Response to the NSF Dear Colleague Letter:

Restructuring of the National Center for Atmospheric Research

Submitted on behalf of the undersigned members of the Department of Atmospheric Sciences, Texas A&M University

We, the undersigned members of the Department of Atmospheric Sciences at Texas A&M University, write to express our strong opposition to any proposal to disassemble, fragment, or relocate the National Center for Atmospheric Research (NSF NCAR). NCAR is not merely a research facility; it is the backbone of the national atmospheric science enterprise, and dismantling it would directly harm research, education, operational forecasting, and public safety in Texas, across the United States, and around the entire world.

NCAR's Unique and Irreplaceable Role

NCAR is operated by a broad-based consortium of 129 universities precisely because it fulfills a role that no single university, federal agency, or private entity can replicate. It develops and maintains community research infrastructure (models, datasets, supercomputing resources, airborne and ground-based observing systems, and training programs) that serve thousands of researchers nationwide. It also serves as a central hub where researchers collaborate on the fundamental science that underpins this infrastructure, and its training programs help scientists from other disciplines transition into atmospheric research.

One thing NCAR does not do is operational weather forecasting. That is NOAA's job. But NCAR does provide the research engine that improves those operational systems. The rapid-response forecasts issued by the National Weather Service using the High-Resolution Rapid Refresh (HRRR) and Warn-on-Forecast-System (WoFS) models are built on the Weather Research and Forecasting (WRF) model, which was developed and is maintained under NCAR's leadership. Dismantling NCAR does not eliminate duplication—it destroys the foundation on which future U.S. operational forecasting depends.

Direct Benefits to Texas and the rest of the U.S.

Texas faces an extraordinary range of weather hazards — hurricanes, tornadoes, severe thunderstorms, flooding, drought, extreme heat, and poor air quality. But extreme weather is not just a Texas problem — it affects every American. NCAR's contributions to understanding, predicting, and mitigating these threats are woven into the research, forecasting, and public safety infrastructure that protects us all.

Public Safety and Forecasting

NCAR designed, tested, and supplied the GPS dropsondes used by the NOAA and Air Force Hurricane Hunters, which provide critical data as hurricanes approach the Texas coast. These instruments have helped produce major improvements in hurricane track forecasts and real-time intensity measurements. NCAR's Model for Prediction Across Scales (MPAS) is slated to become the foundation for the next generation of U.S. global weather forecasting. State-of-the-art machine learning applications for severe weather forecasting are currently being developed at NCAR and are already in semi-operational use by forecasters everywhere, including Texas. NCAR and its collaborators also developed the technology that alerts pilots to dangerous thunderstorm-produced wind shear near airports—technology prompted in part by the Delta 191 crash at Dallas-Fort Worth Airport in 1985 that killed 137 people.

The recent catastrophic flooding in central Texas over the July 4, 2025 weekend shows the importance of accurately forecasting the weather. We need to improve our ability to do that so people can be alerted in a timely manner; dismantling NCAR is a step in the opposite direction.

Research

Faculty across our department rely heavily on NCAR's community models, datasets, and computational resources. The Community Earth System Model (CESM), developed and maintained by NCAR, is central to our research on atmospheric dynamics, atmospheric chemistry, aerosol-cloud interactions, and wildfire smoke impacts. Researchers in our department serve in CESM leadership roles and have active collaborations with NCAR, including StormSPEED, which enables ultra-high-resolution storm simulations, and MESACLIP, which produced a unique global high-resolution simulation dataset critical for insurers and regional planners—a dataset with no comparable equivalent anywhere in the world.

Our researchers also depend on WRF model simulations, NCAR supercomputing allocations, NCAR research-quality observations for model evaluation, and field campaign data repositories managed by NCAR. The NCAR C-130 research aircraft has provided one-of-a-kind test flights for novel instrument deployments and has been instrumental in Texas air quality studies, including the TexAQS campaigns that promoted economic growth with improved public health for millions of Texans in the Houston metropolitan area. NCAR's kilometer-scale CONUS reanalysis datasets are especially critical for understanding Texas, where strong land–ocean contrasts, an extensive coastline, and rapid land-use changes require high-resolution data to accurately capture the details of extreme weather.

Severe Weather Science

Much of the foundational knowledge of how tornadoes, supercell thunderstorms, and squall lines behave originated at NCAR. NCAR played a central role in Project VORTEX, including field operations in Texas that documented tornadoes and led to the landmark discovery that the rear-flank downdraft is a primary driver of tornado formation—a finding that has directly improved tornado warning lead times. NCAR's Cloud Model 1 (CM1) continues to advance understanding of storm dynamics, and NCAR-led field campaigns such as PECAN and ICECHIP have provided critical insights into derechos, hail, and severe thunderstorms relevant to Texas.

Teaching and Workforce Development

NCAR's contributions to our educational mission are equally vital. Unidata, part of the broader UCAR Community Programs, provides the technological infrastructure for real-time weather data access and visualization used in our undergraduate meteorology curriculum. COMET teaching modules are used across our courses and throughout the weather enterprise to train students and professionals. Our faculty use NCAR's MetEd/COMET modules as essential complements to classroom instruction because they are designed by experts, scientifically rigorous, and kept up to date.

NCAR also helps develop the next generation of atmospheric scientists through undergraduate research and leadership experiences like the Undergraduate Leadership Workshop, SIParCS internship, and SOARS program. Its visiting scientist programs, summer colloquia, and workshops extend that impact across the full career pipeline, from graduate students to senior researchers.

Why Dismantling NCAR Would Not Work

NCAR does things that are beyond the scope of individual universities or informal collaborations. Important synergies arise from the co-location of different types of atmospheric research—weather modeling, atmospheric chemistry, observational technology, data stewardship, and computational science—under a single integrated institution. Distributing these capabilities to individual universities, federal agencies, or private entities would therefore be profoundly counterproductive.

Transferring NCAR's mission to a federal agency with an operational or regulatory mandate—such as NOAA, DOE, or NASA—would fundamentally alter its character as a neutral, community-serving research institution. Each of these agencies has its own mission focus; none could serve as a substitute for the role that NCAR plays under NSF stewardship and university governance through UCAR.

Conclusion

If not for NCAR's computational resources, data accessibility, technological expertise, and continuous support of community weather and Earth system models, the United States would not be the global leader in atmospheric sciences that it is today, and Texas would be a much more dangerous place to live. Disassembling NCAR would not save money or reduce duplication. It would destroy irreplaceable national infrastructure, weaken public safety, and cripple the research and educational missions of universities across the country—including our own.

We urge reconsideration of proposals to fragment or dismantle NCAR and to instead strengthen this essential institution.

Respectfully submitted,

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