

A tall, silver weather station tower stands in a grassy field under a blue sky with light clouds. The tower has various sensors and a small solar panel at its base. In the background, there's a fence and some trees.

Winter 2023-24 Outlook - Missouri RAC

10/25/23

Chip Redmond - Assistant Meteorologist, Mesonet Manager





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Kansas Mesonet

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Lorraine

Station Metadata

Temperature 42 °F
Wind Chill 34 °F
Dewpoint 37 °F
Humidity 84%
24-hr Precip 1.77 inches
Wind NW at 14 mph
SLP 1007.8 mb
Last Observed 10:15 AM CDT

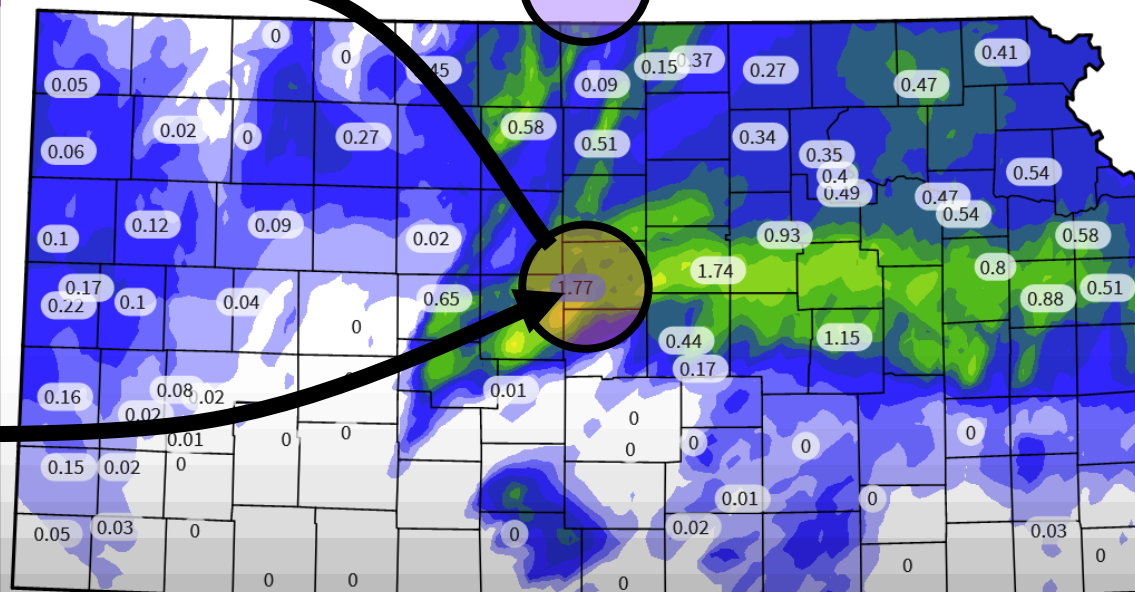
Today

High 45 °F

Precipitation 70%
Thunderstorms

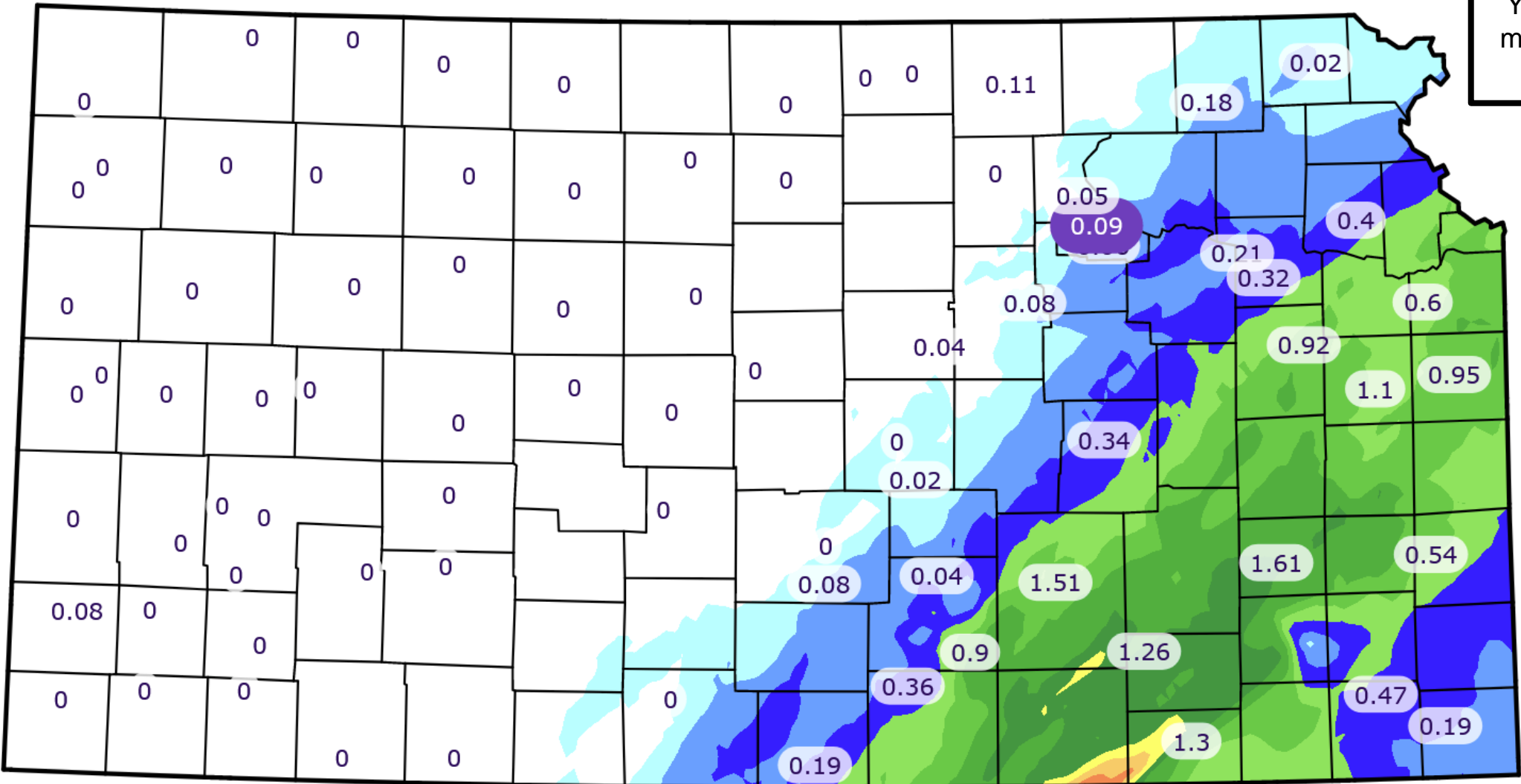
Tonight

Low 40 °F

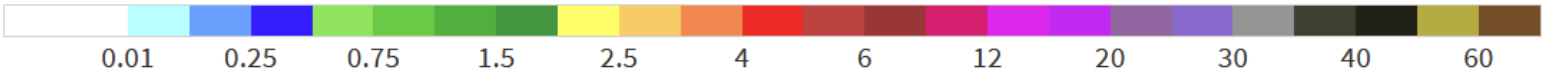


Observed - Since Midnight

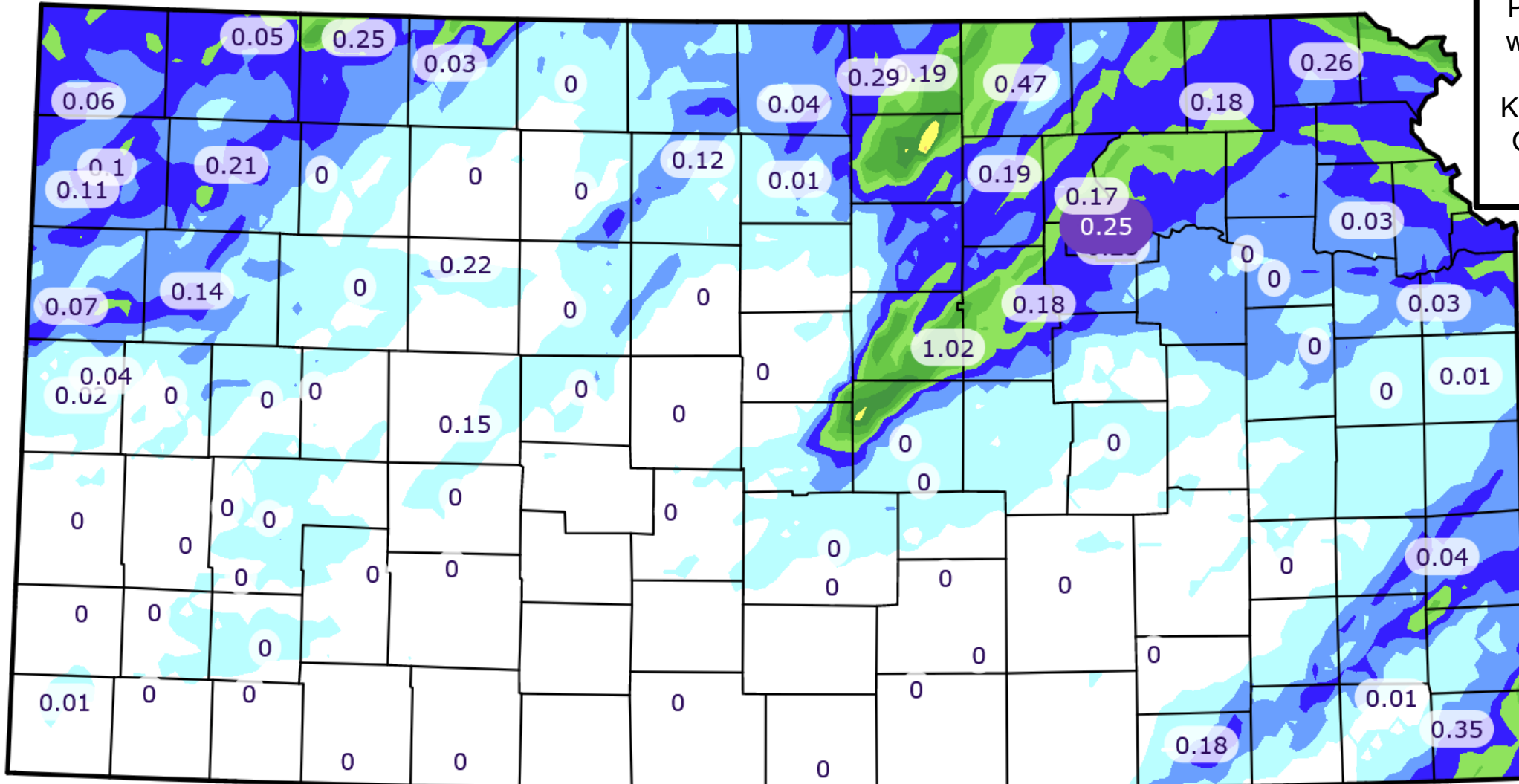
Yesterday's rainfall was much needed in portions of eastern Kansas.



