

Precipitation and Drought in Oklahoma: What to Expect?

Brian Fuchs



NATIONAL DROUGHT
MITIGATION CENTER
UNIVERSITY OF NEBRASKA

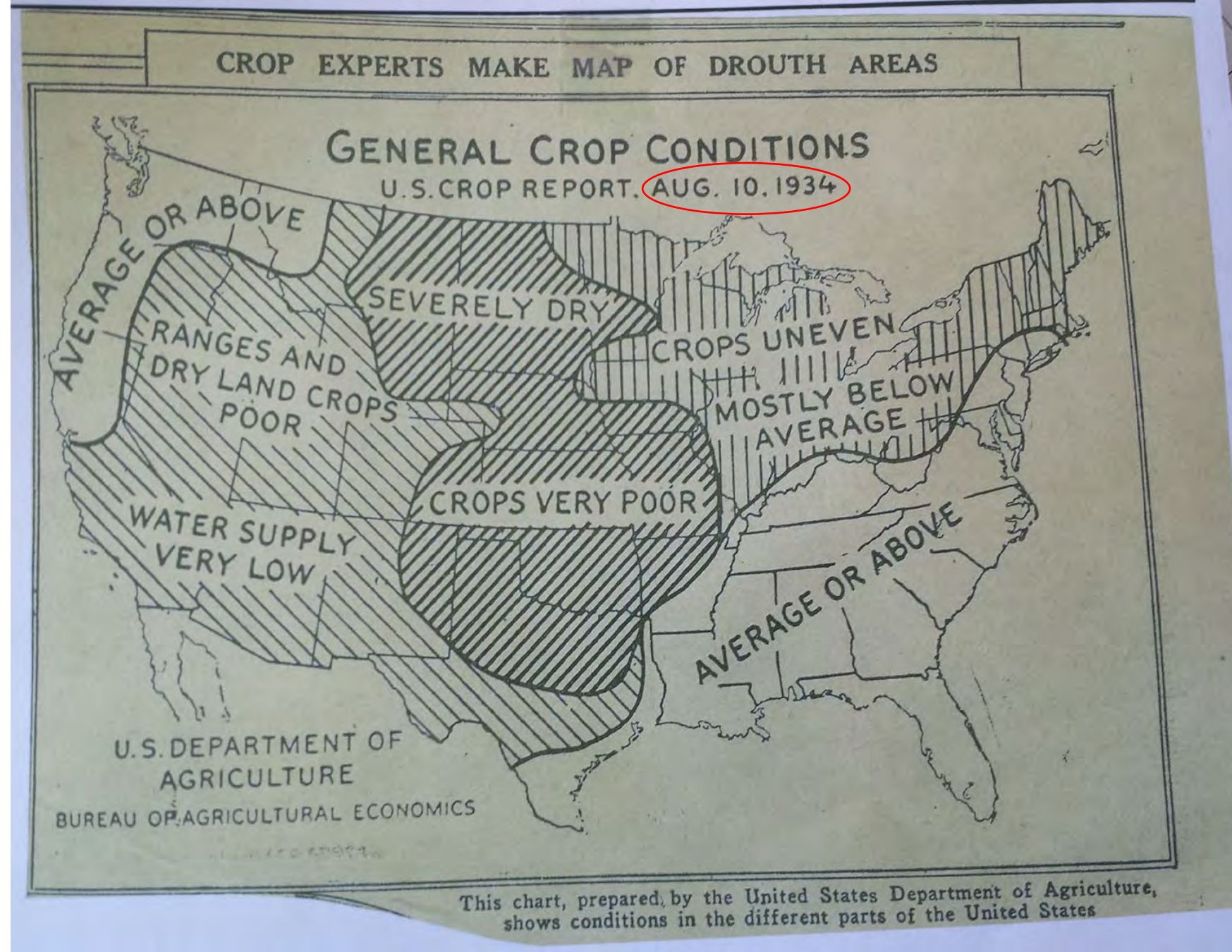
OSU Extension

Rancher's Thursday Lunchtime Series

March 23, 2023



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

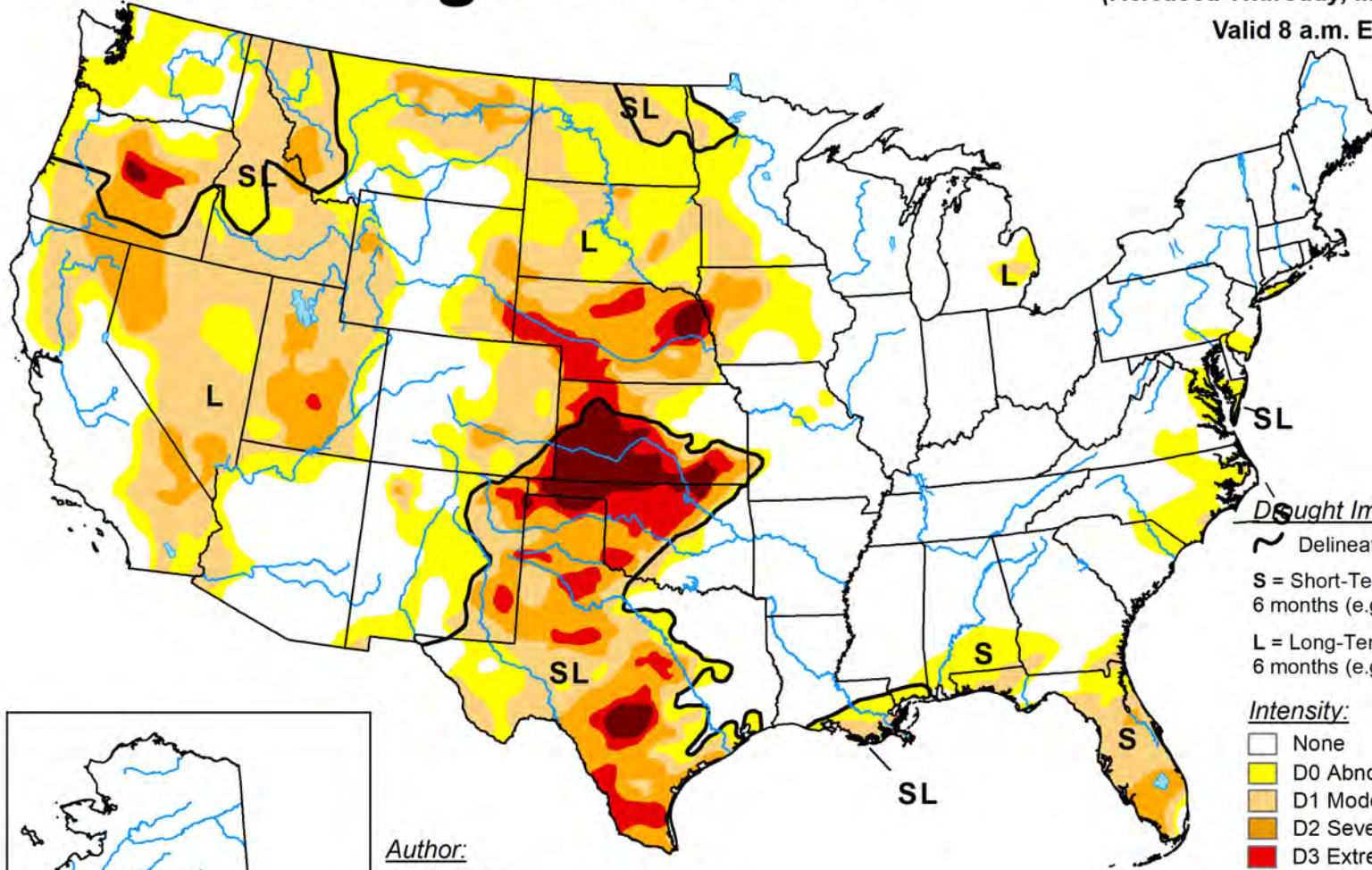


U.S. Drought Monitor

March 21, 2023

(Released Thursday, Mar. 23, 2023)

Valid 8 a.m. EDT



Drought Impact Types:

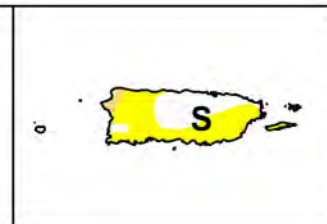
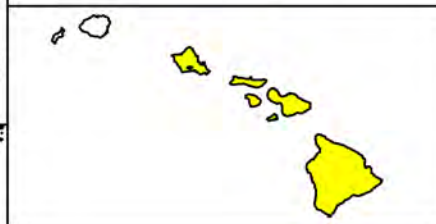
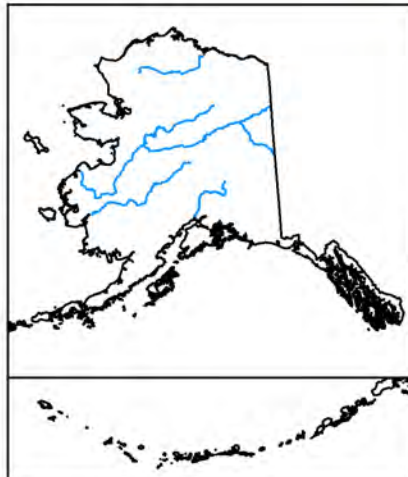
- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

