A Critical Review of the University of Colorado Boulder Response to the NSF-DCL

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Summary

The following analysis examines the University of Colorado Boulder - Dear Colleague Letter (CU-DCL) in response to the National Science Foundation's intent to restructure the management of NCAR (NSF-DCL). The review highlights several critical discrepancies and legal concerns regarding the proposed restructuring, notably questioning the authority of Brian Stone to order such a fundamental shift while the NSF Director position is legally vacant under the Federal Vacancies Reform Act. Furthermore, the document identifies a potential "downsize and evict" strategy regarding NCAR's physical infrastructure, drawing a parallel to the recent loss of the custom-built NSF headquarters in Alexandria.

Central to this critique is the contrast between the proven University Corporation of Atmospheric Research (UCAR) management model and the undefined, regressive nature of the CU-DCL proposal. We reinforce the strength of UCAR's 129-member democratic framework, which utilizes an elected Board of Trustees to ensure national accountability. In opposition, the CU-DCL suggests a three-member regional partnership that risks acting as a "regional gatekeeper," disenfranchising the 126 institutions currently enjoying democratized access to national scientific assets.

Finally, this review identifies several contradictory and strategically defeatist statements within the CU-DCL that inadvertently legitimize irregular processes. By providing a "serious" response to a restructure that may be a "political ploy," CU Boulder risks becoming legally entrained in a transfer of stewardship that is currently the subject of an NSF Inspector General investigation and a UCAR lawsuit. **Ultimately, we argue that the current UCAR model remains the most effective, contractually robust method for serving the national interest.**

Analysis

Disclaimer

To facilitate inline commentary, the original CU-DCL was transcribed into this document; any minor spacing or formatting irregularities are a result of this process. Every effort has been

made to ensure a factual analysis supported by referenced data. We welcome notification of any significant discrepancies or errors so that a corrected version may be issued promptly.

Document Version

- **March 31, 2026:** Initial release

Legend

Statements in subsequent sections are highlighted as follows:

- **White:** CU-DCL statements deemed **procedural**.
- **Green:** CU-DCL statements deemed **correct**.
- **Yellow:** CU-DCL statements deemed **incorrect**.
- **Red:** CU-DCL statements deemed **harmful, unsubstantiated, or refuted**.
- **Gray:** Our inline **analysis**.

Inline Analysis of the CU-DCL

March 13, 2026

Mr. Brian Stone, Acting Director

Brian Stone is *not* the Acting Director of the NSF. As reported on the Save NCAR timeline in the November 25, 2025 update and verified through our correspondence with the Government Accountability Office (GAO): “The 210-day limit for authorized acting service in the NSF Director role expired today, marking a significant legal transition for the agency's leadership. Per GAO guidance, because the vacancy originated with the resignation of Director Panchanathan on April 24, 2025, the NSF was required to discontinue the use of the ‘Acting Director’ title to remain in compliance with the Federal Vacancies Reform Act. While the position is now *legally vacant*, essential agency functions continue to be maintained by senior staff specifically authorized to perform the duties of the office.”

This is not an isolated oversight, though it is perhaps unsurprising given that the NSF-DCL itself was unsigned. While prominent responses from UCAR, the Union of Concerned Scientists (UCS), and Dr. Daniel L. Swain made the same assumption regarding leadership, it raises a critical legal point: Is it reasonable for a respondent to expect that any officer besides a legally appointed Director may order the fundamental restructure of the agency they lead?

National Science Foundation
2415 Eisenhower Ave
Alexandria, VA 22314

The headquarters of the NSF is *not* at 2415 Eisenhower Ave. As reported on the Save NCAR timeline in the November 14, 2025 update: “The NSF is moving its headquarters from 2415 Eisenhower Ave to the Randolph Building at 401 Dulany Street, both located in Alexandria, VA.” Much like the Mesa Lab, the 2415 Eisenhower Ave building was custom-built to address the unique needs of the NSF and was inaugurated as the NSF Headquarters in 2017. The loss of the 2415 Eisenhower Ave building reinforces the threat that the intent of the NSF is to change ownership of the NSF NCAR Mesa Lab.