Mesonet Data - Precip (in) at Oct 24 2023 20:45 (CDT)

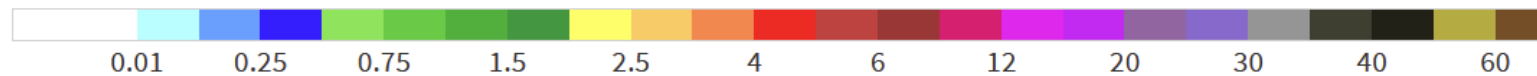


Observed - 14 Days Through Yesterday

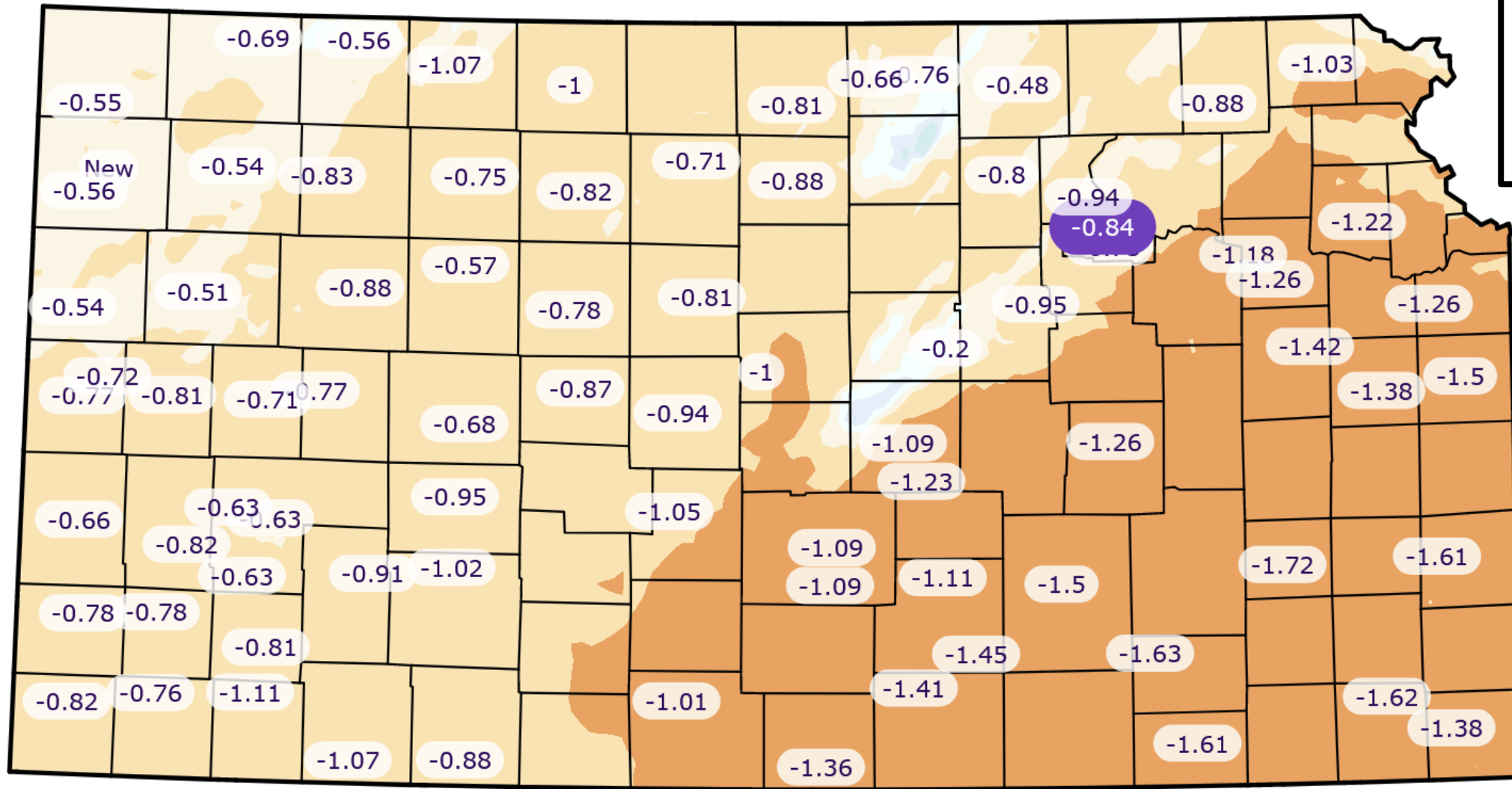


Precipitation the last two weeks has been minimal and isolated across Kansas before yesterday. Only isolated areas had measurable moisture.