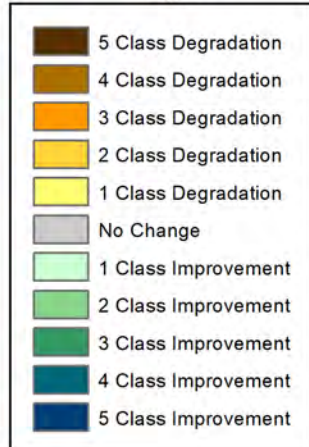
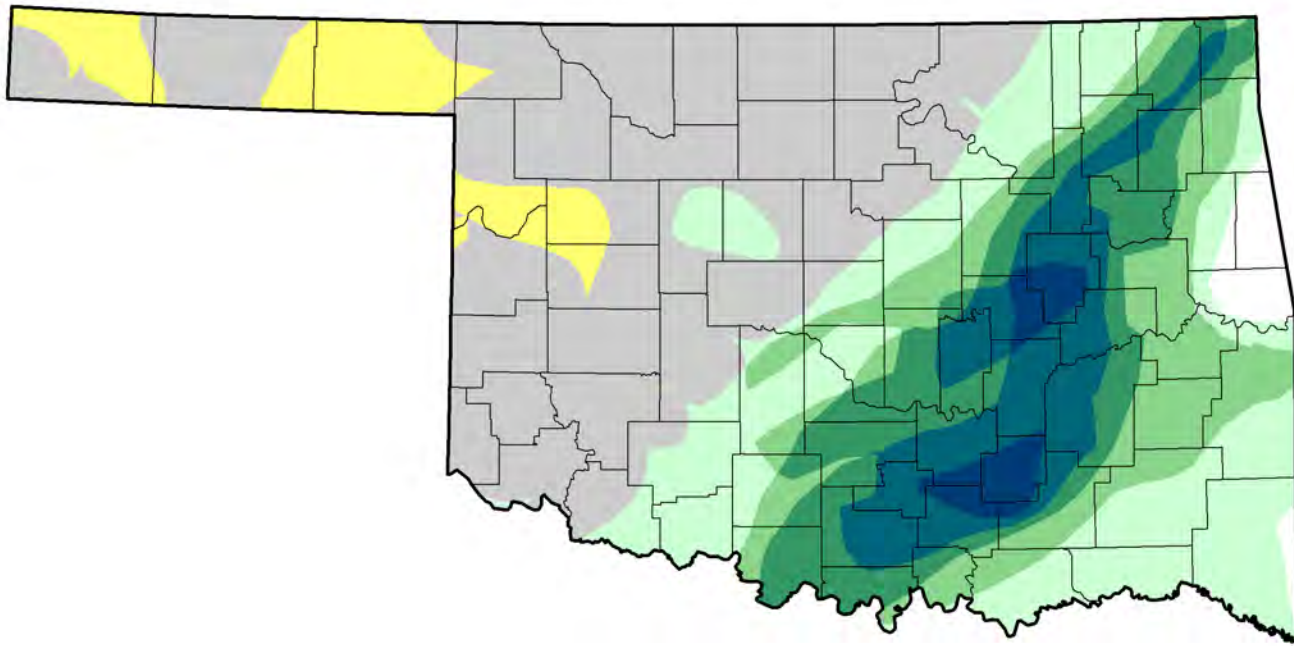
Author:
Curtis Riganti
National Drought Mitigation Center

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



droughtmonitor.unl.edu

U.S. Drought Monitor Class Change - Oklahoma 8 Week



March 21, 2023
compared to
January 24, 2023

droughtmonitor.unl.edu

a)

| |
|-------|
| D4 |
| 11.21 |
| 8.86 |
| 11.65 |
| 11.65 |
| 17.25 |
| 7.81 |

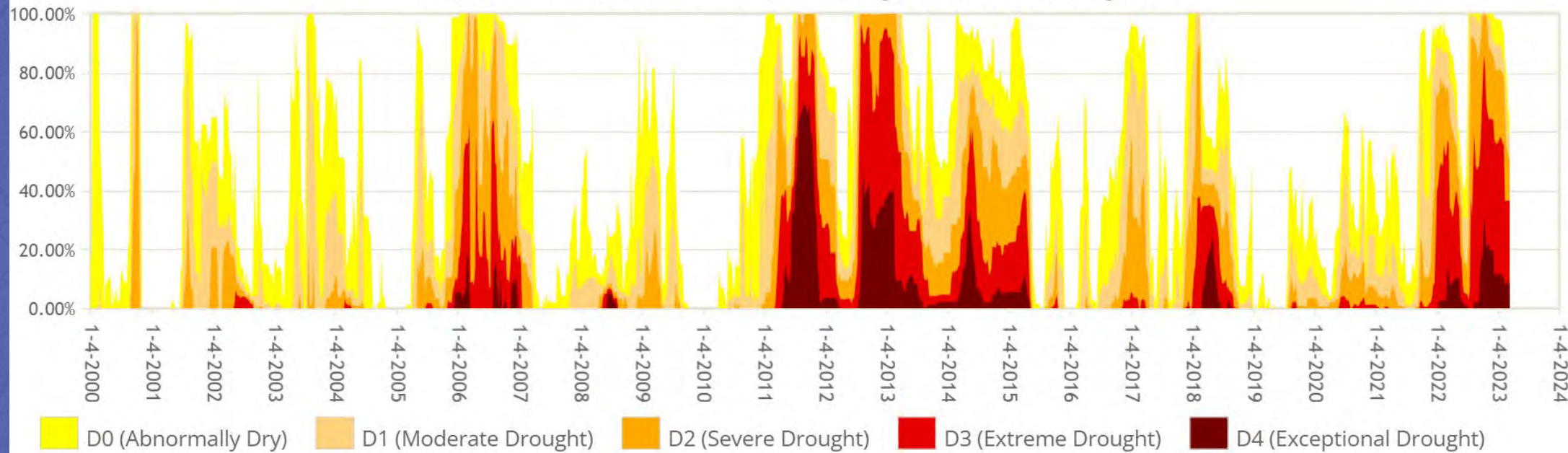
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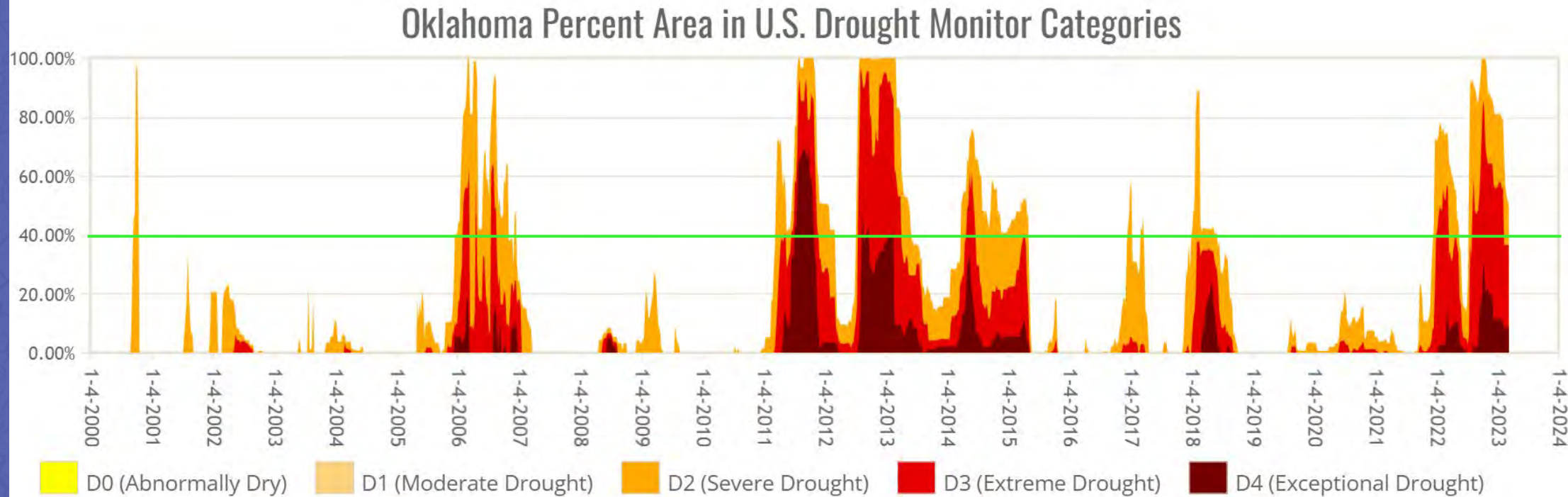


What has Drought looked like in Oklahoma over the last few decades?

Oklahoma Percent Area in U.S. Drought Monitor Categories



What has Drought looked like in Oklahoma over the last few decades?



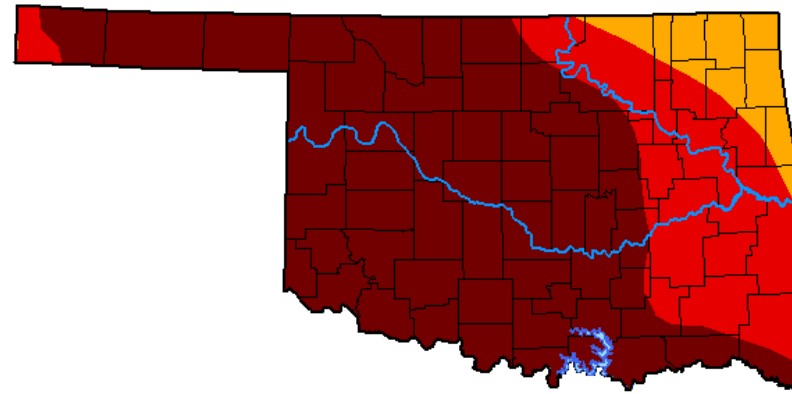
In 23+ years of the U.S. Drought Monitor, the period from 2011-2013 was the most intense and widespread drought in the state

U.S. Drought Monitor Oklahoma

September 13, 2011
(Released Thursday, Sep. 15, 2011)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|--|-------|--------|--------|--------|-------|-------|
| Current | 0.00 | 100.00 | 100.00 | 100.00 | 92.59 | 68.93 |
| Last Week <i>09-08-2011</i> | 0.00 | 100.00 | 100.00 | 100.00 | 85.44 | 69.15 |
| 3 Months Ago <i>06-16-2011</i> | 22.11 | 77.89 | 57.87 | 41.76 | 33.53 | 10.32 |
| Start of Calendar Year <i>01-06-2011</i> | 8.81 | 91.19 | 12.53 | 1.85 | 0.00 | 0.00 |
| Start of Water Year <i>09-30-2010</i> | 66.28 | 33.72 | 4.21 | 0.00 | 0.00 | 0.00 |
| One Year Ago <i>09-16-2010</i> | 50.13 | 49.87 | 7.72 | 0.00 | 0.00 | 0.00 |



Intensity:

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

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Author:

Mark Svoboda
National Drought Mitigation Center



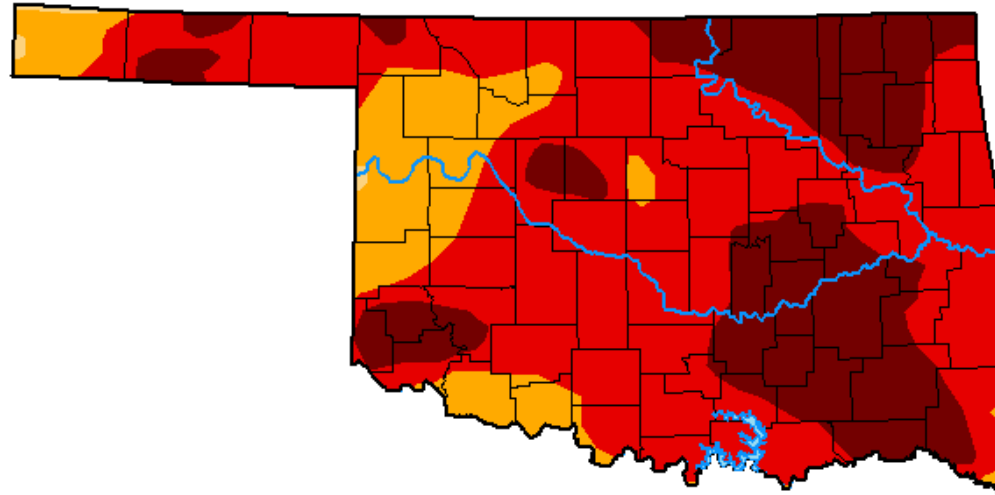
Comparing 2011 to 2022

U.S. Drought Monitor Oklahoma

October 11, 2022
(Released Thursday, Oct. 13, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|--|------|--------|--------|-------|-------|-------|
| Current | 0.00 | 100.00 | 100.00 | 99.66 | 85.65 | 29.10 |
| Last Week <i>10-04-2022</i> | 0.00 | 100.00 | 99.97 | 99.51 | 75.77 | 17.78 |
| 3 Months Ago <i>07-12-2022</i> | 0.00 | 100.00 | 62.75 | 22.39 | 2.87 | 0.00 |
| Start of Calendar Year <i>01-04-2022</i> | 5.02 | 94.98 | 88.14 | 72.26 | 40.44 | 0.00 |
| Start of Water Year <i>09-27-2022</i> | 0.00 | 100.00 | 99.88 | 94.44 | 64.44 | 17.25 |
| One Year Ago <i>10-12-2021</i> | 4.45 | 95.55 | 62.17 | 19.04 | 1.52 | 0.00 |



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Author:

Brad Pugh
CPC/NOAA



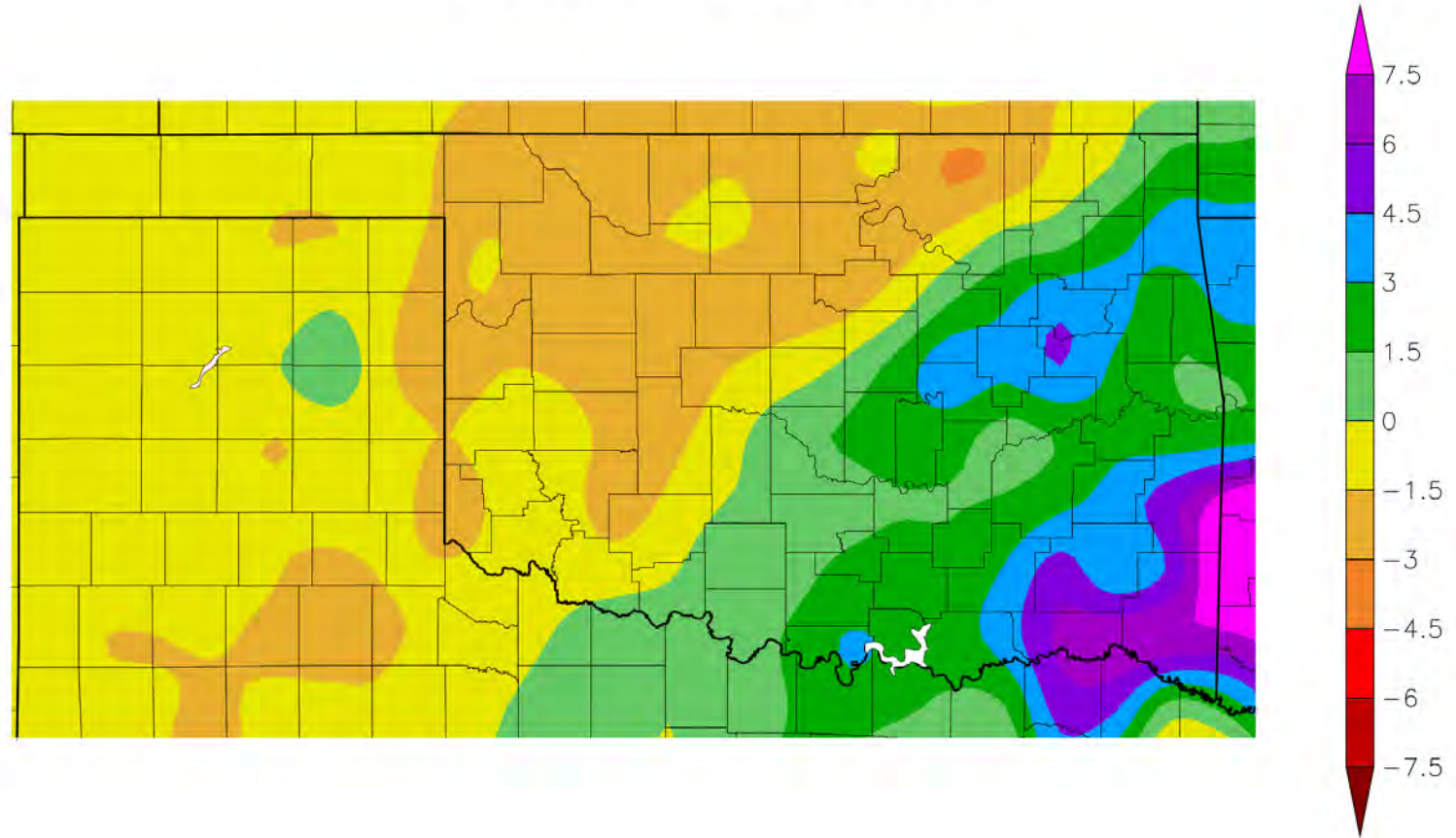
droughtmonitor.unl.edu

What's going on currently in the region?



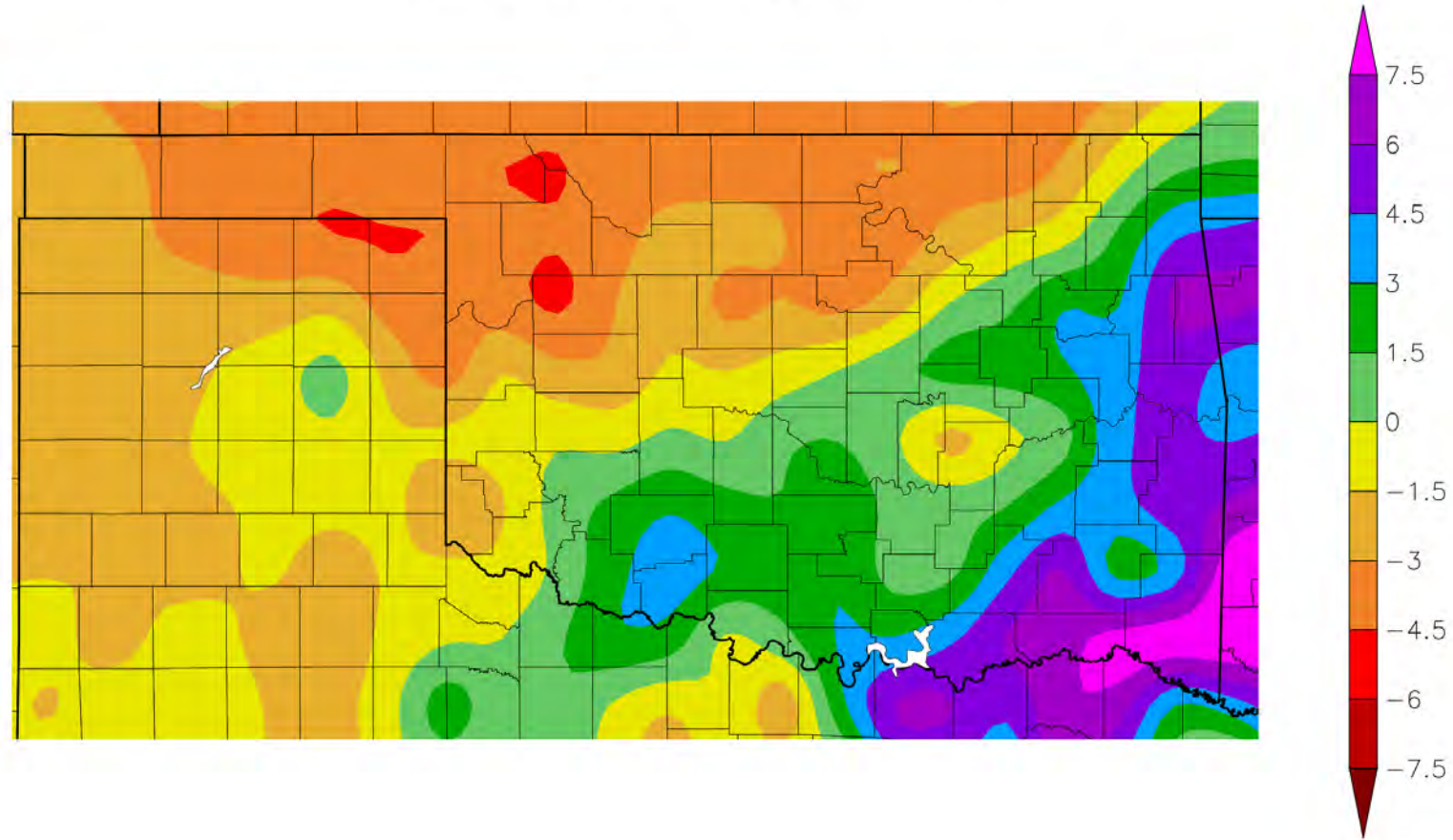
How are current conditions in the region?

