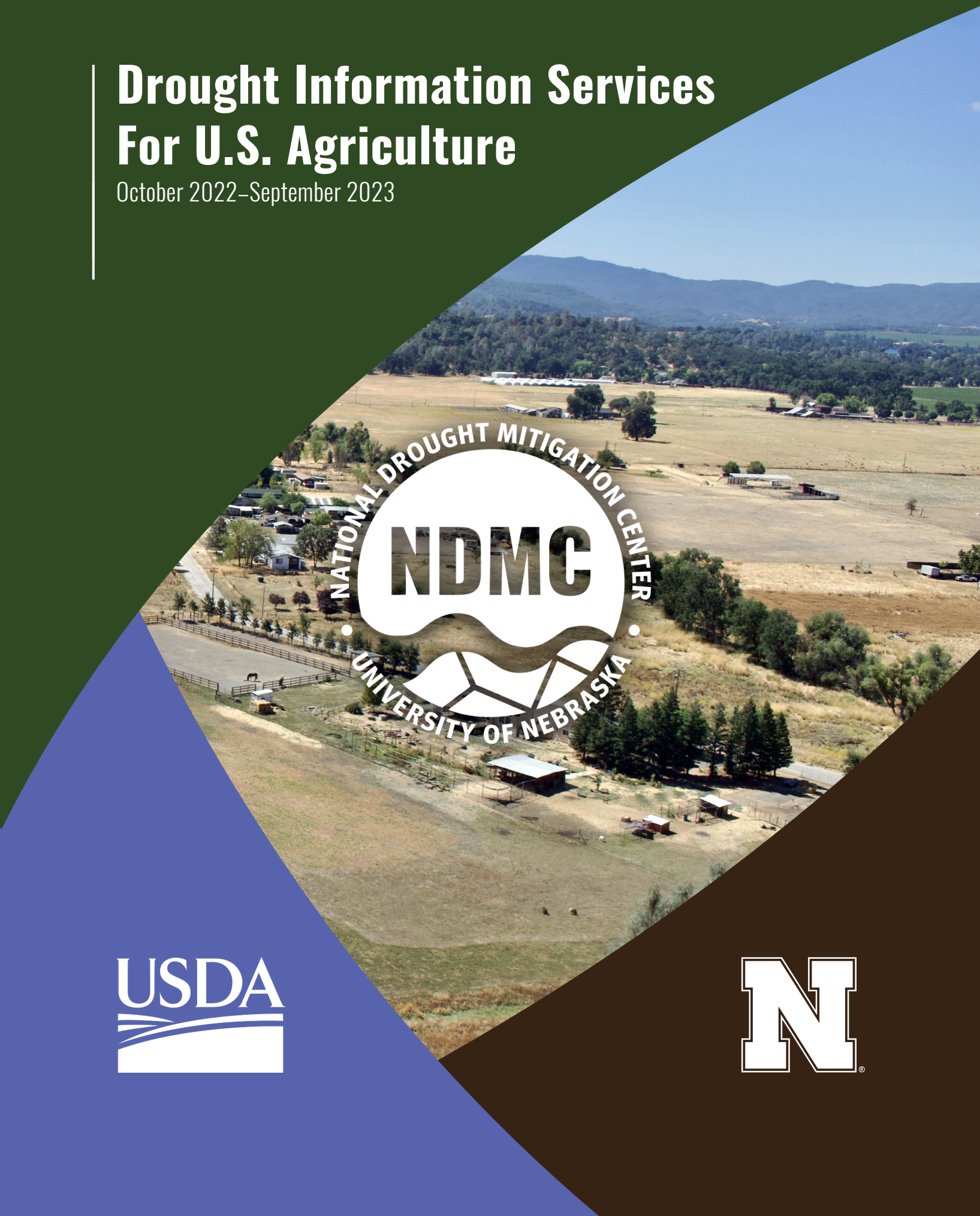
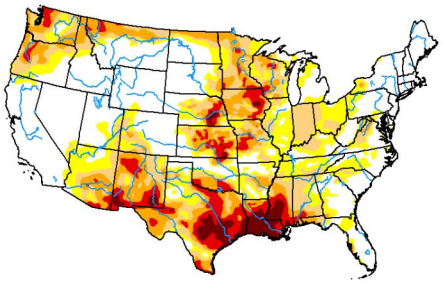
Drought Information Services For U.S. Agriculture

October 2022–September 2023



USDA

ENHANCING USDM PRODUCTS AND SERVICES



Since 2014, a partnership between the U.S. Department of Agriculture (USDA)'s Office of the Chief Economist (OCE) and the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln has focused on refining existing analytical and monitoring tools associated with the U.S. Drought Monitor (USDM) and developing new ones. Related efforts focus on helping agricultural producers and others plan for and respond to drought. This funding has supported the USDM since the establishment of the first USDA cooperative agreement. The major recent accomplishments of that collaboration are highlighted in this report.

The USDM has played an increasingly central role in the nation's response to drought since it was established in 1999 as a timely, authoritative assessment of the extent and severity of drought. The 2008 Farm Bill established the USDM as the mechanism to determine producer eligibility for assistance through the Livestock Forage Disaster Relief Program. After widespread and severe drought in 2012, the USDM became the fast-track trigger for Secretarial disaster designations. The Internal Revenue Service uses it to identify areas where livestock producers are eligible for capital gains relief due to drought.

Stakeholders who rely on the USDM include:

- National policymakers who use the USDM as a measure for allocation of relief dollars.
- Ranchers whose eligibility for aid through the Livestock Forage Disaster Program is triggered by the USDM.
- State governments that refer to the USDM to trigger drought response measures.
- Planners and researchers studying the effects of current and past droughts.
- Media professionals and educators looking for graphic representation of complex climate interactions.

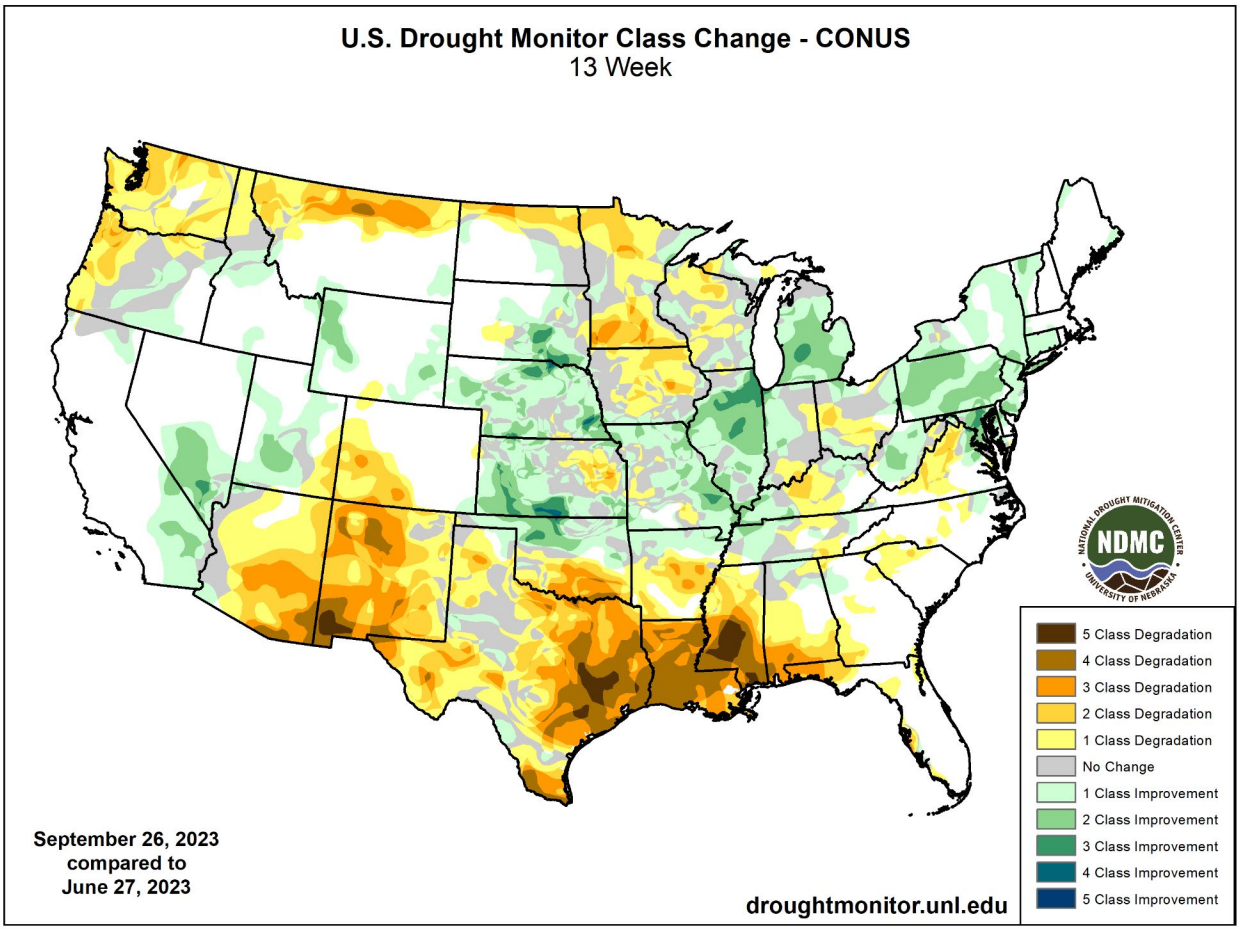
The USDM served as the key mechanism for distributing $11.103 billion from 2011 through August 2023 in relief payments to agricultural producers through the Farm Bill. It also serves as a planning asset for agricultural producers and an essential climate reference across American economic sectors.