Mesonet Data - Precip (in) at Oct 24 2023 20:45 (CDT)

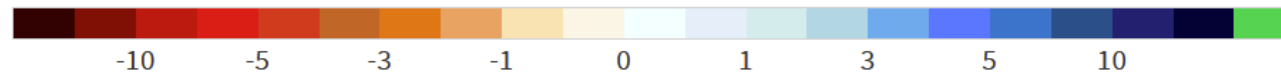


Departure - 14 Days Through Yesterday

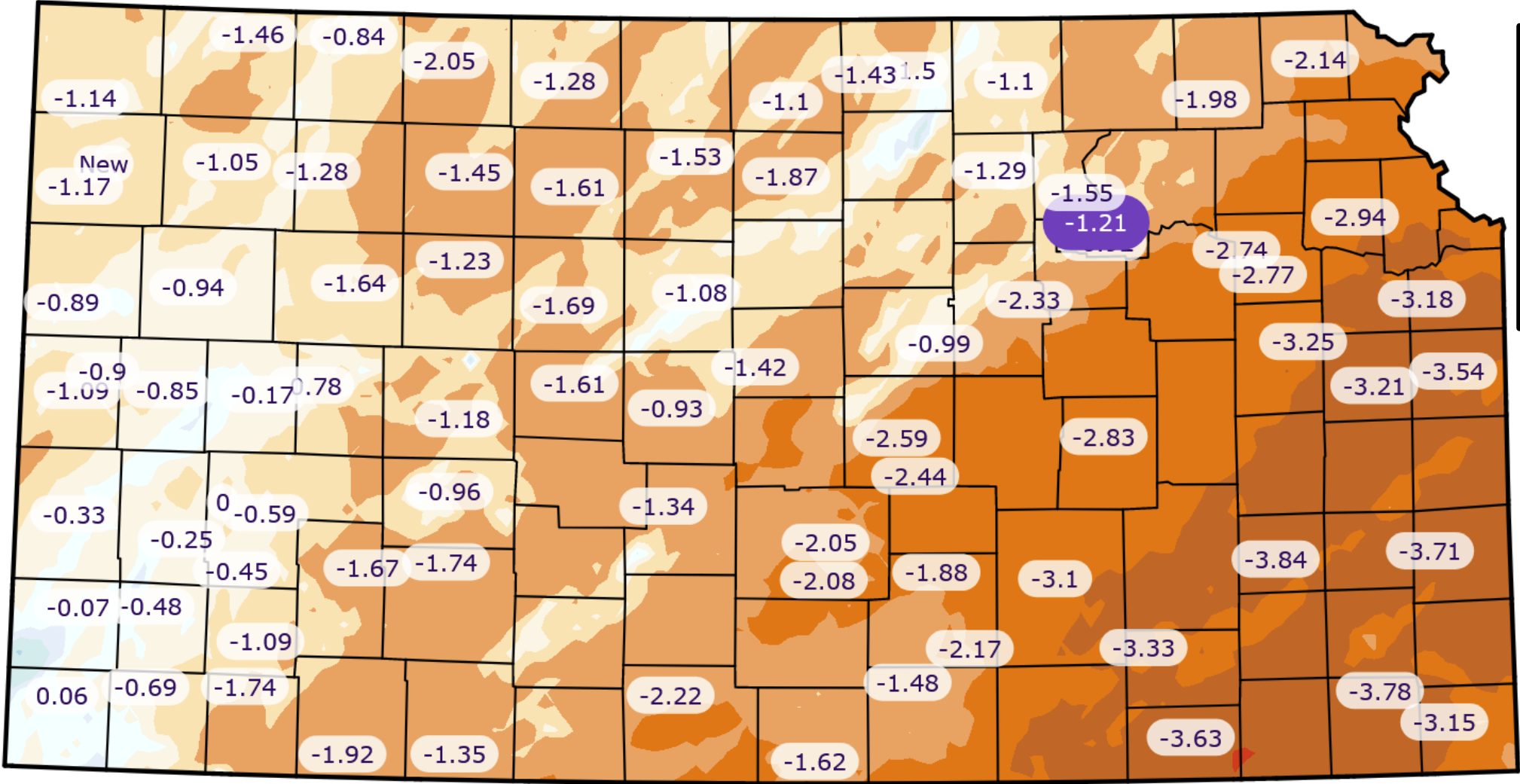


While precipitation averages are climatologically falling each week, zero moisture continues to grow big deficits quickly.

Mesonet Data - Precip (in) at Oct 24 2023 20:45 (CDT)

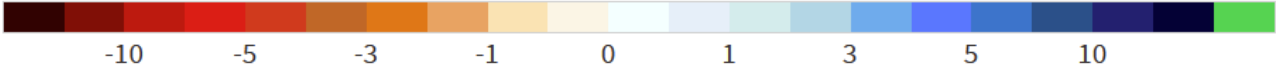


Departure - 30 Days Through Yesterday



Looking beyond the last two weeks, there has been a few isolated areas of above normal moisture. However, outside of these, most of the state has continued to grow deficits by 1-2" the last 30 days.

