

The National Drought Mitigation Center: Drought Science. Planning Sense.

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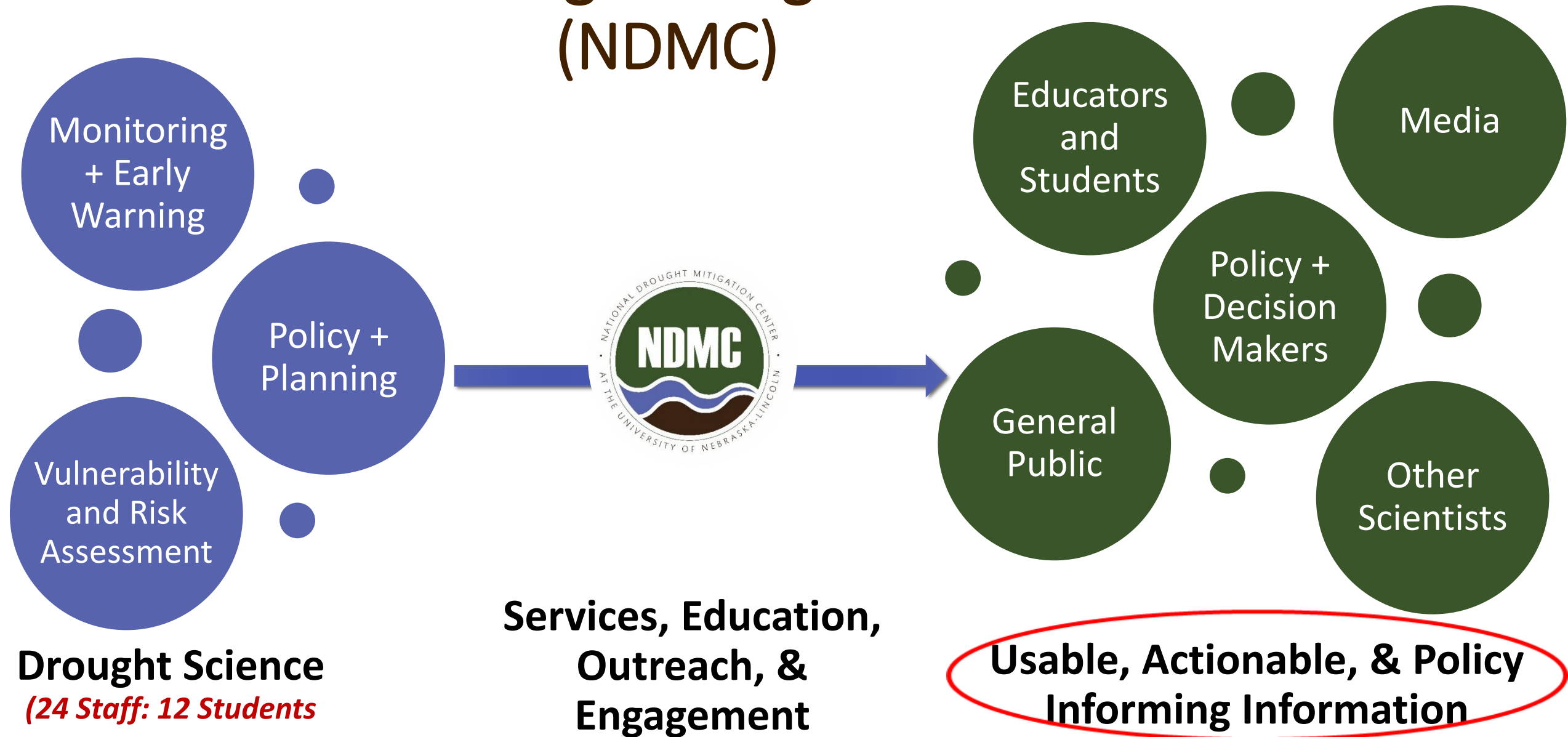


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MITIGATION CENTER
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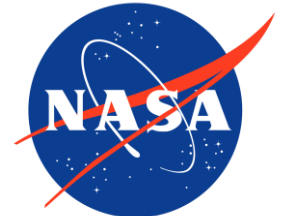
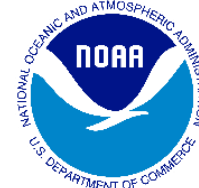
Western States Water Council Water Resources Committee
Courtyard Marriott, Lincoln, NE

April 24, 2025

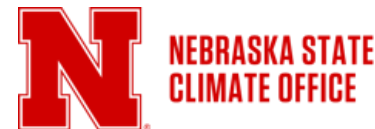
National Drought Mitigation Center (NDMC)



Drought Science. Planning Sense.