The USDM began in 1999 as an experimental depiction of drought, produced jointly by the NDMC, the National Oceanic and Atmospheric Administration, and the USDA.

UPDATES IN 2023

Access the archive of USDA reports:
https://drought.unl.edu/Publications/AnnualReports.aspx

ENHANCEMENTS TO SERVICES FOR USDM USERS



2023: New USDM change maps

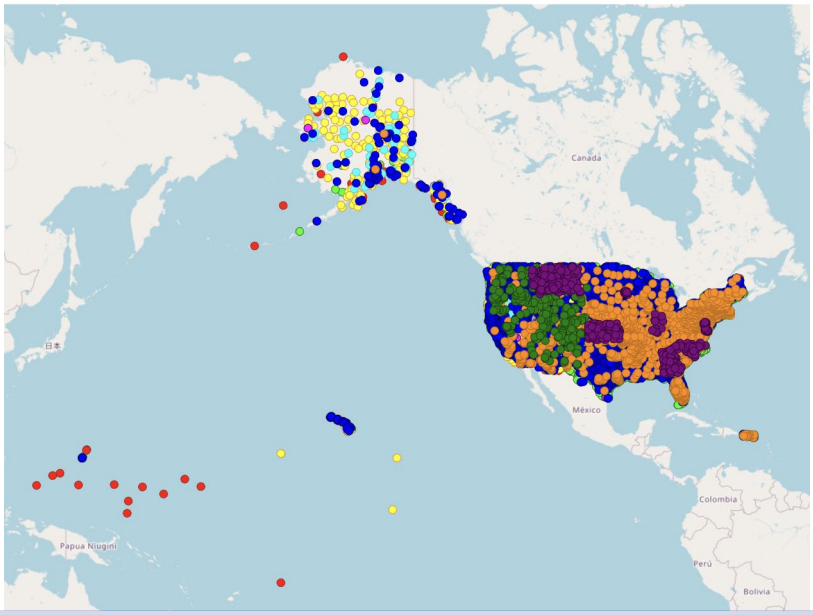
The U.S. Drought Monitor change maps now provide 17 timescale options, in addition to calendar and water years. Change maps are now available for intervals from 1 to 13 weeks, and for 24, 26 and 52 weeks. The decision to expand the available change map timescales was based on feedback from a survey conducted in 2021–22.

First introduced in 2013, change maps show where drought has improved or worsened during various time intervals. Users can easily assess changes in conditions at the regional, state or county level as well as other regions such as Tribal lands.

2023: Expanded OWWLS resource

The Overview of Weather Water Land Sites (OWWLS) map has expanded to the entire U.S. from a prototype developed in an earlier agreement and now includes Puerto Rico and the U.S. Virgin Islands. OWWLS maps the location of weather stations, stream gauges, ground water monitoring stations and reservoirs that are among the dozens of

Overview of Weather Water Land Sites



The OWWLS website now includes weather station location data for the entire U.S., Puerto Rico, the U.S. Virgin Islands and the U.S.-Affiliated Pacific Islands.

datasets used in the production of the USDM. Users can also see various geopolitical boundaries along with the station data. The website broadens efforts to bring more transparency to the USDM decision-making process, including highlighting coverage gaps in station-based data. https://drought.unl.edu/Monitoring/OWWLS.aspx

2023: Sustaining weekly production

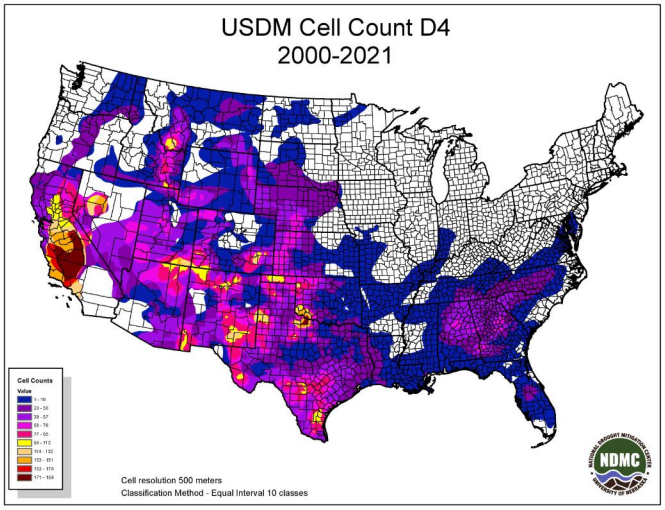
The USDM website, hosted on the NDMC's web servers at the University of Nebraska-Lincoln, generated over 17 million page views and over 360,000 downloads in 2023. Each week, processing the USDM results in 7.58 GB of new data, tens of thousands of statistical records and 38,369 files. It creates 19,501 map files and 18,656 change map files per week.

The NDMC has taken steps to bolster the USDM's data by using both in-house and cloud-based backups. The NDMC upgraded their original agreement with Esri to allow additional support in the ArcGIS Online and NDMC Esri portal. The USDM was also moved to a fully redundant Microsoft Azure instance, backed up to a storage system.

2023: USDM production data repository

The NDMC established a delivery system on the "Conditions and Outlooks" page of the USDM website to gather and push out GIS information each week. These are the same data used by the USDM authors when making the weekly map. This data can be used by USDM authors or other interested individuals. https://droughtmonitor.unl.edu/ConditionsOutlooks/Inputs.aspx

This builds on an earlier collection of weekly USDM inputs, still produced as a weekly pdf: https://droughtcenter.unl.edu/USDMWeeklyMaps/archive/



Gridded raster files for the U.S. Drought Monitor enable summaries of drought over time. This map shows the number of weeks that each area was in D4, 2000–2021.

2023: Operational USDM gridded weekly raster files

The NDMC developed gridded raster files of the USDM that are available to the public. Used in various tools and services to represent the USDM, this gridded data is created from the vector USDM data at 500-meter cell resolution and is closely correlated to the USDM data and statistics. This data is not used in official USDM decision-making processes, but is of interest to researchers, especially for summarizing drought over time. The files are available on the USDM website, along with metadata and history for more context. https://droughtmonitor.unl.edu/DmData/GISData.aspx

2022: New visualization tools

New tools increased the ease with which users can access USDM data for customized regions. With the "county drilldown" tool, for example, users can simply click on the outline of a county on the USDM map and pull up county-level data and timelines. A new interactive GIS map viewer allows users to zoom and pan across different areas and overlay USDM data with other relevant information. An export tool makes it possible to select a unique display area and reference layers to download a customized USDM map.

Visit droughtmonitor.unl.edu for the county drilldown tool and export tool, and https://droughtmonitor.unl.edu/Maps/MapViewer.aspx for the map viewer.

2021: Tribal regions

USDM maps were introduced for all 323 Tribal regions. As with other defined territories, information and maps of the Tribal areas can be cross-referenced with data for the entire period of record of USDM maps. This is part of the NDMC's efforts to make the USDM more accessible to underserved populations.