Response to NSF Dear Colleague Letter: NSF Intent to Restructure CriticalWeather Infrastructure

The University of Colorado Boulder (CU Boulder) respectfully submits this response to the National Science Foundation’s Dear Colleague Letter titled “NSF Intent to Restructure Critical Weather Infrastructure," which seeks feedback on the future structure and management of the National Center for Atmospheric Research (NCAR). CU Boulder is a long-standing partner of NCAR and of the Boulder federal laboratory community in advancing atmospheric and Earth system science.

For more than six decades, NCAR has served as a cornerstone of the United States’ atmospheric and Earth system science enterprise. Its defining strength is an integrated model that combines observations, theory, numerical modeling, and advanced computing within a single integrated national center serving the broader research community. This structure enables scientific capabilities and coordination at a scale that individual universities, federal laboratories, or private organizations cannot sustain independently.

NCAR’s impact is amplified by its location within the Boulder research ecosystem, one of the most concentrated clusters of atmospheric, Earth system, and geophysical science institutions in the world. Close collaboration among NCAR, CU Boulder, National Oceanic and Atmospheric Administration (NOAA) laboratories, and other federal research organizations creates powerful multiplier effects in scientific discovery, technology development, and workforce training.

While these statements are factually correct regarding the geographic concentration of talent, they neglect the critical role that UCAR plays in supporting this ecosystem. NCAR is a Federally Funded Research and Development Center (FFRDC), while UCAR is the Colorado nonprofit corporation that manages it. While NCAR and UCAR are often conflated, they are distinct: **NCAR represents a vast, multi-state physical infrastructure—including the Mesa Lab, the Foothills Lab, the NCAR-Wyoming Supercomputing Center, the Research Aviation Facility in Broomfield, and the Mauna Loa Solar Observatory in Hawaii—while UCAR provides the independent management, the Board of Trustees, the 129-member university consortium, and the scientific workforce of 1,400 staff.**

At a time when extreme weather, wildfire, drought, flooding, and geomagnetic disturbances are imposing increasing economic and national security risks, the nation depends on stable and integrated scientific infrastructure.

CU Boulder believes that NCAR is a uniquely valuable national asset that should remain intact. Splitting up NCAR resources and functions across organizations would be problematic, financially costly, and inefficient. Fragmenting NCAR would destabilize specialized scientific expertise, disrupt modeling, and weaken national predictive capacity. NCAR's value goes well beyond the sum of its parts. Therefore, maintaining the United States' world-leading position in atmospheric and Earth system science requires that NCAR continues to operate as a publicly managed, community-serving institution. Transferring its management to a for-profit organization or a mission-specific agency would risk undermining the open, community-driven model that has enabled its success.

However, if change is in the best interest of our nation, we recommend preserving NCAR as a unified national center while expanding its reach and capabilities through new structured partnerships with a core group of research universities that are leaders in atmospheric and Earth sciences.

This statement is **strategically defeatist**; it concedes the necessity of reform without evidence and effectively invites the NSF to follow through on restructuring plans. By entertaining the 'best interest' of a restructure, CU weakens the collective legal and administrative argument that the current UCAR management model is the most effective way to serve the national interest.

We believe a complementary university-led consortium that would manage and expand capacity at NCAR could include the University of Colorado Boulder, the University of Oklahoma, and the University of Wyoming. Such a consortium would significantly expand national scientific capacity while maintaining the integrated capabilities that make NCAR uniquely valuable.

Together, preserving NCAR's unified structure, leveraging these and other partnerships, and strengthening national collaboration through this university consortium would provide a practical strategy for sustaining U.S. leadership in predictive Earth system science.

The preceding statements regarding the benefits of a limited university consortium remain unsubstantiated. In contrast, the existing UCAR membership program provides that all 'universities and nonprofit corporations organized and operated for educational or scientific purposes, and located within the United States, Canada, or Mexico, are eligible for UCAR membership' when they meet a well-defined set of criteria. By proposing to replace this inclusive framework with a 'small number of strategic operational partnerships,' the CU-DCL effectively risks creating a regional gatekeeping model. This shift would likely reduce competition and curtail the democratized access currently enjoyed by smaller universities and institutions across the nation. It is important to observe that the current UCAR membership roster already includes all members from the newly proposed CU-DCL Consortium. **As such, it is unclear how the newly proposed CU-DCL Consortium could possibly 'expand capacity' or 'strengthen**

national collaboration' by replacing an inclusive, 129-member university consortium with a restrictive, three-university regional partnership.