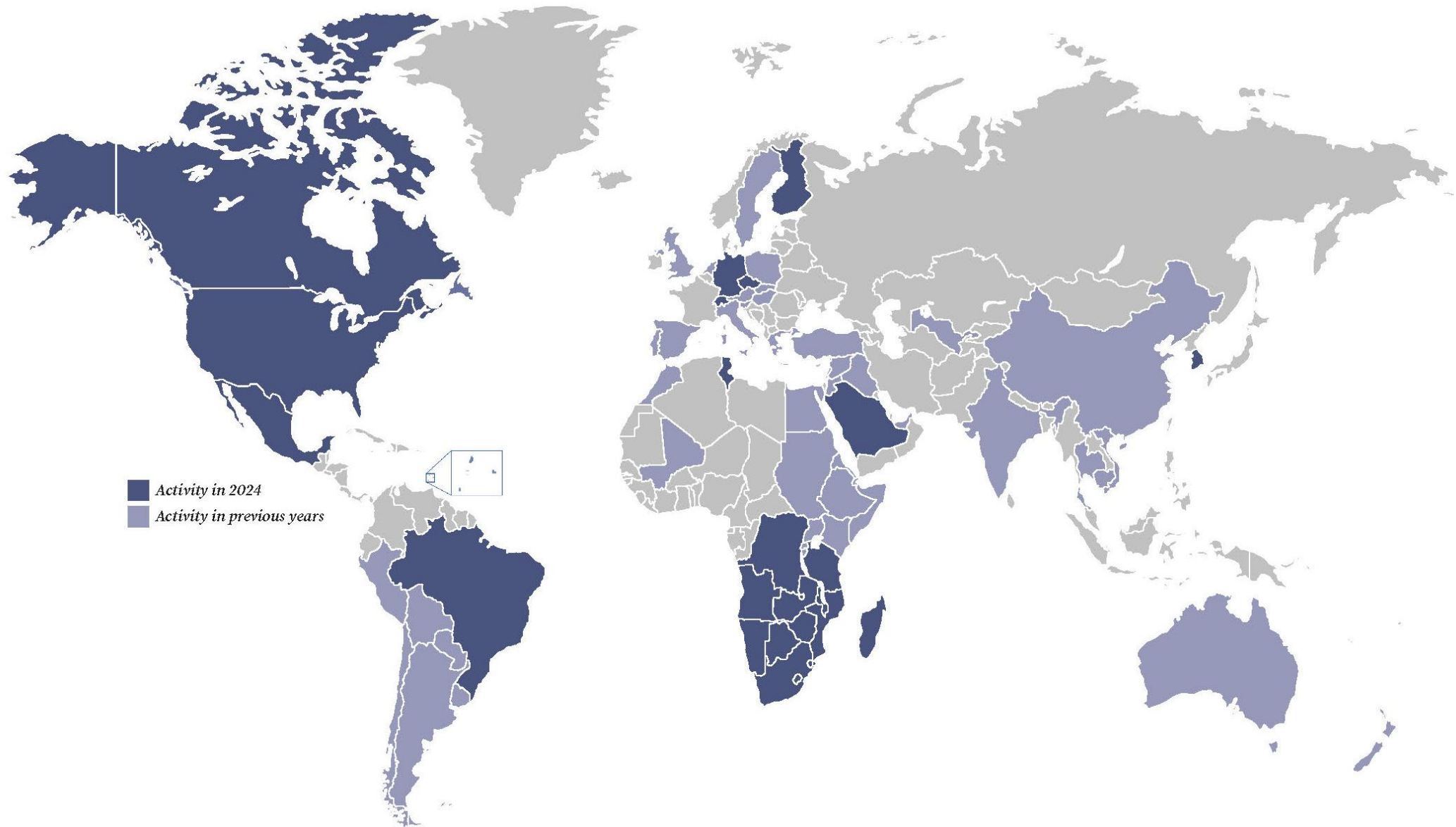
OUR PARTNERS



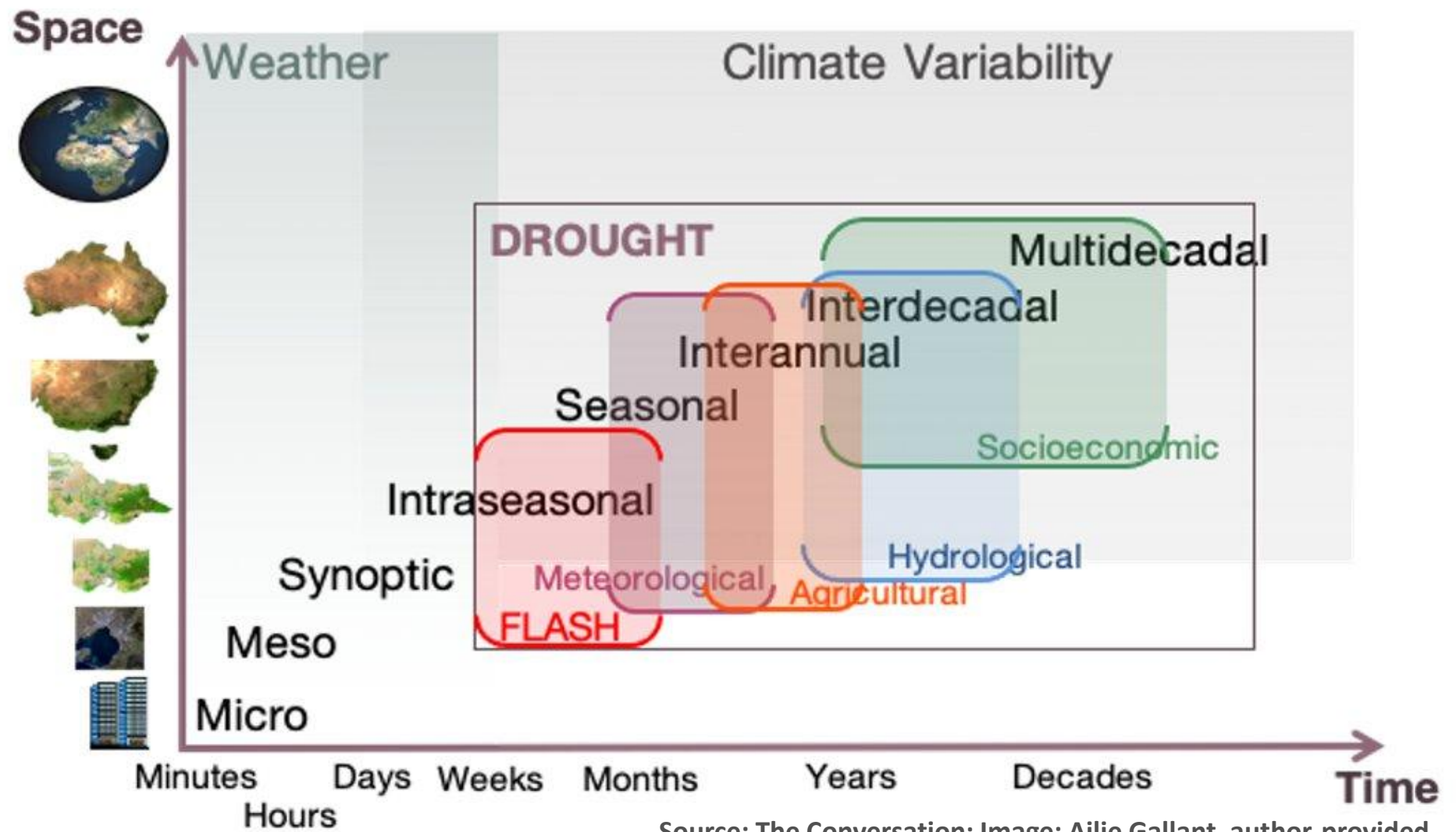
Global Footprint: Where we've worked recently



