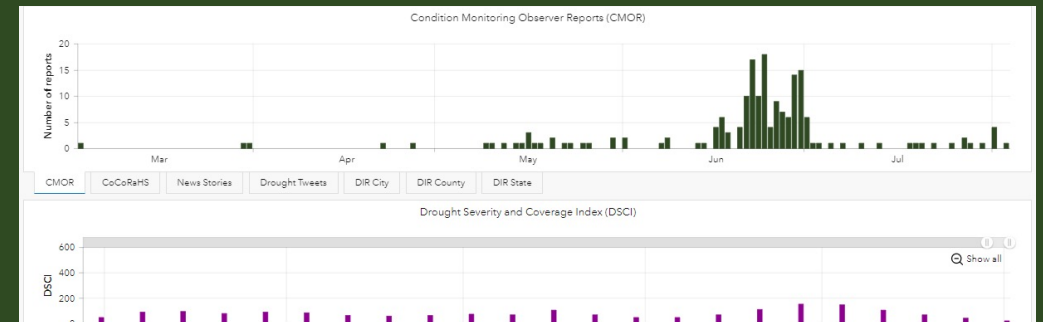
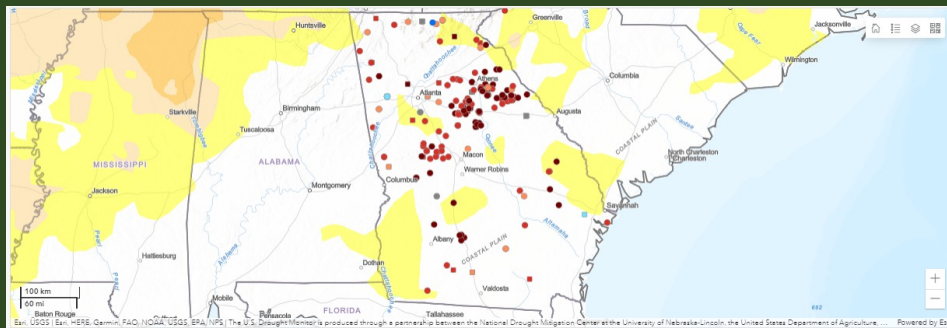


Tuning in to drought chatter: Detecting deviation from expectation

Kelly Helm Smith

Southeast DEWS Partners Dialogue, Atlanta, GA, 2022



Images: go.unl.edu/multi-tool

Go.unl.edu/DIRdash

droughtimpacts.unl.edu/Tools.aspx

Go.unl.edu/CMOR_drought

Go.unl.edu/droughttweets

Go.unl.edu/droughtnews

Go.unl.edu/multi-tool

The image is a collage of screenshots from several web dashboards related to drought monitoring and reporting. The main dashboard shown is the 'Drought Impact Reporter Dashboard' from the National Drought Mitigation Center (NDMC) at the University of Nebraska. It features a map of the United States with various filters on the left for date range, state, county, and impact categories. A central panel displays 'Condition Monitoring Observer Reports (CMOR)' for a specific date, showing a map of the Southeastern US with red dots representing reports. Other panels include 'Drought Tweets' with a map and a list of tweets, 'Media Drought Index' with a map and a bar chart showing the number of reports by state, and 'Drought Impacts Multi-Tool' which provides a comprehensive overview with multiple maps and charts. The NDMC logo is visible in the bottom left of several screenshots.



