

# Condition Monitoring Observer Reports (CMOR) help us “see more” drought [go.unl.edu/cmor\\_drought](http://go.unl.edu/cmor_drought)



NATIONAL DROUGHT  
MITIGATION CENTER  
UNIVERSITY OF NEBRASKA

By Kelly Helm Smith  
WERA 1012, Estes Park, Colorado, May 16, 2023



# Condition Monitoring Observer Reports (CMOR)

go.unl.edu/CMOR\_drought

## Condition Monitoring Observer Reports (CMOR)

National Drought Mitigation Center, University of Nebraska

Smith, K. H., Burbach, M. E., Hayes, M. J., Guinan, P. E., Tyre, A. J., Fuchs, B., Haigh, T., & Svoboda, M. D. (2021). Whose Ground Truth Is It? Harvesting Lessons from Missouri's 2018 Bumper Crop of Drought Observations, *Weather, Climate, and Society*, 13(2), 227-244. Retrieved May 20, 2022, from <https://journals.ametsoc.org/view/journals/wcas/13/2/WCAS-D-19-0140.1.xml>

Dashboard Year to Date

CMOR Madness

Dashboard 2018 - Yesterday

Detail Year to Date

Detail 2022

Detail 2021

Detail 2020

Detail 2019

Detail 2018

About/How To Use

### Filter Options

Select Date Range

Predefined    Calendar

Year to Date

Past 30 Days

Past 7 Days

Reset

Select State

Select one or more

Select County

Select State First

Select How Dry or Wet

Select one or more

Reports with Photos

Show All Reports

Crop Conditions

Excellent - Yield prospects are...

5

Range Conditions

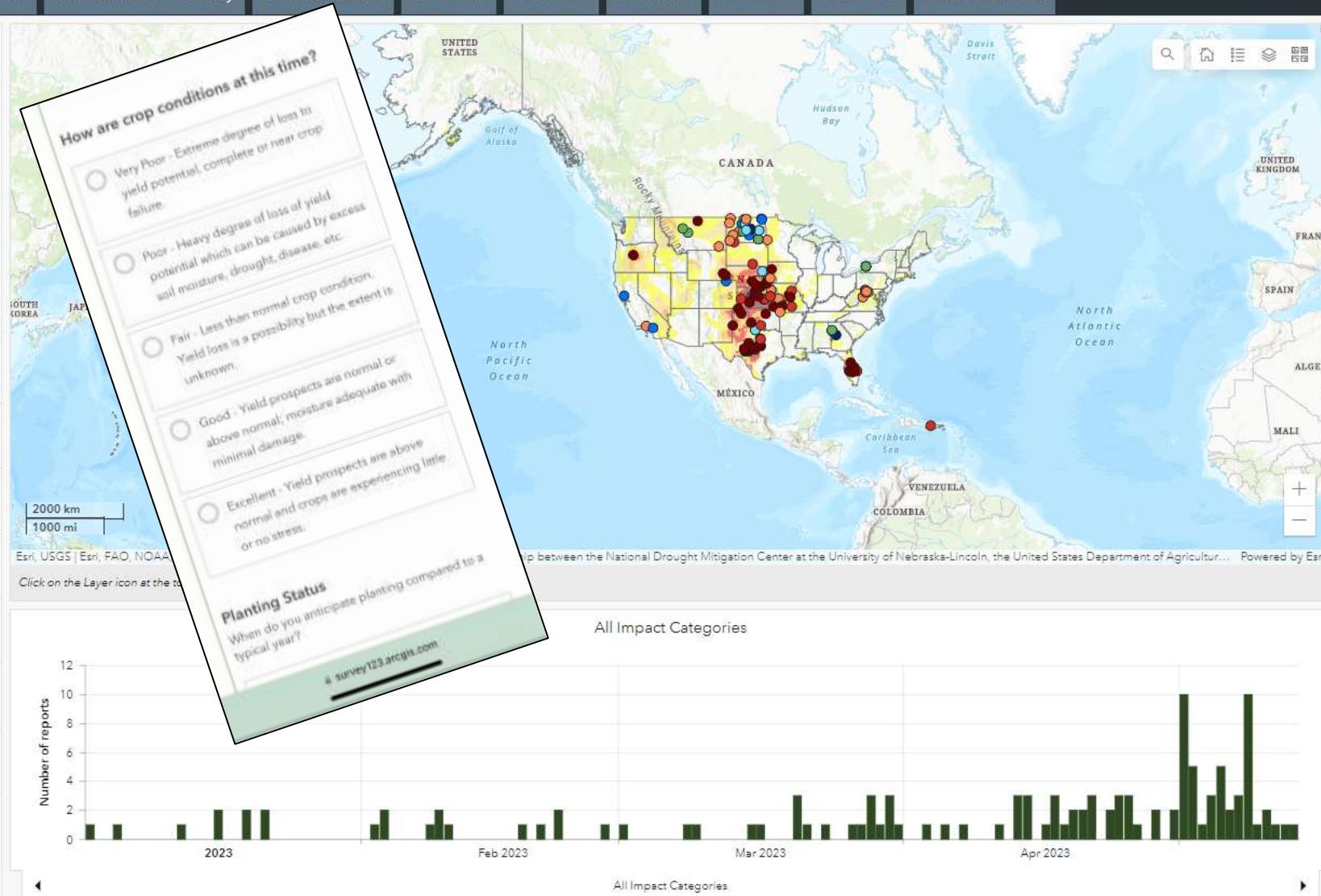
No condition selected

Display Name

Select one or more



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UNIVERSITY OF NEBRASKA



Total CMOR Reports

121

1 of 121

State/Territory: Nebraska

County: Webster

121 Total Displayed

Date: 5/13/2023

How dry or wet is it? Severely Dry

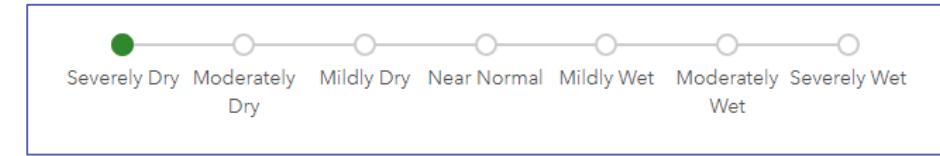


# Evolution of Condition Monitoring Reporting



The screenshot shows the 'Drought Impact Reporter' software interface. At the top, there are tabs for 'Report ID', 'Report Details', 'Community Report', 'Multi-Report', 'Search This Page', and 'About This Page'. The 'Report Details' tab is active. The main area is titled 'Report Details' and contains several sections: 'Report Location' (with a map and dropdown for 'Report Type' and 'Community'), 'Report Category' (with a dropdown for 'Report Type' and a list of categories like 'Drought', 'Flood', 'Hail', 'Wind', 'Ice', 'Snow', 'Hazardous Weather', 'Other Natural Disaster', and 'Unknown'), 'Report Information' (with dropdowns for 'Report Type' and 'Report Status'), and 'Report Description' (with a text area and a 'Submit' button). There is also a 'Print' button at the bottom.

2005  
Drought Impact Reporter  
included “user reports”  
via “Submit A Report” tab



2018  
CMOR reports replaced DIR user  
reports, including 7-point scale

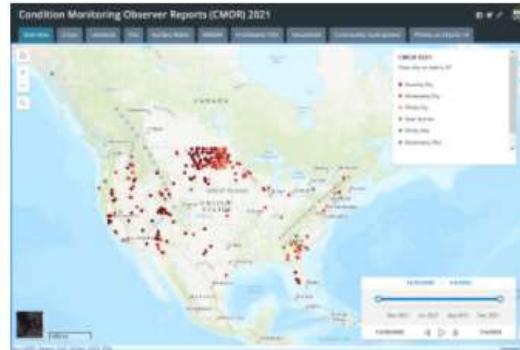
2010  
CoCoRaHS Condition Monitoring reports  
added to Drought Impact Reporter  
database

2016  
7-point dry-to-wet scale added to  
CoCoRaHS Condition Monitoring system

# Old DIR “Submit A Report” + “Condition Monitoring” pioneered by CoCoRaHS = CMOR

Feature	CoCoRaHS	CMOR
<b>Report frequency</b>	Daily	Weekly
<b>Type of information reported</b>	Measurement from a special rain gauge + see below	What you’re seeing or experiencing
<b>Collect sector observations</b>	Can check off sector and add text with Condition Monitoring report	Can choose from list of impacts within sectors or use free text
<b>Photos</b>	No	Yes (optional)
<b>Formal signup and structure</b>	Yes, with excellent education and community-building follow-up	No, anyone can report
<b>7-point dry to wet scale</b>	Yes	Yes
<b>Can report from mobile</b>	Yes	Yes

## Submit and view Condition Monitoring Observer Reports (CMOR)



2022 Map

Archive

Download Factsheet

Watch Video

Social Media Resources

Report drought-related conditions and impacts within the U.S. This is a nation-wide service provided by the National Drought Mitigation Center, based at the University of Nebraska, in partnership with the National Integrated Drought Information System. Information submitted by this form appears on a map and becomes part of a permanent public record. Please note that this form is not part of the process to apply for assistance. To participate, you must legally be an adult, at least 18 years old in most states, 19 in Nebraska or Alabama, or 21 in Mississippi. By submitting information, you agree that it may be used in drought monitoring research. Questions? Please email [DIRinfo@unl.edu](mailto:DIRinfo@unl.edu).

Submit a Report

Submit Report by App

For further assistance in using the app, see [the factsheet](#).





