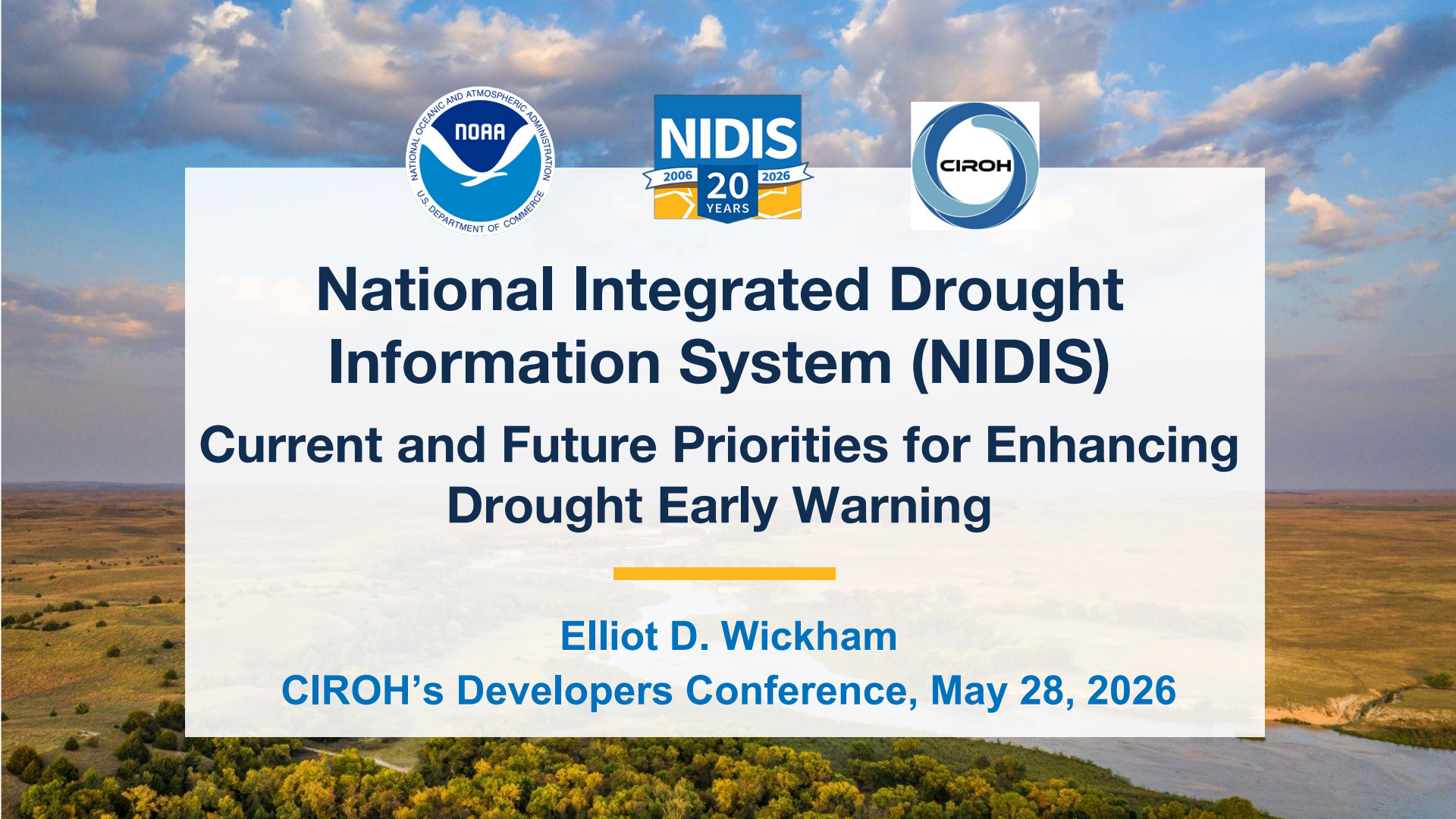


National Integrated Drought Information System (NIDIS)

Current and Future Priorities for Enhancing Drought Early Warning

Elliot D. Wickham

CIROH's Developers Conference, May 28, 2026

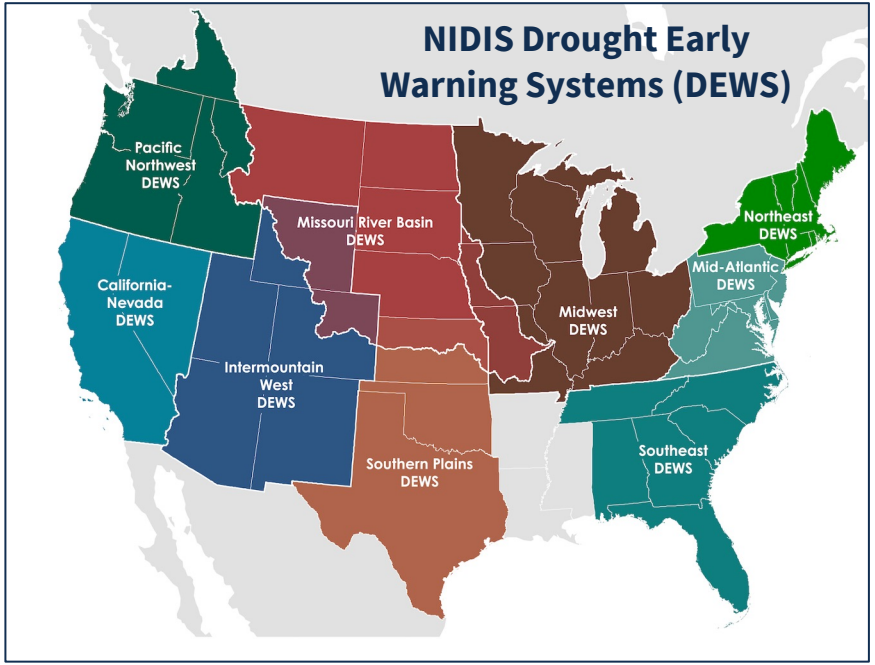
National Integrated Drought Information System (NIDIS)

NIDIS is a multi-agency partnership that coordinates drought monitoring, forecasting, planning, and information across the country.

How do we do this work?

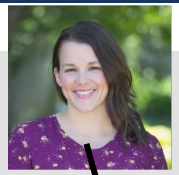
- Coordinating Regional Drought Early Warning Systems
- Delivering drought information
- Improving drought prediction and forecasting
- Supporting drought planning and preparedness
- Strengthening collaboration and coordination
- Leading the U.S. Drought Portal: www.drought.gov

Enable the Nation to move **from a reactive to a more proactive** approach to managing drought risks and impacts.