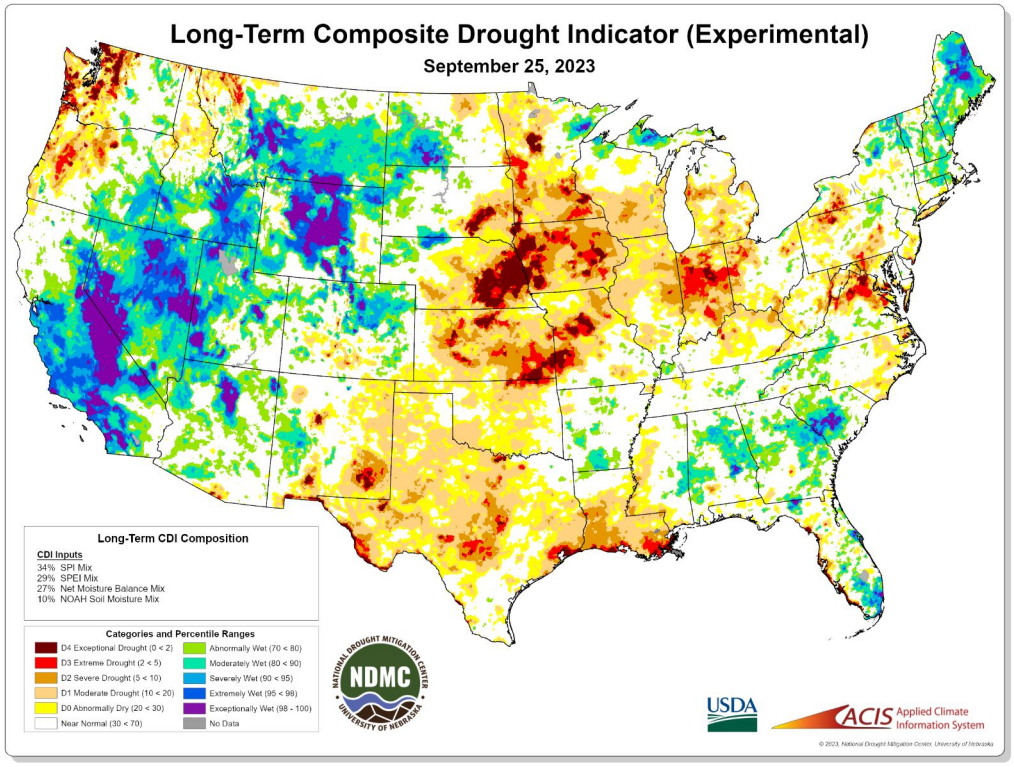
2019: U.S.-affiliated Pacific Islands

U.S.-affiliated Pacific Islands were added to the weekly depiction of drought in April 2019, and U.S. Virgin Islands were added to the weekly depiction of drought in June 2019.

2017–2018: Spanish versions

The NDMC added a Spanish language narrative to the USDM site in 2017. The following year, the NDMC added additional Spanish-language products, including a translated version of the map, for the website, social media and printed materials.

ENHANCEMENTS TO SERVICES FOR USDM AUTHORS



2023: Updated Objective Blends

A new experimental Composite Drought Indicator (CDI) uses machine learning techniques and new inputs to help authors make decisions about short- and long-term drought conditions associated with the production of the USDM. This builds upon short- and long-term objective blend tools that were developed in 2002 and refined over the years. https://ndmcblends.unl.edu

First introduced in 2022, objective blend maps built with gridded data bring finer resolution to weighted combinations of drought indicators. Objective data is the backbone of the USDM process, and the mix, or blend, of objective data varies by region and season. Since the USDM went operational in 1999, its authors have followed a similar blueprint for examining data they use to build the weekly map that shows the latest drought conditions across the country and its territories. They analyze dozens of drought indices and indicators at various timescales that provide information about precipitation, soil moisture, snowpack and other drought information to see where drought conditions could develop, persist or intensify, and they compare that information with on-the-ground reports.

USDM authors sought to develop a suite of tools that were consistent week to week. The author-led effort, which began during the first USDM Forum in 2000, resulted in the

Over 120 drought researchers and stakeholders attended the 2023 USDM forum, held April 11–13, 2023, in Boulder City, Nevada, at the U.S. Geological Survey training facility.

creation of a weekly product that would provide short-term and long-term depictions of drought conditions based on a weighted model that blended several sets of climate division data together. The "objective blends" were born. NOAA's Climate Prediction Center, which developed the product based on the authors' input, houses the original blends online. Over the past 22 years, more data has started feeding into the USDM process at a higher resolution, and the network of observers has grown, leading to a higher resolution depiction of drought conditions across the country. The new objective blends reflect that change. https://ndmcblends.unl.edu/Legacy.aspx

2023: Improved USDM narrative design

The USDM summary is a description of drought conditions and changes made during the production of that week's map, written by the USDM author. NDMC staff surveyed USDM authors about the editorial process and their perceptions of the narrative's purpose. Authors identified potential areas where formatting changes could be made to increase clarification in the narrative and reduce author workload. Feedback was also solicited from attendees of the USDM forum in Boulder City, Nevada, in April 2023, and NDMC staff received suggestions including adding bullet points and shortening the text. Other updates include publishing revised USDM classification tables, new graphics and text in the "About" section of the USDM website.

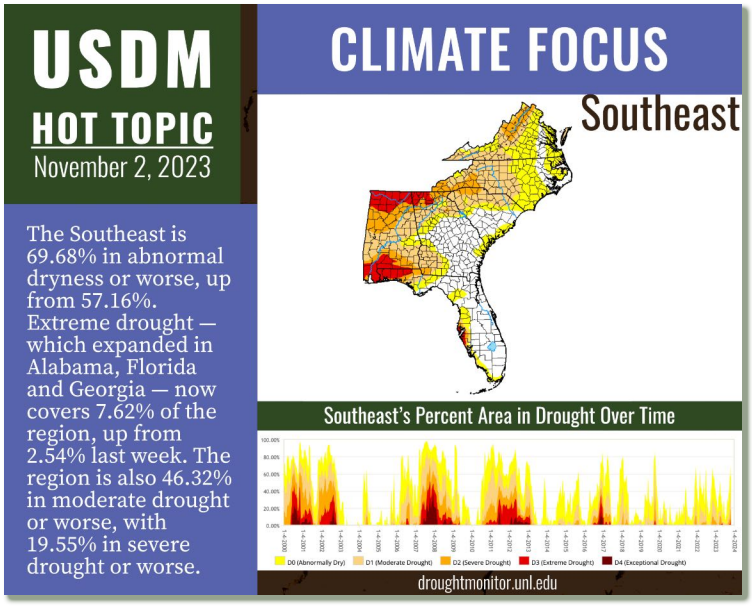
2023: U.S. Drought Monitor forum showcases research, tools, practices

The NDMC organized, conducted and facilitated the 13th biennial U.S. Drought Monitor forum, held April 11–13, 2023, in Boulder City, Nevada, at the U.S. Geological Survey training facility. The forum was organized with partners from USGS and the U.S. Bureau of Reclamation and convened over 120 drought researchers and stakeholders. At the event, 27 presenters shared their knowledge on topics including regional drought status reports, drought reporting tools, flash drought monitoring, snow modeling, feedback on the USDM process and how to contribute to it. The forum ended with a private tour for the group, hosted by Reclamation. The event was made possible through USDA support. To see presentations, visit https://drought.unl.edu/PostEvent.aspx?id=1151.

2022: USDM author training

The NDMC began the process of transitioning the USDM platform onto ArcPro to access new tools for editing the USDM map as well as enhancing both the production and post-production processing. NDMC staff provided a one-day training for current and future authors on the USDM authoring process, including editing examples in ArcPro.

COMMUNICATING THE USDM



2023: Updated USDM email

NDMC communications staff worked with U.S. Drought Monitor authors and others to come up with a template for a more visually appealing and more informative weekly email to be sent to stakeholders when the USDM map is released. To subscribe, please email dmupdate-owner@lists.unl.edu.

2023: Educational resources

The What is the USDM? page and associated fact sheets, infographics and brochures had a major overhaul in early 2023. See https://droughtmonitor.unl.edu/About/WhatistheUSDM.aspx

An associated Media Kit was added in 2022. https://droughtmonitor.unl.edu/About/MediaKit.aspx

In 2018, the NDMC added enhanced tutorials to explain the USDM. https://drought.unl.edu/Education/Tutorials.aspx

Continuing in 2023: Disseminating the USDM

In addition to weekly dissemination of USDM maps and highlights via Twitter and Facebook, in English and Spanish, NDMC Communications produces a "Hot Topic" graphic and social post focusing on an area of interest.