Mesonet Data - Precip (in) at Oct 24 2023 20:45 (CDT)



Departure - Year To Date (Yesterday)

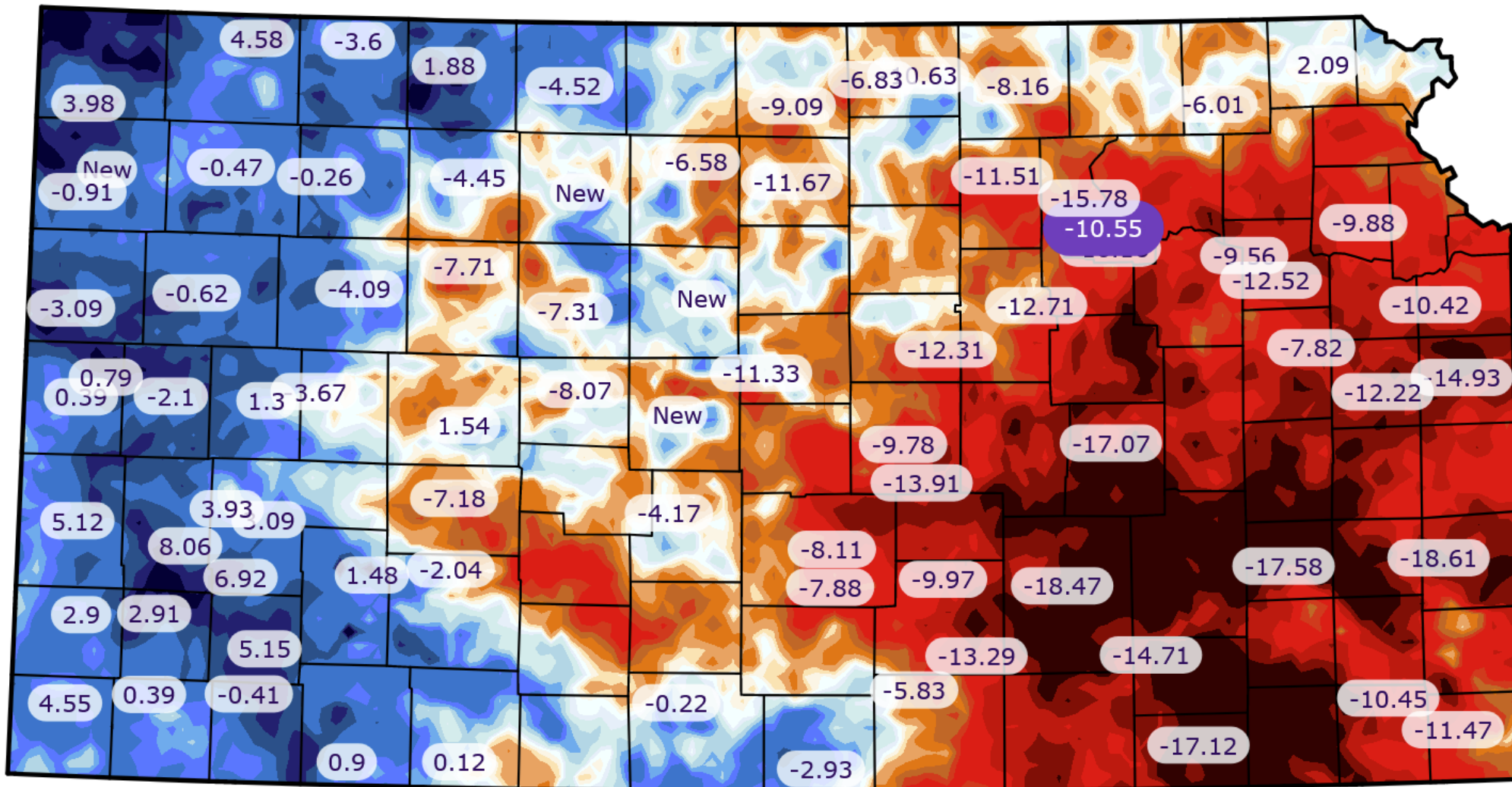
And comparing year to date, the recent dryness has only fueled continued drought in the eastern region. Meanwhile, this has been a welcomed dry out period for those in the west.

Mesonet Data - Precip (in) at Oct 24 2023 20:45 (CDT)