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Past/Prior efforts w/: UNCCD, USDA-FAS, World Bank + USAID

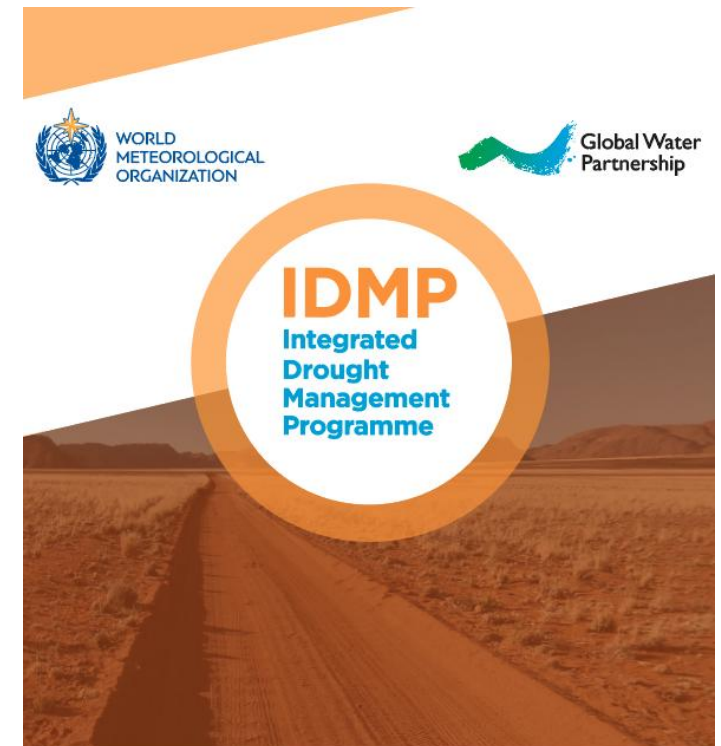


Source: The Conversation; Image: Ailie Gallant, author-provided

Droughts span an enormous range of temporal and spatial scales...not at all unlike the anticipated behavior of climate change...*but on the shorter scale, flash droughts reinforce the need to address drought as a systemic risk given the implications of rapid drought intensification.* (Otkin et al. 2022, BAMS)

Drought Risk Management: The Three Pillars

- Overall purpose: preparedness planning based on these ***pillars of risk reduction*** leads to successful drought policy



How We Do It: Planning

Planning Tools

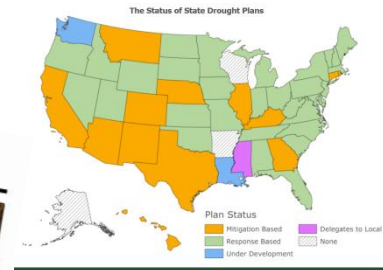
- Planning at *all scales*
- Planning should start local and involve the *“locals”*
- Planning is a *“living”* process



Nation



Basin



Tribal/
State

Community

Individual



Drought Early Warning Systems

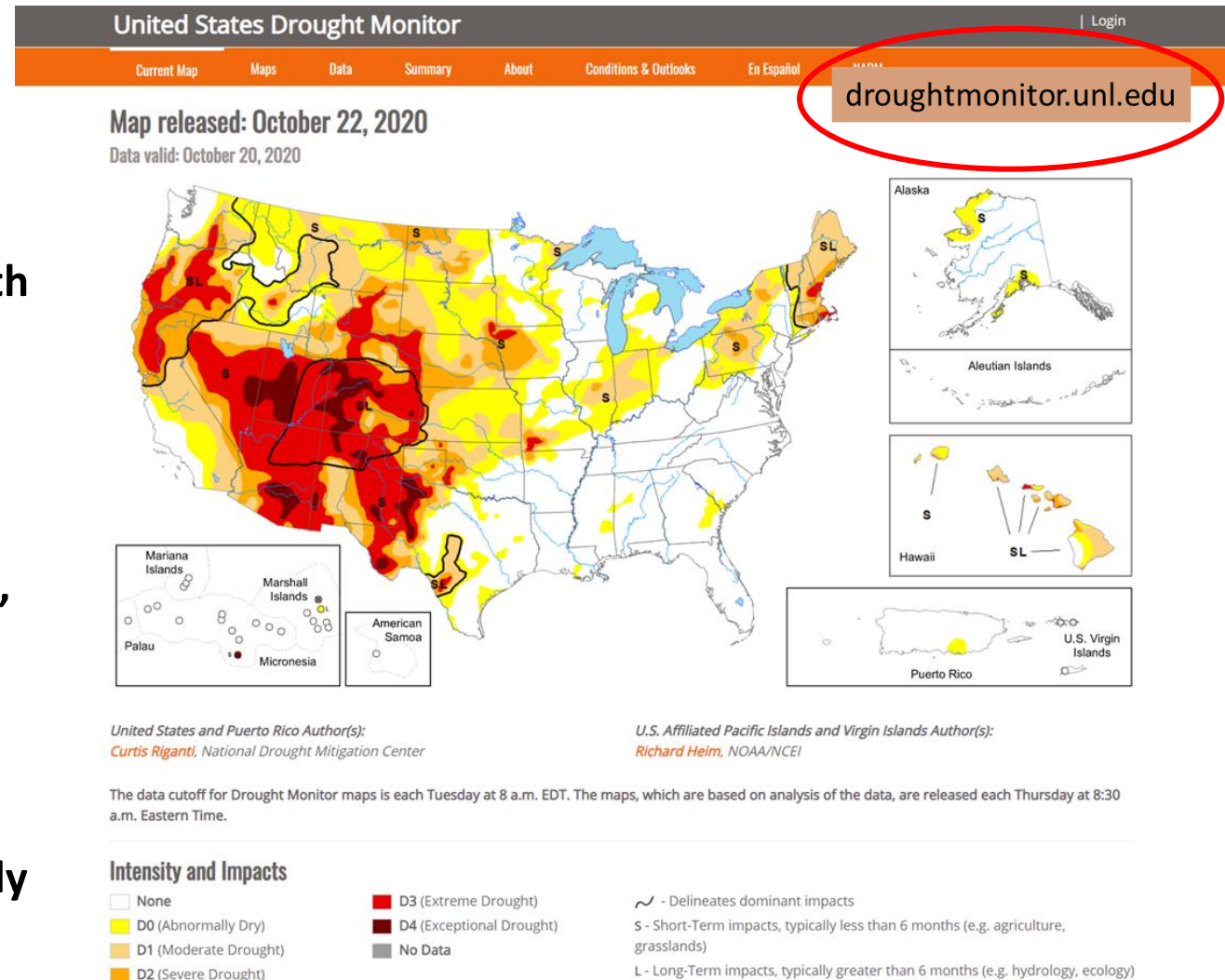
- Utilize **both monitoring and forecast**/outlook products
- Communicates **timely** and **useable** climate and drought information
- Allows individuals to
 - take action to reduce risk
 - prepare an effective response
- **Triggers** actions tied to drought plans



