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National Science Foundation
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Subj: Response to Request for Comment on "NSF Intent to Restructure Critical Weather Infrastructure"

To whom it may concern:

On behalf of the Coastal Flood Resilience Project (CFRP) we are writing to strongly oppose the dismantling of the National Center for Atmospheric Research (NCAR) and to urge you to maintain, and where appropriate expand, the mission of the Center and its funding.

The CFRP is a network of organizations working for stronger federal, state, and local programs to prepare for coastal storm flooding and rising sea levels along the coast of the United States. Given NCAR's work with other federal agencies to provide critical research and information to help avoid coastal flood losses and improve coastal resilience, CFRP is responding to the request for comment from the National Science Foundation (NSF) regarding the future of NCAR.

Coastal Communities at Risk of Storms and Rising Seas

The National Oceanic and Atmospheric Administration (NOAA) reports that disasters with impacts of over a billion dollars have increased since 1980. Of all these billion-dollar events, including wildfire, droughts, and floods, coastal hurricanes were the single biggest contributor to damages, accounting for 54 percent of all costs for a total hurricane cost of over $1.5 trillion. Hurricanes were also the single largest cause of deaths, accounting for over 40 percent of all deaths (i.e., 7,211 total deaths from 1980 to 2024, about 160 per year).

Looking forward, coastal storms will become more severe and cause more significant damage as a result of a warming climate. Climate change is causing an increase in the number of the strongest storms, which bring higher winds, more extensive coastal flooding, higher storm surges, and increased rainfall. The travel speed of intense storms is slowing down and storms are thus lingering and raining on a given place for longer, generating more damage and more flooding. Even as storms move more slowly, they intensify more rapidly, making their landfall harder to predict and more likely to result in major damage and loss of life.

Future coastal storms will drive storm surges that will reach further inland and cause more damage because they will ride on top of higher sea levels. NOAA has estimated that sea level along the U.S. coasts is likely to rise by an average of about 1.3 feet by 2050 in the "Intermediate" scenario. By the year 2100, NOAA projects that sea level rise along the U.S. coasts will average about 4 feet in the "Intermediate" scenario, while an average increase of over 7.2 feet is possible. Sea level rise in some regions could be higher.

More severe coastal storms and rising sea levels will bring flood waters to homes and businesses, but also threaten coastal ecosystems (e.g., beaches and wetlands) and major, critical infrastructure assets that provide essential services such as transportation, energy, water, and education. Critically, coastal wetlands serve as natural buffers that mitigate storm surge, reduce wave energy, and absorb inland floodwaters, yet these ecosystems are themselves threatened by rising seas and development pressures. The multiple dimensions of these coastal impacts will gradually reduce property values, increase insurance costs, undermine the financial health of property owners and communities, and diminish the capacity to recover from major storm events.

Coastal communities face economic, environmental, and social disruption on an unprecedented scale. In the short term, coastal communities can expect more "sunny day flooding" during high tides and larger surges and greater flooding during storms. In the longer term, all or parts of hundreds of coastal communities will face far more extensive flood damages than they currently experience. Many low-income and disadvantaged communities are among those in harm's way. Communities with fewer financial resources, including low-income households, renters, and smaller coastal cities, are most dependent on public forecasting and warning systems, and would bear the greatest burden of degraded infrastructure. The combination of more severe storms and rising seas is projected to result in potential losses of coastal property running into trillions of dollars.

These loss estimates, however, are based on the existing population along the coast, and are likely to rise further as new development of homes and supporting infrastructure occurs in risky coastal places in response to population increases. Today, the coastal counties along the U.S. coasts are home to over 100 million Americans. The population living right along the coast (i.e., the Low Elevation Coastal Zone or LECZ including places at elevations of 33 feet and lower) is expected to double by 2060 to about 44 million people.

NCAR Critical to Supporting Coastal Communities

NCAR's scientific research has significantly contributed to critical improvements in the understanding of coastal storms and improvements in weather forecasting. A 2010 study from the National Academies of Sciences, Engineering, and Medicine found that public weather forecasts and warnings deliver roughly $31.5 billion in annual economic benefits in the United States.

Hurricane forecasting provides a clear example of how NCAR research has contributed to securing the safety, and mitigating the economic losses, of coastal residents and businesses. For decades, NCAR scientists have worked to develop and refine instruments and methods to collect real-time hurricane observations and improve our understanding of storm behavior. By the 1980s, data and modeling advances emerging from NCAR research were being used operationally by NOAA, contributing to a roughly 20%–30% improvement in the accuracy of hurricane track forecasts compared to earlier decades.

NCAR continues to enhance forecasting for hurricanes, as well as their associated flood risks, through the Center's sophisticated flood risk model. Today, the model is used operationally by the National Weather Service in more than 3,800 locations serving 3 million people.

Closing

Dismantling NCAR, as proposed by NSF, would seriously weaken the nation's capacity to understand coastal storms and flood risks and undermine recent gains in disaster preparedness. Forecast improvements require long-term research, coordination, and evaluation. As presently structured, NCAR has proven essential to the broader effort to avoid the property damage and loss of life associated with coastal storms. NCAR's research also underpins the science needed to design and implement nature-based adaptation strategies, including wetland restoration, living shorelines, and green infrastructure that reduce flood risk while delivering ecological and economic co-benefits.

These functions and their magnitude and impact are not duplicative of any other effort and provide critical services that are best delivered by the current structure and management of NCAR at its campus in Boulder, Colorado. It is incumbent upon NSF to explain their reasoning for changing this structure, which performance metrics NCAR failed to deliver, and why a different model is needed. It is not the responsibility of the scientific, environmental, social services communities to propose alternatives to NSF when the current system is meeting our needs with enormous returns for taxpayers impacted by coastal flooding.

We strongly encourage you to maintain the institutional integrity of NCAR, and where appropriate, expand its mission and funding so that it can produce the research and information that are critical to the future of America's coastal communities.

Thank you for considering these comments.

Sincerely,

Organizations

Anthropocene Alliance
Healthy Schools Network
National Wildlife Federation

Ocean Defense Initiative
Surfrider Foundation
Union of Concerned Scientists
Urban Ocean Lab
Wetlands Watch

Individuals with their organizational affiliation

John Englander; Rising Seas Institute
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Jeff Peterson; author of *A New Coast: Strategies for Responding to Devastating Storms and Rising Seas*
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