Departure from Normal Precipitation (in)
1/1/2023 – 3/21/2023



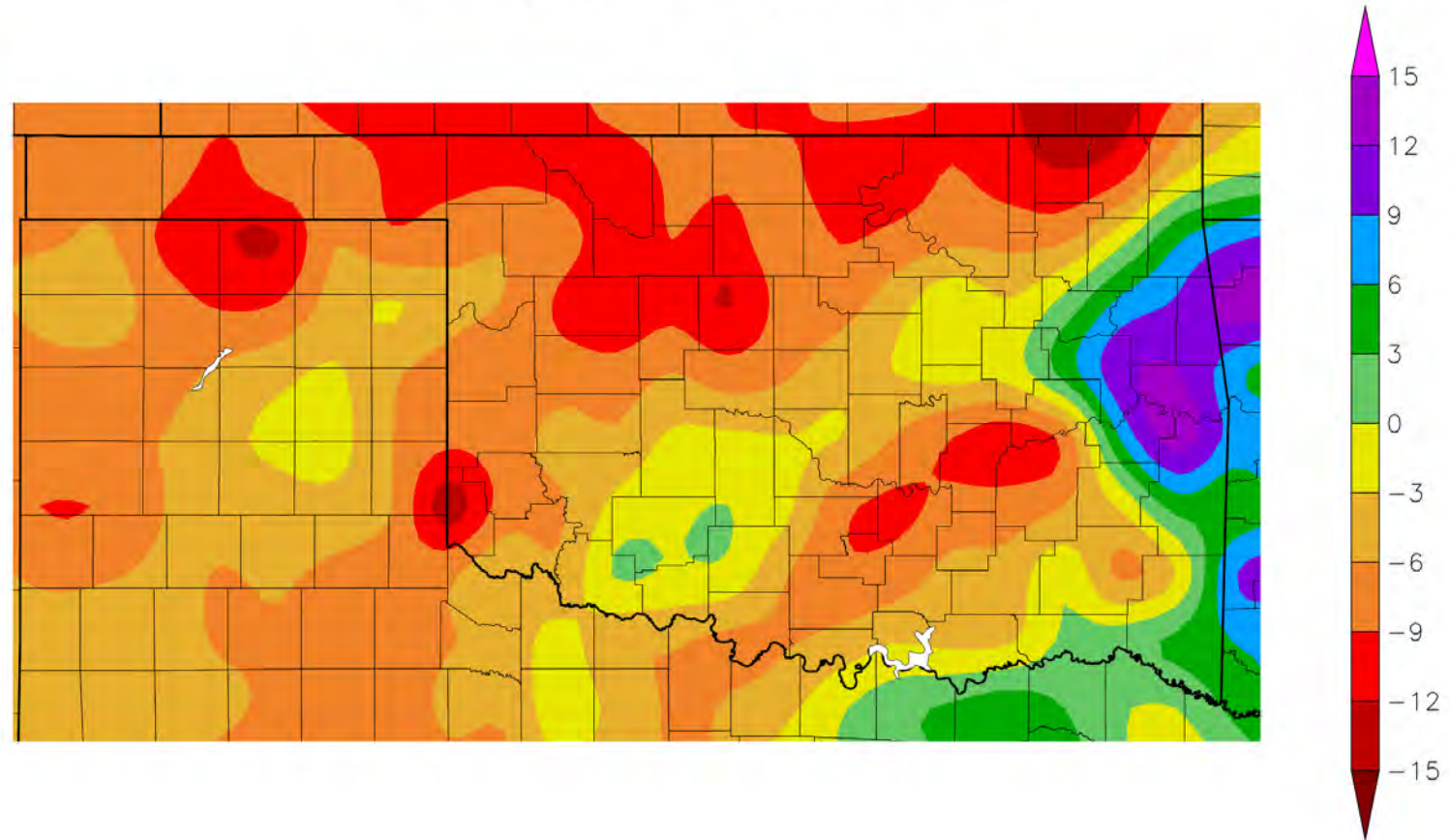
How are current conditions in the region?

Departure from Normal Precipitation (in)
10/1/2022 – 3/21/2023



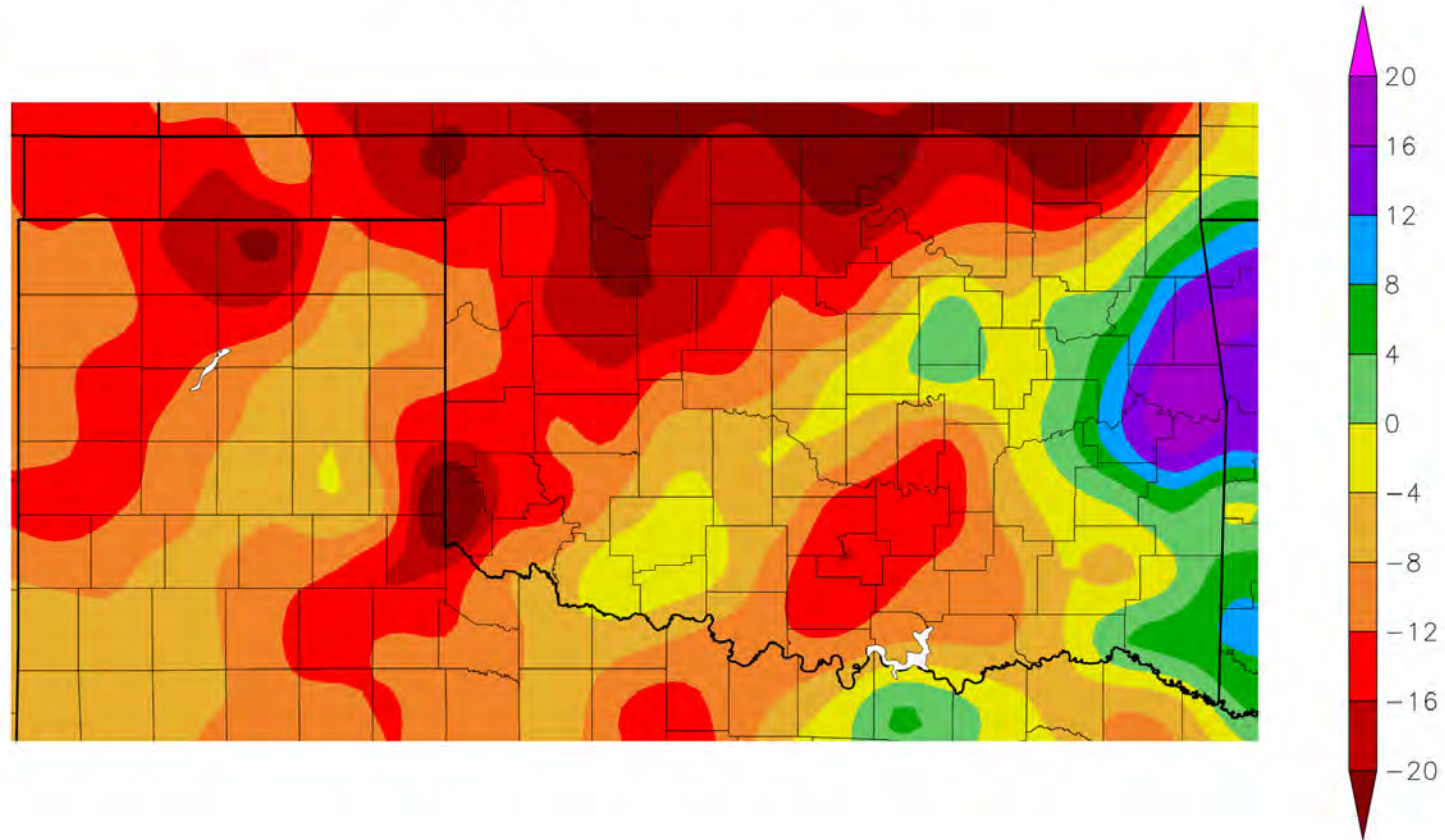
How are current conditions in the region?