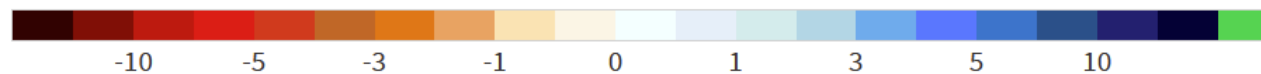
-10 -5 -3 -1 0 1 3 5 10

Kansas Mesonet - Kansas State University, Kansas Research and Extension

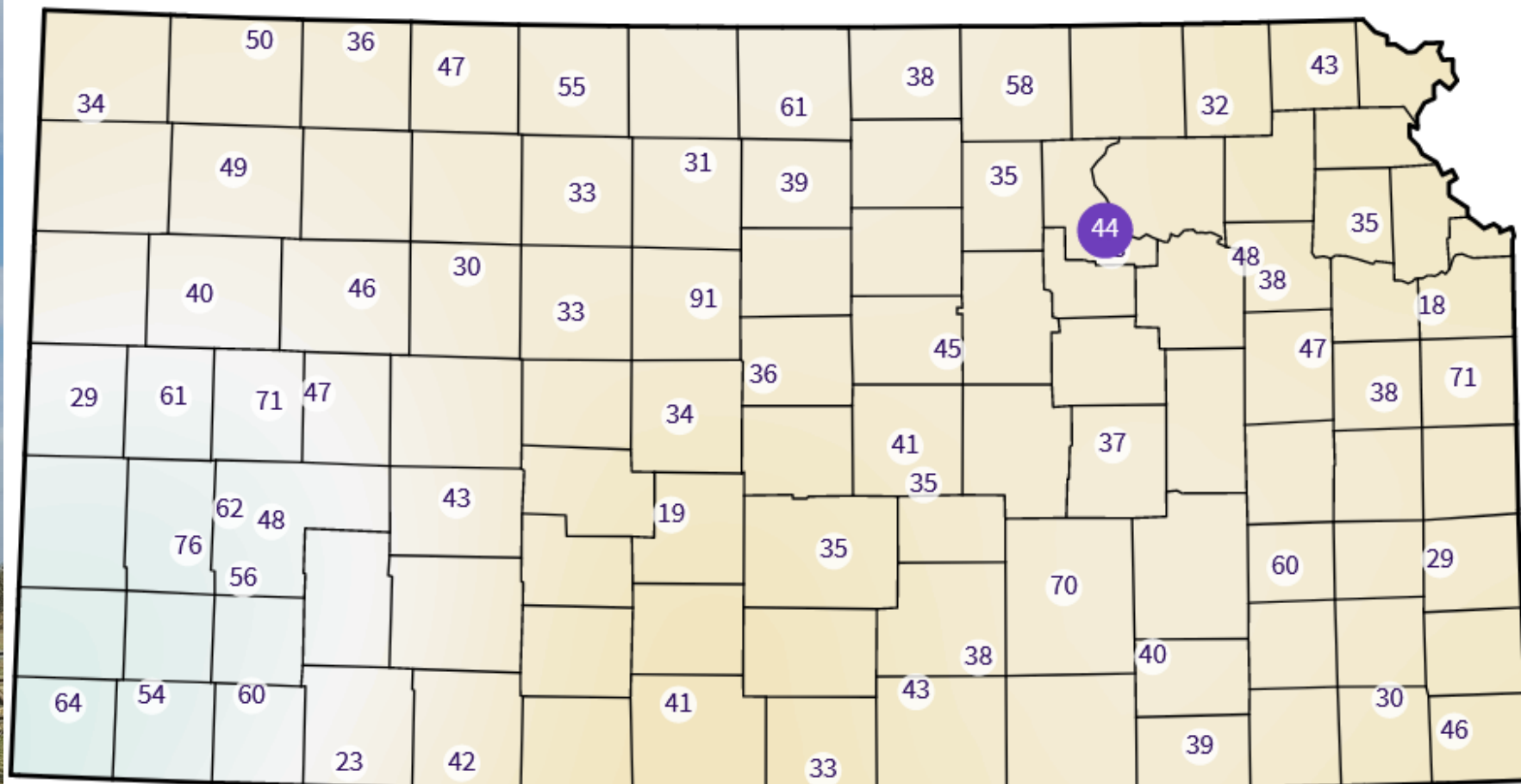
And comparing year to date, the recent dryness has only fueled continued drought in the eastern region. Meanwhile, this has been a welcomed dry out period for those in the west.



Mesonet Data - Precip (in) at Oct 24 2023 20:45 (CDT)



Percent of Saturation at 10 cm



Many folks are planting wheat right now into (around) the four inch (or 10cm) depth. Soil moisture is best at this depth in the southwest. Otherwise, less than ideal moisture exists for much of the state.

This map is representative of grassland vegetation

Mesonet Data - 10 cm % Saturation at Oct 24 2023 21:25 (CDT)