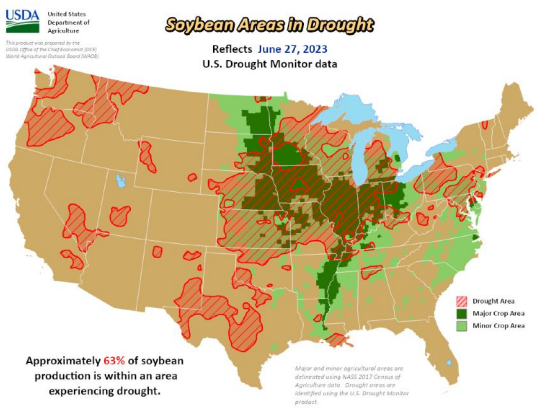
2021: Collaboration with Farmers.gov

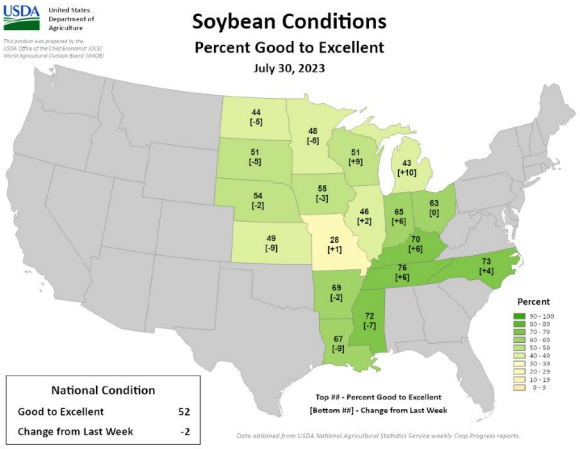
The NDMC collaborated with USDA Communications to produce an Ask the Expert column for Farmers.gov, a fact sheet correcting misperceptions about the U.S. Drought Monitor, and other timely content.

2021: Drought alerts

Through the Drought Alert Request, users can receive county-level email alerts when drought conditions reach or recede from a specific drought designation, from moderate drought (D1) to exceptional drought (D4). https://droughtmonitor.unl.edu/About/AbouttheData/AlertRequest.aspx

INFORMING PLANNING AND DECISION-MAKING





2023: Enhanced Agricultural Commodities in Drought

The NDMC added several new features in 2023 to the U.S. Agricultural Commodities in Drought website, better known as Ag in Drought, and also made it easier to find by adding a link from the U.S. Drought Monitor site. Ag in Drought provides current data on how drought affects agricultural production areas across the nation and resources for managing it. https://agindrought.unl.edu

USDA National Agricultural Statistics Service (NASS) data for the percent of crop or livestock area in drought can be viewed in tables, graphs, map overlays or a series of animated maps. Working with the USDA's Office of the Chief Economist, the NDMC is adding new commodities and developing an enhanced interface available directly on the USDM site. The tool is updated as new census data becomes available from the USDA.

To supplement drought-related updates in Ag in Drought, the NDMC worked with the OCE to provide maps of the weekly NASS crop progress data that comes out every week during the growing season. This feature was requested by users who had seen and used some of these products in the past. The new NASS crop progress maps have received a lot of positive feedback since their implementation. The data can be viewed in the Ag in Drought dashboard. https://agindrought.unl.edu/Other.aspx

Two new commodities, sugar beets and sugarcane, were implemented by the NDMC with data and information received from USDA/OCE during the period. In total, 21 commodities are represented and produced each week: barley, corn, cotton, peanuts, rice, sorghum, soybeans, sunflowers, durum wheat, spring wheat, winter wheat, hay, alfalfa hay, dryland alfalfa, hogs, cattle, beef cows, milk cows, sheep, sugar beets and sugarcane.

The NDMC has worked with Farm Service Agency staff to develop an online tool that agricultural producers can use to determine their eligibility for relief via the Livestock Forage Disaster Program, which uses the USDM as a trigger. droughtmonitor.unl.edu/FSA/Home.aspx

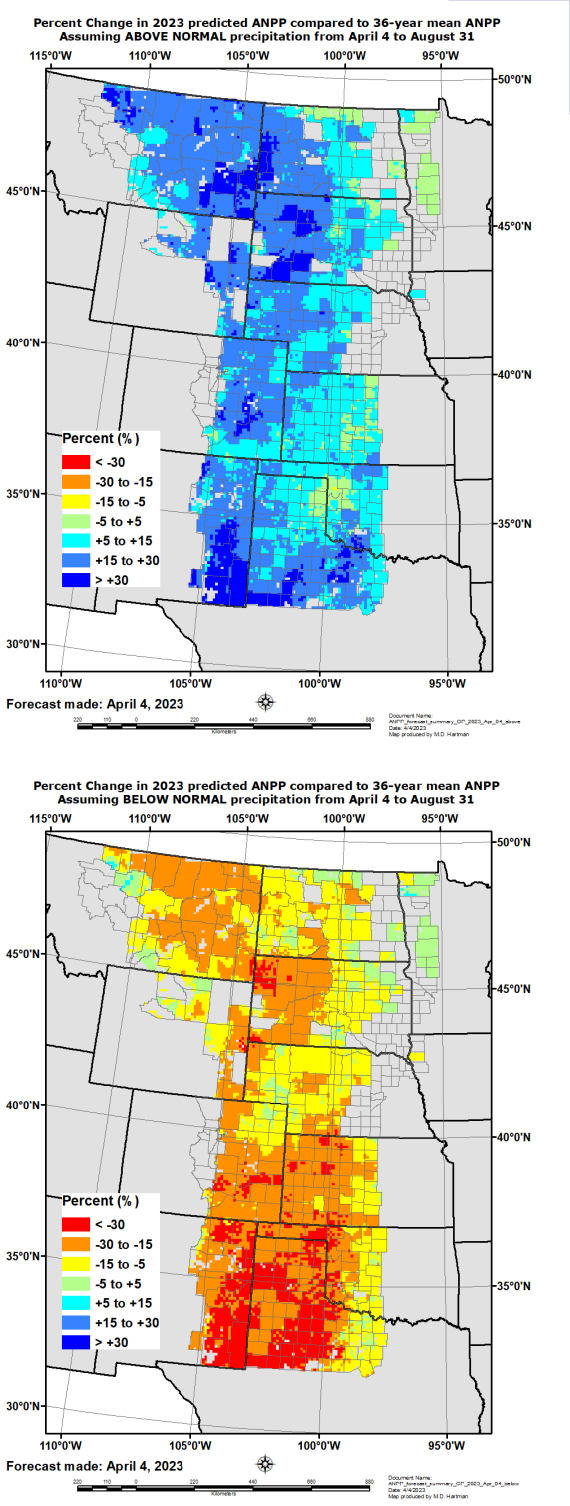
2020–2023: Validating and Hosting Grass-Cast

Grass-Cast is a tool that combines current weather conditions, seasonal climate outlooks and vegetation data to predict grassland productivity and help ranchers determine how much grass will be available for livestock to graze during the grazing season. It is the product of a collaboration between the NDMC, Colorado State University, the U.S. Department of Agriculture and the University of Arizona. Colorado State originally hosted the product, which transitioned to the NDMC website in 2020. It is now operational for portions of the Great Plains, Arizona and New Mexico.