NIDIS Regional Drought Information Coordinators

Jason Gerlich



Molly Woloszyn

Crystal Stiles (acting)

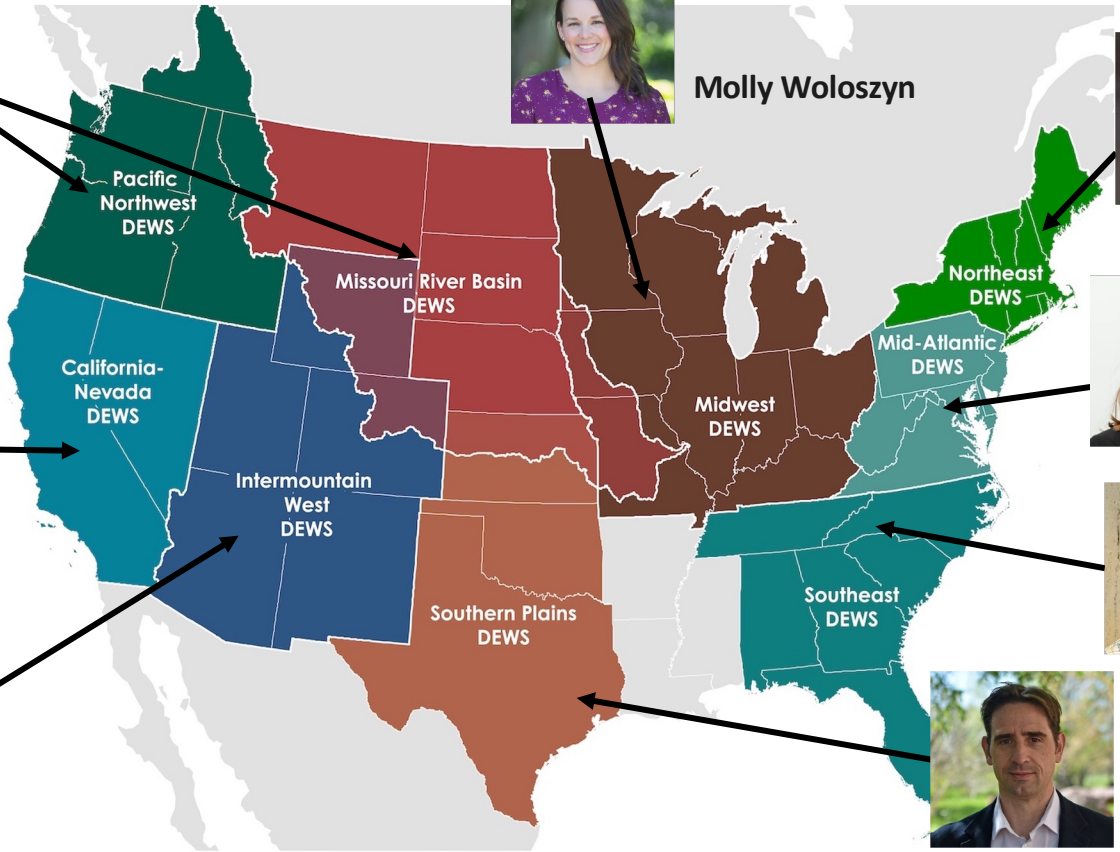
Amanda Sheffield

Elizabeth Ossowski (acting)

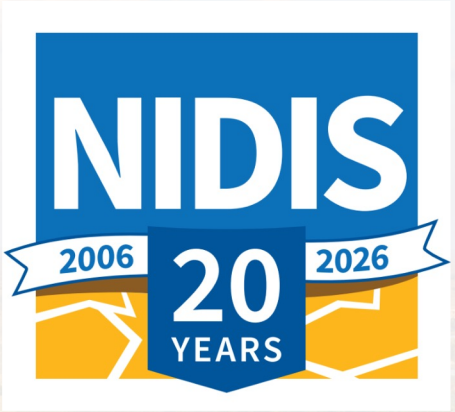
Elliot Wickham

Meredith Muth (acting)