Filter Options

Select a Date Range
Last 90 Days

Select State/Territory
Select one or more

Select County
Select one or more

Agriculture Impacts
No Filter

Business & Industry Impacts
No Filter

Energy Impacts
No Filter

Fire Impacts
No Filter

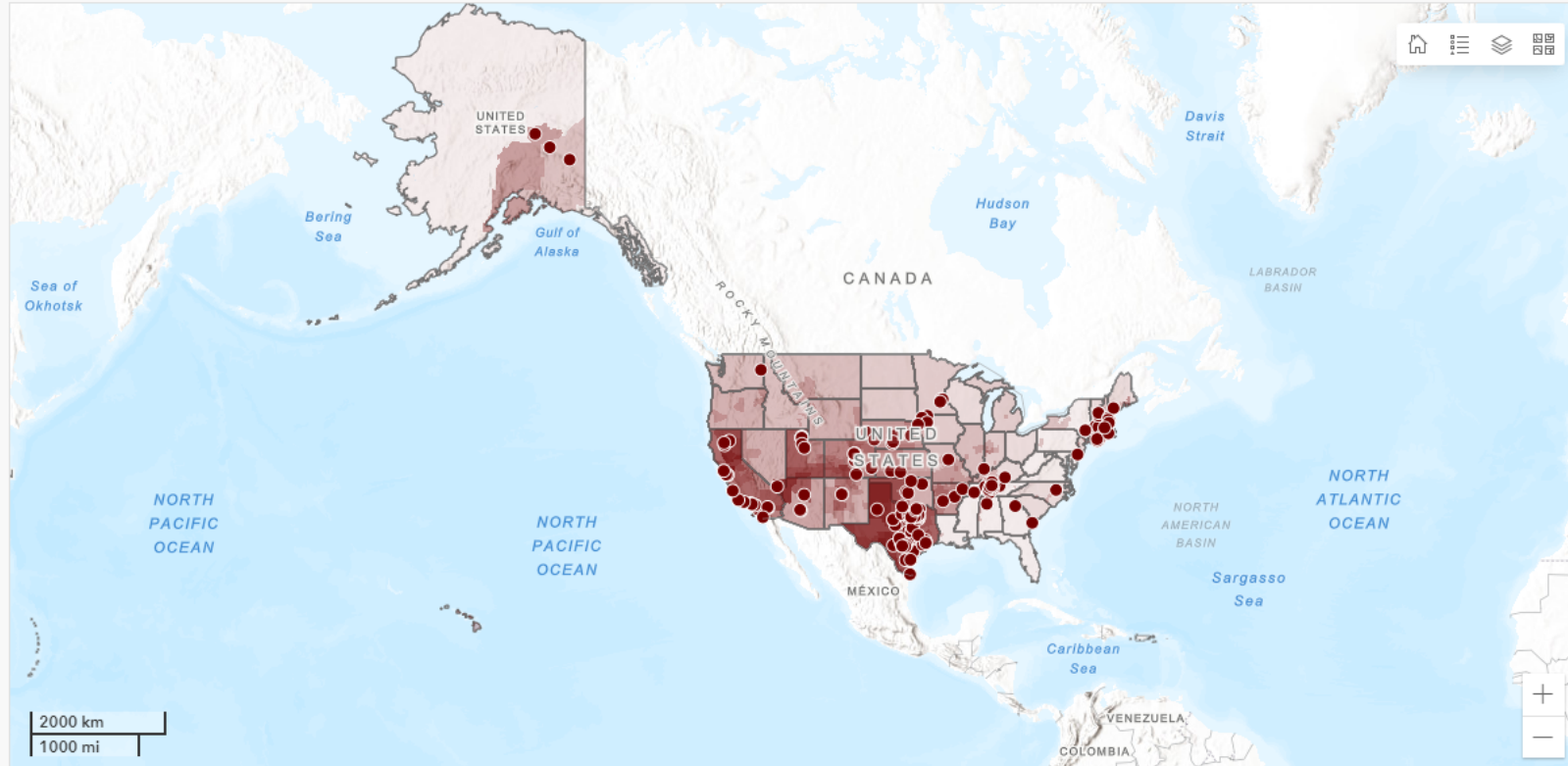
Plants & Wildlife Impacts
No Filter

Relief, Response & Restrictions Impacts
No Filter

Society & Public Health Impacts
No Filter

Tourism & Recreation Impacts
No Filter

Water Supply & Quality Impacts
No Filter

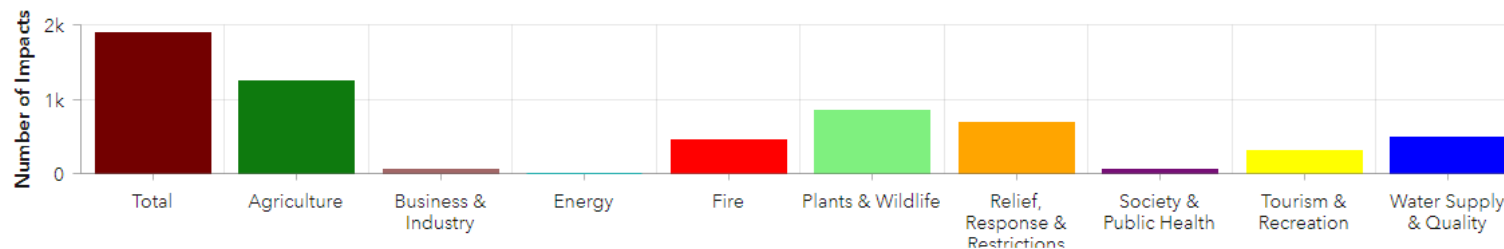


Esri, USGS | Esri, FAO, NOAA, USGS | The Drought Impact Reporter has been supported over the years by the U.S. Department of Agriculture's Risk Management Agency and Office of the Chief Econo... Powered by Esri

Impacts are shaded in red. Darker shades indicate higher number of impacts.

Number of County Impacts by Category

Counts correspond to filter selections at left



Click on the arrows below to see state and county category and time series charts.

County Impacts | State Impacts | City Impacts | County Impacts, 2005 - Present | State Impacts, 2005 - Present | City Impacts, 2005 - Present

About

The Drought Impact Reporter (DIR) dashboard presents drought impacts recorded for states, counties, and cities. The National Drought Mitigation Center launched the DIR in 2005 as the nation's first comprehensive database of drought impacts. Impacts have been systematically culled from daily media reports since July 2005, most relating to present drought, but a few reports have been about historic droughts. The earliest impacts are dated 1850.

Why track drought impacts? 1) To help policy-makers determine where to direct relief; 2) to help researchers enhance understanding of what happens when expected rain or snow doesn't arrive; 3) to help planners know where to address underlying vulnerability, to reduce future impacts. Of course, private citizens, homeowners, farmers and ranchers, business owners and others can plan ahead if they know how drought or water shortage affects them.

The impacts in the DIR are primarily based on news stories. A moderator goes through results from an

About

1 of 1500

County Impacts

Limited to 1,500 impacts in order of most recent. Displayed impacts correspond to filter selections.

County: Beaverhead County
State: MT

Duration: 8/3/2022 - 9/2/2022

Title:
Low, warm waters of the Big Hole River in southwest Montana nearing conservation trigger

Description:
Falling water levels and rising temperatures on the Big Hole River prompted the Big Hole Watershed Committee to warn both irrigators along the river and anglers to prepare for water use conservation measures and to adjust their angling habits. Montana Standard (Butte), Aug 3, 2022

Impact ID: 57500

Impact Source:
<https://moderator.droughtreporter.unl.edu/RSSfeed/Impa>

County Impacts



Reported Drought Impacts by State and USDM Status

This tool sorts and displays impacts from the [Drought Impact Reporter](#) by U.S. Drought Monitor status, and also by season, weeks in drought, and date range. It is based on impacts recorded through the previous calendar year. This tool complements [a table](#) that interprets U.S. Drought Monitor categories. That table includes a column called “Possible Impacts,” which are hypothetical and for the entire country. The impacts displayed in the Reported Drought Impacts by State and USDM Status tool were documented in media reports and recorded in the Drought Impact Reporter for each state. The interactive Reported Drought Impacts by State and USDM Status tool incorporates feedback based on a [proof of concept](#) that used a more limited set of impacts.

Filter by:

State: USDM Category: Season: Weeks in Drought: 
Date Range: to

Filter by impact sector:

- Agriculture
- Business & Industry
- Energy
- Fire
- Plants & Wildlife
- Society & Public Health
- Relief, Response & Restrictions
- Tourism & Recreation
- Water Supply & Quality

Note: The default view is impacts from all sectors. Select a sector to see only impacts from that sector. If you choose multiple sectors, it filters by AND logic.

