

Program Information Sheet

Program Name

National Integrated Drought Information System (NIDIS)

Coping with Drought: Ecological Drought

Program Mission

The National Integrated Drought Information System (NIDIS), authorized in 2006, is a multi-agency partnership that coordinates drought monitoring, forecasting, and planning and information at national, state, and local levels across the country. The mission of NIDIS is to help the nation move to an increasingly proactive approach to understand and manage drought risks and impacts, and to improve long-term drought resilience. Since its inception (2006), and through two subsequent reauthorizations (2014, 2018), NIDIS has been working with various federal, state, local and tribal agencies as well as a network of researchers, academics, resource managers, and policymakers. This collaboration forms the basis for the regional Drought Early Warning Systems (DEWS). These systems are not simply in place to disseminate forecasts, but to encourage innovation by integrating new, locally relevant drought information and supporting the introduction of new technologies that detect and communicate drought risks and warnings.

The overarching goals of NIDIS, as defined by the public laws authorizing the program ([P.L. 109-430](#), [P.L. 113-86](#), and [P.L. 115-423](#)), related to this competition are to 1) provide effective drought early warning for the nation; 2) conduct research and monitoring activities to better understand length, severity and impacts of drought and the role of extreme weather events and climate variability in drought, 3) collect, integrate, and communicate information on key indicators and impacts of drought to inform timely drought assessments, 4) support improvements in seasonal, sub-seasonal, and low flow water prediction; and 5) provide timely data, information, and products that reflect watershed differences in drought conditions.

Ecological drought and drought impacts to ecosystem health are an emerging issue identified in consultation with the regional Drought Early Warning Systems (DEWS) and NIDIS would like to increase understanding of ecological drought processes and integrate that information into planning, preparedness, and response.

Program Authority

[Public Law 115-423](#) National Integrated Drought Information System Reauthorization Act of 2018.

Focus for FY2022

For FY2022, the Coping with Drought: Ecological Drought competition will be focused on research and tools to improve our ***understanding and management of drought risk in***

terrestrial and aquatic ecosystems to inform more deliberate and expanded decision-making that supports sustainable, healthy and resilient ecosystems.

[Note: There is a separate competition through the NIDIS FY2022 Coping with Drought: Building Tribal Drought Resilience competition. Please see the relevant Information Sheet for details.]

Funding for FY2022

Pending the availability of funds in FY2022, NIDIS anticipates a funding allocation of up to \$2.0 million.

Proposals may request funding of up to \$600,000 to be expended over two years in the form of Cooperative Agreements. A total of 6-7 projects may be funded.

Competition Information

Drought has traditionally been viewed in terms of its agricultural, hydrological, and socioeconomic impacts - this human-centric lens does not fully address the impacts to ecosystems, and the services they provide. In 2017, an [Ecological Drought Framework](#) was introduced that intentionally considers ecological, climatic and cultural dimensions as well. This Framework seeks to give decision makers additional intervention points, recognizing the interconnectedness of nature and people, for reducing drought vulnerability and avoiding cascading impacts. This ecosystem services based approach when considering trade-offs between human and ecosystem water needs may also help to identify drought policy and management strategies that are mutually beneficial.

For FY22, the Coping with Drought: Ecological Drought competition will be focused on research to **improve our understanding, early warning and management of drought risk in terrestrial and aquatic ecosystems** to inform more deliberate and expanded decision-making that supports sustainable, healthy and resilient ecosystems.

This competition builds on the foundation of the [USGS Climate Adaptation Science Center Ecological Drought Initiative](#), the NIDIS-CASC Ecological Drought webinar series (Spring 2021), and the NIDIS Regional DEWS Strategic Action Plans which defined research needs and ecological drought management challenges around the United States at national and regional scales. For the purposes of this competition, ecological drought is defined as an “episodic deficit in water availability that drives ecosystems beyond thresholds of vulnerability, impacts ecosystem services, and triggers feedback in natural and/or human systems” and ecologically available water is defined as “the amount of water that is ultimately available to ecosystems during a drought and that is influenced by a combination of natural and human-modified processes” ([Crausbay et al. 2017](#)).

NIDIS is interested in research that explores questions to include but not limited to:

Improving our ability to understand drought impacts to ecosystems and ecologically available water and integrating that information into decision-making

1. How does drought affect thresholds and tipping points of an ecosystem, and what factors lead to recovery, habitat loss or ecosystem transformations? What are the impacts of those changes on people and communities?

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2. What are effective approaches to assess and predict ecologically available water? Which indicator(s) is most useful?
 3. How do traditional measures of drought, such as precipitation and soil moisture, interact with human water use to affect ecologically available water, and the structure and function of ecosystems? How should measures of drought be updated to better reflect ecologically available water?
 4. Future droughts under conditions of climate change are expected to be more frequent, more severe, and of longer duration. How will those droughts influence ecosystems?