Joel Lisonbee



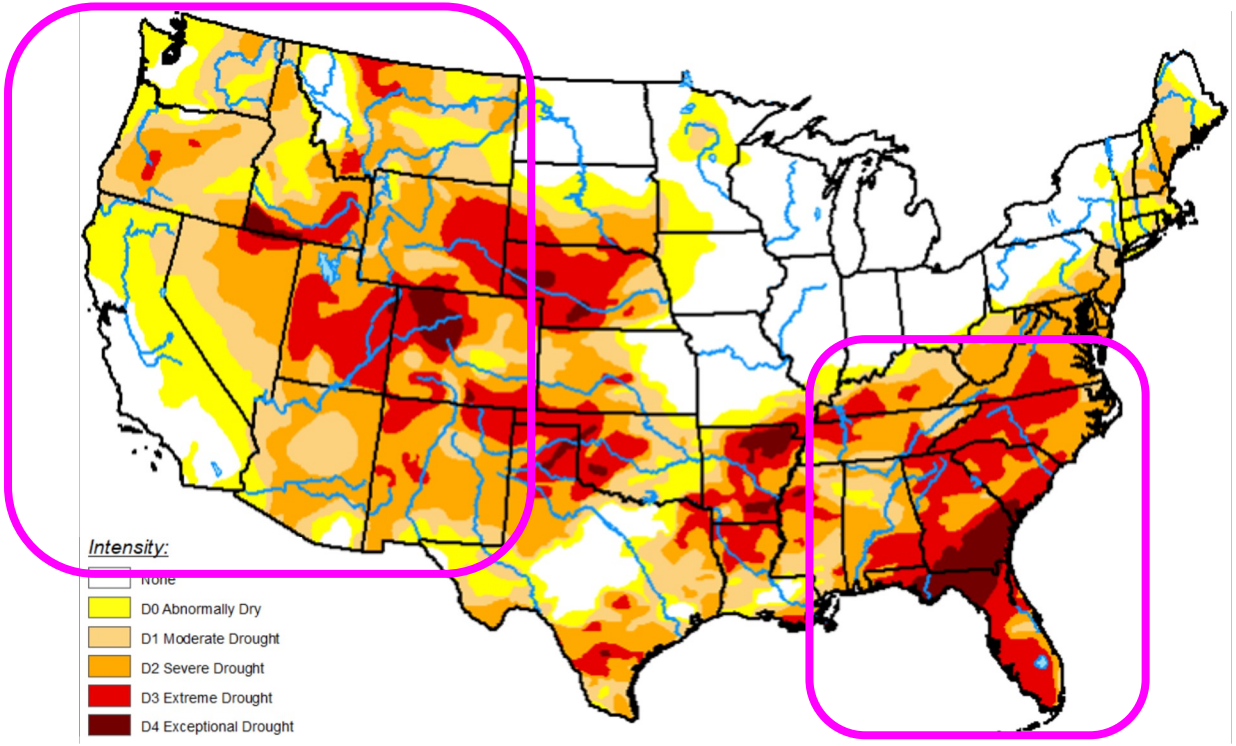
NIDIS at 20



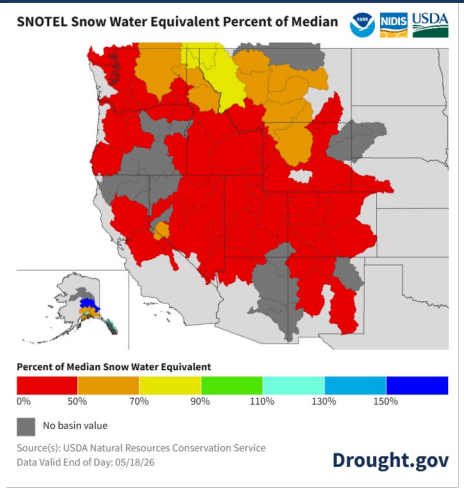
- Drought Involvement
- Priorities
- Current Projects
- Growth

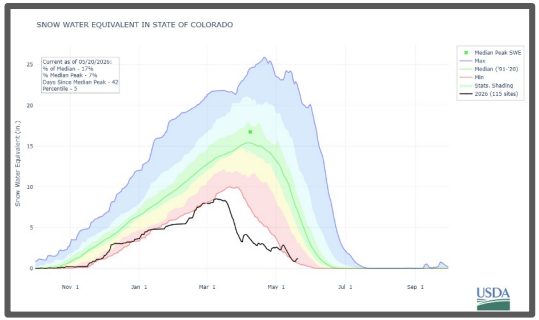
Current Droughts

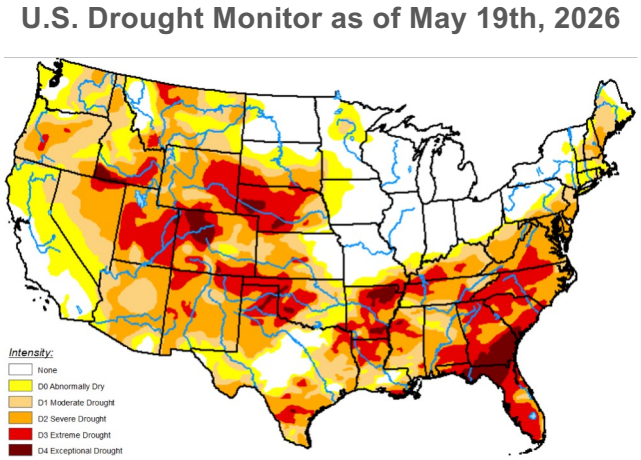
U.S. Drought Monitor as of May 19th, 2026



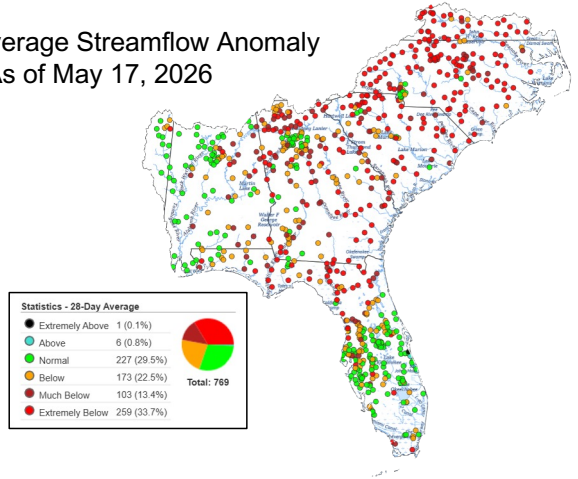
Current Droughts



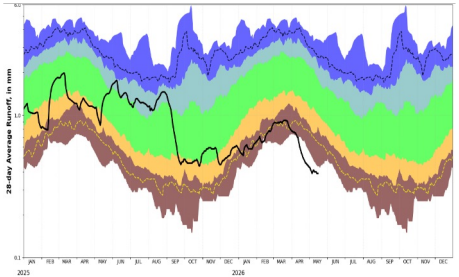




28-Day Average Streamflow Anomaly
As of May 17, 2026



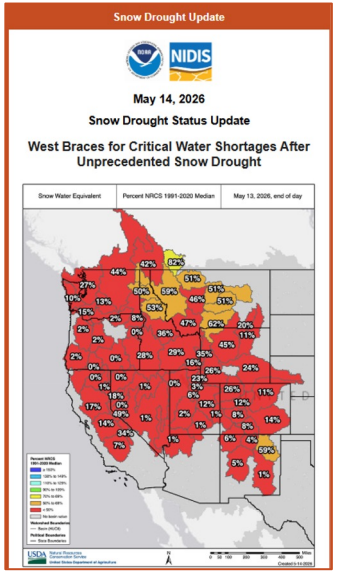
28-day Duration hydrograph for NC

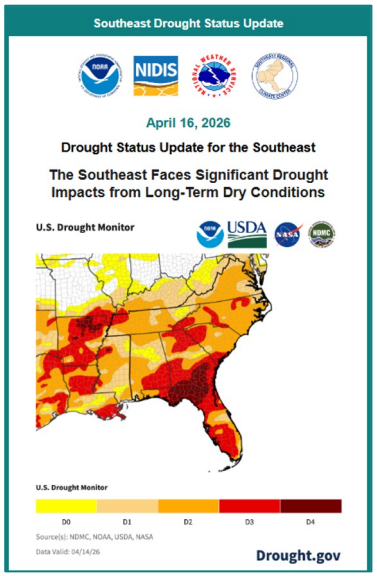


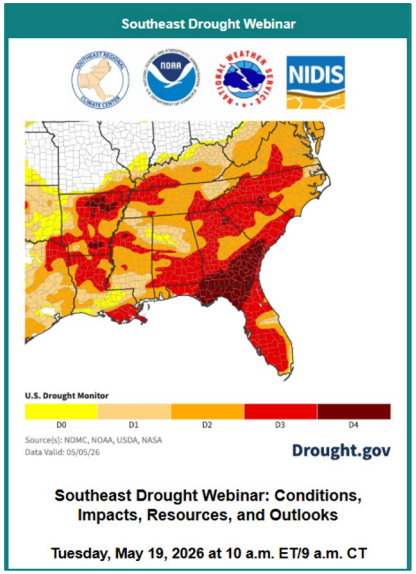
Note: *Following the decommissioning of USGS WaterWatch, historical maps are no longer available. The current images were generated using USGS streamflow data, and the streamflow anomaly data presented here are provisional.*