How well did this tool work for you? Please use [this survey](#) to tell us about your experience.

- Dashboard Year to Date
- Dashboard 2018 - Yesterday
- Detail Year to Date
- Detail 2021
- Detail 2020
- Detail 2019
- Detail 2018
- Info

Filter Options

Select Date Range

Predefined Calendar

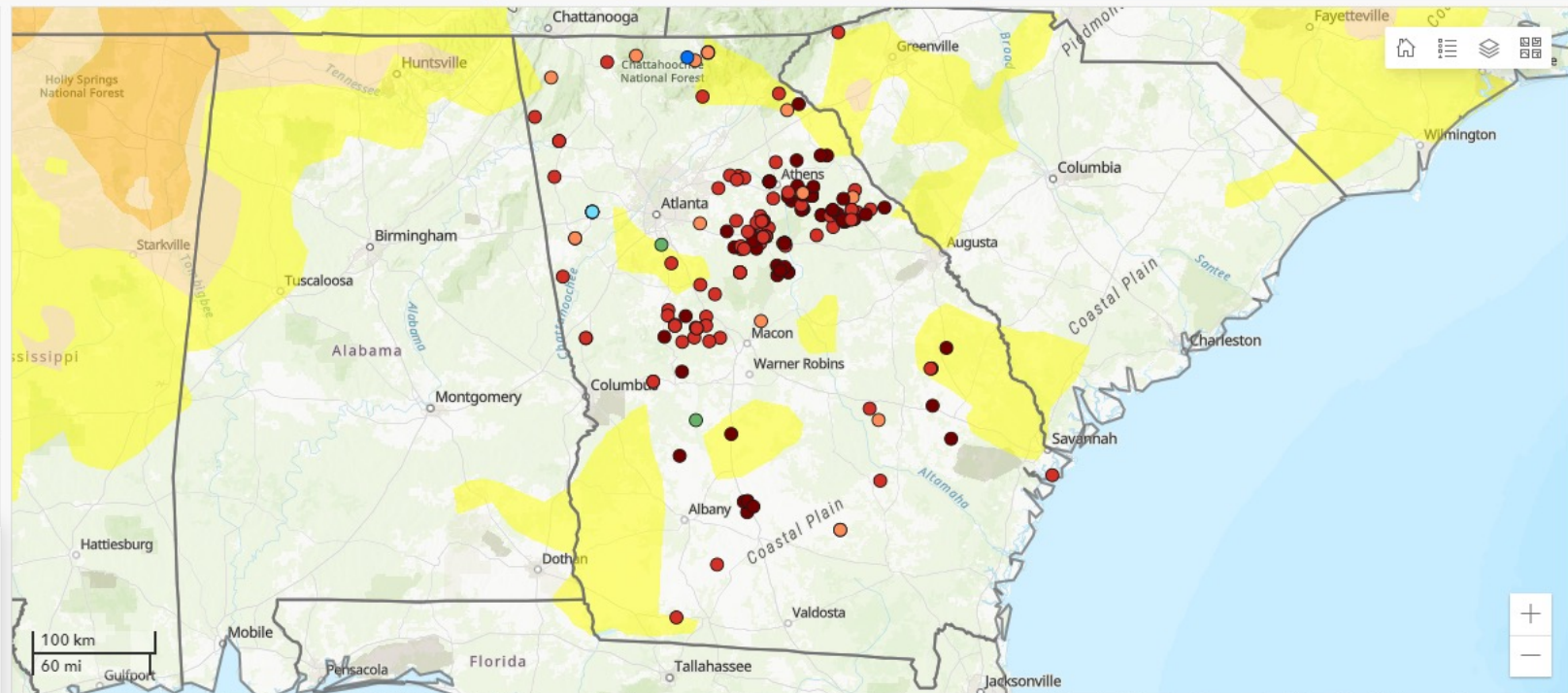
- Year to Date
- Past 30 Days
- Past 7 Days

Select State

Georgia

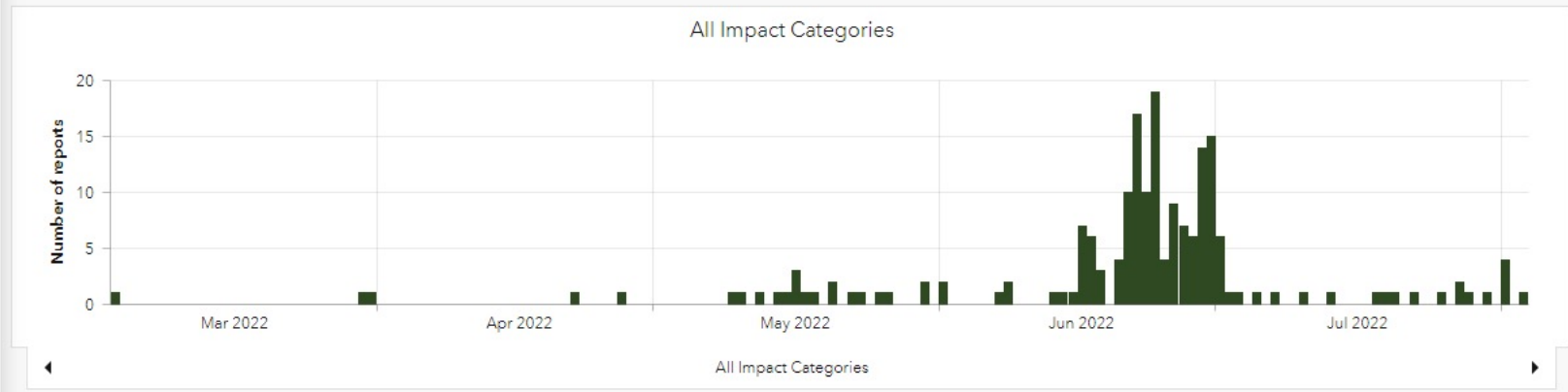
Filter...