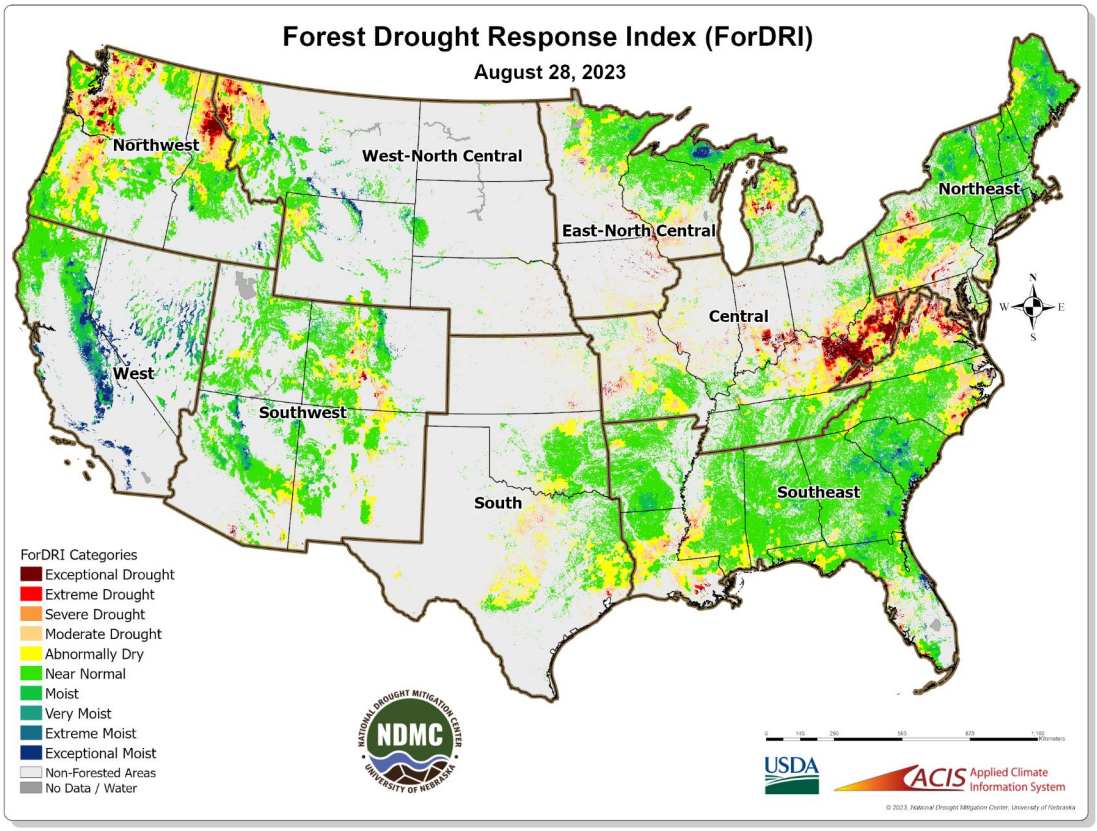
The NDMC worked on a summary report for the Grass-Cast team showing where the best opportunities for expansion could be based on available data and interest. This report will guide further expansion discussions by the full Grass-Cast team.

After collaborating with subject matter experts, the NDMC determined that the first step is to assess the amount of accessible data for various other regions. Grass-Cast needs at least 30 years of biomass clippings and weather data. As part of this effort, 144 individuals in 48 states were contacted. Two broader potential sources of data were also located: the National Science Foundation's Ecological Observatory Network and the Forage Data Hub.

Visit Grass-Cast: https://grasscast.unl.edu



These maps show the percentage change in grassland production for the Great Plains in 2023 compared to its 36-yr average assuming above normal and below normal amounts of precipitation from April 4 – Aug. 31.



The ForDRI map from Aug. 28, 2023, shows forest drought conditions across the continental U.S.

2023: Experimental Forest Drought Response Index launched

The Forest Drought Response Index (ForDRI) website is now available. The ForDRI maps show drought conditions only on the forest cover areas determined by the national forest type dataset. This dataset was produced by the U.S. Forest Service Forest Inventory and Analysis program and the Remote Sensing Applications Center. NDMC is continuing to evaluate ForDRI and associated products by collecting feedback from experts and users to improve the model.

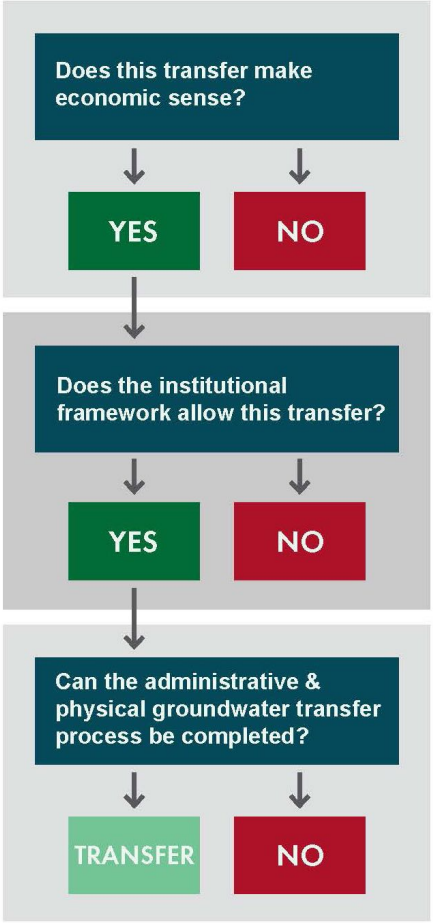
The goal of ForDRI tool development research is to aid USDM authors in characterizing and identifying drought across forest areas in the U.S. The tool is expected to improve drought monitoring efforts by specifically addressing gaps in current monitoring of drought impacts on forests. The current prototype incorporates satellite, climate and biophysical parameters that characterize forest drought response on the order of weeks to months or years. Efforts are being made to evaluate the ForDRI model using several ground observations, including tree rings, and expand it to include all forested regions of the U.S.

Visit ForDRI: https://fordri.unl.edu

ECONOMIC RESEARCH

2023: Researchers chart economic decision-making

A new water markets report documents the variety of approaches to groundwater transfers in Nebraska. The project includes a flow chart outlining the decision-making process for buyers and sellers. This research was published as a collaborative effort that included the Daugherty Water for Food Global Institute (DWFI), NDMC and U.S. Department of Agriculture Office of the Chief Economist. https://waterforfood.nebraska.edu/our-work/research-and-policy/transferring-groundwater-in-the-high-plains

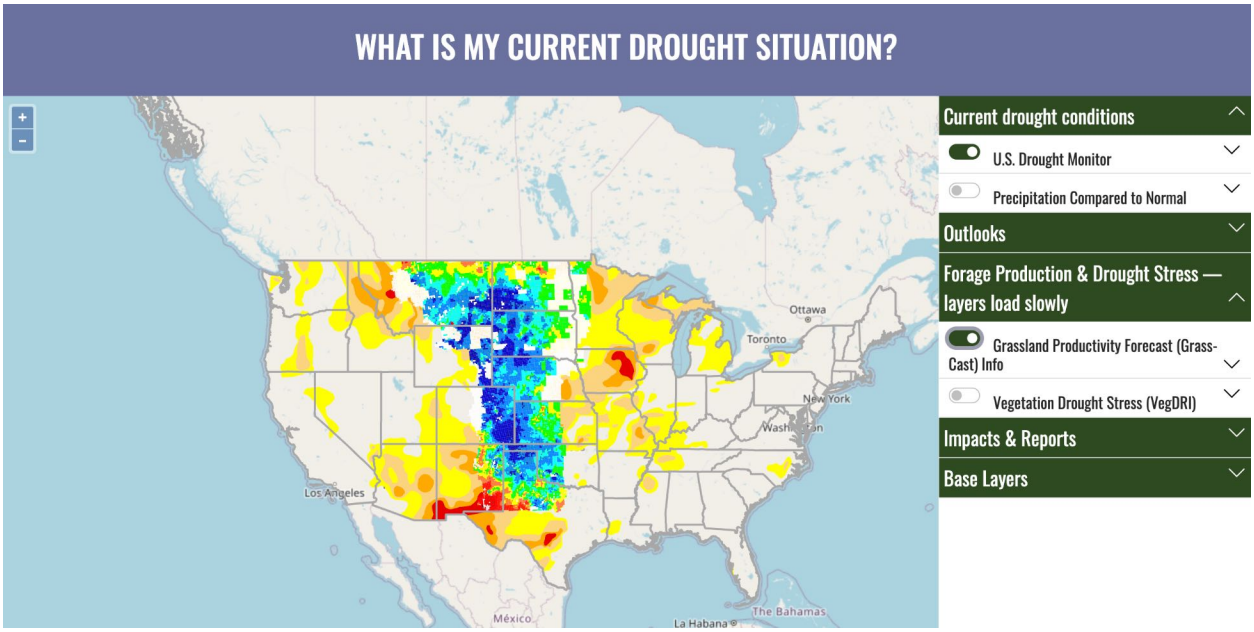


2020–2022: Economics team focuses on drought risk

The NDMC collaborated with the DWFI on state-of-the-art research into incentive-based water management (e.g., water markets) and drought. The partnership provided an opportunity to launch a new economic analysis team composed of staff, faculty, and students from the NDMC, the DWFI, and the Department of Agricultural Economics at the University of Nebraska-Lincoln that focuses on research and engagement efforts to improve drought and agricultural water management. The economic research team has been seeking to better understand the values of agricultural land and water, how drought and water risk are incorporated into these values, and how policies managing water and drought could be improved. To answer these questions, researchers have been applying economic and interdisciplinary analysis tools; engaging with personnel in academic, government, public and private organizations; and building capacity through stakeholder engagement. Fact sheets and interactive maps facilitate shared understanding.