N

10:41 10:41 LTE

X Drought Condition Monitoring Observations and Reports 2021 

Seleccione un idioma

Para utilizar este formulario en español, utilice el menú en la parte superior derecha.

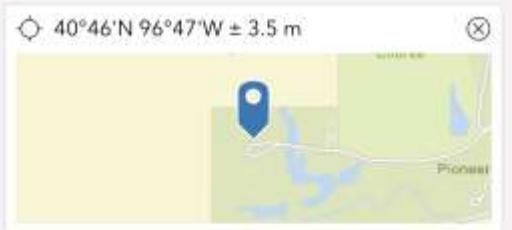
**Introduction**

Report drought-related conditions and impacts within the U.S. This is a nation-wide service provided by the National Drought Mitigation Center, based at the University of Nebraska, in partnership with the National Integrated Drought Information System and the U.S. Department of Agriculture. Information submitted by this form appears on a [map](#) and becomes part of a permanent public record. Please note that this form is not part of the process to apply for assistance. To participate, you must legally be an adult, at least 18 years old in most states, 19 in Nebraska or Alabama, or 21 in Mississippi. By submitting information, you agree that it may be used in drought monitoring research. Questions? Please email [DRIinfo@unl.edu](mailto:DRIinfo@unl.edu).

**Where are you? \***

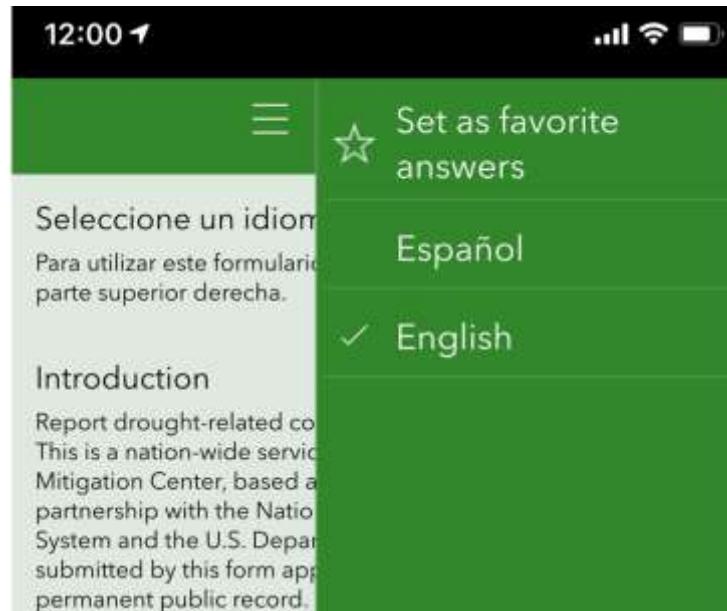
Position the marker on the map for your location using one of three methods: 1) Click on the round compass icon and allow access to your location. 2) Enter an address or the name of a place in the search window. 3) Drag the map until the marker points to the correct location. Use the plus or minus if you want to zoom in or out after you have placed the marker. Scrolling will move the marker.

40°46'N 96°47'W ± 3.5 m

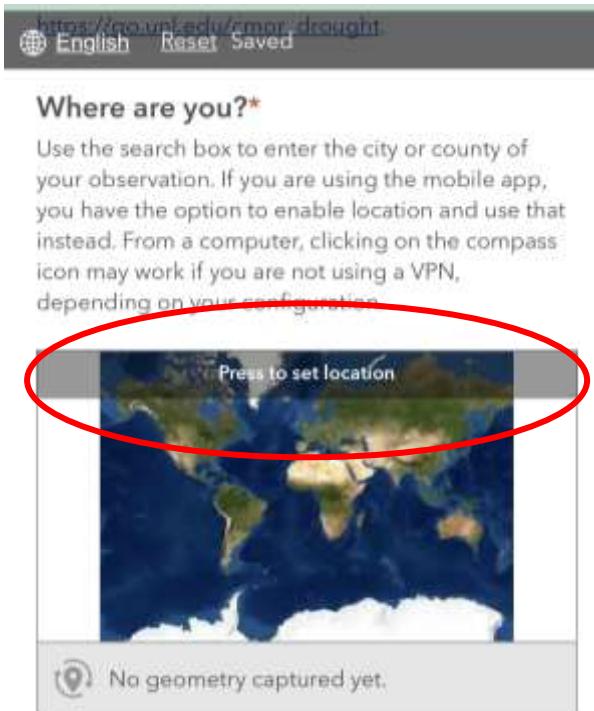


✓

Pick a language  
(current choices are English or Spanish)



# Location widget



← Type it in. City or county is close enough.

Touch the compass to let it find you. Can be extremely precise, especially from the app. But not from a computer with VPN.

← Position the marker on the map.



# 7-point dry to wet scale

## How dry or wet is it?\*

Please use what you know about your part of the country and base your observation on what is normal for this time of year. A normal dry season is not the same as drought.

**Severely Dry:** There is no soil moisture. Ponds, lakes, streams and wells may be nearly empty or dry. Producers may have crop or pasture losses. Mandatory water restrictions may be in place.

**Moderately Dry:** Plants may be brown due to dry conditions. Streams, reservoirs or well water levels may be low. Voluntary water use restrictions may be in place. There may be water shortages. Plants, crops or pastures may be stressed. Soil is dry.

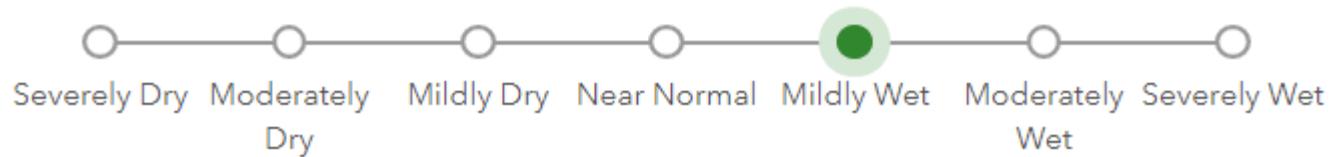
**Mildly Dry:** Growth may have slowed for plants, crops or pastures. Soil is somewhat dry. Local plants, pastures or crops may not have fully recovered if conditions are changing from drier to wetter.

**Near Normal:** What you're seeing is what you expect for this time of year.

**Mildly Wet:** Local plants, crops or pastures are healthy, recovering from dry conditions or draining from wet conditions. Soil moisture is above normal.

**Moderately Wet:** Local plants, crops or pastures are healthy and lush. Soil is very damp and the ground may be saturated with water. There may be standing water in low areas and ditches. Water bodies may be fuller than normal.

**Severely Wet:** Water levels in lakes, streams and ponds are well above normal. Standing water covers some areas that are normally dry. Soil is wet and ground is completely saturated. There may be flooding.



# New in 2022: Report normal or wet conditions

## Conditions are normal or wet

Please use the checkboxes to tell us which of these conditions you are seeing.

Normal conditions for this time of year

More green than usual for this time of year

More standing or flowing water than usual for this time of year

Increased moisture or humidity

Groundwater wells above normal static level

Soil moisture is adequate to good

Non-irrigated crops or pastures are doing well

Lawn and garden watering is not necessary

Low fire danger

Abundant insects or water-loving wildlife

Fisheries in good condition



- Report crop production impact 
- Report livestock production impact 
- Report municipal water supply impact 
- Report community hydropower impact 
- Report health impact 
- Report household impact 
- Report recreation or tourism impact 
- Report other business or industry impact 
- Report fire impact 
- Report forest impact 
- Report wildlife impact 
- Report freshwater fish impact 
- Report spawning fish impact 

# Impact checklists

## Report crop production impact

### Crop production

Please use the check boxes to tell us what effects of drought you have experienced and what actions you have taken.

Less water for irrigation

Reduced yield

Insect infestation

Crop disease

Other

# Crop condition scale, planting and harvest status



## Report crop production impact

### How are crop conditions at this time?

- Very Poor - Extreme degree of loss to yield potential, complete or near crop failure.
- Poor - Heavy degree of loss of yield potential which can be caused by excess soil moisture, drought, disease, etc.
- Fair - Less than normal crop condition. Yield loss is a possibility but the extent is unknown.
- Good - Yield prospects are normal or above normal; moisture adequate with minimal damage.
- Excellent - Yield prospects are above normal and crops are experiencing little or no stress.

### Planting Status

When do you anticipate planting compared to a typical year?

- Normal
- Earlier than normal
- Later than normal

### Harvest Status

When do you anticipate harvesting compared to a typical year?

- Normal
- Earlier than normal
- Later than normal

## Report livestock production impact ▾

### Livestock production

Please use the check boxes to tell us what effects of drought you have experienced and what actions you have taken.

Reduced pasture, forage

Feeding hay early

Supplemental feed

Purchased hay

More invasive species (plants)

Decreased stock weights

Animal stress

Mortality

Reduced grazing on public lands

# Range conditions

### How are range conditions at this time?

Very Poor - Pastures provide very little or no feed. Supplemental feeding is required to maintain livestock condition.

Poor - Pastures are providing marginal feed; supplemental feeding required.

Fair - Pastures are providing generally adequate feed but still less than normal for the time of year.

Good - Pastures are providing adequate feed supplies for the current time of year.

Excellent - Pastures are supplying feed in excess of what is normally expected at the current time of year.

# Photos

- Take a photo, or upload one that's already taken
- Up to 5 photos
- Provide caption information. If the photo shows drought, please tell us what normal would look like, or upload a photo contrasting drought conditions with normal conditions.
- By uploading a photo, you agree that it may be used and shared for educational and management purposes, but you still hold the copyright.