- Alabama
- Alaska
- American Samoa
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia



Esri, USGS | Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS | The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska... Powered by Esri

Click on the Layer icon at the top-right of the map to view reports by impact category.



1 of 188

Report Details

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

How localized or widespread are the conditions you are reporting?

Its on the southeast end of the county. Should have been a D2 in June, we have had a total of 2.6 inches in the last 2 months. 4 miles north, they have had 5 or more inches of rain. I lost part of my first cutting, and all of my 2nd cutting. We are working on what would be the 3rd cutting now and it's about 1/2 on normal. We had to put the cows on the hay fields because the pastures were burnt up. We are 1000 big bales behind, compared to last year.

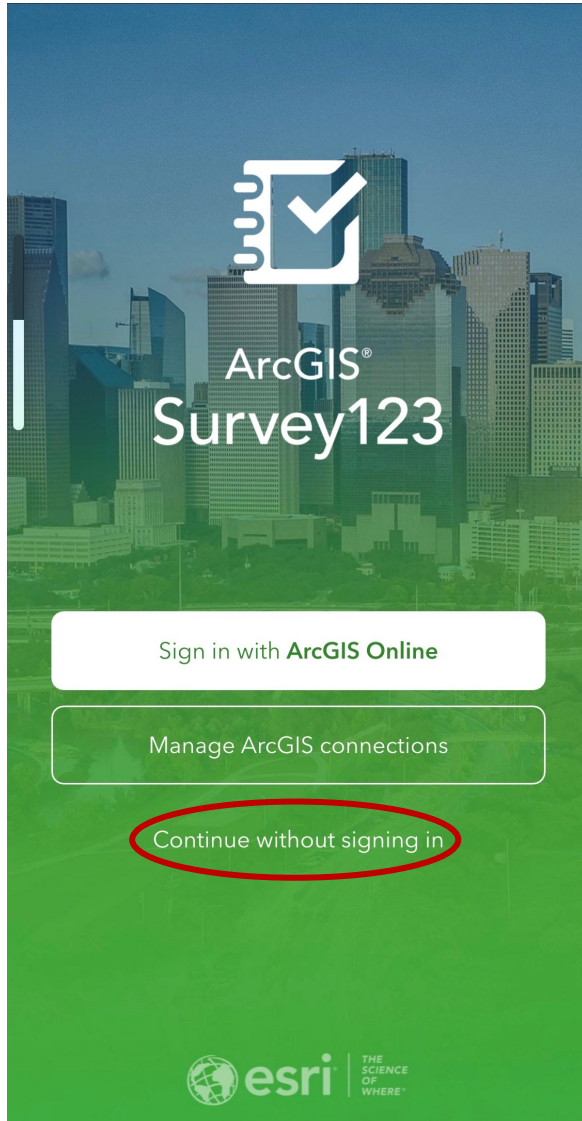
Description and/or caption information:
Pasture, the best it has looked in 2 months

Submitted by: Tankersley Farms

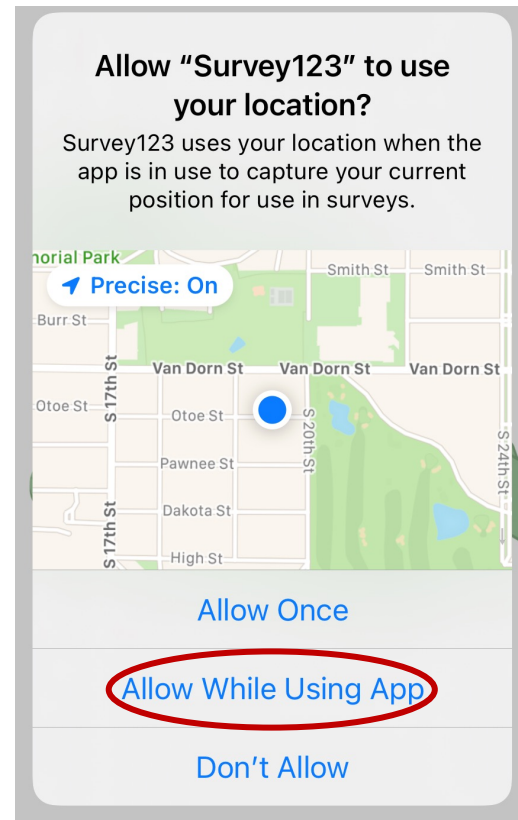


97427A61-7D23-43C7-84B8-6AA268E07A0D.jpeg

Getting started with the field app



- Go to the app store and download Esri's Survey123 field app.
- Click on "Continue without signing in."



- Allow the app to use your location.
- ***Exit the app.***
- Then enter go.unl.edu/CMOR or use the QR code to download the survey.