One of the economics team's findings is that irrigation can add significant economic value to farmers even in regions where production is predominantly rainfed. Agricultural water management regulations and drought mitigation plans in these areas are often rudimentary or absent. We suggest that, given climate change predictions and the likelihood of future droughts, water and drought policies would benefit from establishing mechanisms to address potential water shortages and disputes among different water users. See Rimsaite, R., Gibson, J., & Brozović, N. (2021). Informing drought mitigation policy by estimating the value of water for crop production. Environmental Research Communications, 3(4), 041004. https://iopscience.iop.org/article/10.1088/2515-7620/abf160/meta

INFORMING PLANNING AND DECISION-MAKING FOR RANCHERS



2023: Estimating economic value of ranches

To estimate the economic value of ranches in the Great Plains region, the NDMC created a tool to estimate changes in net income and net worth on cow-calf and cow-calf/yearling based on drought impacts. This was developed as a module in the Drought Ranch Insurance Response model with advice from the USDA Northern Plains Climate Hub. The project is a collaboration with the University of Colorado-Boulder and USDA Northern Plains Climate Hub.

2023: Expanding geographic scope of advice for ranchers

The NDMC conducted a study expanding the geographic extent of our understanding of the relationship between seasonal precipitation and total annual forage production. Results show that seasonal precipitation is more useful in some rangeland regions of the western U.S. than in others. This study provides support and guidance for setting critical decision dates throughout the Great Plains and southwestern U.S. The NDMC will use these results to begin updating the Managing Drought Risk on the Ranch Monitoring Toolkit. https://drought.unl.edu/ranchplan

The NDMC is also working to expand this important resource to other regions by collaborating with climate hubs in the Caribbean, Midwest, Southern Plains and Southeast.

2022: Tribal land tenure

The NDMC continued to enhance and improve the Managing Drought Risk on the Ranch portal and our suite of resources for

ranch planning. Working with Natural Resources Conservation Service Tribal liaisons, NDMC scientists conducted a literature review to better understand Tribal land tenure and its ramifications for ranching and drought risk reduction on Tribal lands. https://drought.unl.edu/ranchplan

2021: Ranch Drought Monitoring Dashboard

The Ranch Drought Monitoring Dashboard aims to provide information that will help ranchers reduce risk ahead of time. The dashboard features the latest data on drought and precipitation conditions, outlooks, on-the-ground reports, vegetative stress, forage productivity and more, organized around five key questions. A user who clicks on the question about drought severity, and how it compares to past droughts, is led to an interactive display that presents current U.S. Drought Monitor conditions and allows for historical comparisons. Other common questions lead users to other vital resources that can be displayed on a U.S. map. Used together, the map's layers provide a clear picture of current drought conditions and expectations. https://drought.unl.edu/ranchplan/Monitor.aspx

2021: Usable Drought Information for Ranchers

NDMC scientists developed several new planning case studies highlighting lessons learned and drought preparation and recovery strategies for ranchers. A database of case studies is available on the Managing Drought Risk on the Ranch site to provide guidance to others. Working with Colorado Extension and the Northern Plains Climate Hub, the NDMC also contributed to the Colorado Drought Advisors Handbook. The team provided text and input to the Handbook and undertook new research on forage growth curves and precipitation patterns in Colorado. drought.unl.edu/ranchplan

Visual Drought Atlas photo taken in Siskiyou County, California, September 2023.

INFORMING PLANNING AND DECISION-MAKING WITH DROUGHT IMPACTS

2023: Increased use of CMOR

Crowdsourced Condition Monitoring Observer Reports (CMOR) reports help us see more drought. NDMC continued working with different states to expand use of CMOR reporting. In addition to ongoing outreach, we made incremental improvements such as a mobile-friendly version of the CMOR map. CMOR went live in 2018 and lets farmers, ranchers and the public share photos and observations of local drought conditions. Observations appear immediately on an interactive map. go.unl.edu/cmor_drought

2023: Integrating CMOR and impacts into USDM Datasets

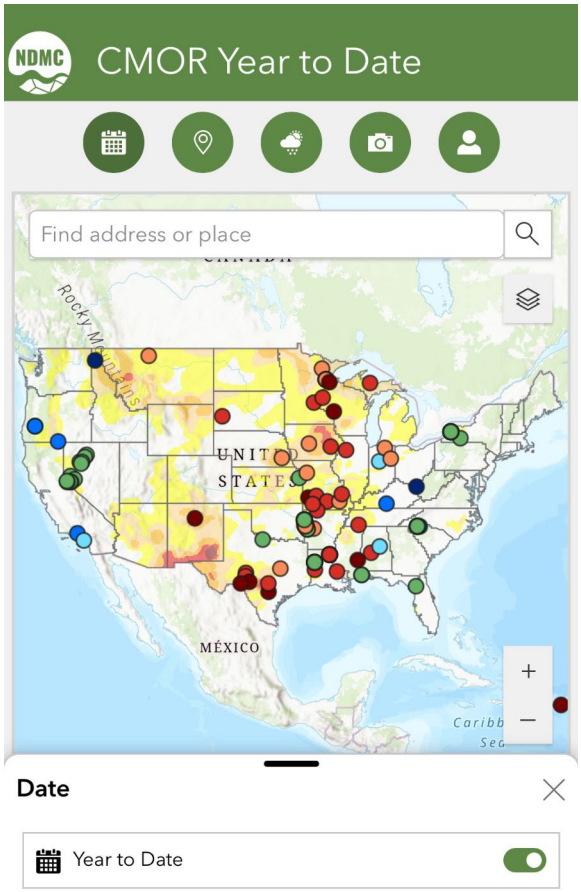
NDMC teammates explored the idea of adding CMOR reports to the USDM authoring environment as a GIS layer. NDMC staff presented information at the USDM Forum in April and facilitated a discussion on how USDM authors and state drought assessment teams would like to use this information.

NDMC staff also provided more ways for users to interact with CMOR by providing notification options, and provided weekly summaries of CMOR reports to the U.S. Drought Monitor listserv.

2021–2022: Drought Impacts Multi-Tool and more

All the layers of impacts-related data built at the NDMC over the past few years are shown on a single map, the Drought Impacts Multi-Tool, with links back to each layer separately displayed in fuller detail. The default view displays crowdsourced CMOR and citizen science observations from CoCoRaHS, mapped by the dry-to-wet scale that they share.
go.unl.edu/multi-tool

The Drought Impact Reporter's display of data was updated in 2022 with the launch of the DIR dashboard and accompanying web app.
go.unl.edu/DIRdash



The CMOR dashboard is now accessible to mobile devices.

The Media Drought Index, launched in 2021, is shown on a dashboard, with timelines showing rising and falling levels of drought news for the country and individual states. A process developed at the NDMC filters news to stories published within the state that they are discussing. An accompanying time-sensitive map of news stories, by place of publication, lets users click through to read individual stories. go.unl.edu/droughtnews

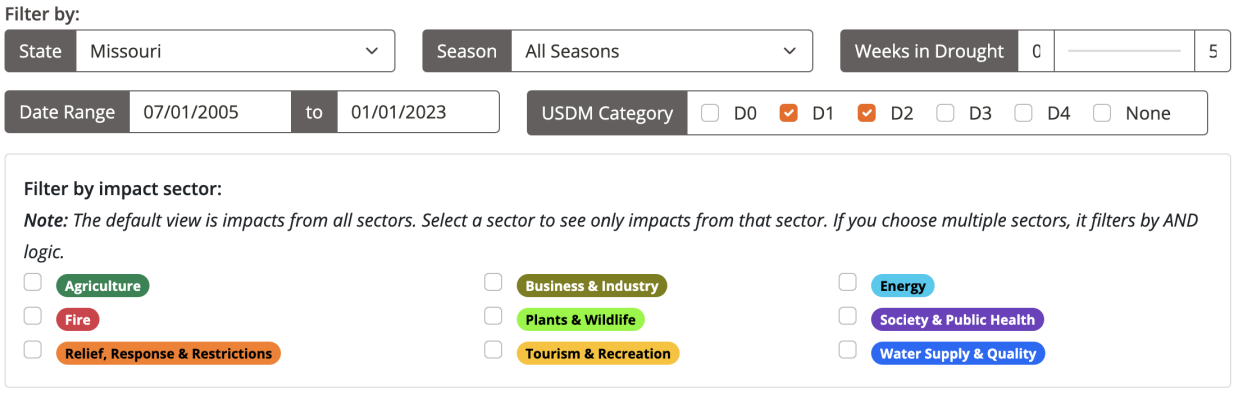
Drought Tweets are similarly mapped by place of publication, allowing users to click through to content. Tweet maps became publicly visible in 2021. News and tweet maps are updated weekly. go.unl.edu/droughttweets

