marc Alessi, PhD  
Climate Attribution Science Fellow  
Climate and Energy Program  
Union of Concerned Scientists