# The United State Drought Monitor: Drought Trends and Frequency

## **Brian Fuchs**



USDA Agriculture Outlook Forum Washington, DC February 23 2023 The reach of the National Drought Mitigation Center services and activities has always been quite broad since the center was founded in 1995



With drought impacting the United States frequently, drought-related Climate Services are an essential part of our work



NCEI/NOAA

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U.S. Drought Monitor December 27, 2022 (Palassad Thursday Dag 20 2022) .....Partnerships are But. key in delivering climate services that reach all decision makers and stakeholders Dry ought aht ught



Drought



NGHT MITIG

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.asp.





Scientists have been trying to monitor and map drought conditions for quite a long time





The United States Drought Monitor (USDM) has continuously evolved from past efforts to monitor drought including from the earliest versions of the map



## Instead of using a single indicator/index, a <u>Hybrid</u> <u>Approach</u> is used: U.S. Drought Monitor (USDM)



NGHT MITIG

# The USDM map is...

An attempt to represent <u>all</u> the different types of drought on one map





NATIONAL DROUGHT MITIGATION CENTER

## The United States Drought Monitor

- Hosted by the NDMC as part of a 3way partnership with NOAA and USDA
- USDM website has on average 12.5 million hits a year (more during significant drought events)
- Used in several USDA programs
- Used by the IRS for tax deferrals
- Many other programs have started utilizing the USDM in official capacities



U.S. Drought Monitor

NADM

Current Map Maps Data Summary About Conditions & Outlooks En Español

## Map released: February 16, 2023

Data valid: February 14, 2023



## Where is drought trending?

Continental U.S. (CONUS) Percent Area in U.S. Drought Monitor Categories





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# What about Drought in the Western United States?

U.S. Drought Monitor West



February 14, 2023 (Released Thursday, Feb. 16, 2023) Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	20.39	79.61	59.31	24.52	3.17	0.15
Last Week 02-07-2023	18.22	81.78	59.36	24.36	3.58	<mark>0.15</mark>
3 Month s Ago 11-15-2022	5.84	94.16	69.18	45.53	18.57	2.02
Start of Calendar Year 01-03-2023	12.08	87.92	62.42	38.84	12.41	0.27
Start of Water Year 09-27-2022	3.89	96.11	73.90	47.71	19.37	2.63
One Year Ago 02-15-2022	3.89	96.11	88.44	64.19	20.00	2.98



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droughtmonitor.unl.edu







## Is the Drought of the Last Several Decades Unusual?

- We can utilize Tree Rings to reconstruct data going back 1,000 years or so.
- Though not as exact as our written records, we can determine the magnitude of dry/wet years and compare this to the written records of the last 125 years or so.
- Let's look at the Phoenix area





# Comparing the driest/wettest period from the reconstructed and written climate records

### **Driest Five-Year Period**

DRIEST FIVE-YEAR PERIOD					
Years	Precipitation (mm)	Percent Average			
1144-1148	306.0	51.9			
1034-1038	330.3	56.0			
1576-1579	360.4	61.1			
1666-1670	373.6	63.4			
1819-1823	383.8	65.1			

DRIEST FIVE-YEAR PERIOD					
Year	Precipitation (mm)	Percent Average			
1948-1952	386.3	56.6			
1902-1906	394.2	57.7			
1900-1904	402.6	58.9			
1957-1961	406.1	59.5			
1949-1953	422.7	61.9			

## Wettest Five-year Period

WETTEST FIVE-YEAR PERIOD					
Years	Precipitation (mm)	Percent Average			
1426-1430	956.4	162.3			
1194-1198	909.7	154.3			
1484-1488	849.6	144.1			
1162-1166	837.5	142.1			
1837-1841	833.2	141.3			
WETTEST FIVE-YEAR PERIOD					
Year	Precipitation (mm)	Percent Average			
1993-1997	1239.3	181.4			
1994-1998	1132.3	165.8			

1109.5

1093.7

1053.8

1992-1996

1907-1911

1905-1909

162.4

160.1

154.3



1148 CE June-August Palmer Modified Drought Index Reconstruction





## The Importance of Monitoring Drought

- Since the introduction of the United States Drought Monitor in the late 1990's, a weekly analysis of drought over the United States has been done.
- The US Drought Monitor is the "Gold Standard" for monitoring drought in the United States and across the world.
- Hundreds of scientist converge each week collaborating on the making of the map.