2022: Enhanced State Impacts Tool

In 2022, the NDMC launched an enhanced State Impacts Tool. The tool associates impacts recorded in the Drought Impact Reporter with drought severity and location, with additional filters for sector, season, weeks in drought and dates. This is an enhancement of the state drought impacts table first produced in 2019. go.unl.edu/drought_state_impacts

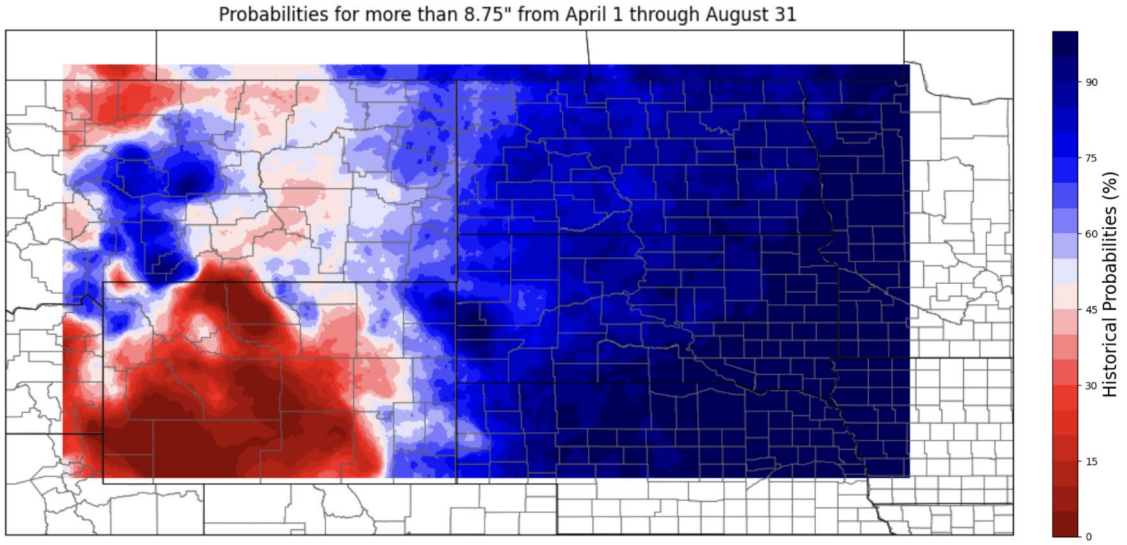
2018–2023: Visual Drought Atlas

Work began in 2018 to transfer the archive of "Field Days" photos collected by CoCoRaHS and the Southern Climate Impacts Planning Program (SCIPP) to a permanent home at the NDMC. The collection launched what is now the Visual Drought Atlas, with photos accessible via a time-sensitive, interactive map. Well-trained CoCoRaHS volunteers continue to contribute photos over President's Day, Memorial Day, July 4 and Labor Day. The NDMC adds photos from its own photo gallery and CMOR to the Visual Drought Atlas and is exploring the addition of photos from other sources, such as historic archives and Phenocam. Users can search photos based on U.S. Drought Monitor status, land use, subjective dry-to-wet assessment, and location and date. go.unl.edu/visualdroughtatlas



The search feature on the state impacts tool allows users to filter impacts by state, season, weeks in drought, date, U.S. Drought Monitor status and sector.

ENGAGING THE CLIMATE HUBS



The Regional Probability of Exceedance tool shows the chances that, from your selected starting date until the end of August, you'll see total precipitation amounts higher than a certain number of inches.

The NDMC collaborates with USDA's Regional Climate Hubs on outreach, events and research relevant to individual service regions and has participated in several of the hubs' five-year reviews. The NDMC has worked with hubs to present information for regional audiences on topics such as the U.S. Drought Monitor process and Condition Monitoring Observer Reports (CMOR) and the Southwest Drought Learning Network (DLN).

Northern Plains: Regional Probability of Exceedance tool

In 2023, the NDMC developed a Regional Probability of Exceedance tool. These maps show the chances that, from your selected starting date until the end of August, you'll see total precipitation amounts higher than a certain number of inches. Along with the Grass-Cast suite of maps, users can see various precipitation totals and the probabilities associated with receiving this much precipitation to help them determine the best solution for forage production through the end of the season. Using historical climate data, the tool calculates the probability of different precipitation thresholds being met from certain points during the grazing season through the end of August (as forward-looking windows). https://drought.unl.edu/ourwork/projects/ProbExceed.aspx

Southwest: Drought Learning Network case studies

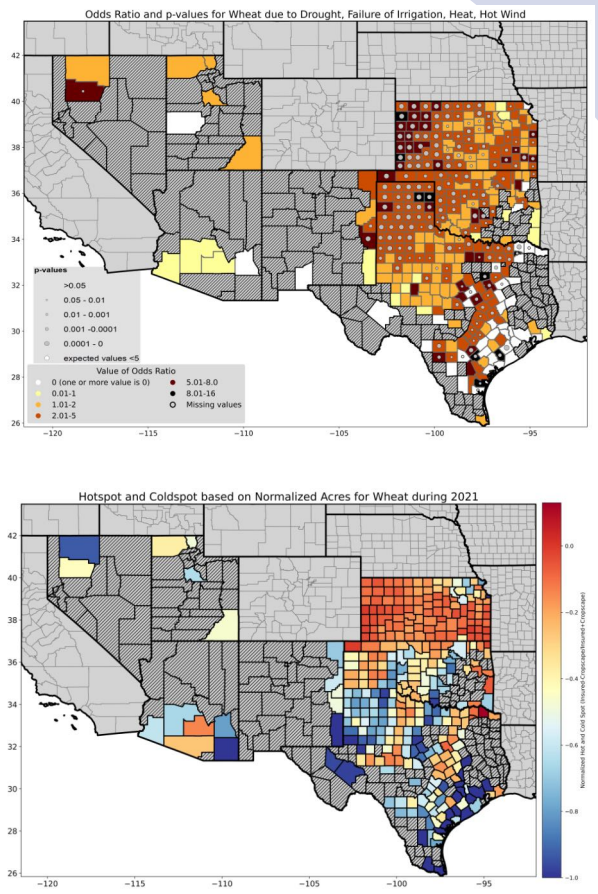
In 2023, two NDMC interns wrote six case studies published by the Southwest Climate Hub. They presented their findings at two forums and during regular Drought Learning Network working group meetings. The team also developed seven other case studies that will be continued in 2023–24.

In 2022, NDMC staff also co-organized several workshops with the Hub on drought monitoring and planning in Hawaii and the U.S.-affiliated Pacific Islands. A manuscript on the evolution of the Southwest Drought Learning Network can be found at: https://journals.ametsoc.org/view/journals/bams/104/5/BAMS-D-22-0017.1.xml

In 2022, the NDMC presented at a meeting cosponsored by the Southern Plains Climate Hub in Oklahoma City on drought tools, drought early warning and climate science in the Southern Plains region.

Southwest and Southern Plains: Cause of loss analysis

In 2023, the NDMC began two lines of analysis on the USDA Risk Management Agency's cause of loss data to see how well crop insurance meets producers' drought-related needs in the Southern Plains and Southwest Climate Hub states. One was an odds ratio analysis, which confirmed a relationship between drought and drought-related insurance claims. The other was a comparison of acres planted to acres insured, which provided illustrative contrasts in insurance use and uptake.



These maps show an odds ratio analysis (top) and a comparison of acres planted to acres insured (bottom).

Midwest: Specialty crop producers

A partnership between the NDMC and the Midwest Climate Hub is working to help producers of specialty crops in Michigan, Ohio, Indiana, Wisconsin, Illinois, Iowa, Missouri and Minnesota identify and report how changes in weather and climate conditions are affecting crop health, growth and productivity. The NDMC developed a survey of producers' weather observations, climate-related concerns and information needs that was presented at regional field days and other events. It is available online. The survey results are being used by the NDMC and the Hub to develop resources that meet the unique drought monitoring and planning needs of specialty-crop producers in the Hub service region.

In 2022, the NDMC conducted a case study of how monthly climate webinars were being used in the Midwest to enhance drought-related resources. The NDMC has also worked with various state agencies in partnership with the Hub as part of the Iowa Drought Planning Team.

Northwest (Alaska): Alaska Composite Drought Index

The NDMC developed a protype drought blend for Alaska called the Alaska Composite

Drought Index (ACDI). This serves as a first step for investigating the expansion of the objective blends to the state. https://drought.unl.edu/Publications/News.aspx?id=408

The NDMC and the Pacific Northwest Climate Hub held a workshop in Alaska in May 2019 to help participants understand drought in a temperate rainforest. The information gathered became the basis for the Southeast Alaska addition to the state drought impacts tables.