Filter Options

Select a Date Range

Predefined Calendar

Last 7 days

Last 30 days

Period of Record

Reset

Mentions

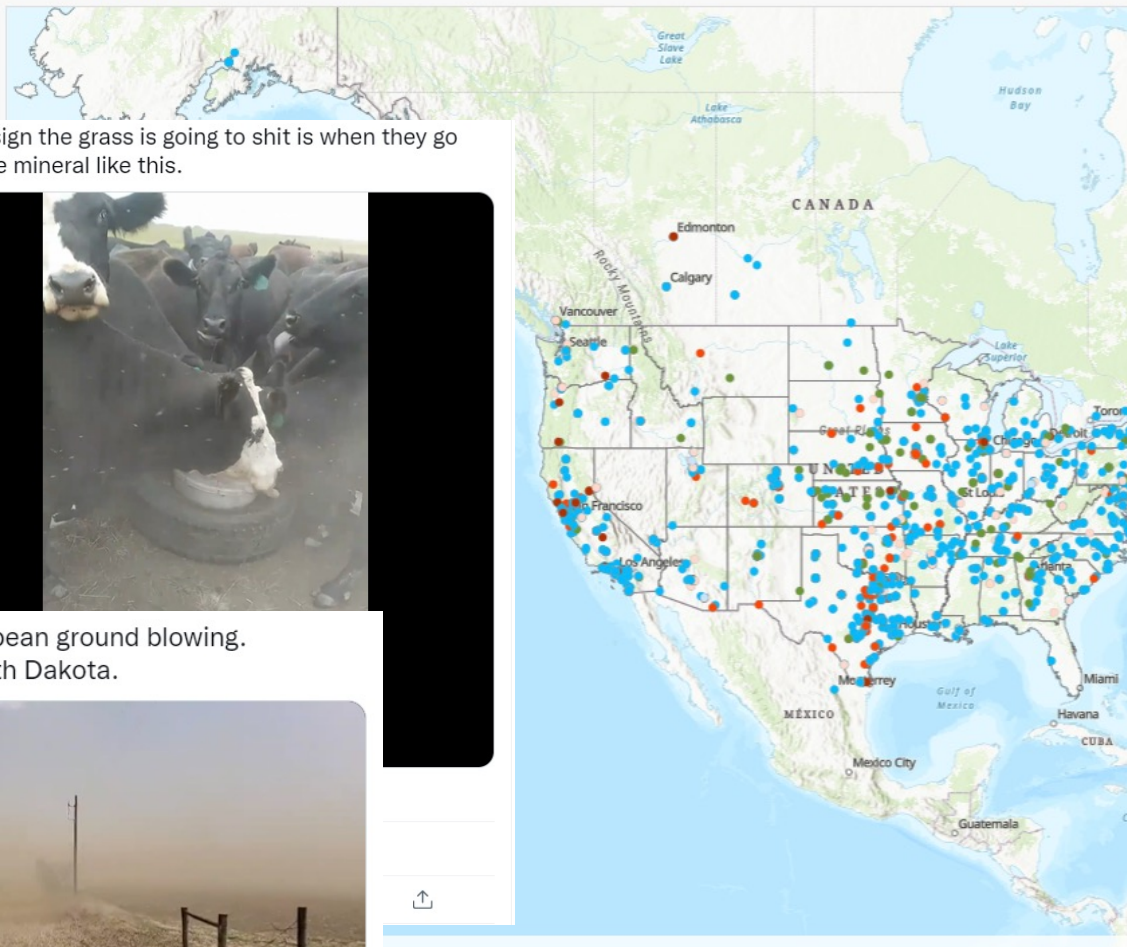
All Mentions Displayed

Select a Location

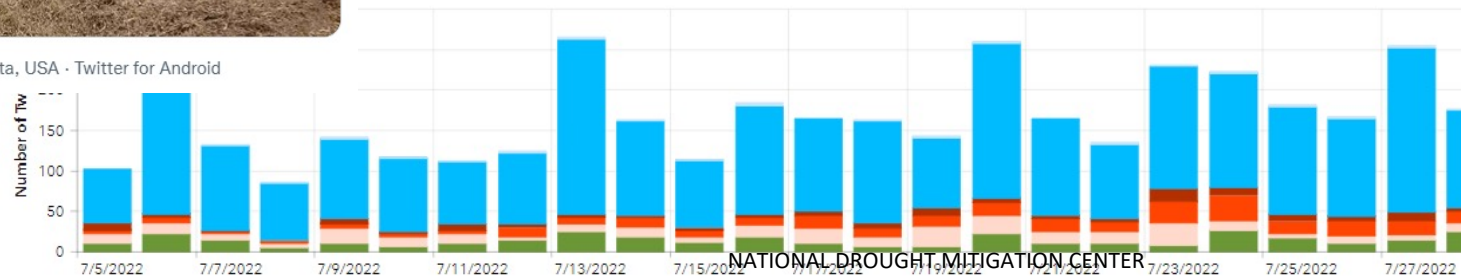
No Location Selected

Select a State

Select a State to Zoom



Frequency and Distribution of Drought Tweets
Counts correspond to filter selections at left and map extent



AgVisors @AgVisors · Aug 23, 2018
Soybeans coming off in Spink Co. Today!!



2 13 26

Jeffrey Breen @Breedustries

Replying to @AgVisors
Spink county, South Dakota... Asking for a friend ... I'll be combining corn in the next week or 2 #dought18

9:04 PM · Aug 23, 2018 · Twitter for Android

OUT

weets are placed on the map based on how users describe their location, so only use tweets with sufficiently specific user locations. We filter out vious international and out-of-state content. Tweets are mostly geolocated cities and slightly jittered so that if you zoom in far enough you can click on ch one individually. This also means that locations are only accurate to the /, not the location within the city.

claimers: Mapping search results does not mean endorsement of content. i filter out tweets that include certain terms but some offensive or political nent may still get through. Please notify ksmith2@unl.edu if you see rthing that requires additional attention.

About Map legend

1 of 4275

#dustbowl22. Tilled soybean ground blowing. Minnehaha County, South Dakota.



1:36 PM · Apr 23, 2022 from South Dakota, USA · Twitter for Android

"It's so dry you don't want to drop a wrench in the wheat stubble, you'll never find it in the cracks"

I never believed that quote till now. My brother didn't want to loose his leatherman tool so he used a wheat plant instead.