NIDIS in Action:

Coordinating with partners about sectoral impacts across the regions for successful response





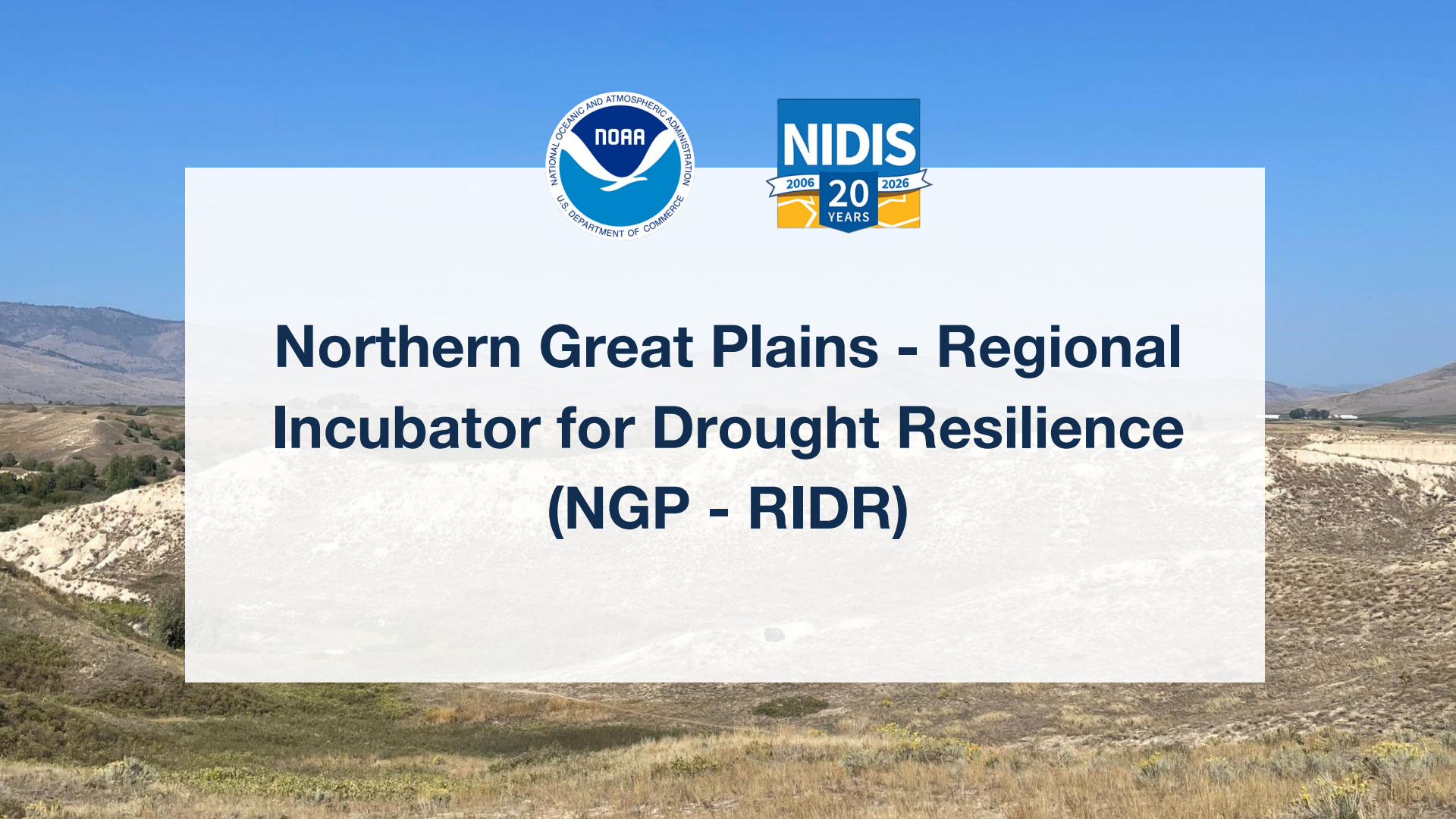


A partnership of federal, state, and academic partners covering:

- Current conditions
- Sectoral impacts
- State & regional responses
- Future conditions & uncertainty

NIDIS at 20: Looking Forward

- **Advancing Research** to further understand the complexity of drought - e.g. hydrologic, agricultural, ecological, snow, flash, demand
- **Monitoring and Contextualizing Drought** to address systemic risks across timescales – note: so many gaps in monitoring, how do we target the most important aspects to monitor
- **Advancing Preparedness: Tools and Resources**
  - Building tools and resources to manage drought risk and water shortages in the future under different drought scenarios
  - Anticipating & addressing the cascading impacts of severe drought such wild/urban fires
- **Water Whiplash: Too Much, Too Little**
  - Can our communities and economies manage for increasing and rapid changes between having too much water (flooding) and having too little water (drought)?
  - If droughts are changing, how are those changes impacting their connection to other compounding hazards, such as heat events?
- **Broadening the network of partners to sustain and expand capability**



Northern Great Plains - Regional Incubator for Drought Resilience (NGP - RIDR)

NGP - RIDR Project (background)

2011 - Floods Across the Upper and Lower Missouri River Basin - **$2 billion** in loss and damages

2012 - Intense Summertime **Drought** Hits the Region

2014 - Missouri River Basin **Drought Early Warning System** Launched

2017 - Drought Across North Dakota, South Dakota, and Montana - **$3.3 billion** estimated cost

2018 - The **National Coordinated Soil Moisture Monitoring Network** Congressionally Mandated

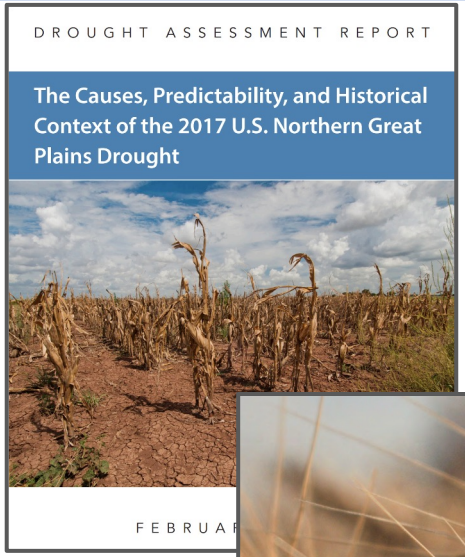
2019 - Floods Across Upper and Lower Missouri River Basin - **$2.9 billion** in losses and damages