NCAR as the Nation’s Integrated Earth System Science Platform

Since its founding in 1960, under the administration of President Eisenhower, NCAR has served as the United States’ primary national center for atmospheric and Earth system science. Its core strength lies in integrating theory, observations, modeling, and advanced computing within a single community-serving institution.

This structure plays a critical role within the national research ecosystem. Federal agencies such as NOAA and National Aeronautics and Space Administration (NASA) conduct mission-driven research and operational forecasting, while universities pursue investigator-led scientific inquiry. NCAR bridges these domains by providing shared scientific infrastructure and collaborative research environments that enable universities nationwide to participate in large-scale Earth system research and that deliver capabilities that are critical to meeting national needs.

NCAR’s community modeling frameworks, observational facilities, aircraft platforms, and cyberinfrastructure enable coordinated research at the national scale. These shared capabilities allow scientists across the United States to access sophisticated tools that would otherwise be prohibitively expensive and inefficient for individual institutions to maintain independently.

This integrative model has proven essential for advancing predictive understanding of the coupled Earth system. Improvements in weather forecasting and modeling, air quality prediction, and space weather science increasingly require coordinated integration of observations, models, and computational resources across the atmosphere, oceans, land surface, and near-space environment.

Maintaining this integrated national capability is therefore critical to sustaining U.S. leadership in predictive Earth system science, as well as ensuring our nation’s economic vitality and national security interests.

Boulder’s Research Ecosystem: An Innovation Multiplier for America

NCAR’s location, just four miles from the University of Colorado Boulder campus, has enabled a uniquely productive integration with both CU Boulder and the surrounding federal laboratory complex, demonstrating the outsized benefits of co-locating national research infrastructure with universities and federal science agencies.

Boulder hosts one of the highest concentrations of atmospheric, Earth system, and geophysical research institutions in the world. This ecosystem includes CU Boulder’s academic departments in Atmospheric and Oceanic Sciences, Physics, Engineering, Applied Mathematics, Geosciences, and Geography, along with major research institutes such as the Cooperative

Institute for Research in Environmental Sciences(CIRES), the Laboratory for Atmospheric and Space Physics (LASP), and the Institute of Arctic and Alpine Research (INSTAAR).

The region is also home to multiple NOAA laboratories and centers, the National Institute of Standards and Technology (NIST), the U.S. Geological Survey (USGS), the National Telecommunications andInformation Administration (NTIA), and other federal research organizations.These institutions are connected through joint appointments, shared graduate education, collaborative modeling efforts, coordinated field campaigns, and integrated computational infrastructure. The resulting scientific network accelerates idea exchange, fosters cross-disciplinary innovation, produces highly trained scientific and technical talent, and generates research innovations that result in new products and companies.

Importantly, this ecosystem also aligns multiple major NSF investments. CU Boulder hosts the Earth System Innovation and Impact Lab (ESIIL), which advances open science and data-intensive Earthsystem research, and the National Solar Observatory (NSO), which provides critical solar observing capabilities essential for space weather science. CU Boulder is also a lead institution in the ASCEND NSF Regional Innovation Engine, which accelerates the deployment of next-generation scalable resilience solutions that are critical to our nation's security and quality of life. In addition, the NationalEcological Observatory Network (NEON) provides continental-scale ecological data that complements atmospheric and Earth system modeling.

The co-location of these capabilities significantly enhances the return on federal investment by enabling tight coordination among observational systems, modeling platforms, data science infrastructure,operational users, and private sector partners.

Disrupting NCAR's presence in Boulder would fracture this deeply integrated ecosystem and reduce the scientific and operational synergies that currently benefit the national research enterprise.

CU Boulder–NCAR Scientific Integration

The partnership between CU Boulder and NCAR spans decades of collaboration in research, graduate education, scientific infrastructure development, and is a contributing factor to the outstanding reputation of our university in terms of start-up creation and technology transfer. CU Boulder faculty and NCAR scientists frequently hold joint appointments and collaborate across disciplines including atmospheric science, space physics, advanced computing, aerospace engineering, and Earth system modeling. Graduate students and postdoctoral researchers regularly work across institutional boundaries, gaining experience with national scientific infrastructure while contributing to frontier research. This collaboration is particularly visible and impactful in areas relevant to this DCL, including domains that bear directly on national preparedness, security, and defense applications.