At least it'll reduce soil compaction. #SDwx



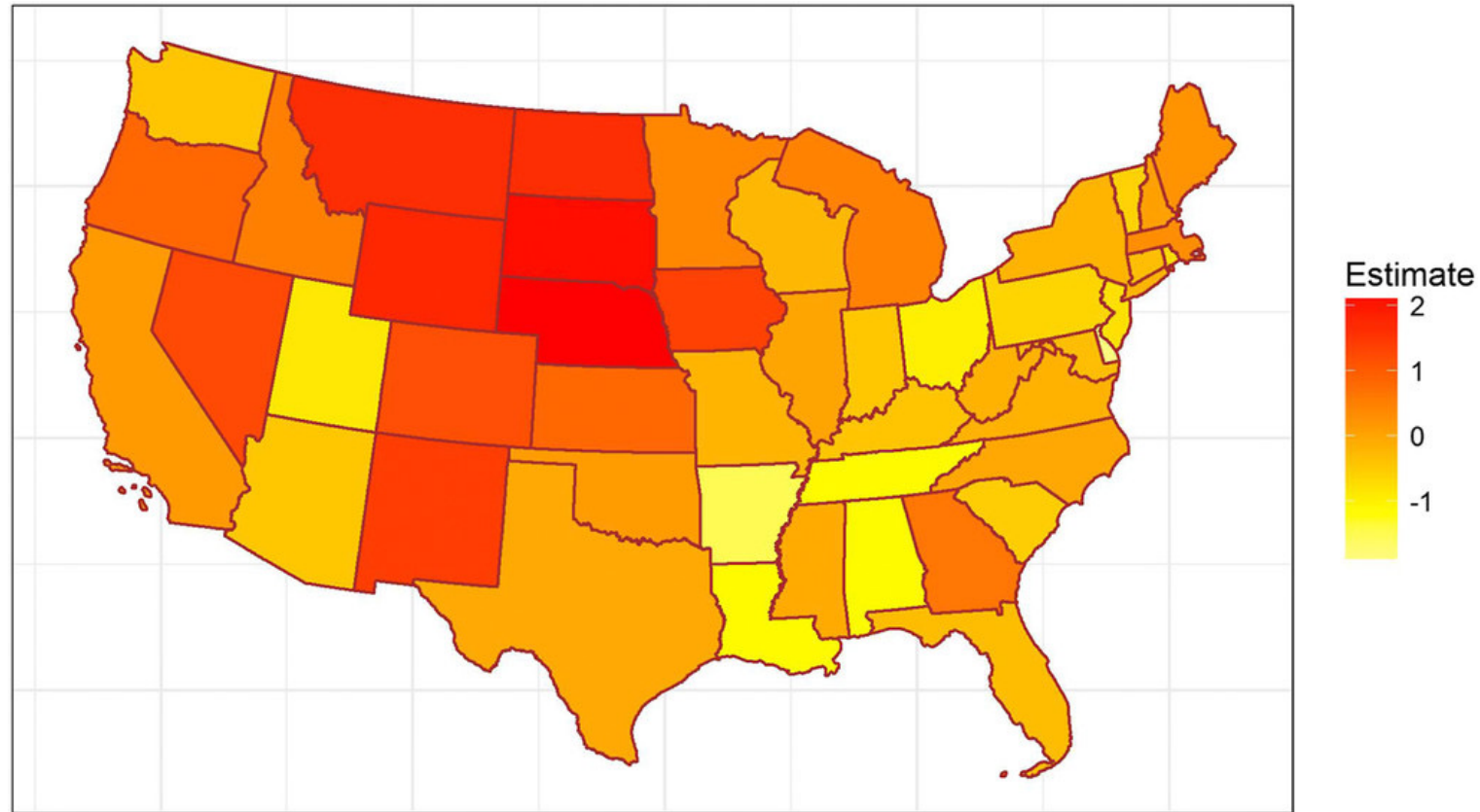
8:41 PM · Jun 29, 2021 · Twitter for iPhone

Use the filters to

map view.

General 72%

Finding: Geographic differences in tweeting behavior



Bulletin of the American Meteorological Society 101, 10; [10.1175/BAMS-D-19-0342.1](https://doi.org/10.1175/BAMS-D-19-0342.1)

Smith, K. H., Tyre, A. J., Tang, Z., Hayes, M. J., & Akyuz, F. A. (2020). Calibrating Human Attention as Indicator Monitoring #drought in the Twittersphere, *Bulletin of the American Meteorological Society*, 101(10), E1801-E1819. Retrieved May 20, 2022, from <https://journals.ametsoc.org/view/journals/bams/101/10/bamsD190342.x>