## Upload photo(s)

You can upload a photo of up to 10 MB, if you are the photographer or have permission to share the photo. It will be visible on the web. Please be sure to use the description field below for credit and caption information: Who took the photo, what is the location, what is the date, and what is it showing us?

You as the copyright holder agree that by uploading a photo, it may be used by UNL, and shared with and by government and academic partners, for drought monitoring, management, and education. Your photo will become part of a permanent public archive. UNL reserves the right to remove objectionable content.

Select image file



## Description

Please enter a description to help us understand the drought impact or conditions that you checked, or what to look for in the photo(s). Try to provide context, even a photo from a different year, to help show the difference between dry and normal conditions.

# Identity

# Display name

## Your role

Please choose one or more observer types to help us understand your perspective.

Extension or Farm Service Agency (FSA)

Farmer or livestock producer

Water supplier

Homeowner

Natural or water resources professional

Field worker

Climate or weather professional

Outdoor enthusiast

Other

## Display Name

A display name will let users of this information see whether multiple reports are from a single individual. Especially if you submit reports consistently over time, this helps you build a credible track record.

You can use your real name, come up with a descriptive username such as "NDrancher07," or use a random string of letters and numbers. If you forget your display name, you can zoom in on the map to find your previous report and see what you used. If the drought center uses one of your photos, we may use your display name as attribution, i.e., "Photo by HappyRancher42 via CMOR."

## Name\*

We won't use your name on public-facing maps but will share it internally with state and federal officials who are assessing drought conditions.

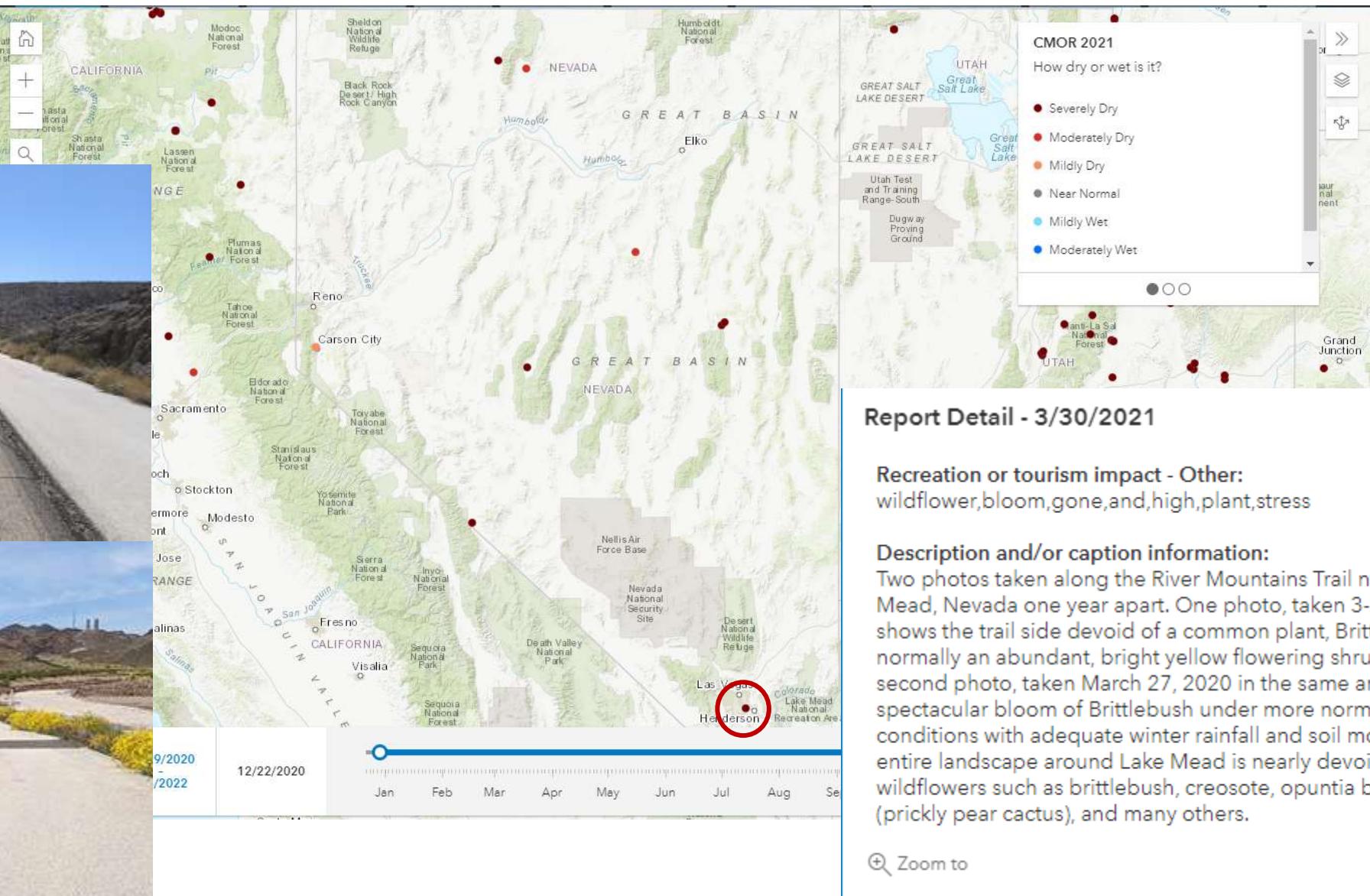
**IMPORTANT:** Please enter your name the same each time you submit a report if you wish to establish a consistent record.

## Your email\*

We won't use your email on public-facing maps but will share it internally with state and federal officials who are assessing drought conditions in case they need to follow up with you.

**IMPORTANT:** Please enter your email the same each time you submit a report if you wish to establish a consistent record.

# Find your dot on the map



# Default view of year-to-date CMOR dashboard

Condition Monitoring Observer Reports (CMOR)

National Drought Mitigation Center, University of Nebraska

[Facebook](#) [Twitter](#) [YouTube](#) [NDMC](#)

Dashboard Year to Date CMOR Madness Dashboard 2018 - Yesterday Detail Year to Date Detail 2022 Detail 2021 Detail 2020 Detail 2019 Detail 2018 About/How To Use

Filter Options

Select Date Range

Predefined [Calendar](#)

Year to Date

[Past 30 Days](#)

[Past 7 Days](#)

[Reset](#)

Select State

Select one or more

Select County

Select State First

Select How Dry or Wet

Select one or more

Reports with Photos

Show All Reports

Crop Conditions

No condition selected

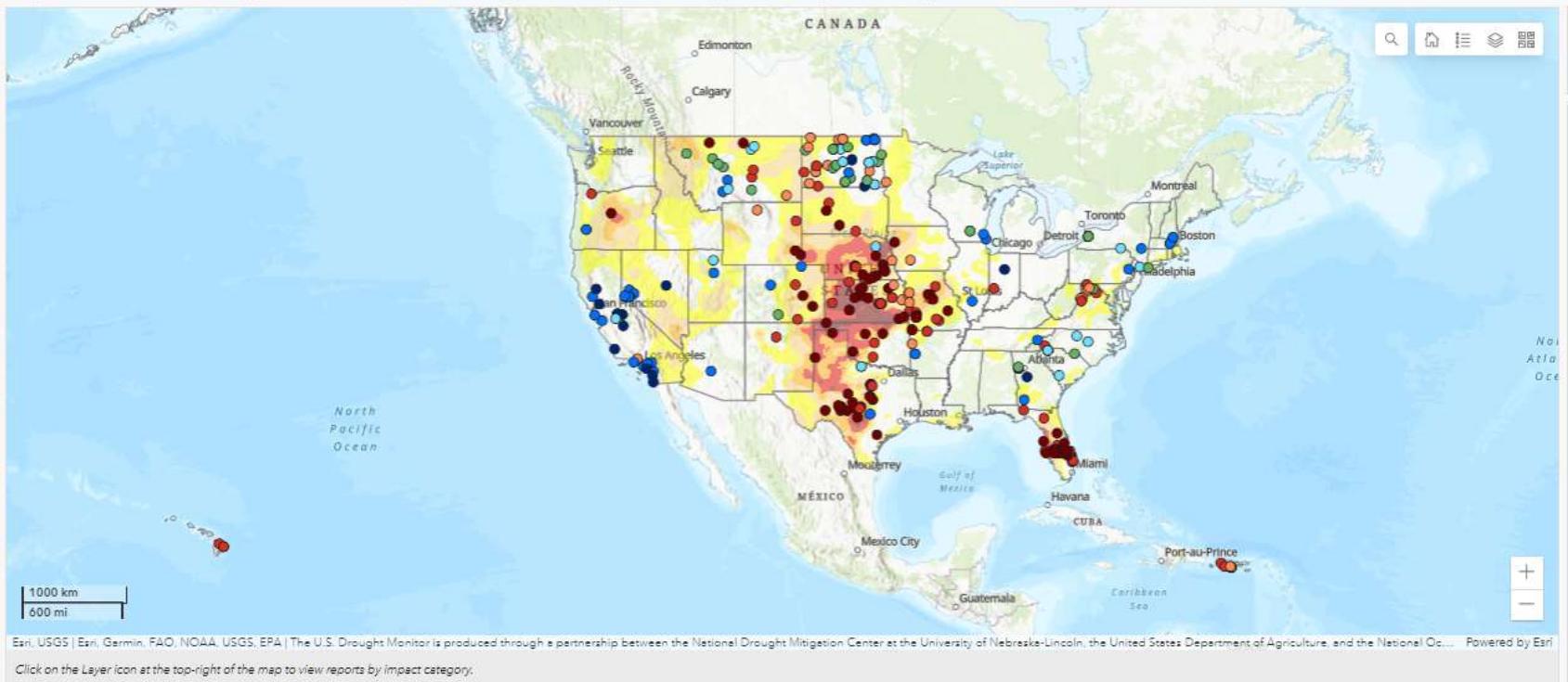
Range Conditions

No condition selected

Display Name

Select one or more

NATIONAL DROUGHT MITIGATION CENTER UNIVERSITY OF NEBRASKA



1000 km  
600 mi

Esri, USGS | Esri, Garmin, FAO, NOAA, USGS, EPA | The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Click on the Layer icon at the top-right of the map to view reports by impact category.