- **Space Weather:** Space weather progress requires sustained solar observations, community models, and a strong research-to-operations interface. NCAR's High Altitude

Observatory (HAO) uniquely integrates these elements, operating key observing infrastructure while stewarding widely used community models such as Whole Atmosphere Community Climate Model (WACCM-X) and Thermosphere-Ionosphere-Electrodynamics General Circulation Model (TIE-GCM) within a broader Earth system modeling framework. CU Boulder complements this capability through LASP's flight-proven instrumentation, the public-facing, event-centered Space Weather Data Portal managed by the Space Weather Technology, Research and Education Center (SWx-TREC), CIRES' partnerships with NOAA's Space Weather Prediction Center, and aerospace research addressing satellite drag and orbital safety. These capabilities are also critical to national security, since space weather can disrupt satellites that support communications, positioning, navigation, timing, and other services relied upon by civilian and defense users alike. Co-location enables tight coordination among observing systems,modeling teams, and operational users, including those responsible for space weather preparedness and protection of mission-critical space assets. Fragmenting NCAR's spaceweather enterprise would separate observing operations from model development, duplicate cyberinfrastructure, weaken partnerships among America's scientific assets, and reduce coherence in Sun-to-Earth system advances. Preserving this integrated capability within NCAR is critical to advancing national preparedness, protecting space-based infrastructure, and sustaining U.S. leadership in this strategically important domain.

NCAR's space weather program is a central issue raised by Representative Neguse's call for an NSF Inspector General investigation. As noted in his formal request: *'In short, my office has received a troubling report that one or more OMB officials allegedly proposed and/or negotiated — before the NSF DCL process had concluded — an arrangement whereby components of NCAR's space weather program would be transferred to a specific private, for-profit company.'* **We assert that by providing a 'serious' response to an irregular DCL process, the CU-DCL inadvertently legitimizes the very environment where such back-room negotiations occur, thereby undermining the investigation meant to protect the integrity of the CU Boulder and NCAR space weather programs.**

- **Weather modeling and atmospheric observing capabilities:** CU Boulder's Department of Atmospheric and Oceanic Sciences advances the physical basis for modeling and observing the coupled atmosphere–ocean–land system. Its field–to–model research culture links observational campaigns with numerical modeling and data assimilation. Through CIRES, CU researchers work alongside NOAA laboratories to improve forecasting and management of high-impact events and conditions, such as flooding, wildfires, drought, and air quality, to name a few. These same advances also support mission-relevant environmental intelligence, improving decision-making for aviation, operations in data-sparse regions, and other contexts where timely, high-quality weather information is critical. INSTAAR contributes complementary expertise in climate variability, cryosphere processes, and changes across natural systems. NCAR provides the national-scale infrastructure that universities cannot sustain alone: openly developed community Earth system models, systems such as Data Assimilation Research Testbed

(DART), high-performance computing, and field campaign support through the Earth Observing Laboratory. This shared infrastructure creates a common scientific foundation across institutions and strengthens predicative capabilities relevant to both public and strategically important operational needs.

- **NCAR Mesa Lab** (located in Boulder, Colorado):
    - Ownership of the NSF NCAR Mesa Lab building for private use.
    - Ownership of the NSF NCAR Mesa Lab building for public use.

The CU-DCL declines to address the critical issue of the legal ownership of the NSF NCAR Mesa Lab. By omitting this, the proposal leaves open the possibility that the NSF intends to execute the same 'downsize and evict' strategy recently applied to its own headquarters, threatening the permanent status of NCAR's physical infrastructure. **As explained by the atmospheric science community, the NSF NCAR Mesa Lab is more than a cornerstone; it is a vital, enduring symbol that serves to inspire generations of scientific achievement.**

The CU–NCAR relationship is therefore complementary by design. CU Boulder contributes disciplinary expertise, workforce development, and strong research-to-operations pathways, while NCAR provides sustained engineering, neutral governance, and community-scale facilities that support nationwide collaboration and translate scientific advances into capabilities relevant not only for research and operations, but also to economic resilience, national preparedness, and defense.

University-Led National Consortium

Strengthening NCAR's national role can be achieved through a structured consortium initially led by the University of Colorado Boulder, the University of Oklahoma, and the University of Wyoming. This consortium would complement NCAR's existing mission as a unified national center while leveraging collaboration with federal laboratories and national research facilities. This model would establish a small number of strategic operational partnerships that contribute complementary scientific capabilities, infrastructure, and workforce pathways to extend NCAR's national impact.