Drought news and Media Drought Index go.unl.edu/droughtnews

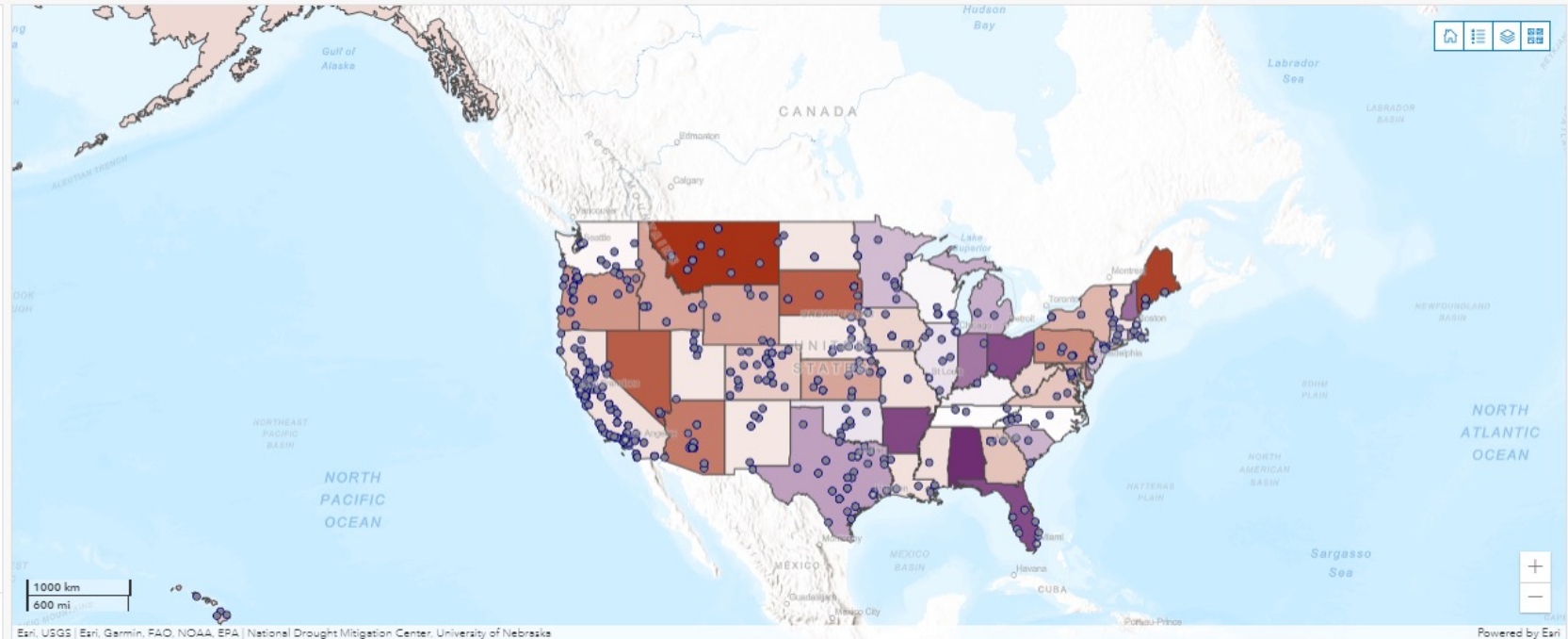
About the Media Drought Index

The Media Drought Index (MDI) compares the number of stories for each state in a week with the weekly number of stories for that state and month since 2011, and expresses the result as a standard deviation. States on the red side of the spectrum have more drought news than they normally do for this time of year, which is what we'd expect for places that are in drought. States on the blue end of the spectrum have less than they normally do for this time of year, which is what we'd expect for places not in drought, or dealing with other events.

The MDI is based on a search of news cataloged by the Maltwater service, and filtered to mostly in-state news, omitting headlines that appear all over the country, restricting repeating headlines to the state that they are about. The drought news layer displays news stories as points, by the cities in which they are published. For more control over the time interval of news on the map, please visit go.unl.edu/newsmap

Filter News Stories

- Select a State**
50 US States and D.C.
- Select a City**
Select a State First
- Select a Source**
Select a State First
- Select a Date**
Last Week



◀ 1 of 10 ▶

State with highest MDI

4.5

Montana

From week 5/9/2022 to 5/15/2022.

◀ 1 of 10 ▶

Most stories per million people

47

Montana

From week 5/9/2022 to 5/15/2022.

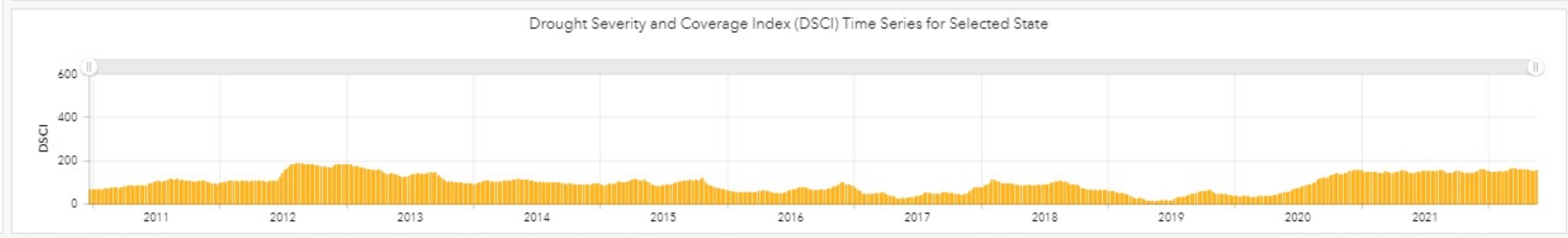
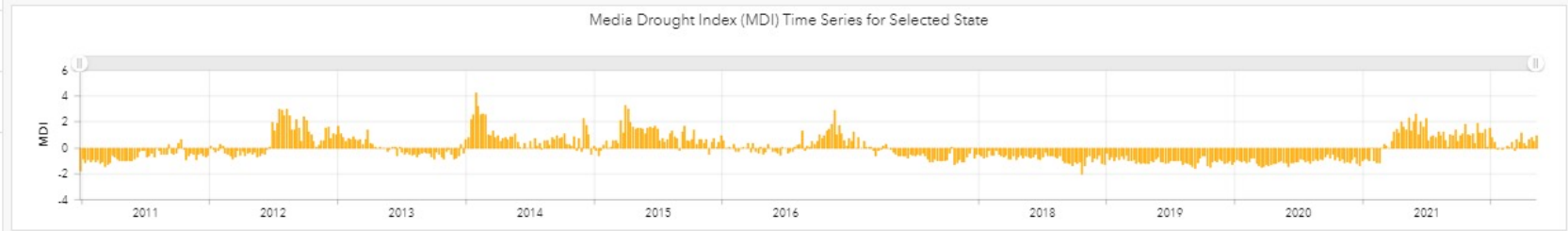
◀ 1 of 10 ▶

News stories added for the week

1.1k

50 US States and D.C.

From week 5/9/2022 to 5/15/2022.



MDI Details
50 US States and D.C.