All Impact Categories

Number of reports

Jan 2023 Jan 9 Jan 16 Jan 23 Jan 30 Feb 2023 Feb 13 Feb 20 Feb 27 Mar 2023 Mar 13 Mar 20 Mar 27 Apr 2023 Apr 10 Apr 17 Apr 24 May 2023 May 8

All Impact Categories

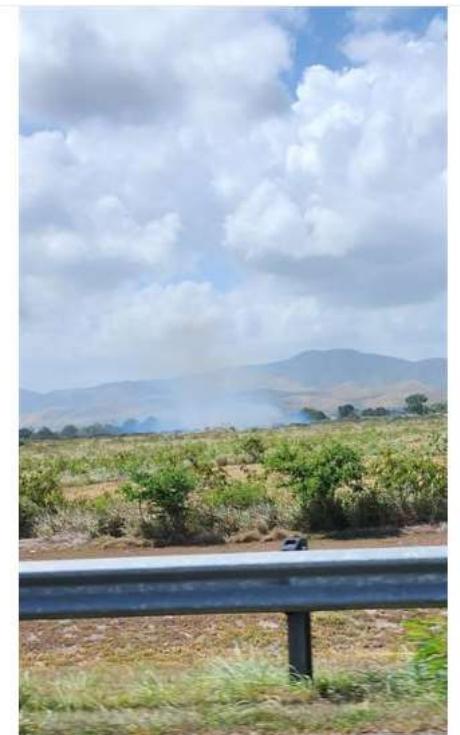
Total CMOR Reports 357

Report Details

Display limited to 2,000 reports in order of most recent. Displayed reports correspond to filter selections.

Condiciones que estuvieron ocurriendo el pasado martes 9 de abril en área cercano al Campamento Santiago y como se nota el cambio en la vegetación, foto suministrada por un familiar.

Submitted by: Hector Martinez observador CoCoReHS, PR-SN-2



# Zoomed in to Kansas

Condition Monitoring Observer Reports (CMOR)

National Drought Mitigation Center, University of Nebraska

NDMC

Dashboard Year to Date CMOR Madness Dashboard 2018 - Yesterday Detail Year to Date Detail 2022 Detail 2021 Detail 2020 Detail 2019 Detail 2018 About/How To Use

Filter Options

Select Date Range  
Predefined Calendar  
Year to Date  
Past 30 Days  
Past 7 Days  
Reset

Select State Kansas (circled)

Select County Select one or more

Select How Dry or Wet Select one or more

Reports with Photos Show All Reports

Crop Conditions No condition selected

Range Conditions No condition selected

Display Name Select one or more

Map of Kansas showing drought conditions (D1 to D4) across the state. Major cities like Wichita, Kansas City, and Topeka are labeled. A legend in the top right corner of the map area shows the color coding for D1 (light yellow), D2 (orange), D3 (dark orange), and D4 (red).

Report Details

Total CMOR Reports 23

Report 2 of 23

This drought is the worst on record in my lifetime. Looking at extreme effects on the wheat crop and a lot of effects on the pasture grass continuing to not green up and grow and farm ponds for livestock.

Submitted by: Midway/ExtensionCrops

Two photographs of dry, brown fields are shown in boxes on the right side of the map.

Bar chart showing the number of reports over time. The y-axis is 'Number of reports' (1, 2) and the x-axis shows dates from Jan 21 to May 6, 2023. The chart shows a significant peak in reports in early April, with two bars reaching a height of 2.

All Impact Categories

NATIONAL DROUGHT MITIGATION CENTER

## “2018-yesterday” dashboard adds US Drought Monitor intensity

Separate maps for each year show more detail

Condition Monitoring Observer Reports (CMOR)  
National Drought Mitigation Center, University of Nebraska

Dashboard Year to Date CMOR Madness Dashboard 2018 - Yesterday Detail Year to Date Detail 2022 Detail 2021 Detail 2020 Detail 2019 Detail 2018 About/How To Use

CMOR Year to Date CMOR Main Page | Submit a Report



The attribute table lets you write custom queries and export to csv

You can change the calendar to view reports from any year, but the sector icons are specific to each year. The survey has evolved over time.

You can change the calendar to view reports from any year, but the sector icons are specific to each year. The survey has evolved over time.

The screenshot shows the NDMC software interface with a 'Date Filter' dialog box overlaid. The dialog box is titled 'Date Filter' and contains several filter options. The first three options are pre-set: 'Year to Date' (selected, green switch), 'Past 7 Days' (not selected, grey switch), and 'Past 30 Days' (not selected, grey switch). Below these are three expandable sections, each starting with 'Select a Date Range' and 'Select a Date'. The first section is expanded, showing two date selection boxes with a 'and' button between them. The other two sections are collapsed, indicated by a minus sign. Each section has a green switch to its right. The background of the software shows a map and various tool icons.

# Filter power!

## Condition Monitoring Observer

National Drought Mitigation Center, University of Nebraska-Lincoln



Dashboard Year to Date

CMOR Madness



CMOR Year to Date



State/Territory/County



How Dry or Wet



Photos



Display Name



Normal or Wet Conditions

Crop/Range Conditions

Planting/Harvest Status

Crop Production

Livestock Production

Municipal Water Supply

Comm

Public

House

Recrea

Other

Fire

Forest

Wildlife

Freshw

Spawning

Detail Year to Date

Detail 2022

Detail 2021

Detail 2020

Detail 2019



Sort

Map

Table

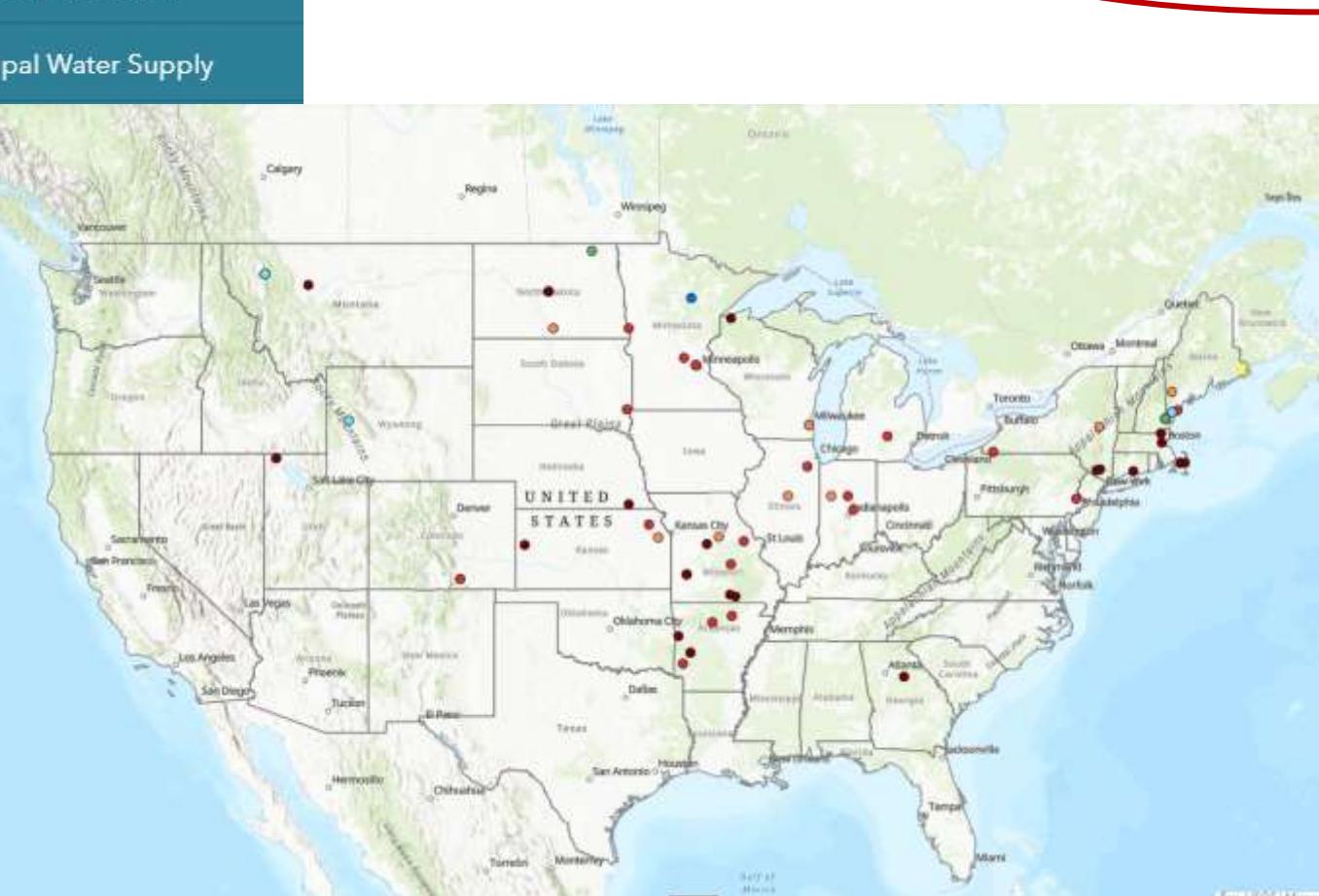
Report

CSV

PDF

Print

Help



Custom Filter

Custom filter:

Layer: CMOR Reports 2018 - Year...