U.S. Drought Monitor (USDM):

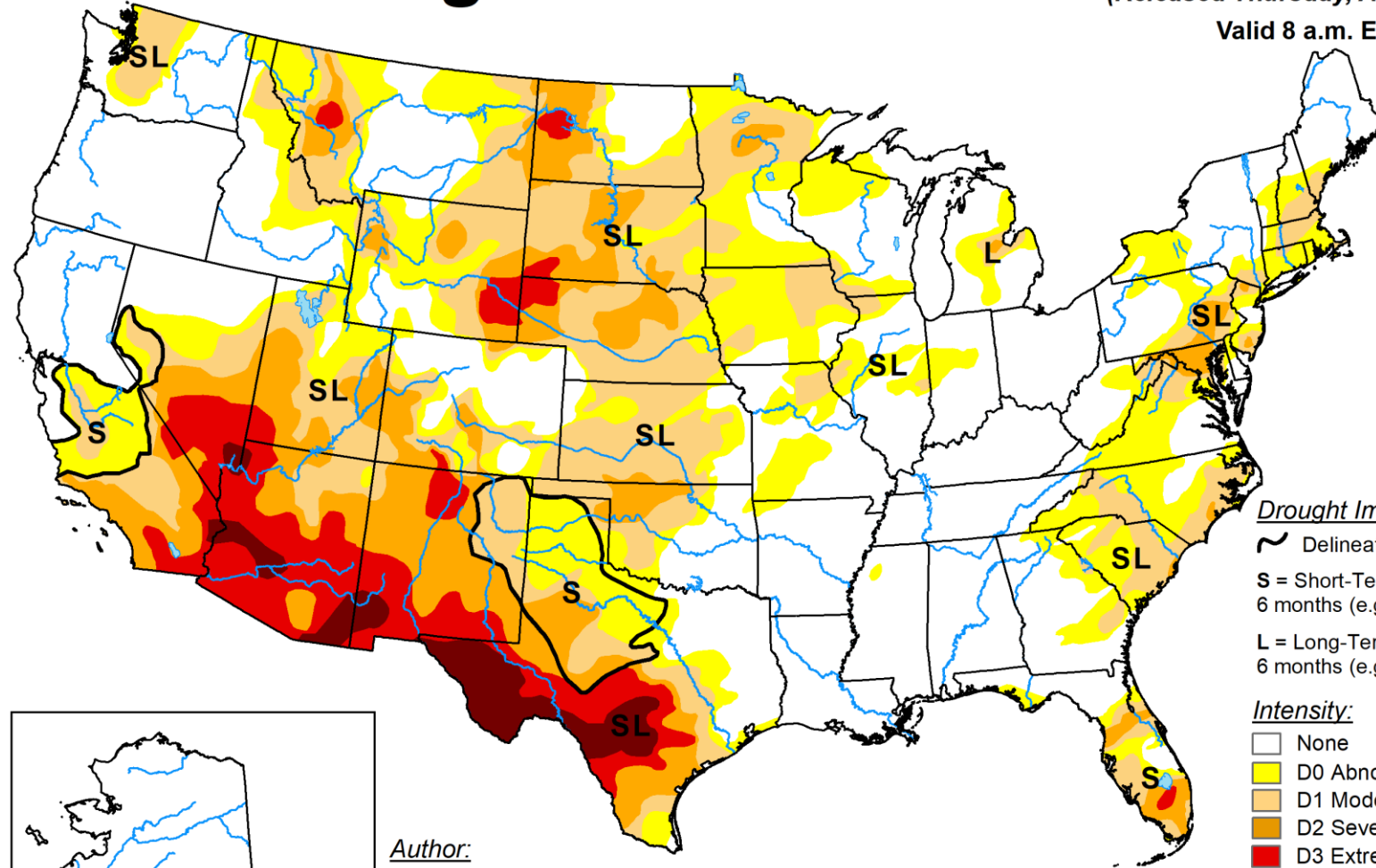
(*Science before Policy*)