Under this model, NCAR would remain the integrated backbone of the nation's atmospheric and Earthsystem science enterprise while partnering with strategically aligned research universities and working closely with federal laboratories to expand scientific capacity, accelerate innovation, and strengthen workforce development.

These universities maintain the depth of expertise, operational experience, and federal partnerships essential to supporting national-scale atmospheric science activities under a new structure. This consortium would contribute complementary capabilities that reinforce NCAR's mission, ensure strong partnerships with federal laboratories and operational science agencies, and enable continued access to NCAR tools and resources for universities and critical partners across the country. These three institutions could comprise a starting point to be built upon by engaging a strategic group of research universities that are leaders in atmospheric sciences, hydrology, weather prediction, and related disciplines.

As UCAR explains, “More than half a century ago, atmospheric scientists from 14 universities came together with a common vision: to create an organization where they could share resources and build collaborations.” **By proposing a "starting point" of only three institutions, the CU-DCL does not offer a strategy for expansion; rather, it suggests a regressive infrastructure that is smaller and more restrictive than at any point in the 65-year history of the National Center.**

CU Boulder provides deep expertise in atmospheric chemistry, climate science, space weather, wildfire and drought science, and Earth system modeling, while also serving as a central hub within the Boulder federal laboratory ecosystem, which includes multiple NOAA laboratories, NIST, USGS, and other national research facilities that support strong research-to-operations pathways.

The University of Oklahoma contributes internationally recognized leadership in meteorology, severe weather, and advanced radar technology through close collaboration with NOAA’s National Severe Storms Laboratory (NSSL), related operational forecasting centers, and the National Weather Center, and the Cooperative Institute for Severe and High-Impact Weather Research and Operations (CIWRO), operated in partnership with NOAA and the National Weather Service. University of Oklahoma scientists affiliated with NSSL also collaborate extensively with University of Colorado scientists working with NOAA laboratories and centers in Boulder and Maryland on forecast improvement, atmospheric modeling, weather testbed development, and atmospheric process studies.

The University of Wyoming provides complementary strengths in high-performance computing and large-scale Earth system modeling infrastructure, supporting data-intensive simulation and next-generation computational approaches.

The CU-DCL’s proposed association with the University of Wyoming is deeply problematic in light of the ongoing NSF Inspector General investigation. As noted by Representative Neguse, allegations suggest the NSF-DCL is a 'political ploy to feign proper conduct,' masking a preordained determination by the OMB to transfer the NWSC supercomputing facility to the University of Wyoming and the space weather program to a for-profit entity. This suggests the consortium model is not a strategy for growth, but a vehicle for the fragmented privatization of national assets. Furthermore, the UCAR lawsuit explicitly challenges the legality of this move, seeking 'injunctive relief prohibiting NSF from implementing or effectuating any such transfer.' **By participating in this proposal, the University of Colorado Boulder risks becoming legally entrained in a transfer of stewardship that a federal court may soon declare unlawful.**

By combining their resources and capabilities and by working in partnership with federal laboratories, these universities could host regional research testbeds where new observational technologies, modeling approaches, and computational methods are developed and validated

before integration into NCAR's national platforms. These environments would accelerate innovation while protecting the stability of NCAR's core infrastructure.

This statement serves as a revealing **admission against interest**. By proposing that only the CU-DCL Consortium universities would host these 'regional research testbeds,' the proposal effectively confirms that the 126 institutions excluded from this model would be disenfranchised from the development and validation phase of new technologies. This creates a profound **conflict of interest**, where a small group of universities acts as the sole gatekeeper for innovations intended for national platforms, fundamentally undermining the 'democratized access' that is a cornerstone of the current UCAR mission.

The consortium would also strengthen workforce development by promoting innovations in graduate education, postdoctoral training, and shared research opportunities that connect universities, federal laboratories, and NCAR's community models, observational systems, and computing resources. Bylinking university training programs directly to national scientific infrastructure and federal laboratory collaborations, this framework would strengthen the pipeline of scientists and engineers needed to advance next-generation Earth system prediction.