Display features in the layer that match the following expression:

Description and/or caption information (String):

contains

layer

Case sensitive

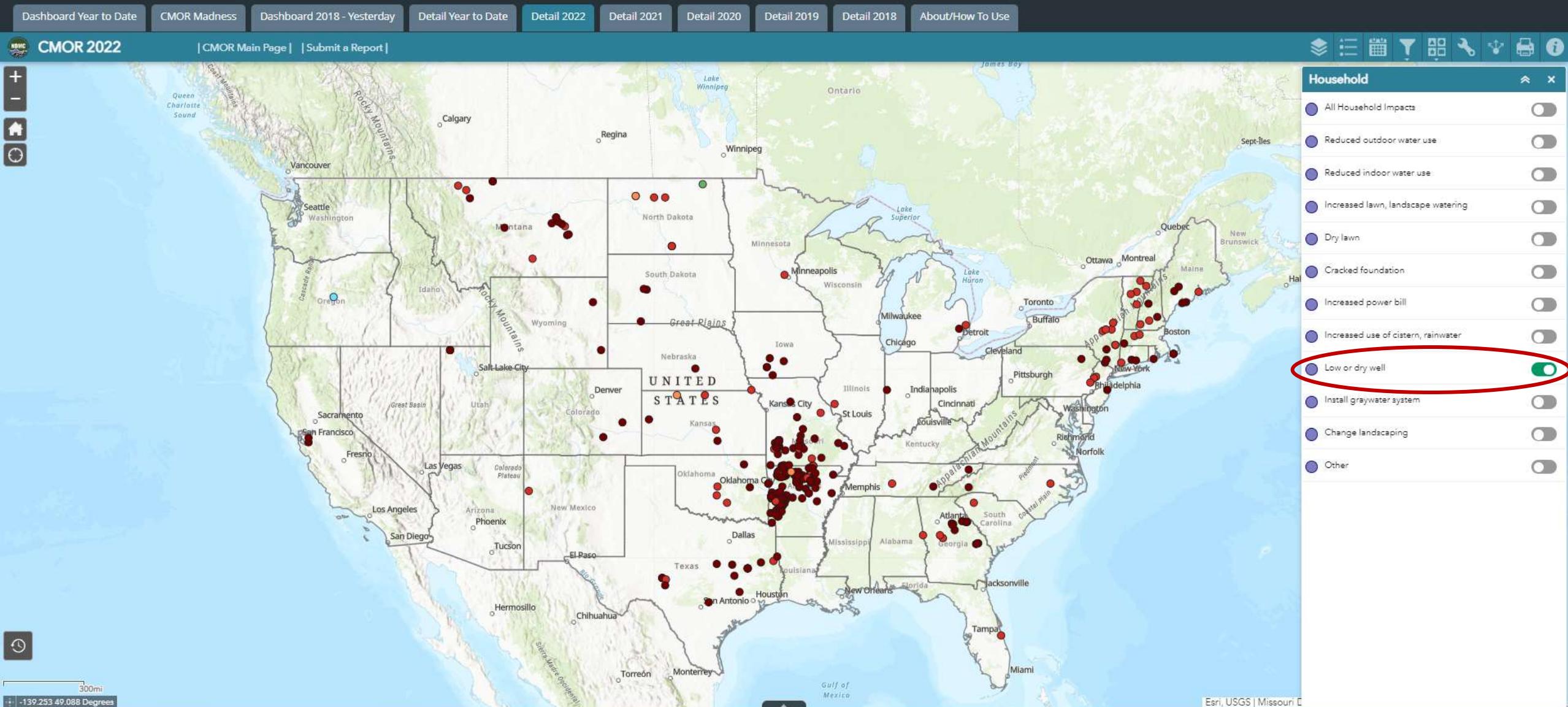
+ Add expression

+ Add set

# Filtered by a checked off impact: 2022 reports of low or dry wells

## Condition Monitoring Observer Reports (CMOR)

National Drought Mitigation Center, University of Nebraska



## Condition Monitoring Observer Reports (CMOR)

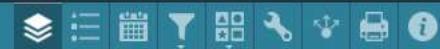
National Drought Mitigation Center, University of Nebraska



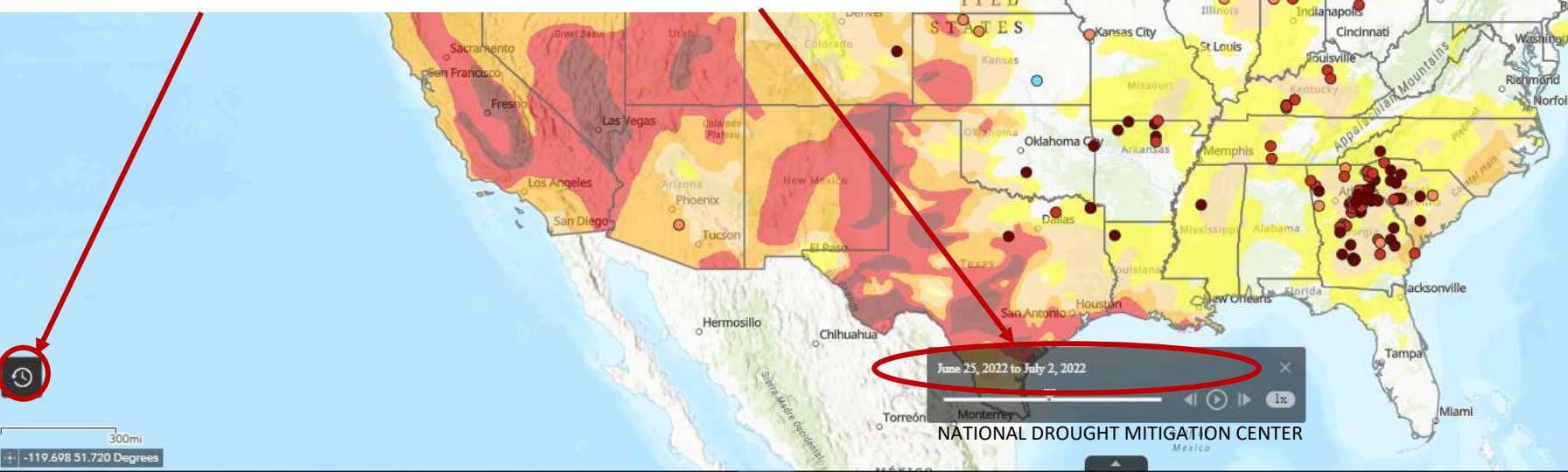
Dashboard Year to Date CMOR Madness Dashboard 2018 - Yesterday Detail Year to Date Detail 2022 Detail 2021 Detail 2020 Detail 2019 Detail 2018 About/How To Use

NODMC CMOR 2022

| CMOR Main Page | | Submit a Report |



To compare CMOR reports with past US Drought Monitor, activate time slider and USDM layer, and advance to the week of interest