- **State-of-the-science** drought assessment in the U.S. since 1999
 - **Collaborative effort** between NOAA, USDA and NDMC
- Composite indicator blends objective indicators and indices with **field input from over ~425 experts**
- **“Convergence of Evidence”** approach
- **Policy implications** in Farm Bill (USDA), IRS, Federal Reserve Board, CDC, FERC, NOAA-NWS and several state drought plans and task forces
- **“Go to source”** for media and the public
 - ~12+ million page views annually
 - Part of the **U.S. Climate Resilience Toolkit**



U.S. Drought Monitor

April 15, 2025
(Released Thursday, Apr. 17, 2025)
Valid 8 a.m. EDT

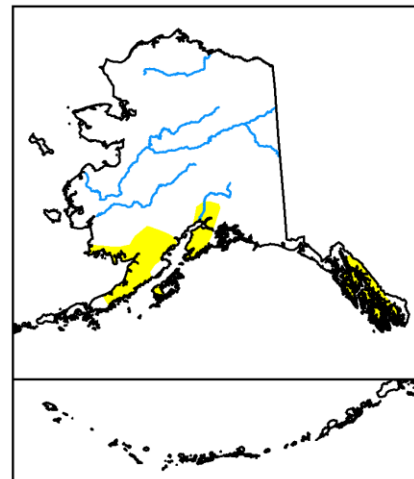


Drought Impact Types:

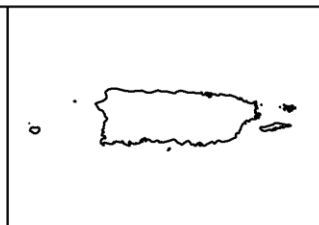
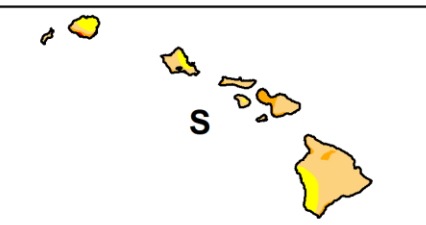
- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought



Author:
Curtis Riganti
National Drought Mitigation Center



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



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droughtmonitor.unl.edu

The NDMC at UNL is the central repository for the USDM data, map and web services archive

U.S. Drought Monitor production

The National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln (UNL) is the web host and academic partner for the U.S. Drought Monitor (USDM), a weekly map showing the location and intensity of drought. One of the USDM authors takes the lead each week, integrating many types of data to adjust the lines on the map. The NDMC hosts the official USDM data repository and archive.

droughtmonitor.unl.edu

On Wednesday

afternoon or evening, the author hands the final map files and summary text to the NDMC, where it is processed and prepared for Thursday morning distribution in different forms.

NDMC's geospatial experts check the map for accuracy and review the narrative for grammar, spelling, or date errors. Once any issues are resolved, the map is final for the week and post-production processing begins.

Quality control

The NDMC saves the narrative as a PDF and uploads it to the USDM database, then uses Google to translate the summary text into Spanish.

Narrative processing

The author and date are added to the USDM database as the narrative is uploaded. The weekly data processing usually begins around 5-7 p.m. CT. A script produces all the weekly outputs, including statistics, datasets and grids.

Data production

Color, black & white and Spanish versions of the maps are produced for many regions and in many graphic formats. Data are exported into several spatial formats, and are used to produce Agriculture in Drought maps for the U.S. Department of Agriculture.

Map production

On Thursday at 7:30 a.m. CT, the new USDM map and all of the associated data are publicly released via the web, email and social media.

USDM distribution

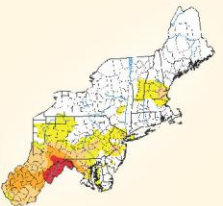
Processing time totals 13-15 hours

Over **9.75 GB of new data** are created in 93,000 unique data records, with 8 GB of new web content each week. From 2000 through September 2024, there have been **57,360,440 data records** and **24,964,723 maps created**.

Weekly maps produced:



38,110



Over **580 types of USDM maps** are created showing regions, weather forecast offices, USDA Climate Hubs, reservations and more. The weekly map production includes **18,576 change map files**, both PNGs and PDFs.

Map areas

- 1 Continental U.S.
- 1 Alaska, Hawaii and Puerto Rico
- 1 U.S.-Affiliated Pacific Islands
- 1 U.S. Virgin Islands
- 52 States (including Puerto Rico and DC)
- 6 Climate Regions or Regional Climate Centers
- 8 Geographic Regions
- 123 NWS Weather Forecast Offices
- 13 River Forecast Centers
- 10 USDA Climate Hubs
- 8 Regional Drought Early Warning Systems
- 18 Hydrologic Regions
- 15 Custom regions

Federal USDM users

Department of Agriculture
Farm Service Agency
Risk Management Agency
Office of the Chief Economist
Forest Service
Natural Resources Conservation Service
National Oceanic and Atmospheric Administration
National Weather Service
National Integrated Drought Information System
Internal Revenue Service
Centers for Disease Control
Federal Energy Regulatory Commission
Bureau of Reclamation
Bureau of Land Management
Environmental Protection Agency
Federal Reserve Board

Change map time intervals

1-10 weeks
12, 13, 24 and 52 weeks
Water year
Calendar year
Other timesteps used for custom projects are not currently included in the operational services.