State: 50 US States and D.C.
From week: 5/9/2022 to 5/15/2022

State MDI: 0.98

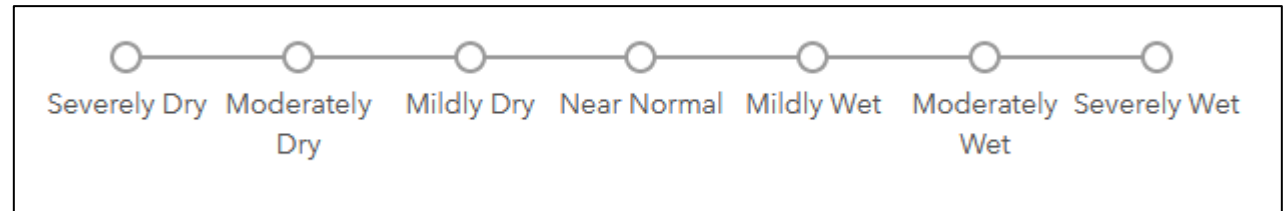
News stories per million people: 3.3

Number of news stories for week: 1,100

CoCoRaHS Citizen Science

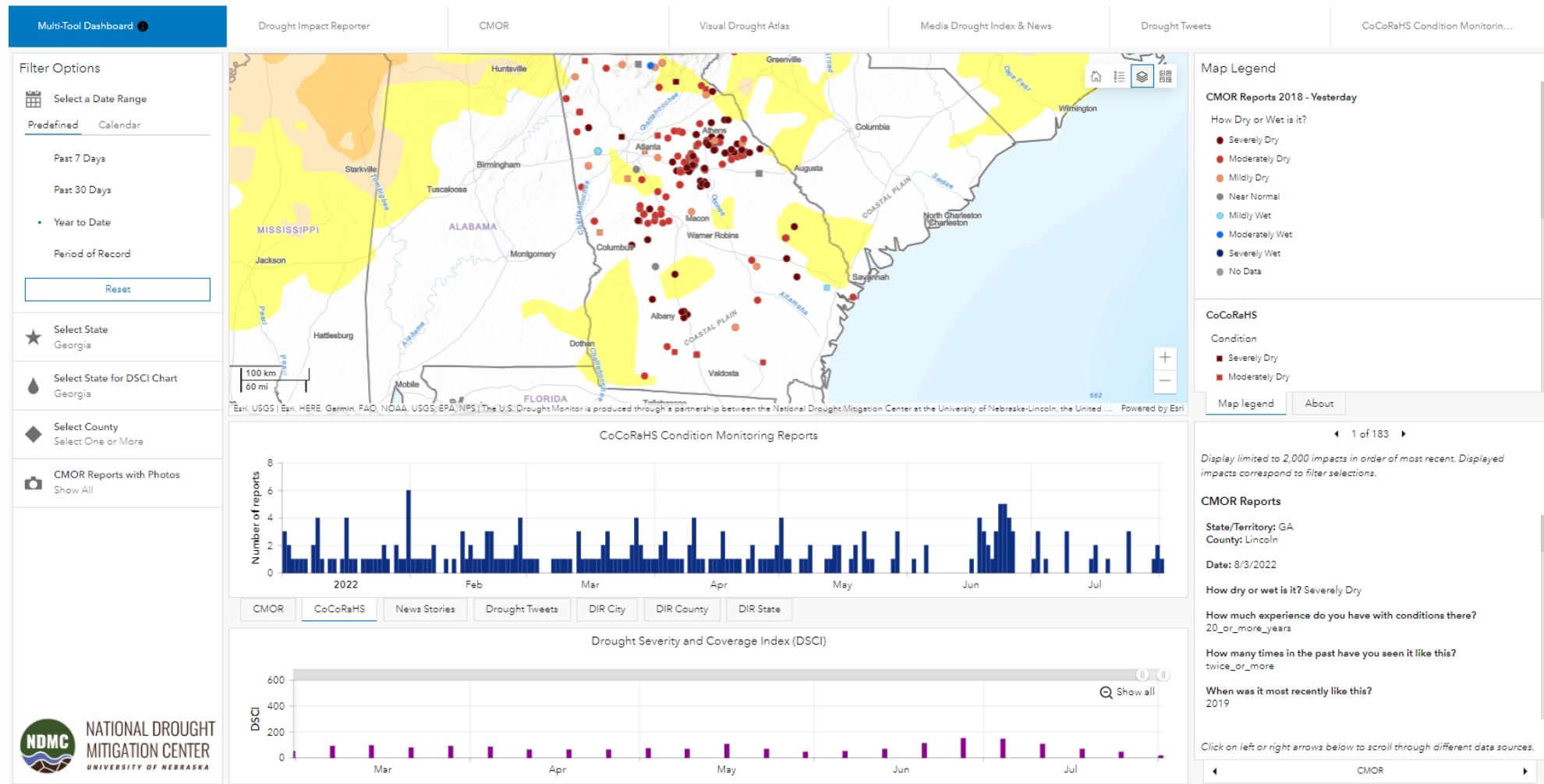
cocorahs.org

CoCoRaHS, the Carolinas Integrated Sciences and Assessment (CISA) and NDMC collaborated to develop “condition monitoring” and the 7-point dry-to-wet scale.



CoCoRaHS Condition Monitoring reports, with CMOR

Go.unl.edu/multi-tool



Lackstrom, K., Farris, A., Eckhardt, D., Doesken, N., Reges, H., Turner, J., Smith, K. H., & Ward, R. (2017). CoCoRaHS Observers Contribute to “Condition Monitoring” in the Carolinas: A New Initiative Addresses Needs for Drought Impacts Information, *Bulletin of the American Meteorological Society*, 98(12), 2527-2531. Retrieved May 20, 2022, from <https://journals.ametsoc.org/view/journals/bams/98/12/bams-d-16-0306.1.xml>

Questions, comments?
Kelly Helm Smith
ksmith2@unl.edu

Tools

Go.unl.edu/multi-tool

The screenshot displays the 'Drought Impacts Multi-Tool' interface. At the top, there's a navigation bar with 'Home', 'Tools', 'Emerging Impacts', and 'Impact Assessments'. Below this, a 'Multi-Tool Dashboard' contains several tool tabs: 'Drought Impact Reporter', 'CMOR', 'Visual Drought Atlas', 'Media Drought Index & News', 'Drought Tweets', and 'CoCoRaHS Condition Monitorin...'. The main area features a map of the United States with various data points overlaid. A 'Filter Options' sidebar on the left allows users to select a date range (Predefined or Calendar), choose a state, and select a county. Below the map, there are two charts: 'Condition Monitoring Observer Reports (CMOR)' showing the number of reports from February to July 2022, and 'Drought Severity and Coverage Index (DSCI)' showing the index from 2006 to 2022. A 'Map Legend' on the right explains the color coding for CMOR reports (Severely Dry to Severely Wet) and CoCoRaHS conditions (Severely Dry to Moderately Dry). A 'Layers' panel on the map allows users to toggle different data sources like 'CMOR Reports 2018 - Yesterday', 'CoCoRaHS', 'Drought News Stories', etc. At the bottom right, there's a section for 'CMOR Reports' with details for a specific report from Cowley, KS on 8/4/2022, including a question about the user's experience with similar conditions.