Departure from Normal Precipitation (in)
3/22/2022 – 3/21/2023

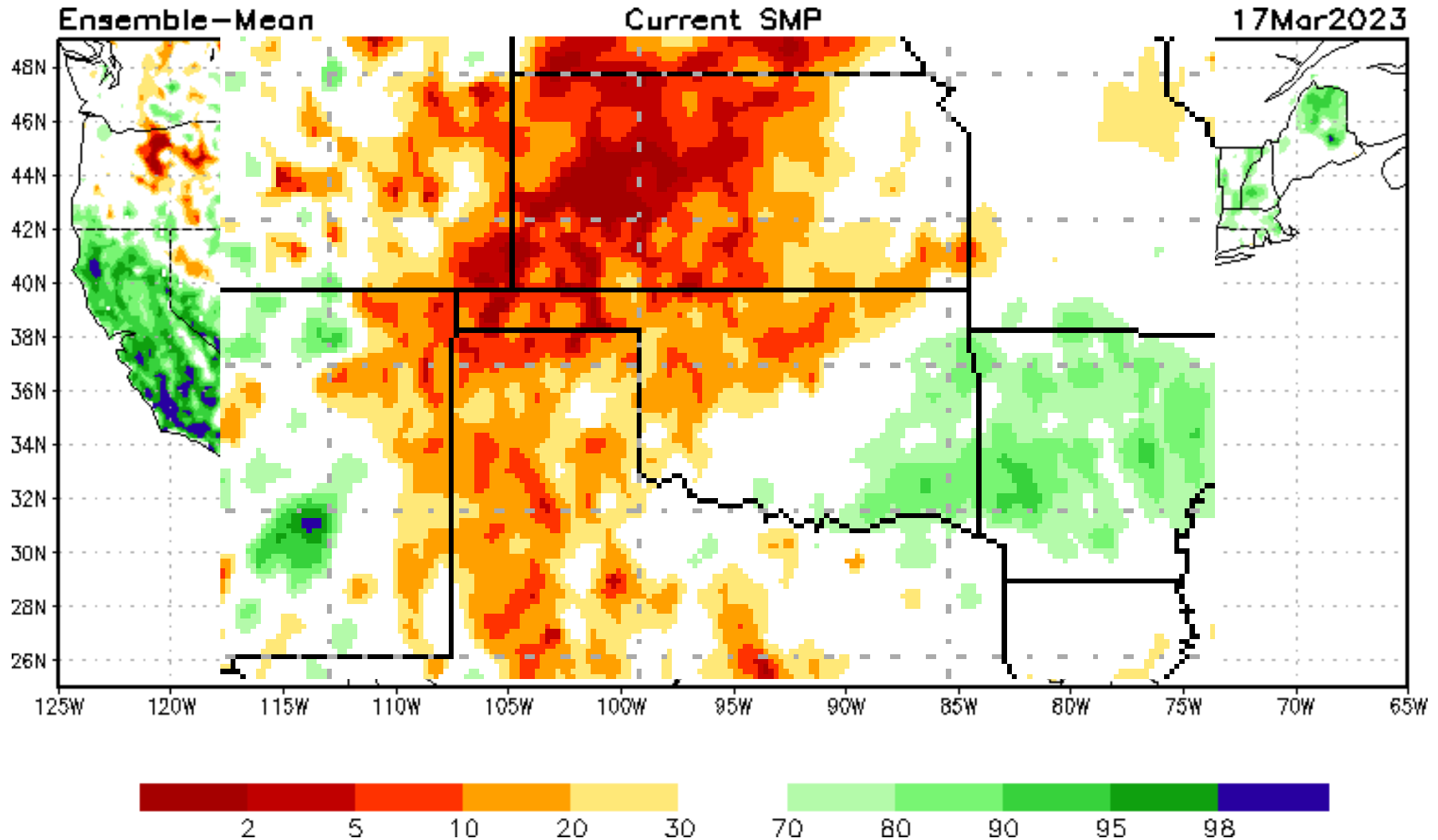


How are current conditions in the region?

Departure from Normal Precipitation (in)
3/21/2021 – 3/20/2023

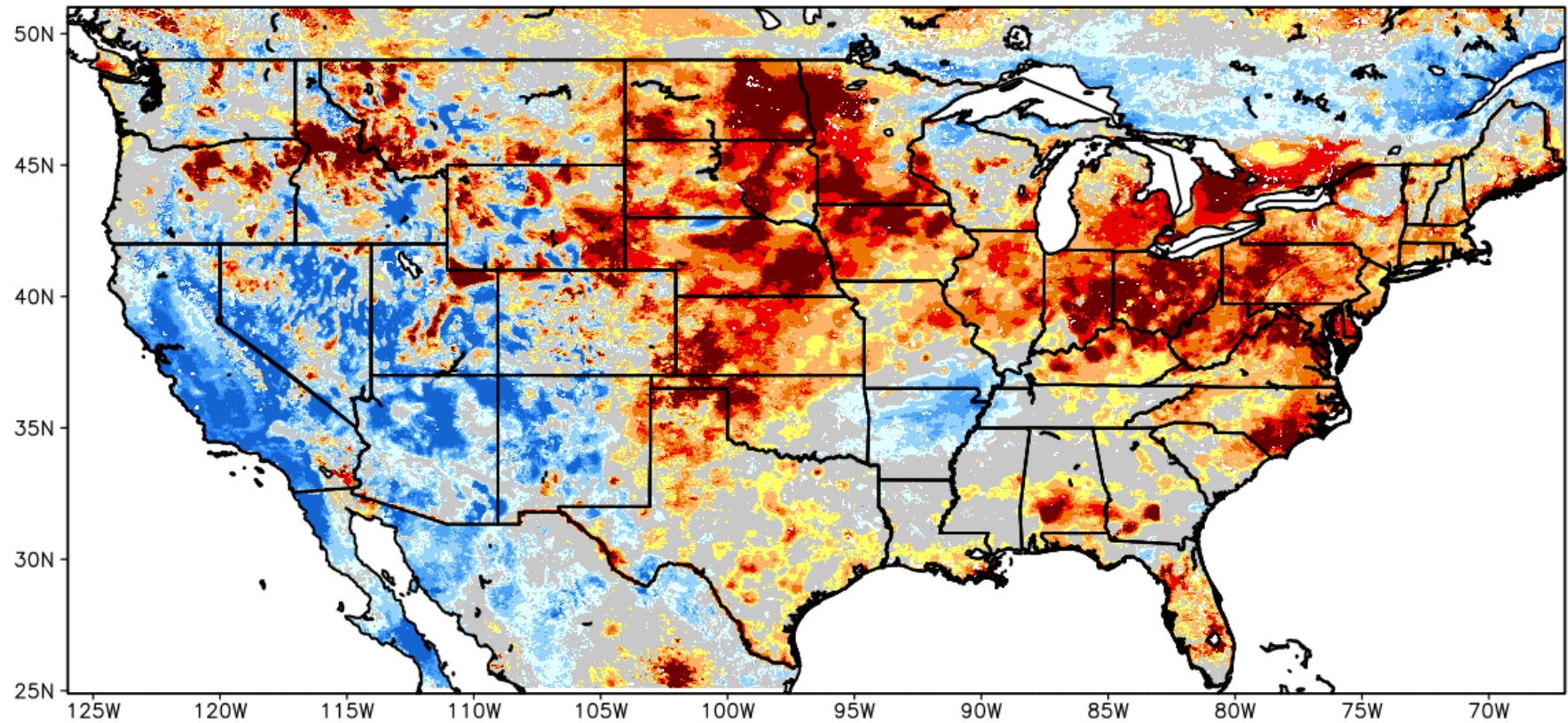


How are current conditions in the region?



How are current conditions in the region?

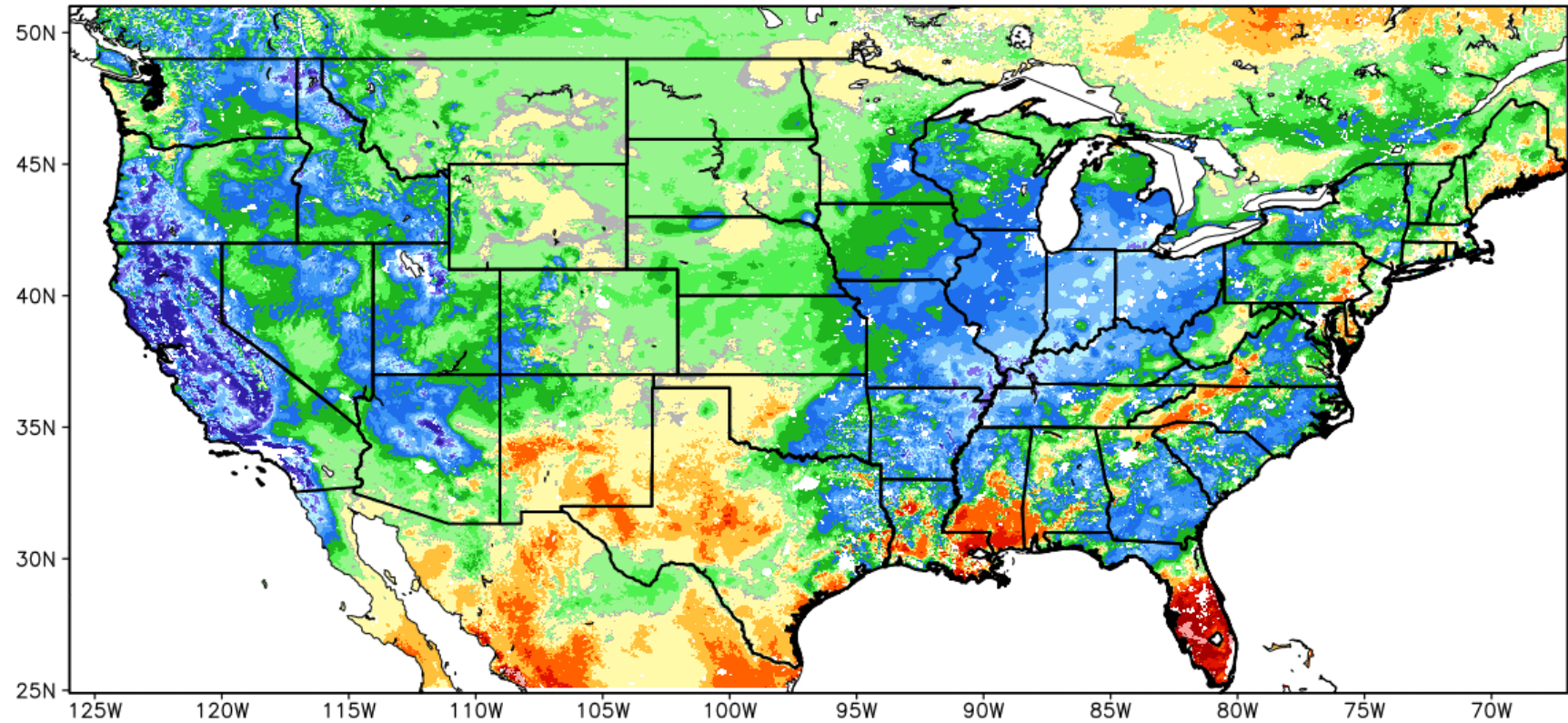
SPoRT-LIS 0-100 cm Soil Moisture percentile valid 22 Mar 2023



****NOTE****
****Experimental****

How are current conditions in the region?