Integrating ecologically-relevant information to support drought monitoring, planning and action

5. What information (tools, indicators, observations, models, etc.) is needed to better incorporate ecological drought into decisions at different time scales?
6. How can tailored eco-drought metrics that integrate traditional drought indicators with ecosystem characteristics be utilized as input into drought monitoring and natural resource management efforts? What are the current limitations on incorporating ecological drought indicators into traditional drought monitoring?
7. What are science-based approaches and considerations for incorporating ecosystem drought vulnerability into droughts, water and land use planning?
8. What information is needed to develop natural resource management strategies for mitigating drought risk based on previous droughts and future trends, including within the context of multiple extremes?
9. What are the socio-economic impacts of ecological drought (e.g. ecosystem services, recreation, tourism, fisheries), and how can that information be integrated into decision making?

Please note that proposals may address one or more of these and/or other related research questions, and are not expected to/should not address them all.

Guidelines for Applicants

Project funds will be awarded as Cooperative Agreements, thus ensuring a working partnership and substantial interaction between the Project PIs and the NIDIS Program, NOAA scientists, and other relevant staff. Projects will be expected to submit annual reports and respond to periodic data and information requests including quarterly calls to ensure co-production.

Proposals will:

- Include partners and decision-makers from relevant sectors and communities (across all levels of government). These partners should be part of an integrated project team that will contribute subject matter expertise and/or who are the beneficiaries of the results of the proposed research to ensure the results are assimilated, utilized, and enhance planning, early warning, response and mitigation within the NIDIS DEWS after the completion of the project.
- Clearly demonstrate collaboration and partnership that will take place within the project team. This may include representatives from the public and private sectors; academia; local, regional, tribal, and federal governmental entities; non-governmental organizations (NGOs); environmental groups; citizen groups, etc.

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- Demonstrate relevance to the NIDIS national and regional priorities and clearly state how outcomes can be incorporated into a [national and/or regional Drought Early Warning System\(s\)](#).
 - Demonstrate support of diversity, equity, inclusion, and environmental justice in their proposals, not only through the required statement but in their project teams and in engagement with partners where appropriate through the proposed work.

Proposal may:

- Demonstrate work that complements or builds upon other funding sources.
- Demonstrate external contributions (e.g., in-kind contributions and/or funding) to be leveraged with these federal research funds, though there are no match or cost-share requirements.

Additional Considerations:

- Research that provides concrete applications to planning and decision making are preferred. This can include drought and water management, as well as natural resource management.
- Preference will be given to those proposals that focus on natural systems (e.g. freshwater, coastal, wetland, grasslands, rangeland, forest ecosystems, and/or aquaculture (coastal/freshwater)) and shall avoid well-studied systems such as intensive and industrial agriculture systems.
- Applicants shall avoid single species-specific projects
- We encourage the consideration of future trends (climate change, land use, population) where applicable to the research questions.
- Applicants are encouraged to be aware and consider integration of research results into regional Drought Early Warning Systems, where appropriate. The Strategic Actions Plans for each regional DEWS are available on the DEWS pages which can be found through <https://www.drought.gov/dews>.
- Investigators are strongly encouraged to submit an LOI prior to developing and submitting a full proposal using the [FY22 CWD LOI submission form](#). Investigators unable to submit via the form should email their LOI to britt.parker@noaa.gov. If you email your LOI you will receive confirmation of receipt, if you do not please follow-up.

Additional General Guidelines for Applicants

Successful applicants who accept a NOAA award under this solicitation will be bound by the Department of Commerce Financial Assistance Standard Terms and Conditions. This document will be provided in the award package in NOAA's Grants Online system at <http://www.ago.noaa.gov> and at <http://go.usa.gov/hKbj>. Specifically, pursuant to 2 CFR §200.315(d)(1), NOAA will have the right to obtain, reproduce, publish, or otherwise use all data produced under an award under this solicitation. Additionally, pursuant to 2 CFR §200.315(b), NOAA will have a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use any copyrightable work developed under this award for Federal purposes. Federal purposes under this solicitation include collecting and integrating information on the key indicators of drought in order to make usable, reliable, and timely drought forecasts and assessments of drought, including assessments of the severity of drought conditions and impacts; and communicating those drought forecasts, drought

conditions, and drought impacts to stakeholders including the public. (P.L. 109-430, P.L. 113-86, and P.L. 115-423).

All products, tools and deliverables produced via this competition will reside in the open access / open source domain, freely available to the public for the benefit of all. In addition, where applicable, products, tools and results will be hosted on the U.S. Drought Portal (www.drought.gov), any documents are required to be 508 compliant, and any data or information required to replicate the deliverable should be made available to NIDIS.

This competition lead will be holding an informational webinar on Wednesday 14, 2021 at 3pm ET/2pm CT/1pm MT/12pm PT to discuss the background of the programs and expectations for this competition, as well as to address questions related to the development and submission of letters of intent and proposals. Please register [here](#) or check the [Climate Program Office Grants website](#) for registration information and a recording of the webinar if you cannot attend.

The National Integrated Drought Information System (NIDIS) Coping with Drought will be managed by Britt Parker at britt.parker@noaa.gov.

Administrative questions regarding the Federal Funding Opportunity (e.g. proposal formatting or submission guidelines) should be directed to Diane Brown at diane.brown@noaa.gov.