Southeast: Decision guide for cotton growers

In 2023, the NDMC worked with the Southeast Climate Hub to create a drought guide and decision calendar for cotton growers. The NDMC gathered relevant regional tools for cotton to put into the decision calendar. These tools were based on the needs of cotton producers at each decision-making stage and are specific to seasons/growth stage.

Northeast: Snow and precipitation analysis

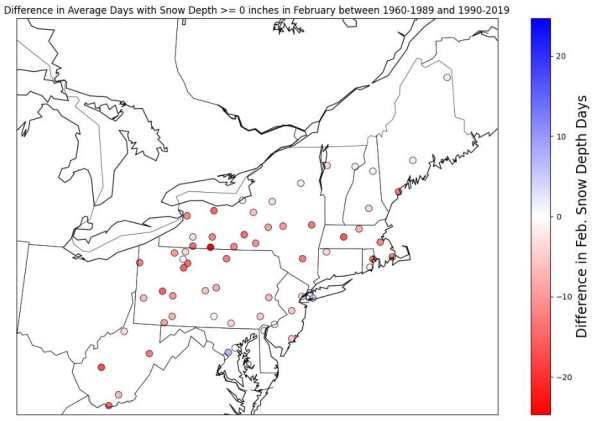
To address gaps in understanding the area's changing drought landscape, the National Drought Mitigation Center produced a new analysis of snow and precipitation patterns. The 2023 study is a partnership with the Northeast Climate Hub. https://drought.unl.edu/OurWork/Projects/NRCC.aspx

The Forest Drought Response Index (ForDRI) was developed in coordination with the Northeast Climate Hub. For more detail please see the ForDRI article on page 11.

Caribbean: Social media library translated to Spanish

In 2023, the NDMC updated its social media resources webpage with more CMOR graphics, including graphics in Spanish. Spanish translations were provided by the National Weather Service San Juan in Puerto Rico.

The NDMC worked with the Caribbean Climate Hub to develop the Caribbean Drought Learning Network, modeled on the Southwest Drought Learning Network. Staff continue to be involved with the Network as part of the advisory committee and as



This map illustrates the difference in the average number of days in February with measurable snow depth at sites in the Northeast, comparing 1990-2019 with 1960-1989. Comparisons between these two time periods indicate widespread decreases in the number of February days with snow on the ground.

This Spanish CMOR promotional graphic is one of the new updates to the NDMC social media resources page. Translations provided by the National Weather Service San Juan in Puerto Rico.

participants in meetings and working groups. In addition, the NDMC provided rain gaugens to enhance CoCoRaHS reporting of precipitation and conditions and worked with the Hub to translate the Condition Monitoring Observer Report form and outreach materials. The NDMC also worked closely with the Hub to get the U.S. Virgin Islands included in the USDM, with initial meetings in St. Croix and San Juan.

Previous work with the Climate Hubs

2020

More than 65 people attended a two-day Southeast Climate Hub workshop in West Columbia, South Carolina, to learn about the USDM and discuss drought-related issues in the region.

2019

The NDMC, California Climate Hub and others coordinated four California workshops for ranchers. Held in Solvang, Loomis, Tulare and Susanville, the workshops focused on providing climate and drought resources for dealing with uncertainty in rangeland drought planning.

2018

In 2018, the NDMC and the Southern Plains Hub presented at a one-day USDM training workshop in Amarillo, Texas. Through collaborations with the Southwest and Southern Plains Climate Hubs in 2017, the NDMC also organized six La Niña Outlook forums and other topical workshops for producers and stakeholders in New Mexico and Texas and co-hosted a meeting for ranchers at the Agricultural Research Service Center in Colorado.

The NDMC and the Hub also held a training session in Ogden, Utah, on USDM applications, seasonal forecasting and drought impacts.

2017

Early in 2017, the NDMC, the Northern Plains Climate Hub and Colorado State University began discussions on the development of a forage-estimation tool for the Plains. The tool is now known as Grass-Cast. The NDMC has continued to work with the Hub and other researchers to enhance and expand the tool. Along with the University of Colorado, for example, the team is working to estimate the economic value of Grass-Cast to cow/calf operations. The NDMC also worked with the Hub to contribute to the Colorado Drought Advisors Handbook.

The Visual Drought Atlas (VDA) contains photos that are accessible through a time-sensitive, interactive map. The NDMC adds photos from its own photo gallery and Condition Monitoring Observer Reports to the VDA, and is exploring the addition of photos from other sources.

Left: VDA photo taken in Carbon County, Wyoming, September 2023.

Right: VDA photo taken in Gloucester County, Virginia, September 2023.

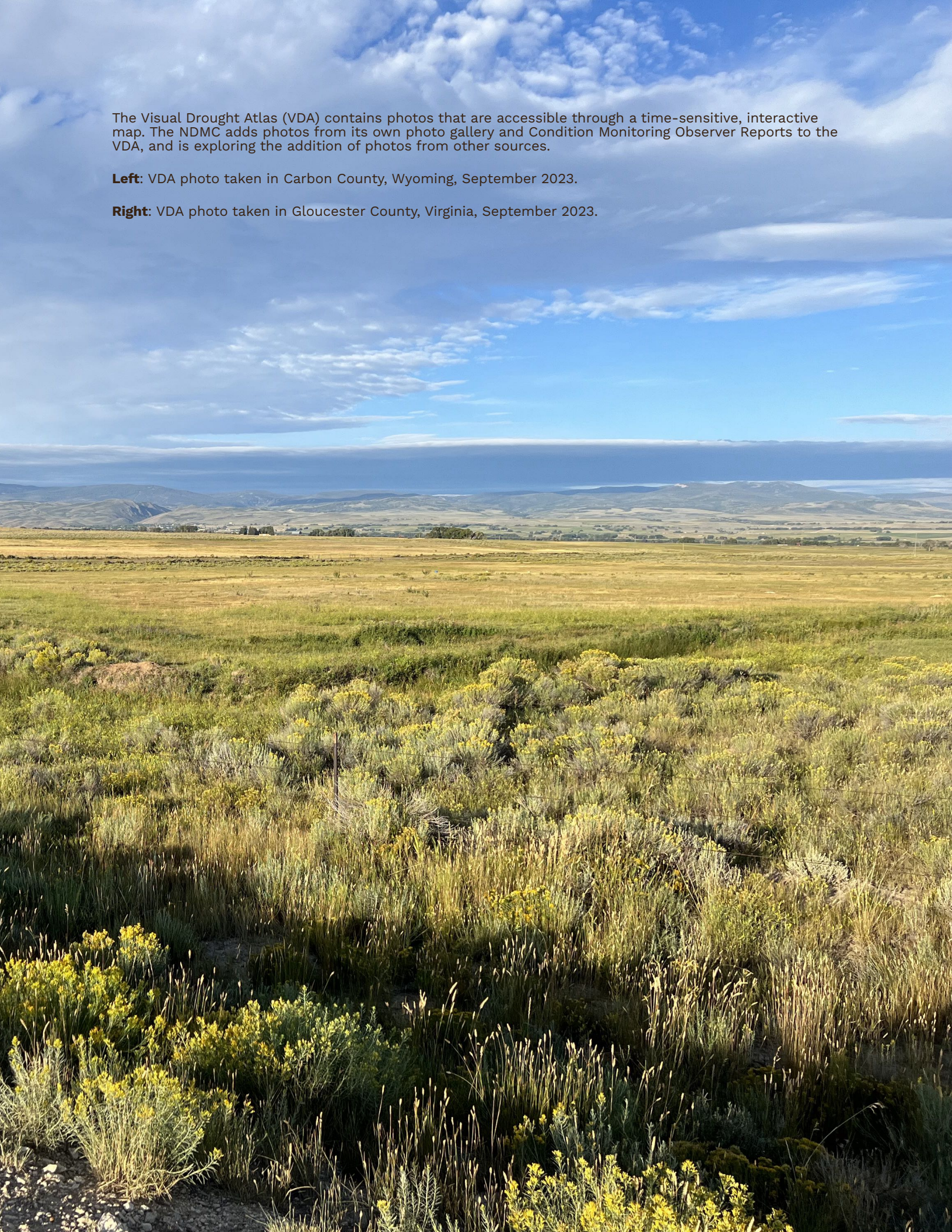



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Photo: Visual Drought Atlas photo taken in Lake County, California, September 2023.

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