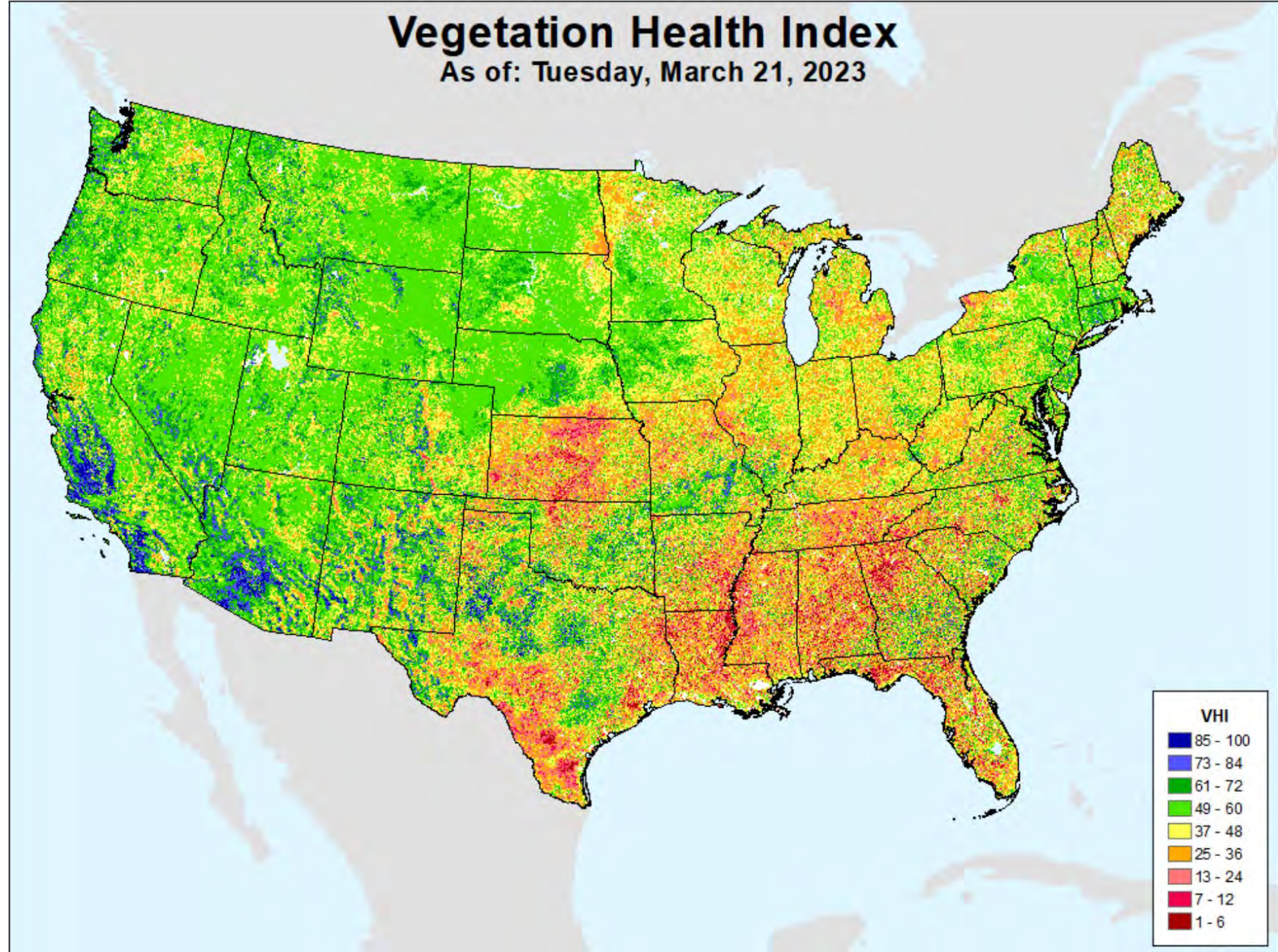
3-Month Difference in Column Relative Soil Moisture (%) valid 12z 22 Mar 2023



****NOTE****
****Experimental****



How are current conditions in the region?



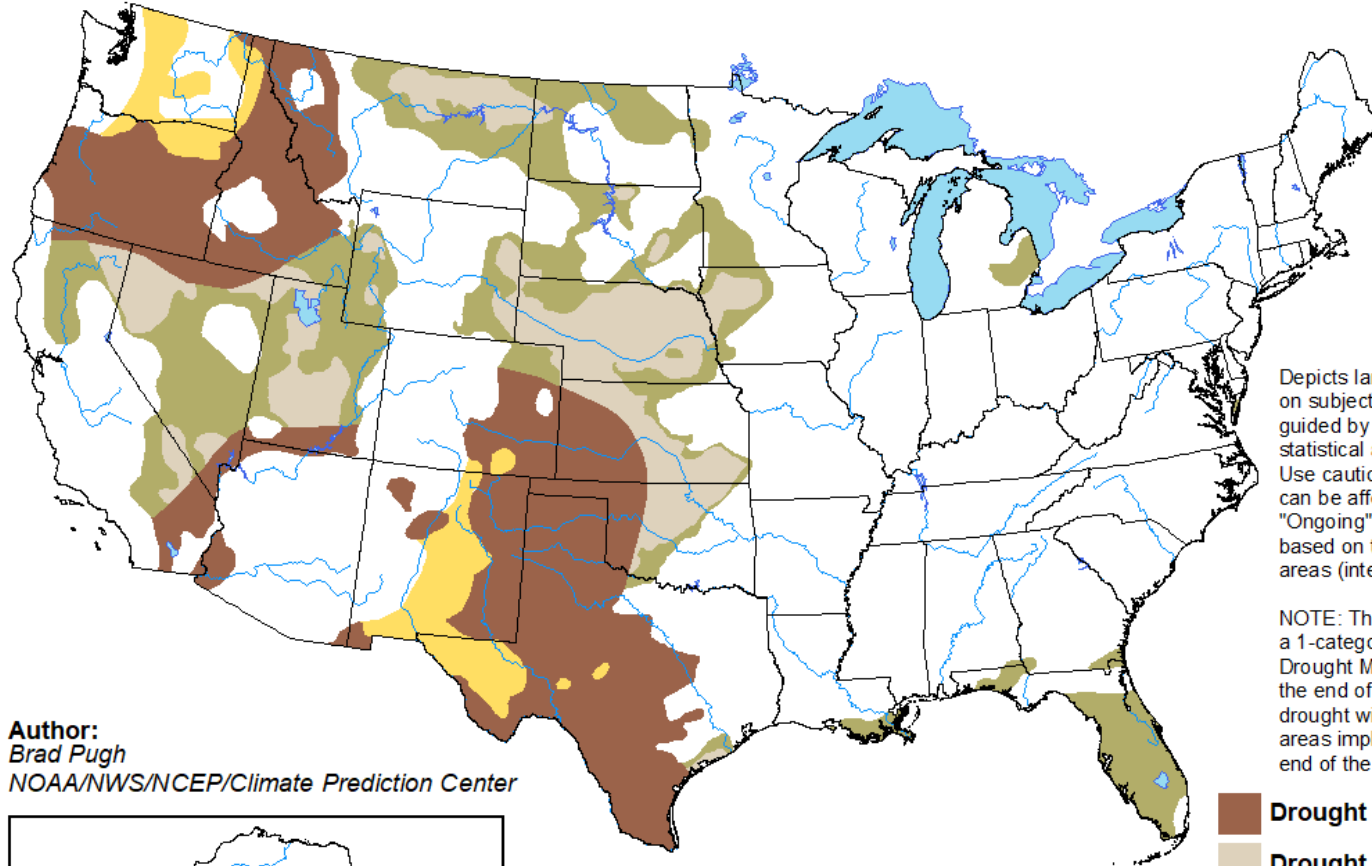
What is
expected
going forward
in 2023?



What to expect for 2023?

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for March 16 - June 30, 2023
Released March 16

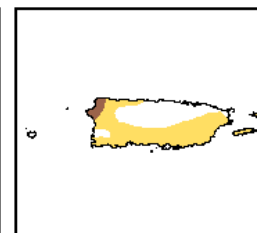
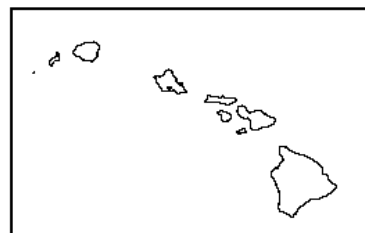
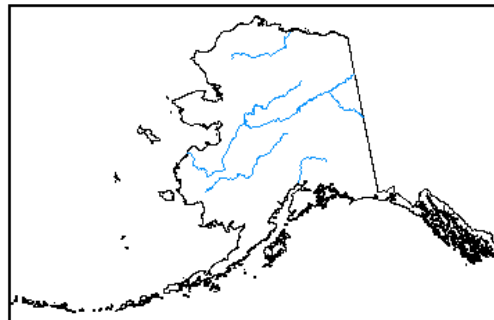


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists**
- Drought remains but improves**
- Drought removal likely**
- Drought development likely**