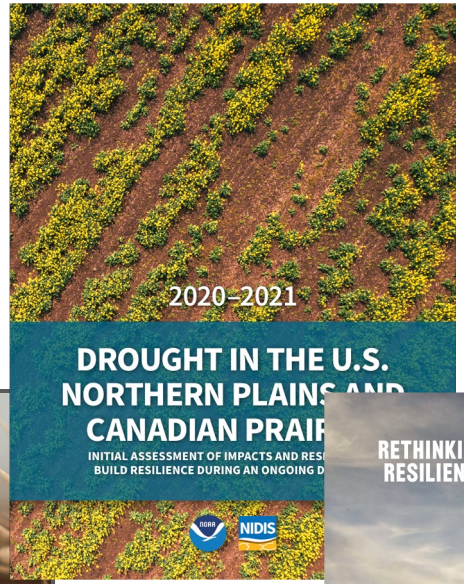
2020-2021 - Drought Across North Dakota, South Dakota, Montana, and Wyoming

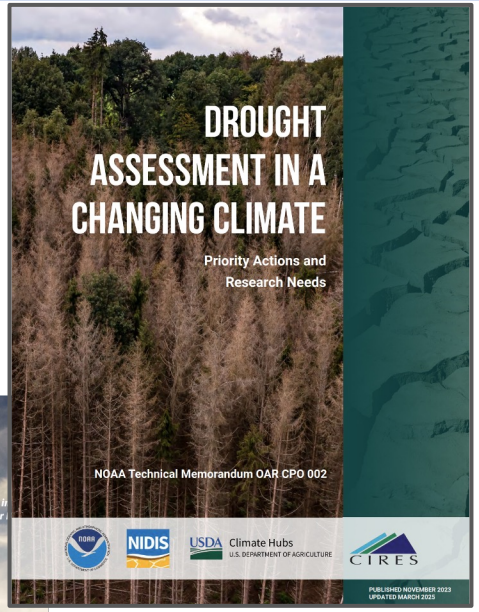
2021 - The Infrastructure, Investment, and Jobs Act passes, launching the **UMRB Mesonet Buildout**

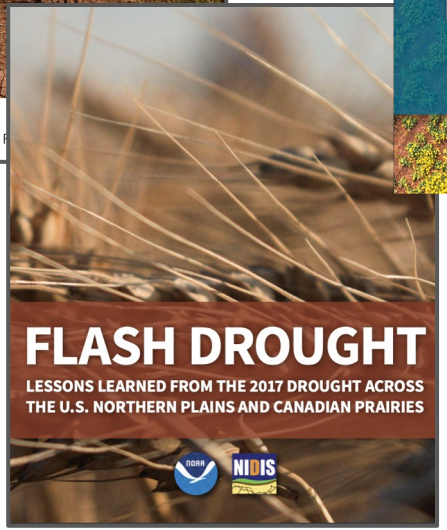
2025 - Phase 1 of the **Northern Great Plains Regional Incubator for Drought Resiliency** is Funded by NSF

NGP - RIDR Project (background)









NIDIS at 20: Northern Great Plains - RIDR Project

Goal: Bring together state climate offices, mesonets, agencies, tribes and businesses in the NGP to build a more comprehensive and modern drought assessment, coordination, and innovation ecosystem.