Map Layers

Layers

CMOR Reports 2018 - Yesterday

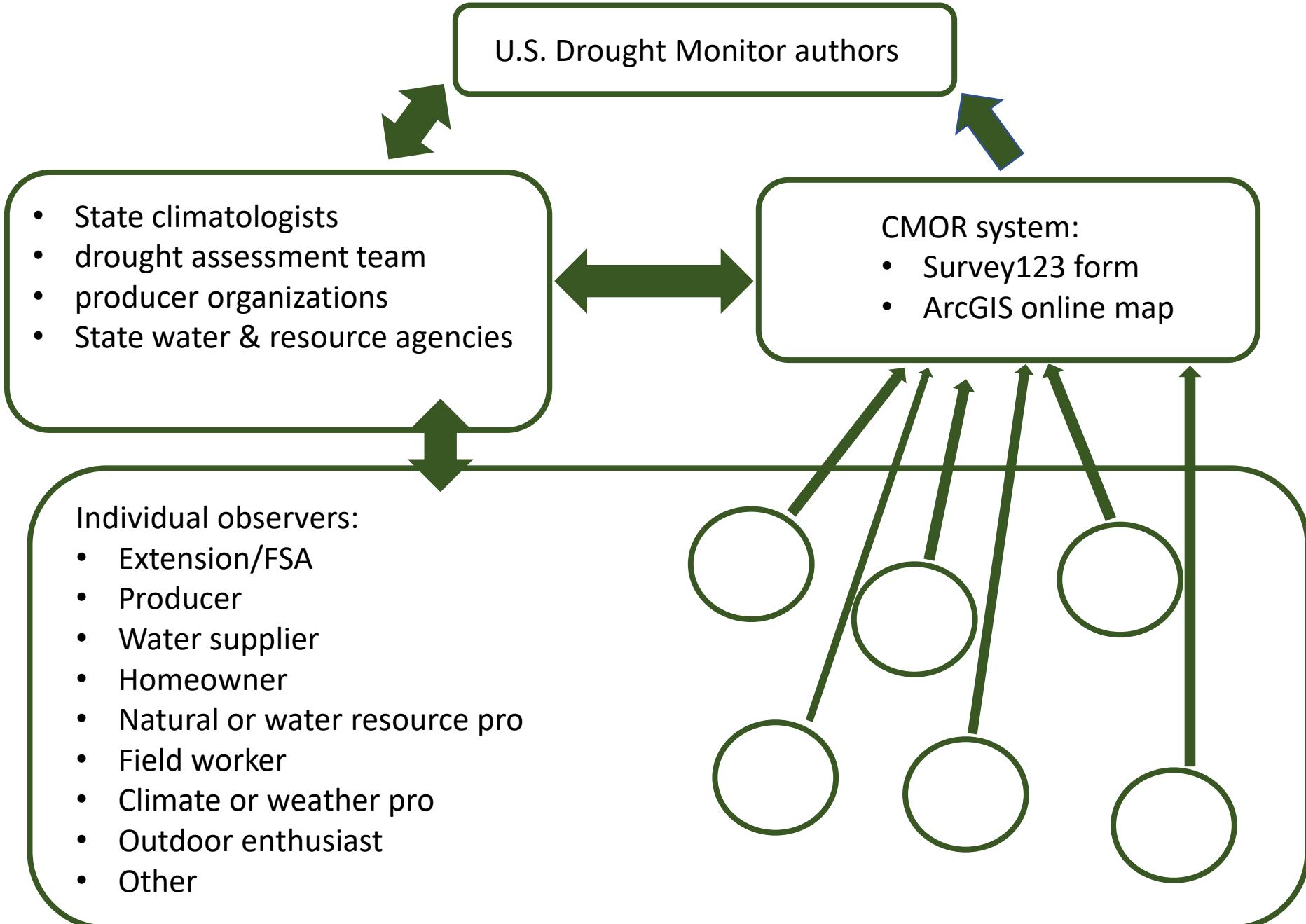
US State/Territory Boundary

US County/Territory Boundary

U.S. Drought Monitor - Current Week

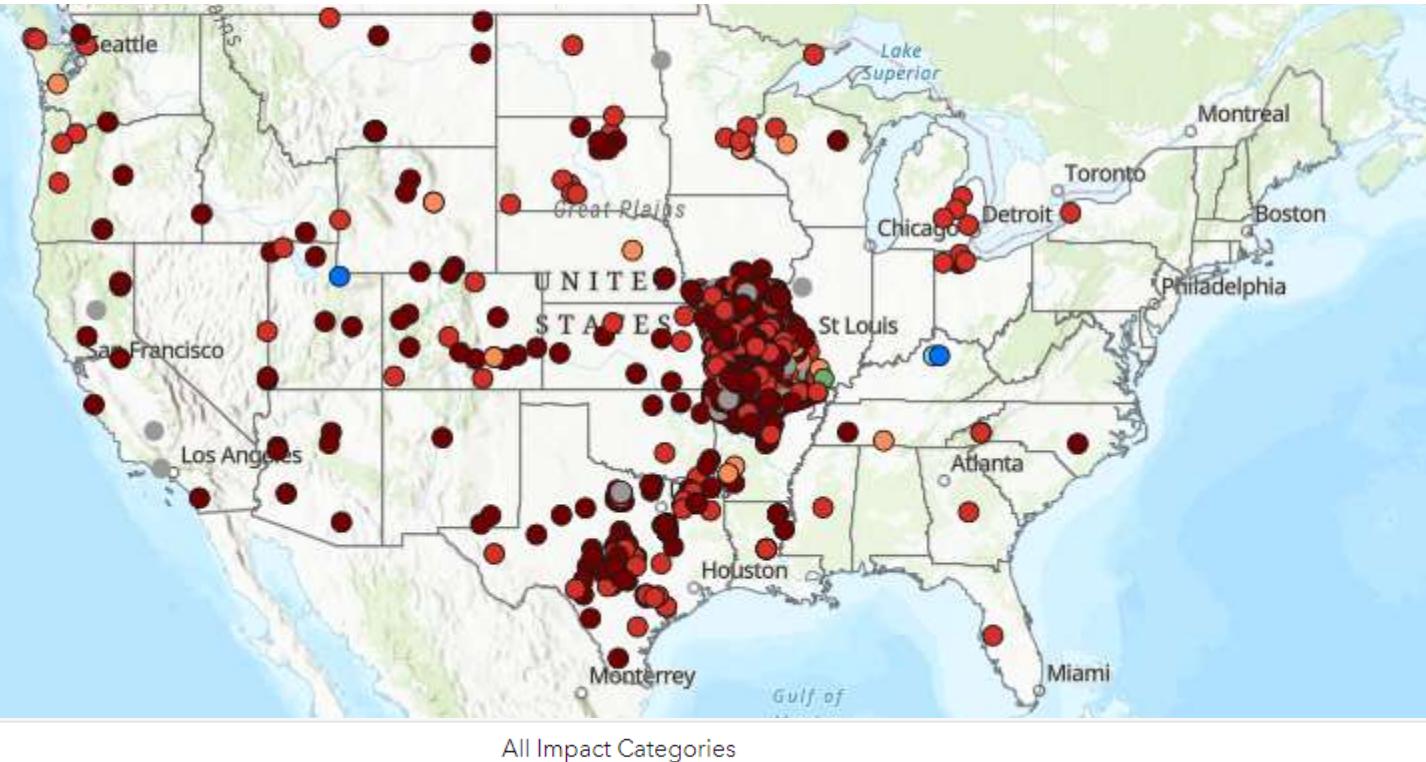
U.S. Drought Monitor - Archive



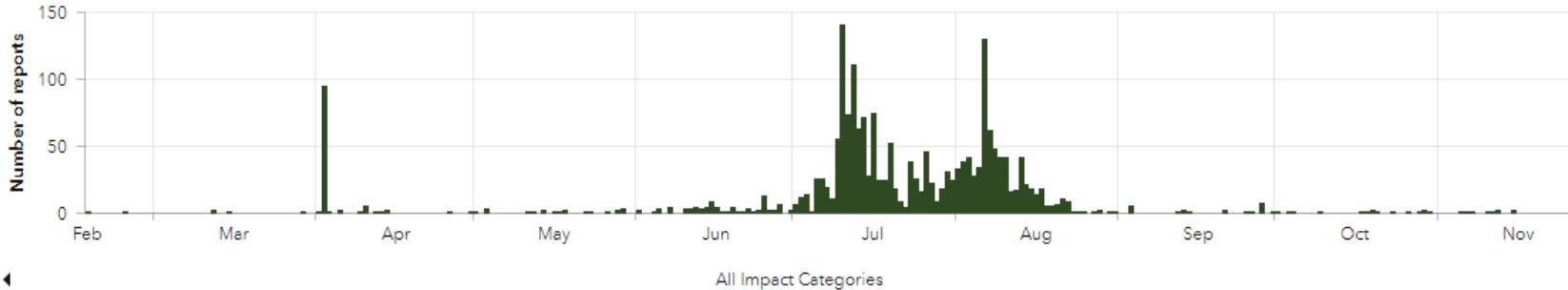




# 2018: Missouri's "media blitz," building on years of effort by state climatologist to cultivate impact reporting. State officials: "Trust but verify."



All Impact Categories



◀ 3 of 1521 ▶

**Report Details**  
Display limited to 2,000 reports in order of most recent. Displayed reports correspond to filter selections.

**State/Territory:** MO  
**County:** Boone

**Date:** 10/18/2018

**How dry or wet is it?** Mildly Dry

**U.S. Drought Monitor Intensity:** D0 (Abnormally Dry)

**How localized or widespread are the conditions you are reporting?**

**Description and/or caption information:**  
The attachment shows two pictures of a Missouri Dept. of Conservation lake, just southeast of Columbia, Missouri. The first pic was taken on Aug 2, 2018 and the second was taken on Oct 18, 2018. Nearly 6-inches of rain fell during the first half of October and some recovery is noted. Initially, there was not much runoff due to a very dry soil profile, but additional rainfall events contributed to some recharge, though the lake is still not at capacity.