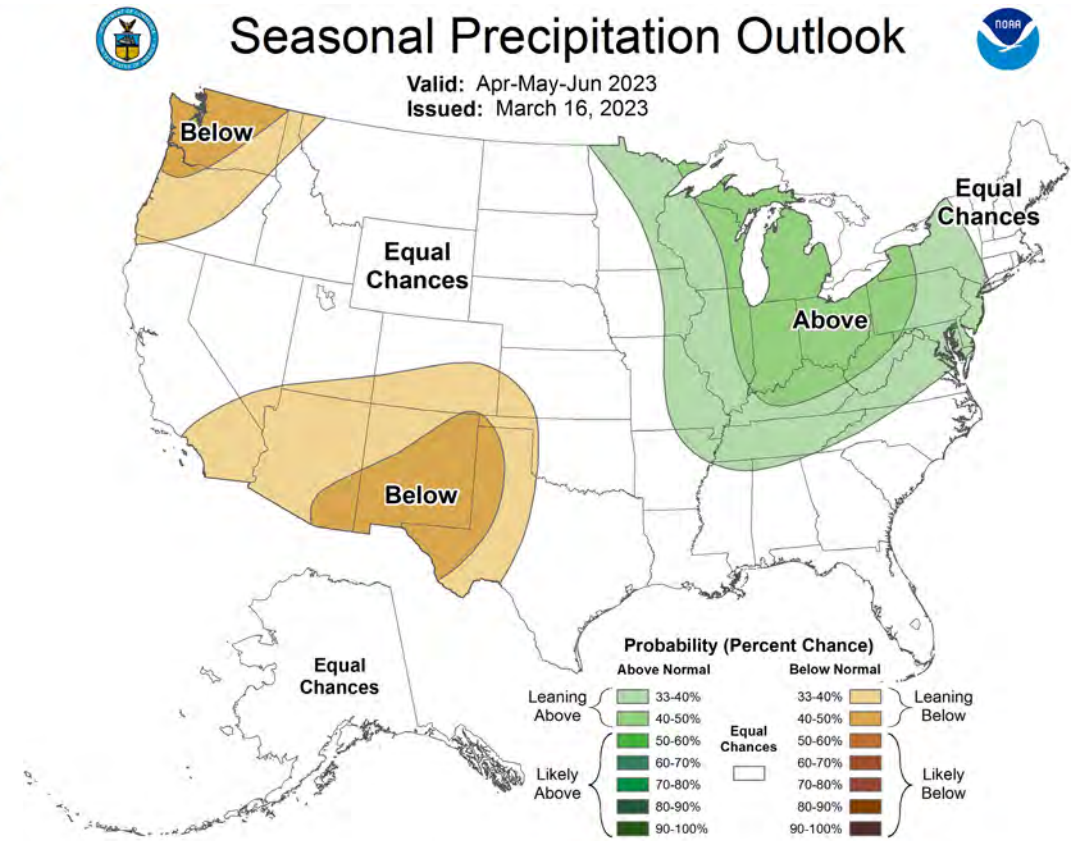
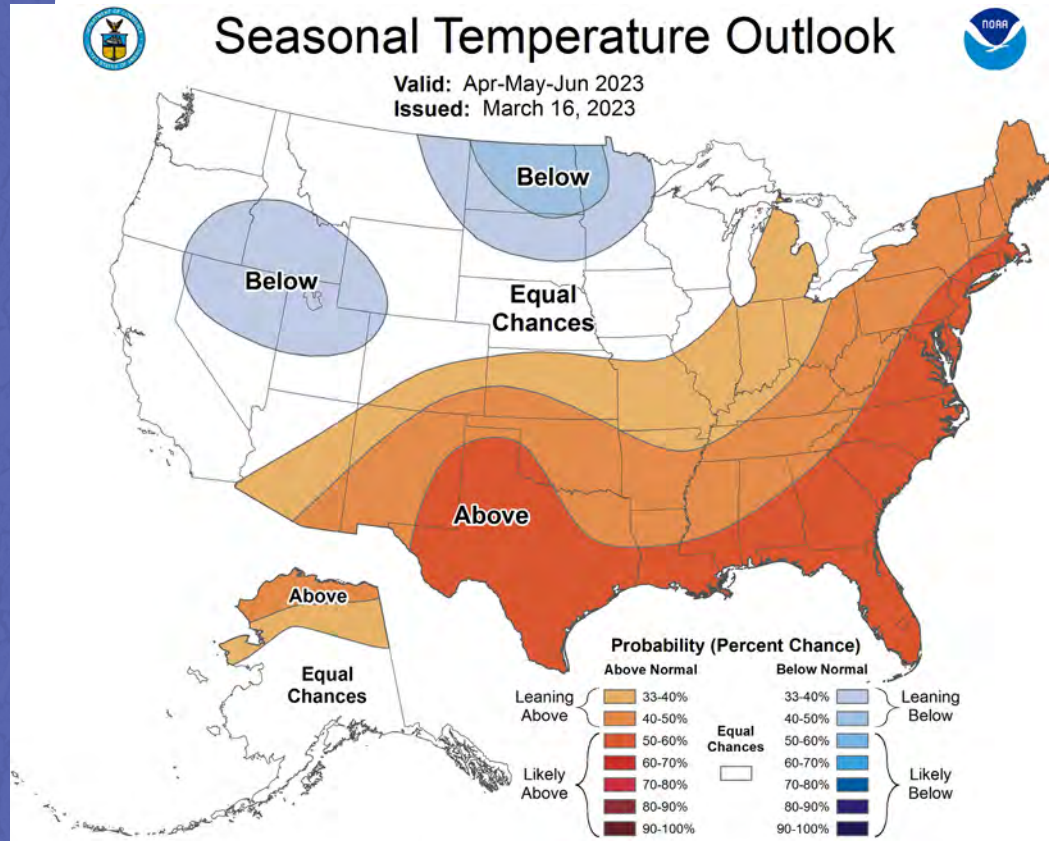
Author:
Brad Pugh
NOAA/NWS/NCEP/Climate Prediction Center



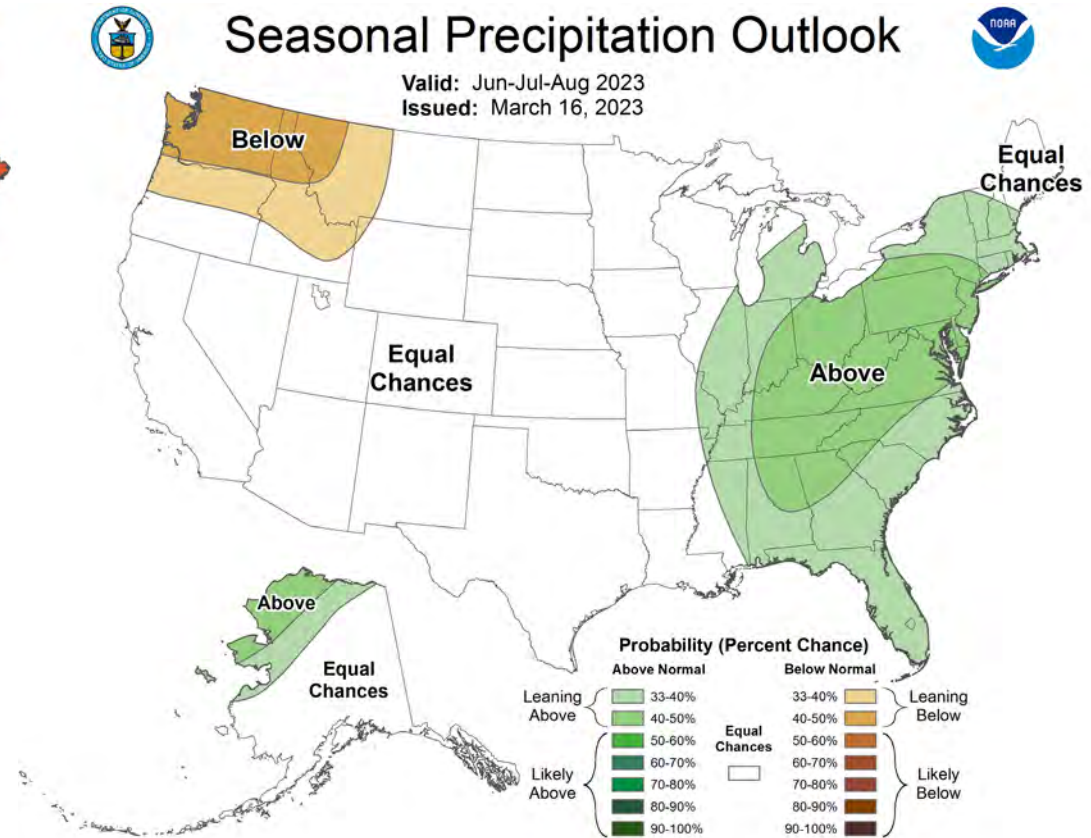
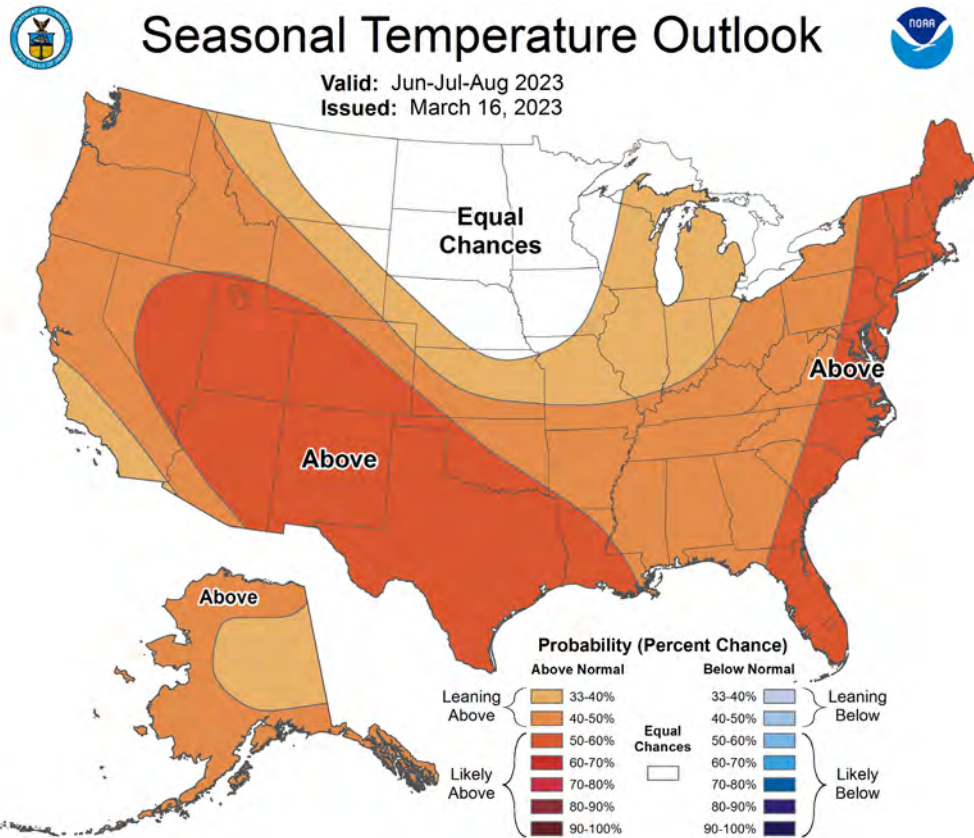
<http://go.usa.gov/3eZ73>



What to expect for 2023?