This alternative model would preserve NCAR's integrated structure while leveraging distributed excellence across leading research institutions, increasing the return on federal investment and strengthening the nation's capacity to address critical challenges in weather, climate, and space weather prediction.

A focused consortium of a small number of research universities is well suited to managing a national center such as NCAR because it combines operational capability with clear governance and accountability. Leading research universities routinely manage large, complex scientific enterprises—including major federally funded facilities, advanced computing infrastructure, and interdisciplinary research centers—and have the administrative capacity, technical expertise, and workforce development programs needed to steward national scientific infrastructure. In addition, a university-led organization would fully leverage technology transfer and innovation ecosystems to accelerate deployment of solutions.

This statement is fundamentally contradictory. While the CU-DCL seeks to leverage the 'clear governance and accountability' that UCAR provides, the proposal simultaneously undermines those very attributes by dismantling the established self-governance framework that produced them. **In reality, the 'governance and accountability' in the CU-DCL proposal are fundamentally incompatible with the established UCAR model.**

This contradiction strikes at the heart of the recent lawsuit filed by UCAR, which asserts that the organization's management is not only effective but contractually and legally robust. Crucially, UCAR's governance is enshrined in its Bylaws—which establish a democratic governance model where a Board of Trustees is elected by a 129-member university consortium—and are further fortified by the Colorado Revised Nonprofit Corporation Act and enforced by the 5-year

cooperative agreement between the NSF and UCAR to ensure that NCAR's management remains accountable to the university consortium and the NSF. **By excluding these binding legal and structural distinctions, the CU-DCL fails to address how its proposed three-university model could ever replicate or replace the broad-based accountability and democratic legitimacy mandated by the current framework.**

In sum, this structure would ensure participating institutions coordinate closely, align resources strategically, and make decisions efficiently while maintaining strong connections to the broader academic and federal research community. At the same time, NCAR's mission as a national resource would remain unchanged: its models, observing capabilities, computing infrastructure, and scientific leadership would continue to serve universities, federal agencies, and partners across the entire research community.

Responses to NSF Dear Colleague Letter Questions

Question 1: Are there areas in which NCAR activities or capabilities duplicate those of other government agencies, universities, or the private sector?

No. NCAR's capabilities are not duplicative; they are uniquely integrative and complementary within the national research ecosystem. Although multiple federal agencies conduct atmospheric and environmental research, their missions, statutory authorities, and operational constraints differ fundamentally from NSF's mandate and from NCAR's design as a university-centered user facility. NOAA operates mission-driven forecasting systems and bears statutory responsibility for public weather prediction and hazard warnings. NASA focuses on space-based observation platforms and exploratory science. NCAR's mission is discovery-driven and community-serving. It provides open-access modeling infrastructure, shared computing systems, aircraft observing platforms, and collaborative research environments for universities nationwide. Its community model paradigm is particularly distinctive: models are openly developed, documented, validated, and improved through broad academic participation. This democratized approach enables institutions without large internal supercomputing resources across the nation to contribute to frontier research.

Operational agencies often rely upon scientific advances originating in NCAR's research environment. Improvements in ensemble forecasting, data assimilation, convective parameterization, aerosol–cloud interaction modeling and coupled atmosphere–ocean systems have historically migrated from NCAR's community research framework into operational prediction systems. This knowledge transfer underscores complementarity rather than duplication. NCAR also reduces systemic duplication by centralizing high-cost infrastructure. Aircraft fleets, large-scale field instrumentation, and atmospheric supercomputers are highly specialized and expensive national assets. If fragmented, universities or federal agencies would face pressure to replicate portions of this infrastructure independently, increasing overall cost and decreasing coordination. Concentrating these resources within a shared facility enhances efficiency and coherence – and results in more impactful research that benefits Americans at a lower cost.

The private sector similarly benefits from NCAR’s foundational research. Many commercial weather analytics companies, airlines, and insurance companies build upon advances first developed in NCAR's open modeling frameworks. This value-add function—providing foundational science that enables downstream innovation—is central to NSF’s role and cannot be replicated within profit-driven environments. Fragmenting NCAR would not reduce overlap; it would dismantle the mechanism that ensures integration across federal, academic, and private research activities. The current structure minimizes redundancy through shared infrastructure and coordinated scientific advancement.

Question 2: Are there transformative prospects for observational platforms and the resulting data that are currently unexplored or underutilized?