Solution 1: Regional Drought Assessment Framework

Solution 2: Next Generation Total Water Balance Drought Monitoring

Solution 3: Integrated Regional Drought Data Services

Solution 4: Risk, Adaptation, and Drought Non-stationarity

Solution 5: Tribal and Rural Drought Workforce Development

U.S. National Science Foundation
Award 2519681

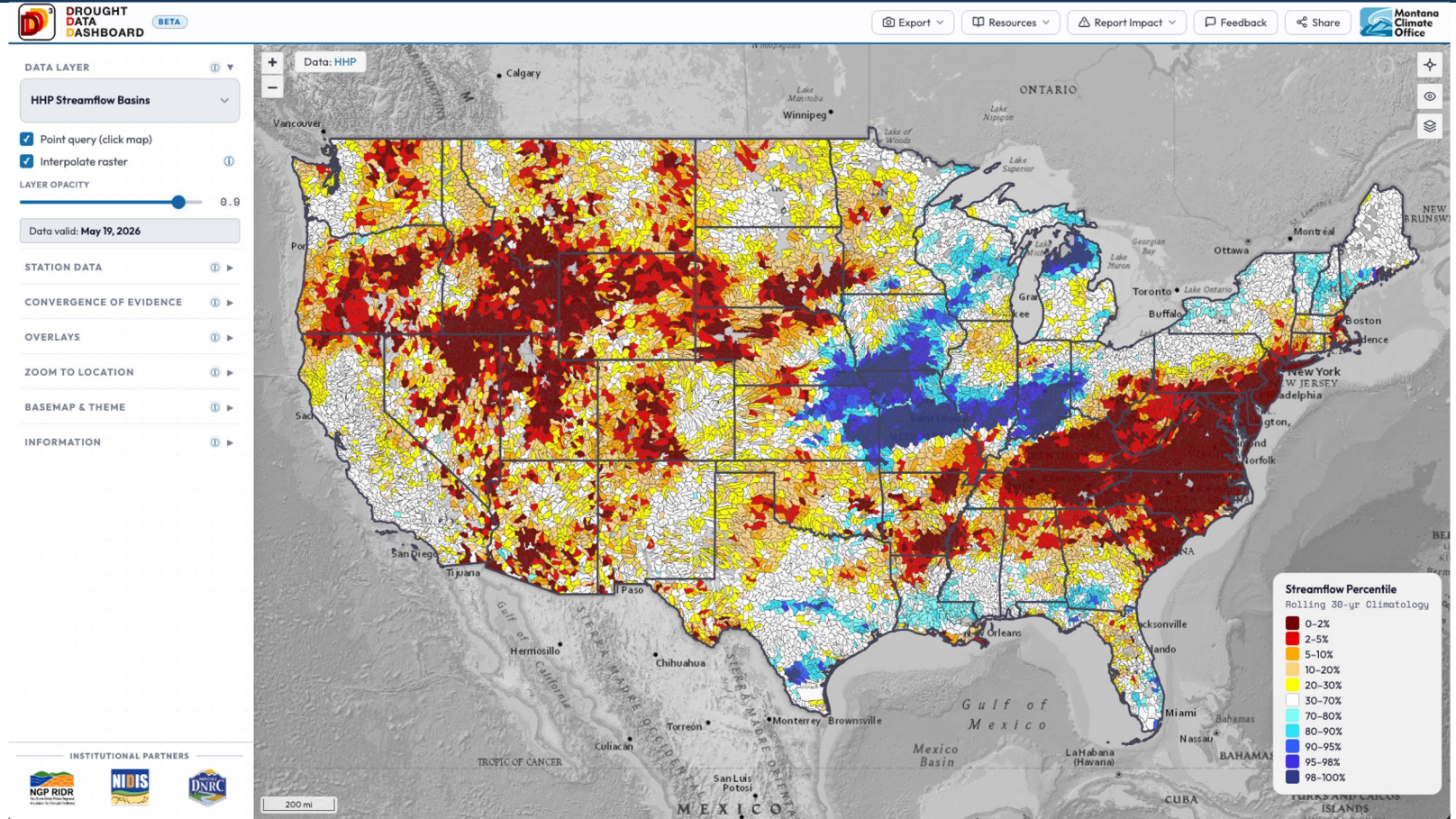
NGP RIDR

Northern Great Plains
Regional Incubator for Drought Resiliency

Research to Action

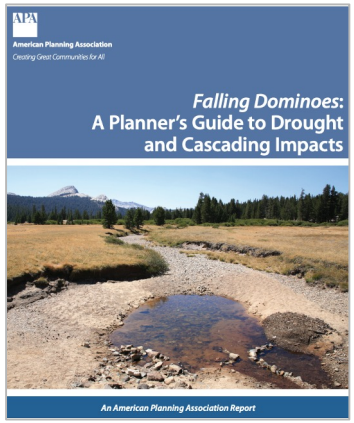
www.ngp-ridr.org

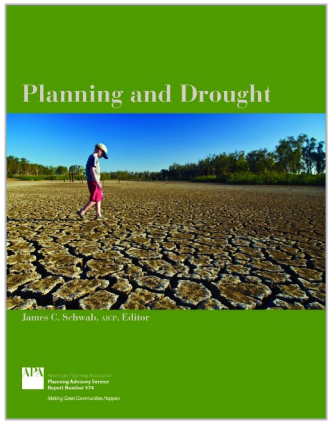
Drought Data Dashboard: Foundation for Solution 3 Integrated Regional Data Services

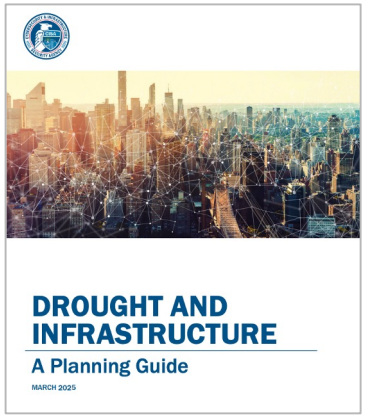


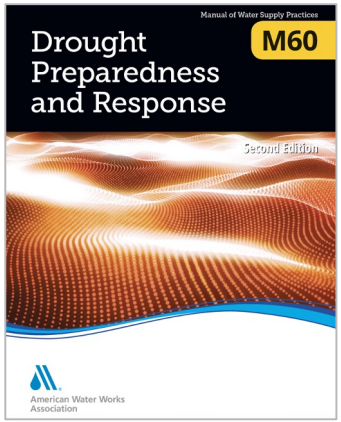
The Drought Planning Platform (DPP)

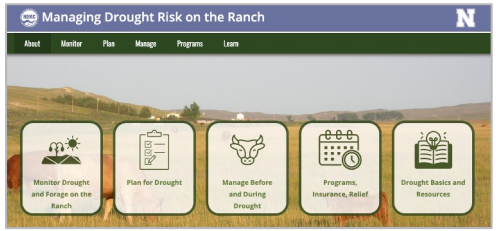
Why Is a Drought Planning Platform Needed?











Guidance for drought planning is spread out across many organizations and not all communities have resources or expertise to develop a scientifically rigorous and comprehensive drought plan

Drought Plans Improve Resilience and Reduce Risk

A drought plan is a written risk management strategy and decision making framework to reduce drought impacts

Moves from reactive to proactive

Transforms reactive emergency measures into a **proactive, structured strategic 'playbook'** to safeguard essential water supplies while minimizing economic disruption

Leads to tangible and beneficial outcomes

Improved water conservation through a better informed public and water users

Improved infrastructure through the identification of vulnerabilities and qualification for state/federal project assistance

Addresses both response and preparedness

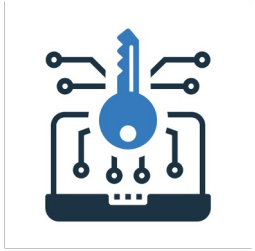
Comprehensive plan answers: how to **detect** drought early, how it will **impact** the community, and how to **mitigate** those impacts

A One-Stop Drought Planning Federal Resource Hub

The Drought Planning Platform will be a public-facing federal resource hub that provides technical assistance and guidance for drought planning and preparedness

Information for drought planning in a single, public platform, gathering information from across multiple federal and state agencies

Providing tailored guidance on **locally appropriate** drought indicators, impacts, and vulnerabilities



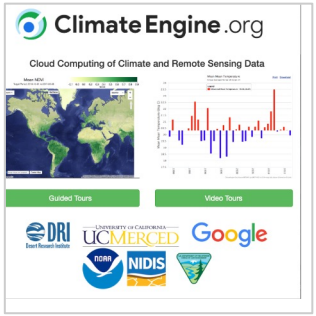
Applying **innovative technologies including AI and Large Language Models** to rapidly deliver customized information

Phase 1 in **Arizona, Colorado, New Mexico, and Utah;** then expand to Western U.S.

The Drought Planning Platform Is Being Designed by a Diverse Interdisciplinary Team

Drought.gov
National Integrated Drought Information System

U.S. Department of the Interior
Bureau of Reclamation
WaterSMART
WaterSMART Program



Argonne NATIONAL LABORATORY

INSTITUTE ON THE ENVIRONMENT
UNIVERSITY OF MINNESOTA

Internet of Water COALITION

CENTER FOR GEOSPATIAL SOLUTIONS

Natural Hazards Center
UNIVERSITY OF COLORADO BOULDER

FORRESTER

NASA

USGS
science for a changing world

Data scientists specializing on drought, water and climate information

Social scientists specializing on interpreting and visualizing data

Website interface design experts specializing on customer experience

The DPP Is Being Organized By Steps a User Takes ('User Journey') to Develop a Drought Plan

Getting Started
Where do I start in developing a plan?

Understanding Drought Risk and Vulnerability
How will drought affect us?

Developing a Drought Monitoring Framework
How will we recognize drought in the early stages?