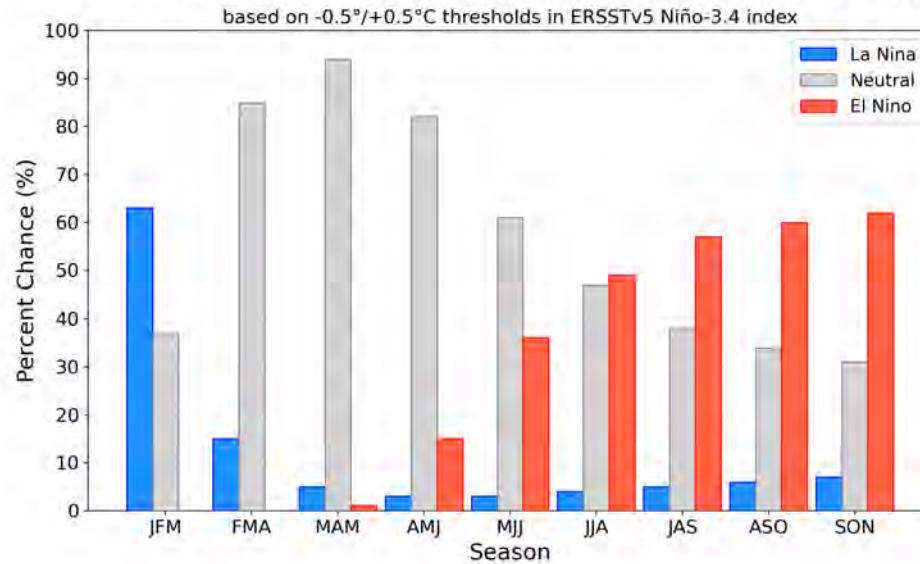


What to expect for 2023?

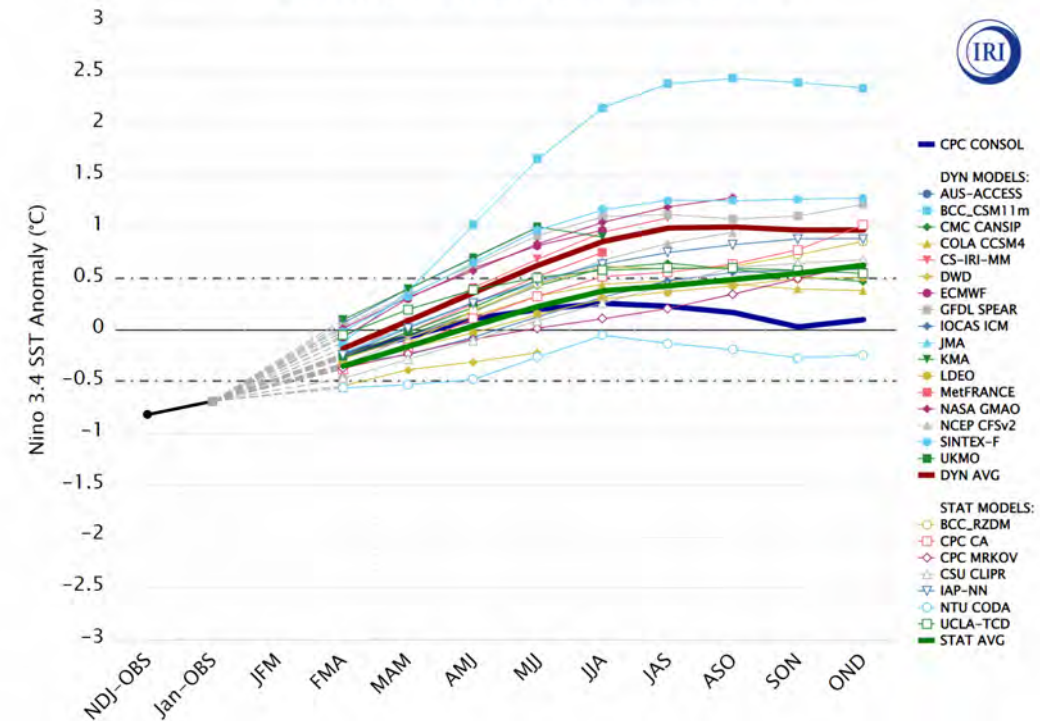


Will 2023 see the return of El Nino?

Official NOAA CPC ENSO Probabilities (issued Feb. 2023)

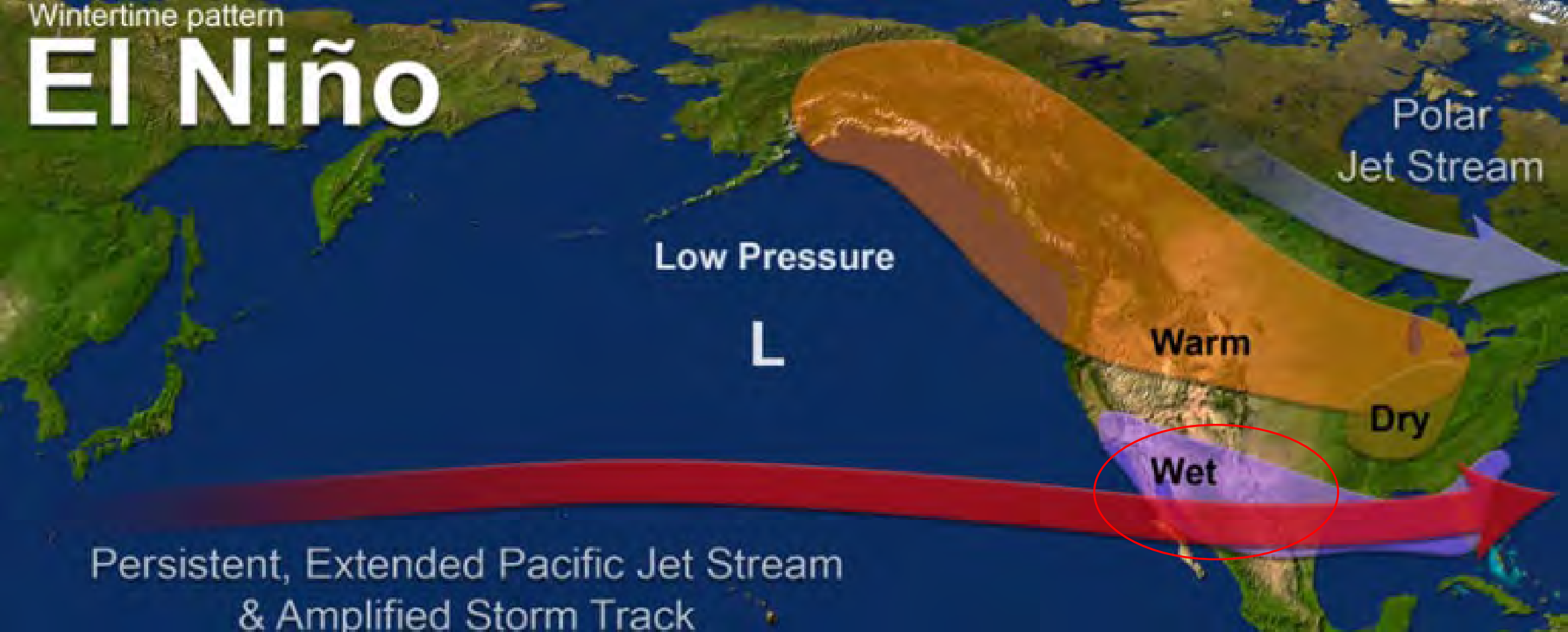


Model Predictions of ENSO from Feb 2023



Wintertime pattern

El Niño



What does El Niño mean for the region?

Grassland Productivity Forecast

Outlook

- Grass-Cast Static Maps
- Grass-Cast Zoomable Maps
- About Our Maps
- Introductory Video
- How to Read the Maps
- Grass-Cast Handout
- Science Webinars
- Acknowledgements
- Historical Productivity

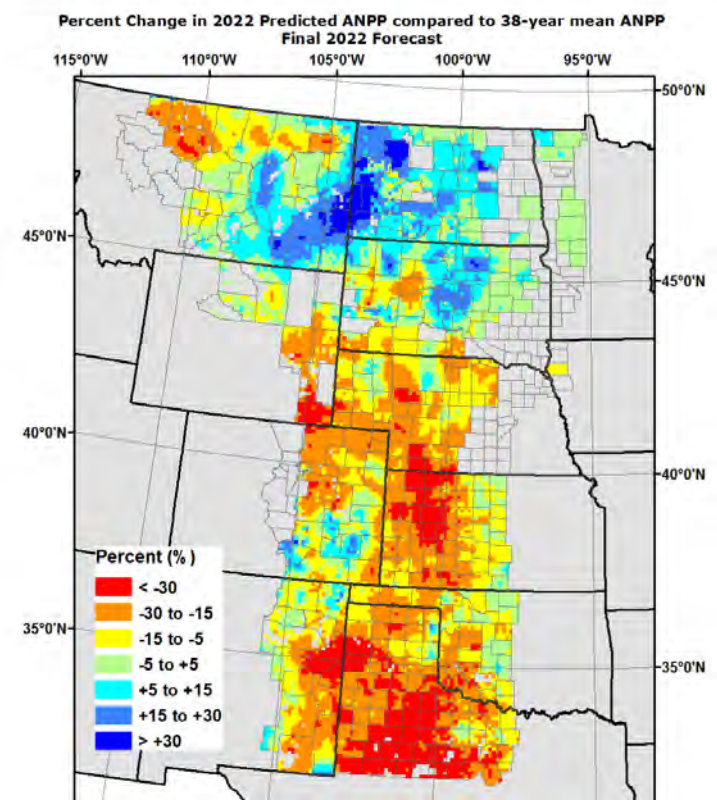
Select an area:

Great Plains Southwest

[Help Ground-Truth Grass-Cast by Reporting Your Actual End-of-Season Forage Production Here](#)

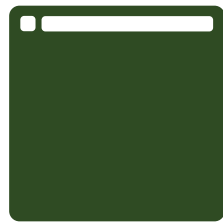
% Change in Grassland Production for Your Area this Summer Compared to Its 38-yr Average - Forecast Made: September 1, 2022

For the map below: "Given actual precipitation observed through Aug 31st, grassland production in your grid-cell at peak biomass during the SUMMER of 2022 is estimated to be ___% more or less than its 38-year average."



Thank You!
Questions?

Contact:
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bfuchs2@unl.edu



drought.unl.edu



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