Yes. The most transformative opportunity lies in tightly integrating observational platforms with advanced data assimilation, AI-enabled analytics, and coupled Earth system models to create continuously updated, predictive representations of the atmosphere, from surface to space. Emerging capabilities in autonomous sensing, next-generation radar, advanced satellite instruments, distributed in situ networks,and space-based solar monitoring are generating unprecedented volumes and diversity of data. At the same time, advances in machine learning and hybrid physics–AI modeling now enable adaptive observing strategies, rapid uncertainty quantification, and real-time model updating. Together, these developments make possible digital twin–style frameworks for weather, climate, and space weather prediction that were not previously feasible. These capabilities also have growing relevance for national security and defense, where better environmental intelligence supports mission planning, resilient communications, protection of space-based assets, and decision-making in data-sparse or operationally contested environments.

Realizing this potential requires coordinated evolution of observing systems, cyber infrastructure, high-performance computing, and community modeling frameworks. The valuable existing partnerships uniquely support this integration. Continuing co-location of NCAR with CU Boulder, NOAA laboratories, NSO, CIRES, and other federal and academic partners creates daily interaction among observational scientists, model developers, data assimilation experts, and operational users. That proximity is particularly valuable where civil science and operational needs intersect, including weather forecasting, space weather preparedness, and mission-relevant environmental intelligence. This research density accelerates the translation from measurement to model improvement and from model improvement to operational impact. By leveraging this uniquely concentrated value-cluster of America’s scientific resources, NCAR can lead the development of next-generation integrated observational–modeling systems at national scale, ensuring that new data translate directly into improved predictive capabilities, scientific leadership, and societal impact while also strengthening national preparedness and supporting defense-relevant decision-making.

While the preceding research directions are valid, the CU-DCL fails to demonstrate that its proposed consortium would execute these tasks more effectively than the current UCAR management model. Furthermore, the statements offer no evidence that the UCAR management model is deficient. Notably, these research objectives appear to align closely with

the established goals of the 2025-2029 NSF NCAR Strategic Plan. **This continuity suggests that such advancements can be successfully pursued within the existing UCAR management model, rendering a high-risk restructure unnecessary to achieve them.**

Question 3: Are there other concepts for management and operations of NCAR activities that differ from the current model that NSF should consider?
Yes. NCAR's mission to serve the research community makes this envisioned university-led nonprofit management structure the most effective framework if NCAR is to be restructured. The future management structure of NCAR would be anchored on the following guiding principles: preserve NCAR as an integrated national center, strengthen collaboration across the national research ecosystem, and expand national scientific capacity while protecting stability.

NCAR's core purpose is to serve as a national community resource that has a multiplier effect on the university research enterprise in service to our nation. Its university-centered, nonprofit management structure is uniquely aligned with that mission. As a neutral, community-governed institution, NCAR provides open-access models, shared computing infrastructure, observing platforms, and collaborative scientific leadership to institutions across all fifty states. This structure ensures broad participation, community engagement, transparency, and long-term stewardship of capabilities that no single university or agency could independently sustain. Importantly, this model preserves NCAR's unity and independence while strengthening governance, accountability, and strategic coordination.

NSF may appropriately consider governance refinements that enhance transparency, clarify performance metrics, and formalize advisory mechanisms that ensure strong alignment with community needs.

This statement further erodes the argument that the CU-DCL provides a 'clear governance and accountability' model. By entertaining 'refinements' as a starting point, the proposal risks drifting further from the well-established UCAR management model. As argued by the UCAR lawsuit, the 2022-2023 Business Systems Review and NSF's own auditors recently confirmed UCAR's administrative transparency and financial health, reinforcing a management record spanning over six decades. **Ultimately, the willingness to negotiate these refinements legitimizes an administrative overreach that threatens to dismantle a high-performing national asset for political gain rather than documented institutional need.**

However, these improvements should reinforce, not fragment, NCAR's integrated structure as a national facility. For these reasons, we strongly believe NCAR should not be transferred to a for-profit entity or placed under direct management of a mission-driven agency. A for-profit model would be fundamentally misaligned with NCAR's public-good mission and open science framework. By prioritizing financial return over scientific and societal benefit, it would undermine the very purpose that gives NCAR its national value. Direct agency management, meanwhile, could narrow NCAR's focus toward specific operational objectives, potentially constraining the broad, discovery-driven research ecosystem that NSF is charged to steward.