Identifying Actions During and Before a Drought
How can we protect ourselves from the next drought?

Keeping the Plan Relevant
How do I implement and keep the plan relevant?

Foundation for Planning Process

- ☐ Organize a Leadership team
- ☐ Develop an Organizational Structure
- ☐ Identify key Roles and Functions

Outreach and Engagement

- ☐ Learn the Basics
- ☐ Plan your Approach

Historical Drought and Impact Assessment

- ☐ Document historical droughts
- ☐ Identify impacts

Assessing Current and Future Drought Vulnerability

- ☐ Understand Drought Risk and Vulnerability
- ☐ Explore Assessment Options
- ☐ Conduct your own Assessment

Drought Monitoring

- ☐ Establish Your Monitoring Team
- ☐ Choose Your Indicators and Indices

Drought Triggers & Stages

- ☐ Select Drought Stages
- ☐ Select Triggers and Thresholds
- ☐ Communicate Drought Conditions

Drought Mitigation Actions

- ☐ Identify and Prioritize Mitigation Actions
- ☐ Engage Stakeholders

Drought Response Actions

- ☐ Identify and Prioritize Response Actions
- ☐ Link Response Actions to Drought Stages
- ☐ Communicate Drought Response

Drought Plan Implementation

- ☐ Update and Evaluate the Plan
- ☐ Build an Educational Program
- ☐ Integrate Plans and Actions

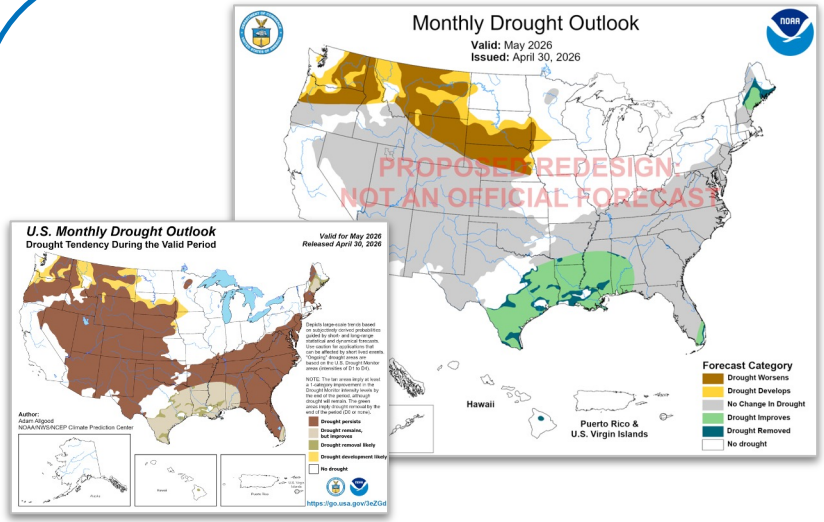
Examples of Who Is Expected to Use the Platform

Persona Profile Overview

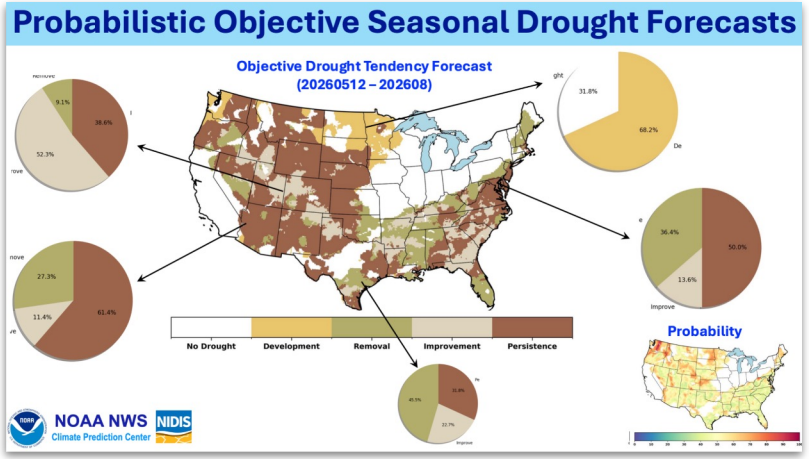
Persona Profile	Details	
Small City/Town	• **Smaller** municipal setting/community or organization, limited staff and technical capability • **Limited staff** and **resources** for drought planning, but also for water infrastructure • Usually focused on **municipal water supply** • **Newer** to drought planning and acquiring funding; likely outsources for plan development • Some familiarity with water supply data and issues • Spends **less than 25%** of their time dealing with drought planning	
Water Delivery and Agriculture	• Works in entities with decades of operational experience; **medium** sized teams with high expertise/experience • More experienced irrigation district managers or engineers • Focus is on **water allocation** and **delivery**, infrastructure (canals, diversion gates, pump stations) and seasonal operations in rural areas for **agriculture users, municipalities, and tribal partners** • Manage irrigation systems with **limited or no storage**, relying on real-time hydrology and return flows • Regularly **communicate** with farmers, ranchers, and tribal entities to build trust • Often **outsource highly technical elements** for plan development • Spends 50% of time on drought planning during irrigation season and ~30% year round	
Regional/ Complex Water District	• **Large**, complex organization with regional responsibilities; staff includes engineers, planners, and data analysts • Oversees water delivery across multiple municipalities and sectors: mixed water use; over 500,000 residents served • Balances **short-term operational needs** with **long-term planning** horizons (20–50 years), often using scenario modeling and paleohydrology to inform decisions • Leads **regional coordination** and buy-in efforts; • **Least likely to outsource** any elements for grant/plan development • Drought planning is a **core function**; spends more than 25% of their time	

Improving NOAA Climate Prediction Center Drought Outlook Products and Services

Improving NOAA Climate Prediction Center Drought Outlook Products



Improve the understandability and usability of the current and new outlooks.