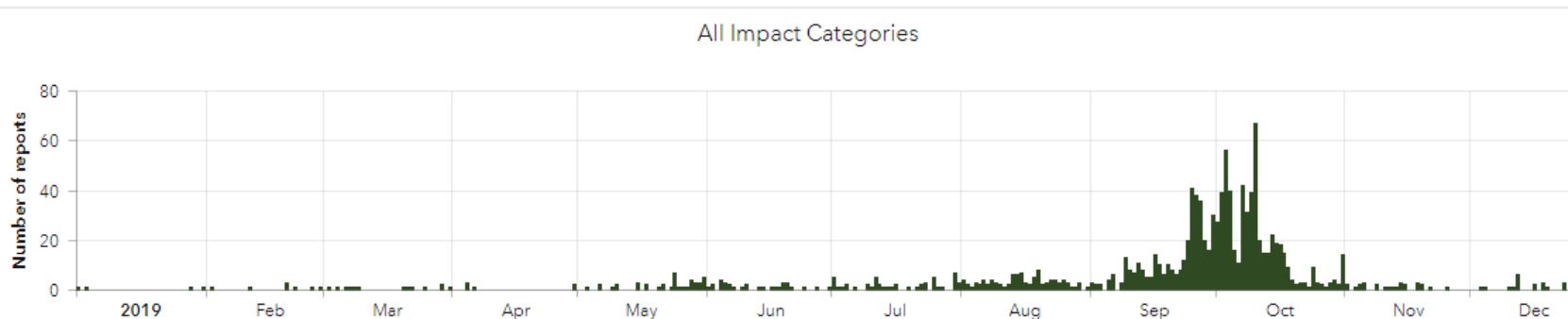
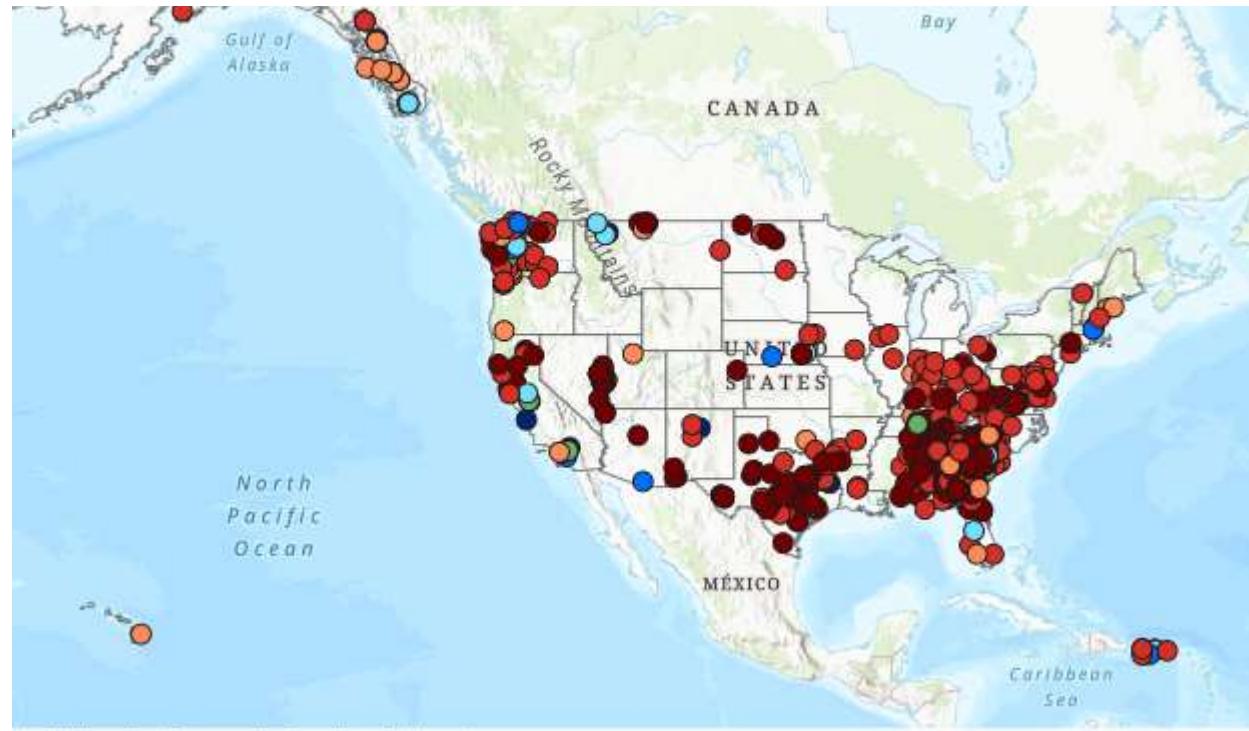
South Farm R-1 Lake, southeastern city limits of Columbia, Missouri, Boone County, August 2, 2018



South Farm R-1 Lake, southeastern city limits of Columbia, Missouri, Boone County, October 18, 2018



# 2019: Late-season, fast-emerging drought in Georgia. State officials said they tuned in to any and all impact information and appreciated the convenience of CMOR.



## Report Details

Display limited to 2,000 reports in reports correspond to filter selection

State/Territory: GA

County: Lamar

Date: 12/10/2019

How dry or wet is it? Mildly Dry

U.S. Drought Monitor Intensity:

None

## Description and/or caption information:

There are two photos. One is us feeding and the other is a cow and calf on brown and so.e green grass. We are still selling livestock because we just don't have the grass to keep them. The grass is growing but not very fast. We keep getting missed by the big rains and only receive small showers here and there. The ponds the cows drink out of is once again getting a green tinted. So I know the water quality is down again.



2021: North Dakota SC persuades Extension to report weekly during growing season.

Process includes verification, calibration, weekly calls with state officials.

2021: Oregon Forestry makes a broad appeal for forestry-related reports



State/Territory: OR  
County: Lane

Date: 7/8/2021

How dry or wet is it? Severely Dry

U.S. Drought Monitor Intensity:  
D2 (Severe Drought)

Out of 2,078 reports in  
2021:

- 864 were from North Dakota
- 362 were from Oregon

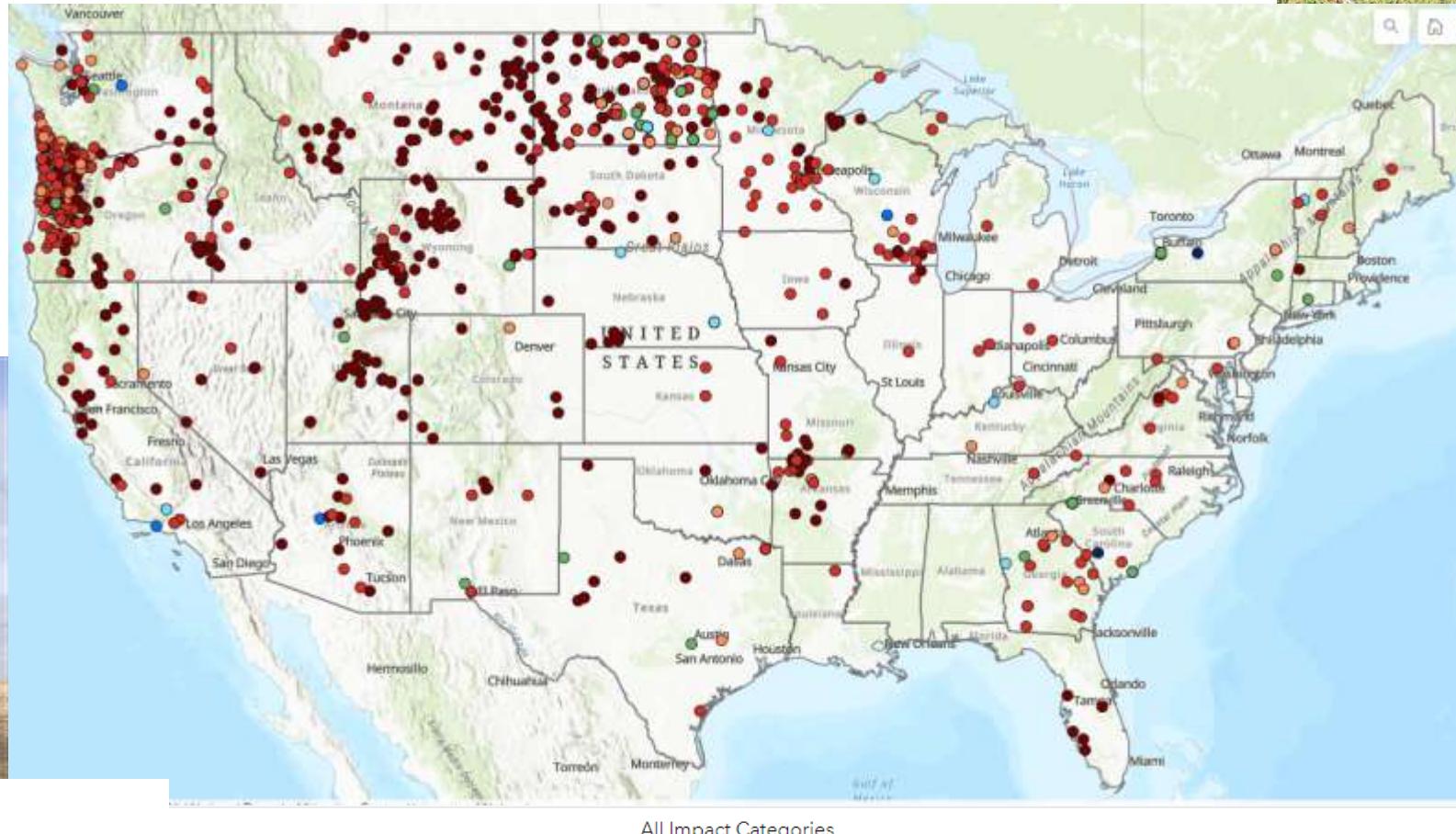


State/Territory: ND  
County: Slope

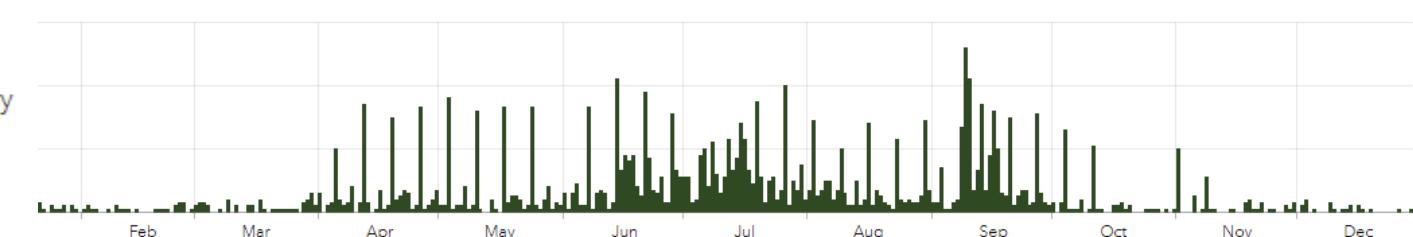
Date: 4/30/2021

How dry or wet is it? Severely Dry

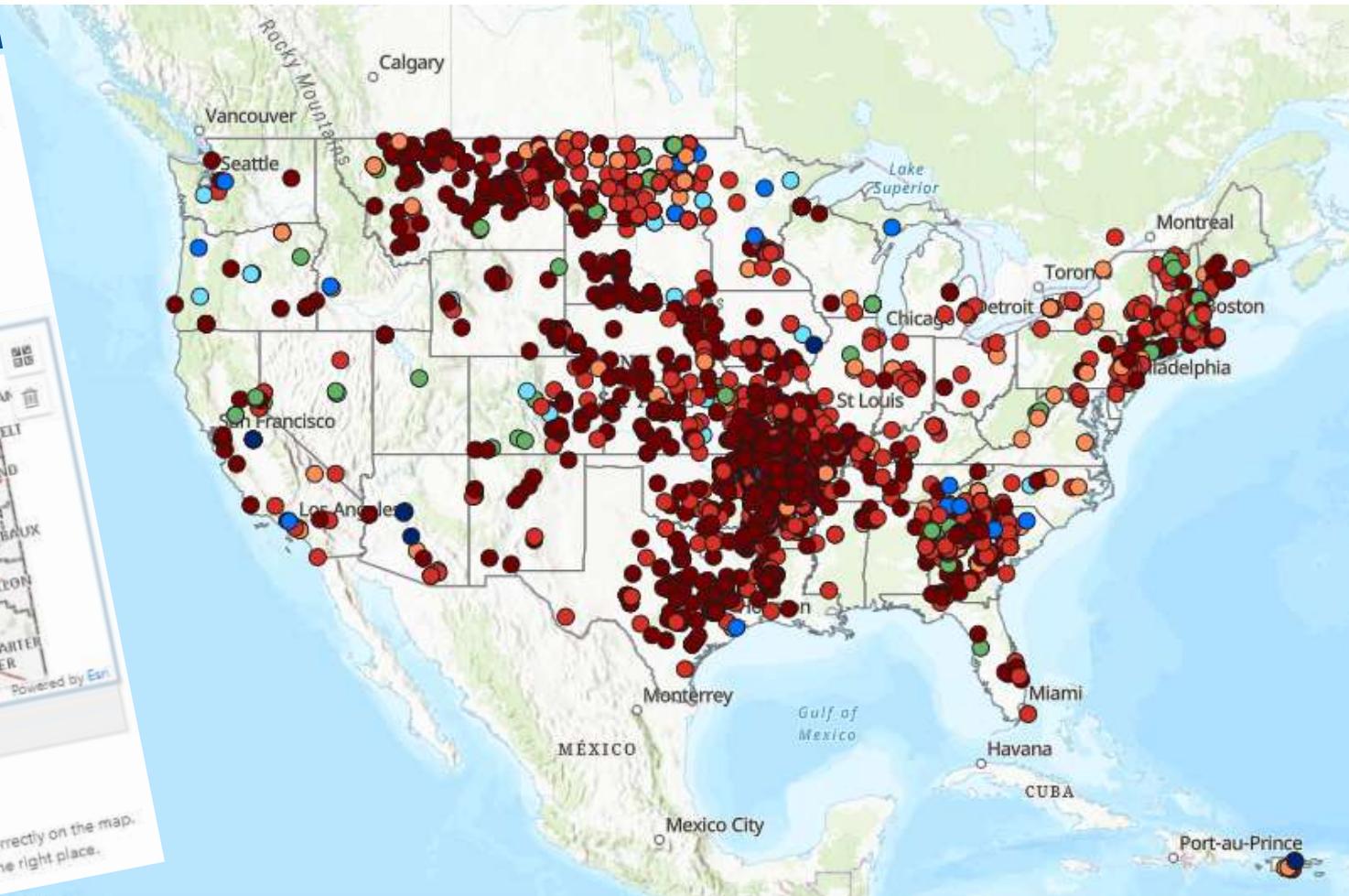
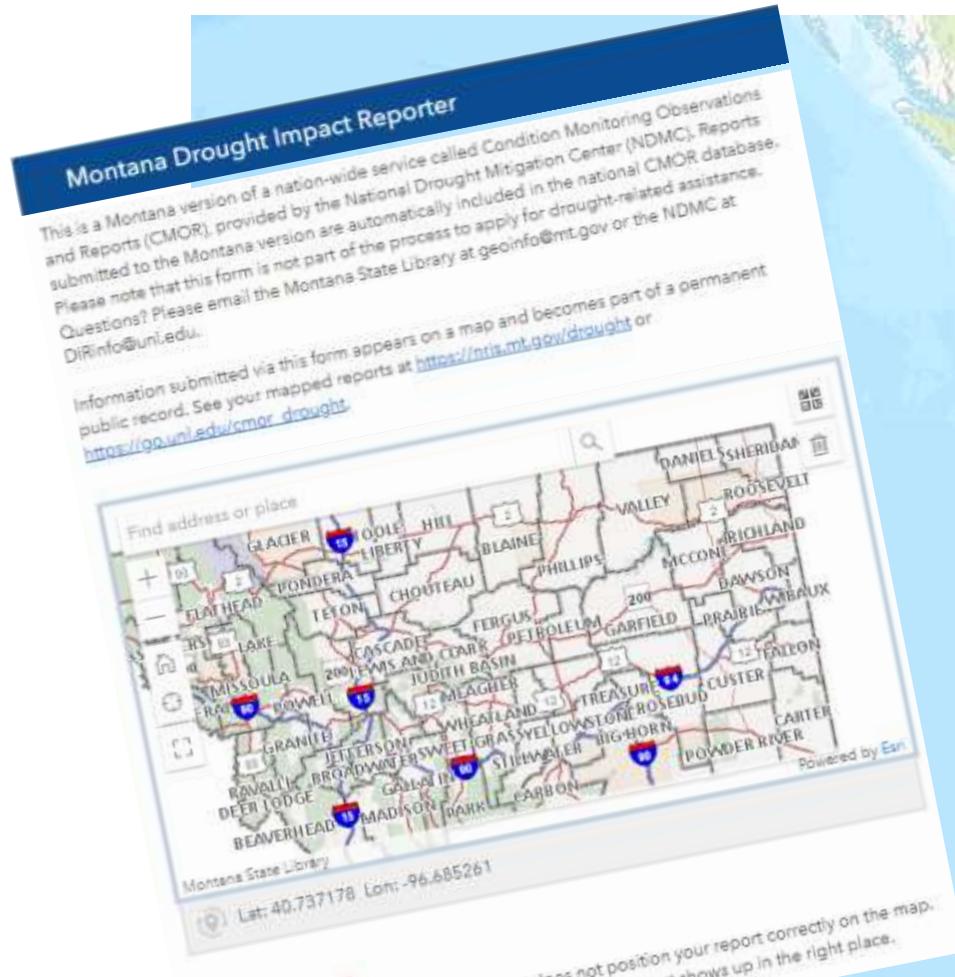
U.S. Drought Monitor Intensity:  
D3 (Extreme Drought)



All Impact Categories



# 2022: A few states (Montana, Kentucky) begin tailoring forms within the overarching data flow.



# Default “multi-tool” view compares CMOR and CoCoRaHS reports

**Drought Impacts Multi-Tool**

**Filter Options**

Select a Date Range  
Predefined    Calendar  
 Past 7 Days  
 Past 30 Days  
 Year-to Date  
Period of Record  
Reset

Select State  
No State Selected  
Select State for DSCI Chart  
50 US States and D.C.  
Select County  
Select a State First  
CMOR Reports with Photos  
Show All

**Map Legend**

**CMOR Reports 2018 - Yesterday**

- Severely Dry
- Moderately Dry
- Mildly Dry
- Near Normal
- Mildly Wet
- Moderately Wet
- Severely Wet
- No Data

**CoCoRaHS**

- Severely Dry
- Moderately Dry
- Mildly Dry
- Near normal
- Mildly Wet
- Moderately Wet
- Severely Wet
- No Data

**U.S. Drought Monitor - Current Week**

Map legend    About

1 of 35

Display limited to 2,000 impacts in order of most recent. Displayed impacts correspond to filter selections.

**CMOR Reports**

State/Territory: NE  
County: Webster  
Date: 5/13/2023  
How dry or wet is it? Severely Dry  
How much experience do you have with conditions there? 20\_or\_more\_years  
How many times in the past have you seen it like this? twice\_or\_more  
When was it most recently like this? 2015  
How localized or widespread are the conditions you are reporting? widespread throughout the county and neighboring counties  
How are crop conditions at this time? poor  
Planting Status: normal  
Harvest Status: earlier\_than\_normal

Click on left or right arrows below to scroll through different data sources.

**Condition Monitoring Observer Reports (CMOR)**

Number of reports

Date	Number of reports
May 7	~3
May 8	~20
May 9	~3
May 10	~3
May 11	~3
May 12	~3
May 13	~3

CMOR    CoCoRaHS    News Stories    Drought Tweets    DIR City    DIR County    DIR State

**Drought Severity and Coverage Index (DSCI)**

DSCI

2006 2008 2010 2012 2014 2016 2018 2020 2022

NATIONAL DROUGHT MITIGATION CENTER  
UNIVERSITY OF NEBRASKA



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