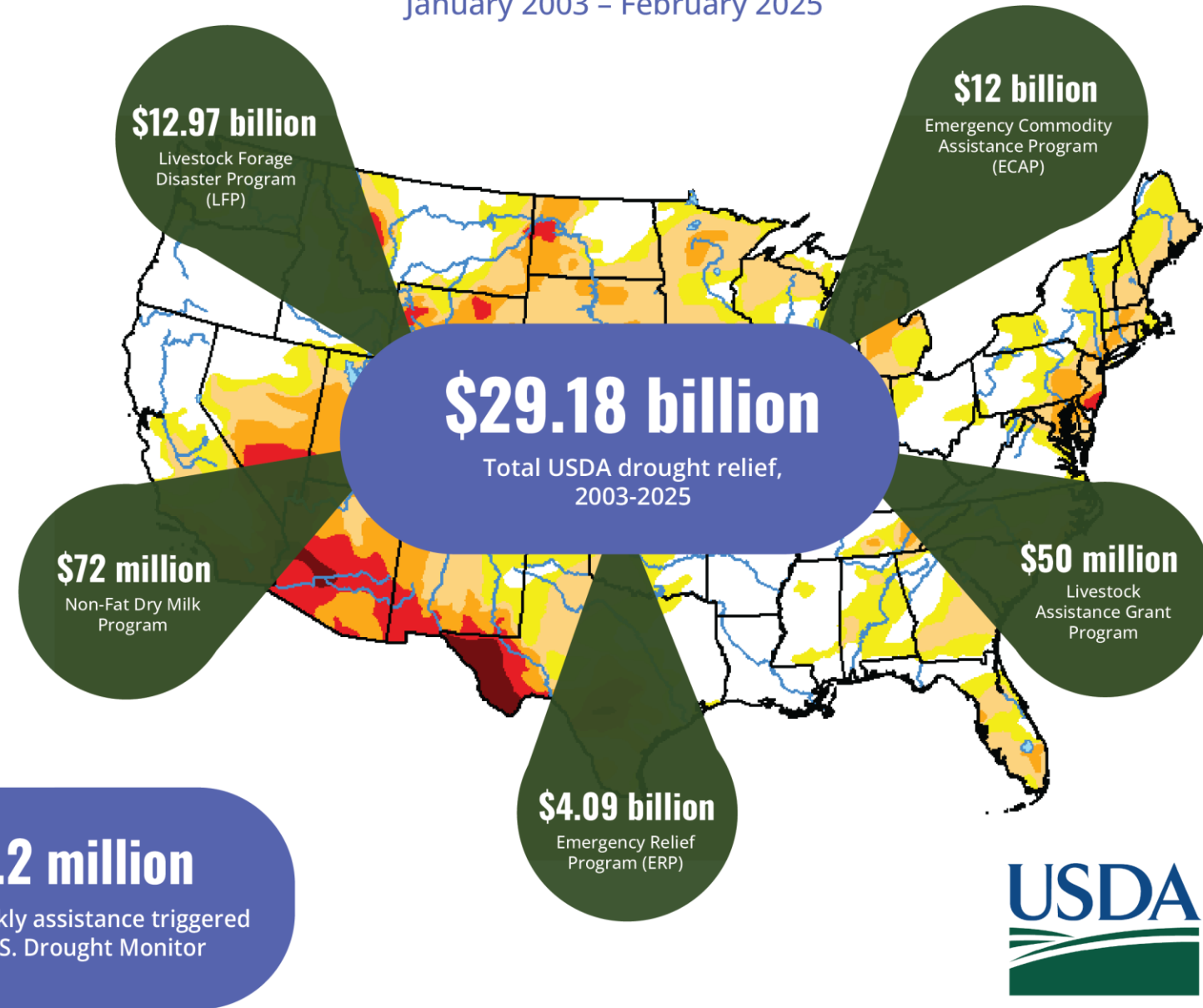
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The USDM is produced through a partnership between the NDMC at UNL, the USDA and NOAA. Learn more at drought.unl.edu.