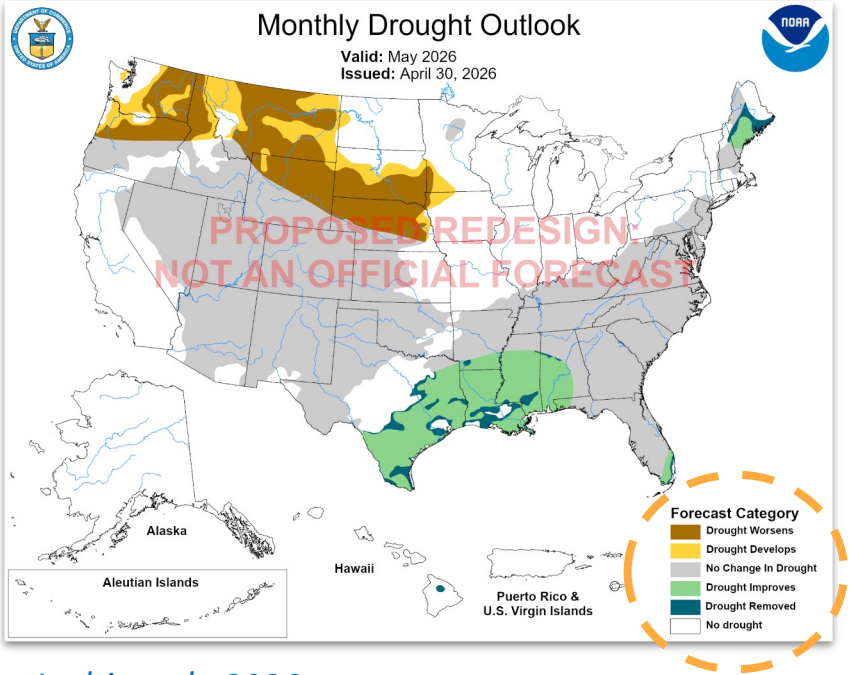
Develop new probabilistic drought outlooks - Seasonal, Monthly, and Flash.

Communication and Visualization of Drought Information

Using empirical social science to advance drought decision support tools

DARTS MODEL

- **Diagnosing** visualizations
- **Assessing** product goals, uses, and needs
- **Redesigning** product to meet goals and needs
- **Testing** and comparing the effects of design changes
- **Synthesizing** and sharing results with partners and stakeholders



Joshi et al., 2026

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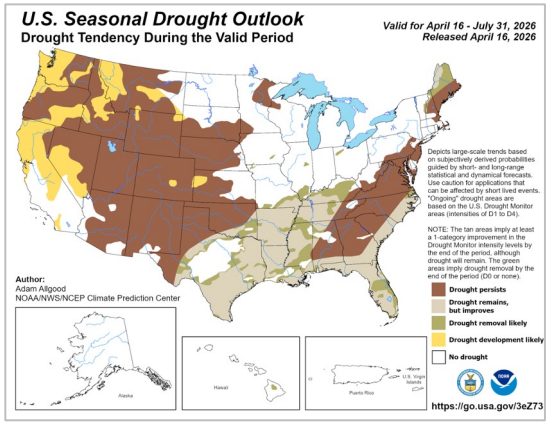
Driven to Discover℠

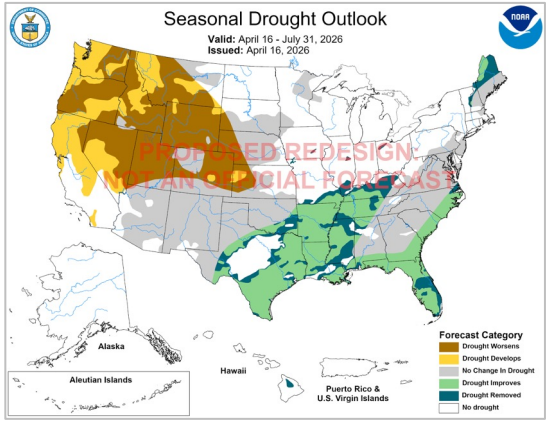
Proposed Drought Outlook Redesign - Public Comment Open

Find more information and provide comments on the proposed design!

Current Outlooks



Proposed Redesigned



Research to operations

Next project phase includes CIROH

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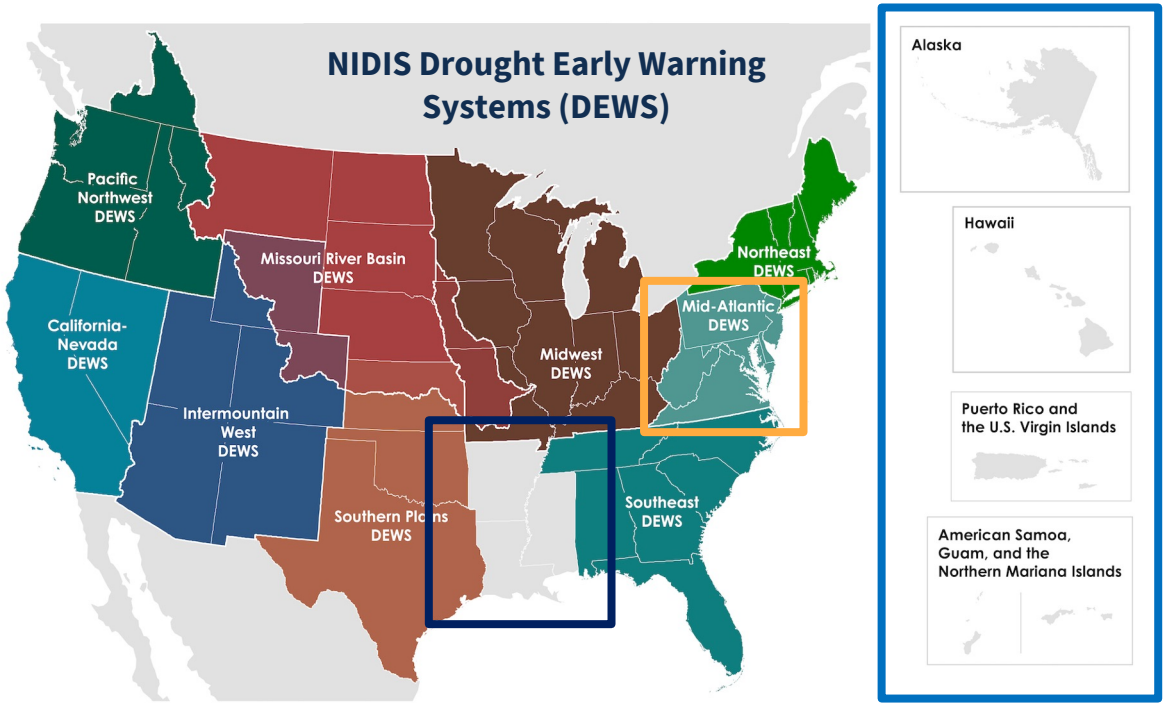
Expanding Regional DEWS for National Coverage

Filling in the DEWS coverage Gaps



April 2026:
Official formation of Mid-Atlantic DEWS

2026-2027:
Forming “Lower Mississippi DEWS”

Next (2027-2028):
Forming DEWS in OCONUS areas

Thank You

Elliot D. Wickham

Elliot.wickham@noaa.gov

Sign up for NIDIS information

www.drought.gov

National Integrated Drought Information System

@NOAADrought