#### The USDA uses the USDM map as a trigger for programs that help agricultural producers recover from drought and other natural disasters:

Livestock Forage Disaster Program (LFP)

LFP provides compensation to eligible livestock owners and contract growers who are also grazed forage producers and have suffered drought-related grazing losses during the normal grazing period for the county. LFP is for eligible livestock owners on native or improved pastureland with permanent vegetative cover or planted specifically for grazing. fsa.usda.gov/lfp

#### Emergency Assistance for Livestock, Honeybees and Farm Raised Fish Program (ELAP)

ELAP provides financial assistance to eligible producers of livestock, honevbees, and farm-raised fish for losses not covered by the Livestock Forage Disaster or Livestock Indemnity Programs. In relation to drought, this program specifically covers water transportation to livestock physically located in a county designated as D2- Severe Drought and above according to the USDM. Assistance is also available to honeybee producers for additional feed losses in counties rated as D2-Severe and above/or higher on the USDM.

And, ELAP now covers feed transportation costs where grazing and hay resources have been depleted, this includes in D2-Severe Drought for eight consecutive weeks, a D3 or greater drought intensity rating, or where USDA has determined a shortage of local or regional feed availability. fsa.usda.gov/elap

#### Fast Track USDA Disaster Designations

The fast track process is an expedited process for USDA Secretarial disaster designations developed for severe drought situations. The fast track process is based on drought intensity data from the USDM. To qualify for a Secretarial designation under the fast track process, a county must experience 8 weeks of continuous severe drought (D2), or extreme drought (D3) or exceptional drought (D4) for any length of time, during the county's grazing period. A designation triggers emergency loan availability. fsa.usda.gov/programs-and-services/ disaster-assistance-program/disaster-designationinformation/index

https://drought.unl.edu/archive/Documents/FactSheets/USDM-FSA-fact-sheet.pdf



# The Importance of Monitoring Drought

- With the 2008 Farm Bill, USDA has utilized the US Drought Monitor in providing direct aid to livestock producers due to severe drought with the Livestock Forage Disaster Program (LFP).
- USDA also has provided aid due to drought via the Emergency Relief Program (ERP) utilizing the US Drought Monitor designations.
- The IRS has also implemented programs utilizing the US Drought Monitor to provide capital gains relief to livestock producers who sell stock due to drought.

### FSA Livestock Forage Disaster Program Eligibility Tool Help U.S. Drought Monitor

Welcome! If you grow forage for livestock and have recently gone through drought, this website can help you find out whether you qualify for assistance. Qualifying for assistance is based on the U.S. Drought Monitor and on your county's designated grazing periods. To use this tool, you will need to know your county's grazing period. If you are not sure what it is, please consult your local Farm Service Agency representative

The FSA Eligibility Tool does not guarantee any financial aid. It simply estimates which U.S. counties meet the criteria, based on the U.S. Drought Monitor. Eligibility will be confirmed by the FSA once the signup period has begun. Please contact your local FSA agent for more details and to verify eligbility after the start of the signup period.



To read about the Livestock Forage Disaster Program, please refer to the FSA factsheet: 2014 criteria version | 2008 criteria version

To learn more about the U.S. Drought Monitor, please visit the web site.

To apply for assistance, please contact your local FSA office.

For help with this tool, please visit the FSA Eligibility Tool Help pages.





https://droughtmonitor.unl.edu/FSA/Home.aspx

## Final Thoughts.....

- Drought magnitude and duration has impacted much of the Western United States at various points in time over the last several decades.
- Data trends are showing that this region has already become drier.
- Understanding the impact of drought in the region must encompass analyses of all types of drought including ecological, agricultural, hydrological, meteorological and socio-economic.
- Utilizing paleo-climatic data, some of the more modern droughts observed are not out of the realm of possibilities for the region.
- Building resiliency and adaptation measures will be needed to sustain vital resources of the region and lessen the impact of drought for everyone.





Thank You! Questions?

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