USDA assistance triggered by the U.S. Drought Monitor

January 2003 – February 2025



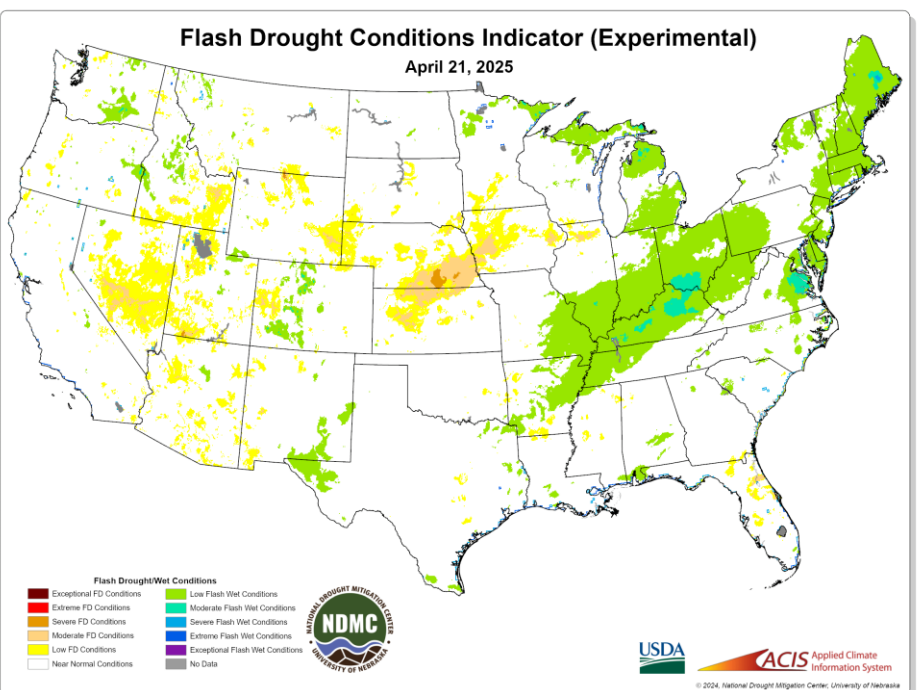
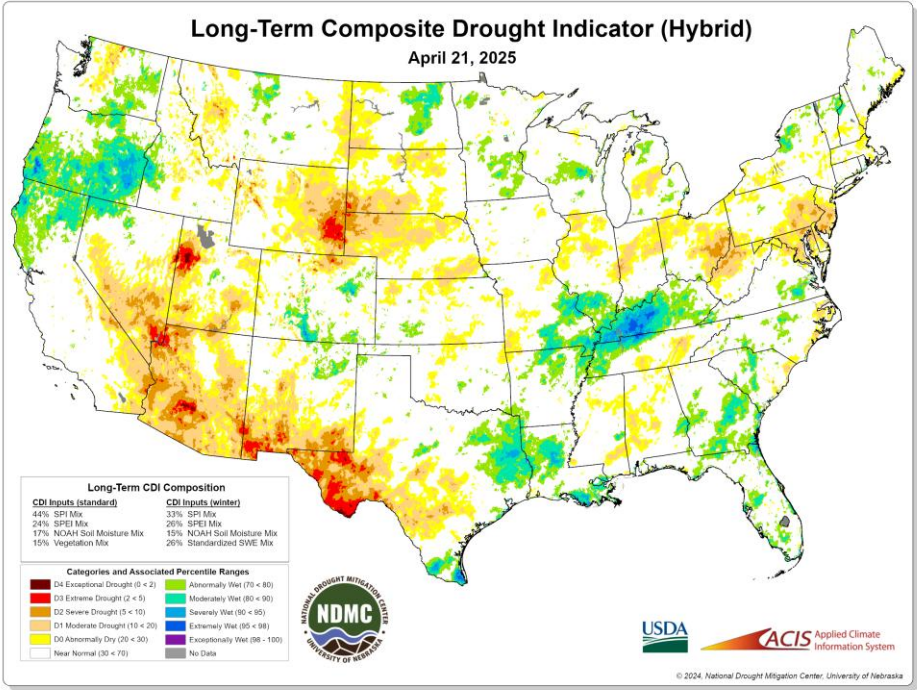
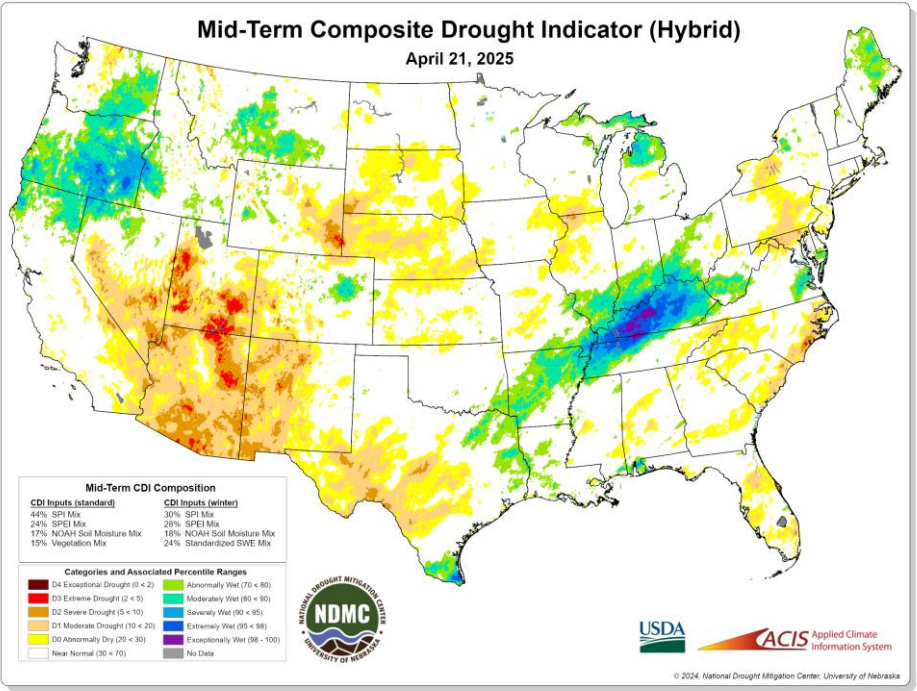
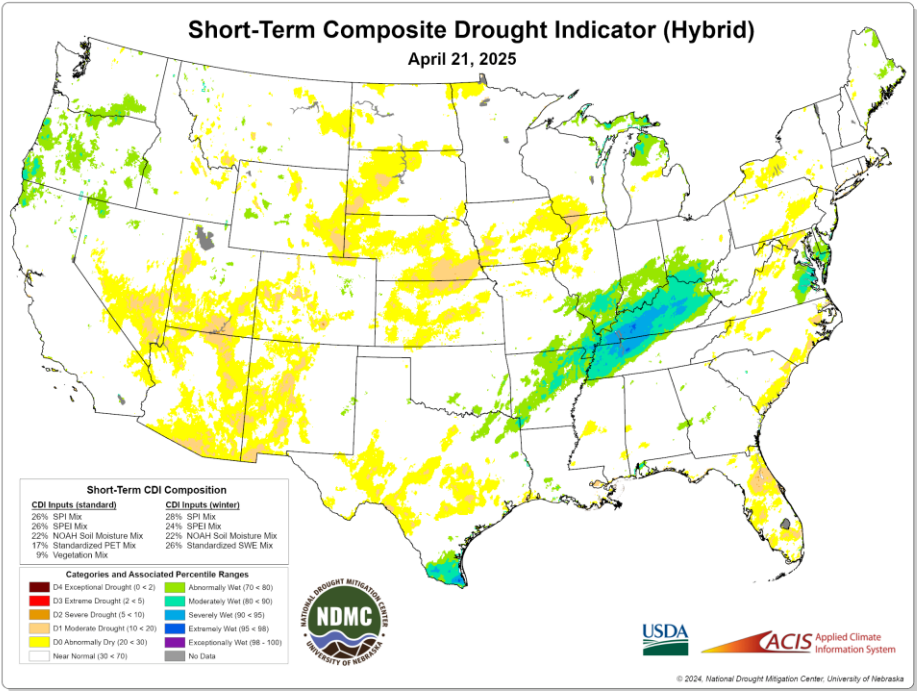
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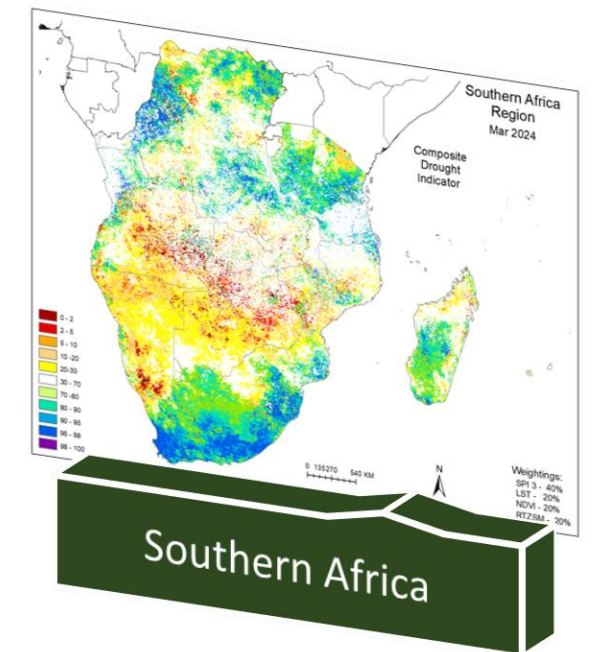
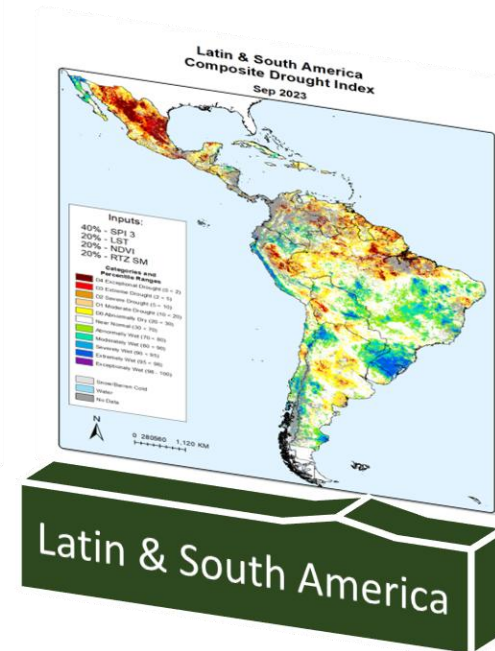
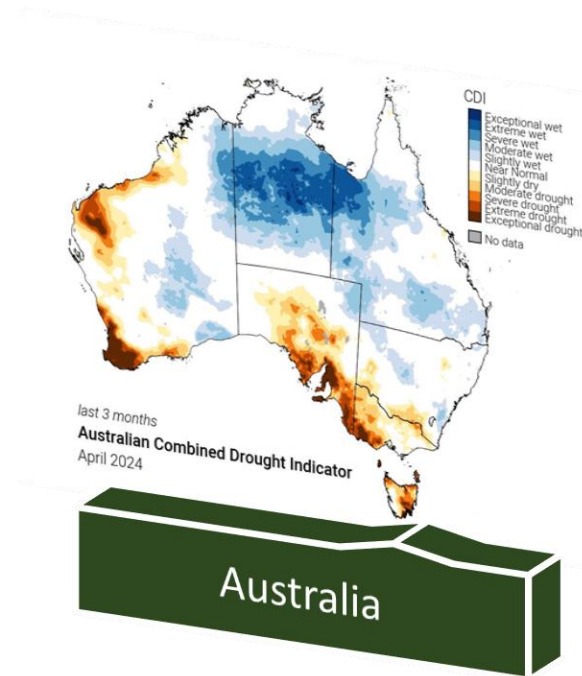
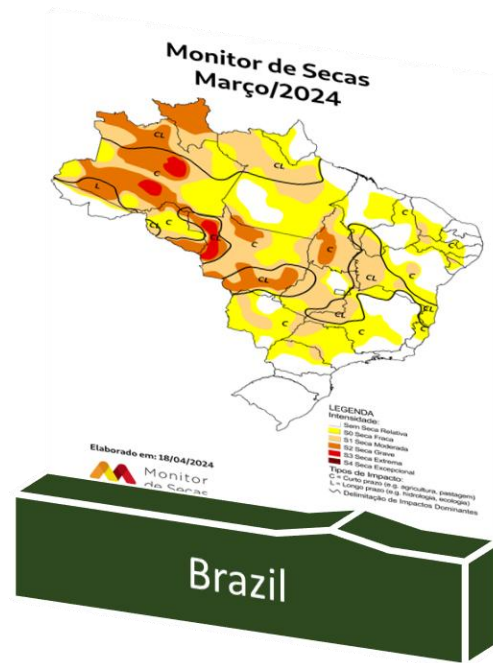
New Tools:
Combined Drought Indicators
Account for regional and/or seasonal characteristics



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A Sampling of Past and Present NDMC/Partner International Combined Drought Indicator (CDI) Activities



DROUGHT: Future Challenges and Opportunities

- Climate change/*flash/eco droughts*
- Public *health* issues
- *Trans-boundary* issues
- Food and water *(in)security*
 - *Climate shocks*
- Impacts aren't created equally
 - Vulnerability/risk
 - Can be *BOTH* negative and positive in nature
- Risk management
 - *Mitigation* applications
 - *Planning* activities at all scales
 - Improved *monitoring and prediction*
 - *Decision support*



Final Thoughts

- The NDMC is dedicated to developing *usable* information and services
 - Involve a variety of networks and incorporate *user feedback* at all times in what we do!
- Strong partners and *collaborations on the ground* with our stakeholders at all scales (personal, local, watershed, NRDs, state, regional to national + international) has been the key to our success
- Goal is to *link scientific knowledge w/ the actions* needed to reduce impacts and future risk through a sound drought risk management process



Thank You! Any Questions?



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 @droughtcenter

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