At the same time, the evolving scale and complexity of Earth system science present an opportunity to strengthen NCAR’s national role through a coordinated university-led consortium that complements, augments, and grows NCAR. Under such a model, NCAR would remain as a unified national center while formalizing structured partnerships with a small number of leading research universities whose capabilities align closely with NCAR’s core scientific pillars. This approach could expand national coordination among universities, federal laboratories, and operational science and security agencies,strengthening research-to-operations pathways and increasing the return on federal investment while preserving NCAR’s integrated mission. It would also provide a more flexible framework for strategic partnerships with government and private sector entities. These partnerships would augment, not replace, foundational federal support, accelerate the science–to–action pipeline, and extend the impact of NCAR-developed capabilities.

An initial consortium would include the University of Colorado Boulder, the University of Oklahoma, and the University of Wyoming. Each institution contributes complementary capabilities that reinforce NCAR's scientific and operational strengths. Together, these institutions would form a focused partnership that strengthens NCAR’s ability to integrate theory, observations, modeling, and advanced computational capacity. By aligning NCAR’s core capabilities with the strengths of leading research universities and their associated federal laboratory partnerships, which could be readily expanded upon, the consortium would reinforce NCAR’s role as the nation’s premier community resource for atmospheric and Earth system science. Strengthening that role is essential if the United States is to regain global leadership in weather predication, build the world’s best forecasting enterprise.

This university-led consortium would also strengthen NCAR’s training mission by protecting and expanding the national talent pipeline in atmospheric and Earth system science through coordinated innovation in graduate education, postdoctoral training, shared research appointments, and experiential learning opportunities that connect universities, federal laboratories, and community modeling and observational capabilities. By linking university training programs directly to national scientific infrastructure, this framework would strengthen the pipeline of scientists and engineers needed to advance next-generation Earth system prediction.

At the same time, continuity of operations and workforce stability must remain central considerations. NCAR’s scientific and engineering workforce represents decades of accumulated expertise in modeling,high-performance computing, field operations, data assimilation, and community code stewardship.Structural disruptions that introduce prolonged uncertainty risk the loss of highly specialized personnel whose expertise cannot be rapidly replaced and whose departure would weaken national capability.

The most stable and forward-looking path is therefore to preserve NCAR as an independent, nonprofit, university-centered community resource while strengthening governance mechanisms and structured partnerships that expand national collaboration and increase scientific impact. A carefully designed university-led consortium provides a practical mechanism to achieve these

goals while maintaining the integrated capabilities that have made NCAR a cornerstone of the United States' Earth system science enterprise.

Conclusion

For more than sixty years, NCAR has served as the nation's central platform for atmospheric and Earthsystem science, enabling collaboration, shared infrastructure, and community access at a scale that no single institution or agency could sustain alone.

The strongest course is to preserve NCAR as a unified national center while strengthening its partnerships with leading research universities through a coordinated, university-centered nonprofit management model. This approach protects the integrated scientific capabilities that make NCAR uniquely valuable and creates new opportunities to advance national research capacity, innovation, and workforce development.

By leveraging the strength of our nation's co-located research infrastructure, maintaining NCAR as a unified community asset, and establishing a coordinated partnership of these leading research universities to support its durability, NSF can reinforce the nation's atmospheric research infrastructure and maximize the return on federal investment in weather, space weather, and Earth sciences. CU Boulder stands ready to partner with NSF and other leading research universities to help ensure that NCAR remains a national asset, responsive to national priorities, and positioned to serve the American people for decades to come.

Sincerely,

Dr. Justin Schwartz
Chancellor

Dr. Massimo Ruzzene
Senior Vice Chancellor for Research & Innovation
Dean of the Institutes

The CU-DCL is **signed exclusively by University of Colorado Boulder** representatives, leaving it entirely unclear whether this constitutes a joint proposal with the University of Wyoming and the University of Oklahoma. As reported by the Boulder Reporting Lab, 'A UCAR spokesperson said CU Boulder did not reach out to the consortium before submitting its proposal.' A rigorous and credible proposal would, at a minimum, include formal concurrence from all named partners and a consultation process with UCAR to ensure a stable transition. The absence of these elements suggests a lack of consensus and undermines the administrative integrity of this proposal.