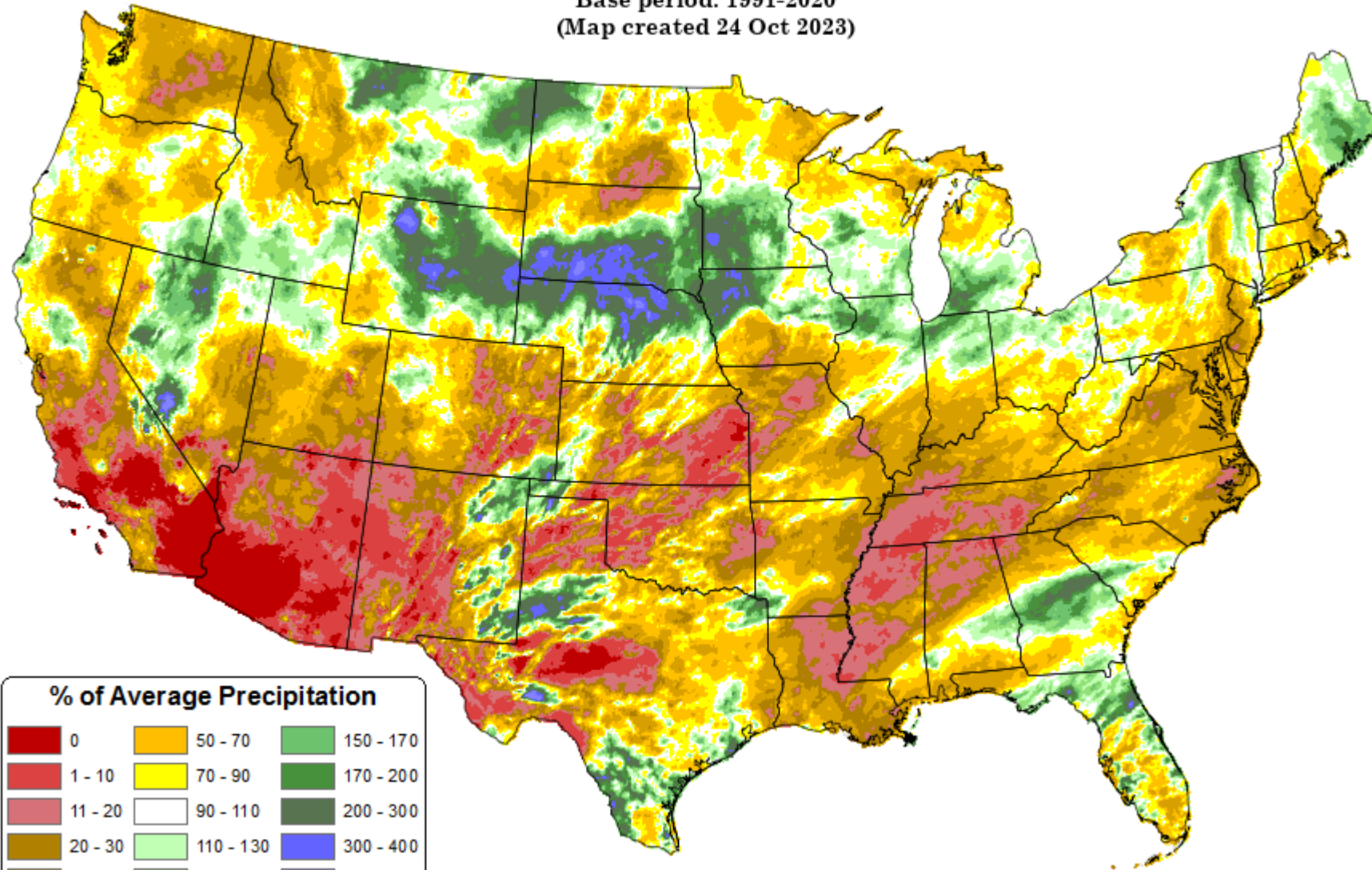


Total Precipitation Anomaly: 01 Oct 2023 - 23 Oct 2023

Period ending 7 AM EST 23 Oct 2023

Base period: 1991-2020

(Map created 24 Oct 2023)



% of Average Precipitation

0	50 - 70	150 - 170
1 - 10	70 - 90	170 - 200
11 - 20	90 - 110	200 - 300
20 - 30	110 - 130	300 - 400
30 - 50	130 - 150	> 400

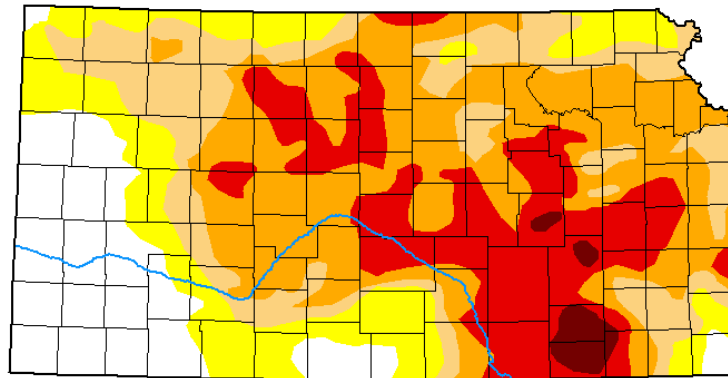
Looking at the bigger picture, outside of northern NE and southern SD, moisture has been limited across much of the US this month.

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This has resulted in drought expansion in the northeast and isolated areas (right). Over the last few weeks, only a few localized areas have observed one category drought improvement.

U.S. Drought Monitor Kansas

October 17, 2023
(Released Thursday, Oct. 19, 2023)
Valid 8 a.m. EDT



Intensity:

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

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>

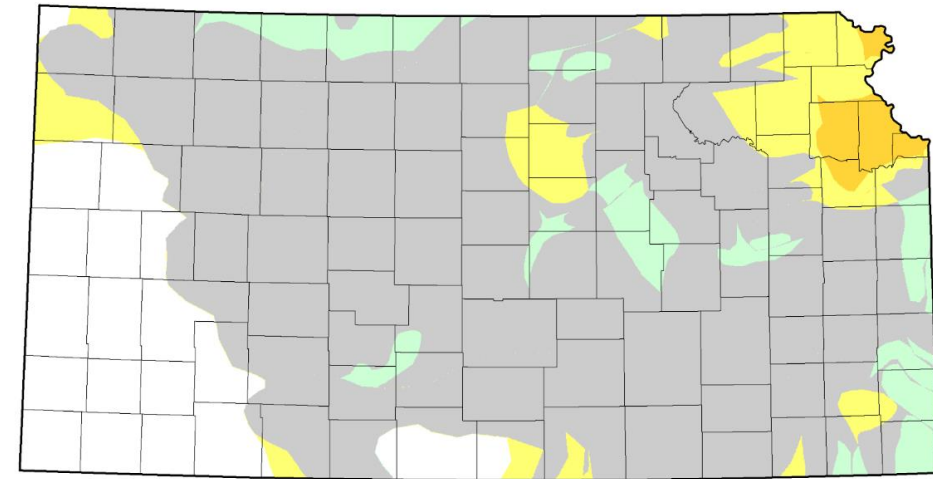
Author:

Rocky Bilotta
NCEI/NOAA



droughtmonitor.unl.edu

U.S. Drought Monitor Class Change - Kansas 4 Week



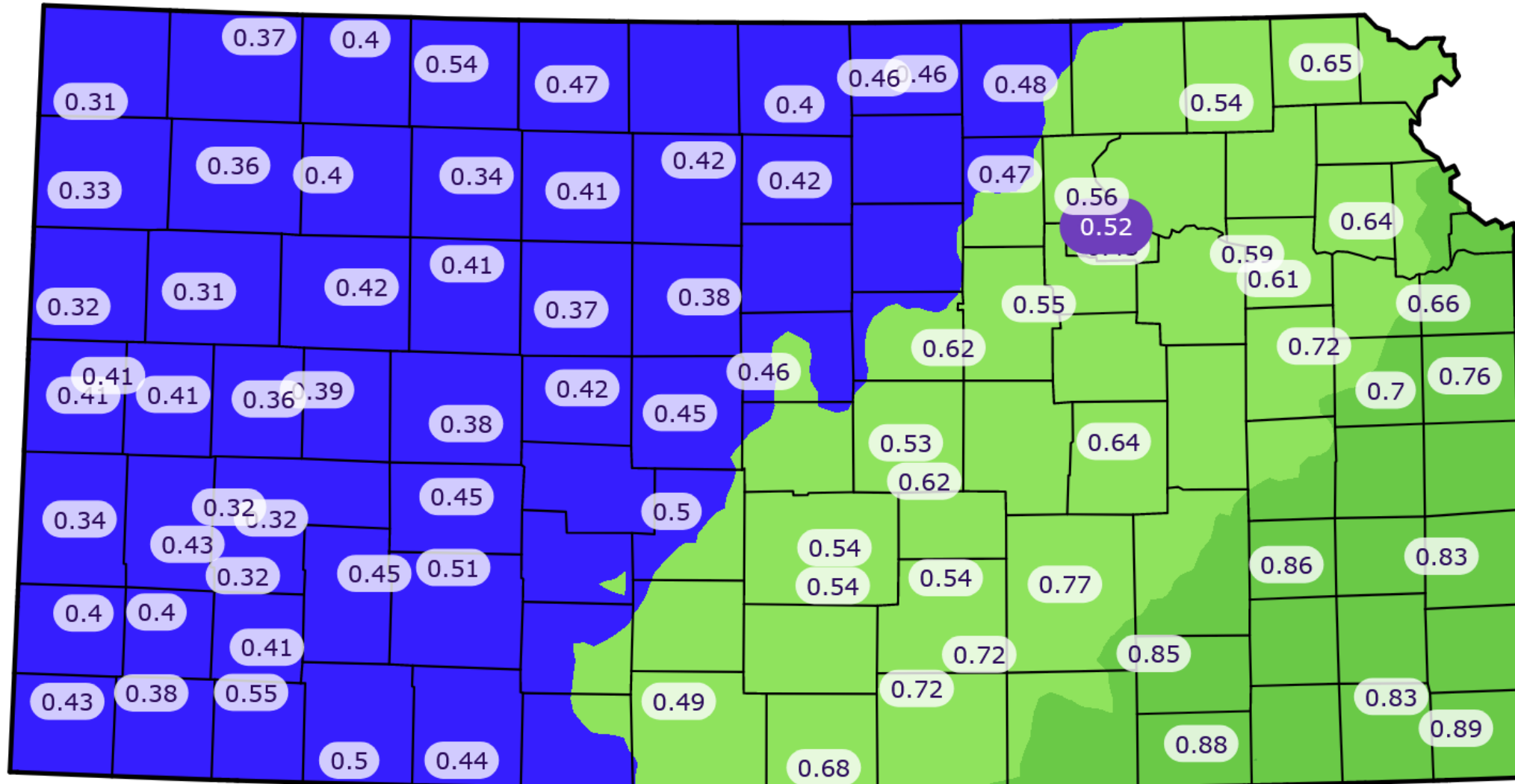
October 17, 2023
compared to
September 19, 2023

droughtmonitor.unl.edu



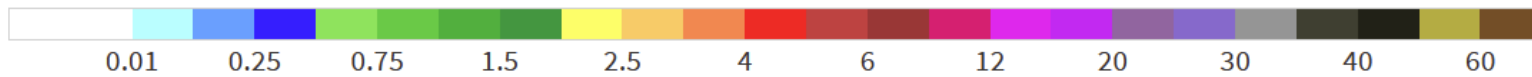
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

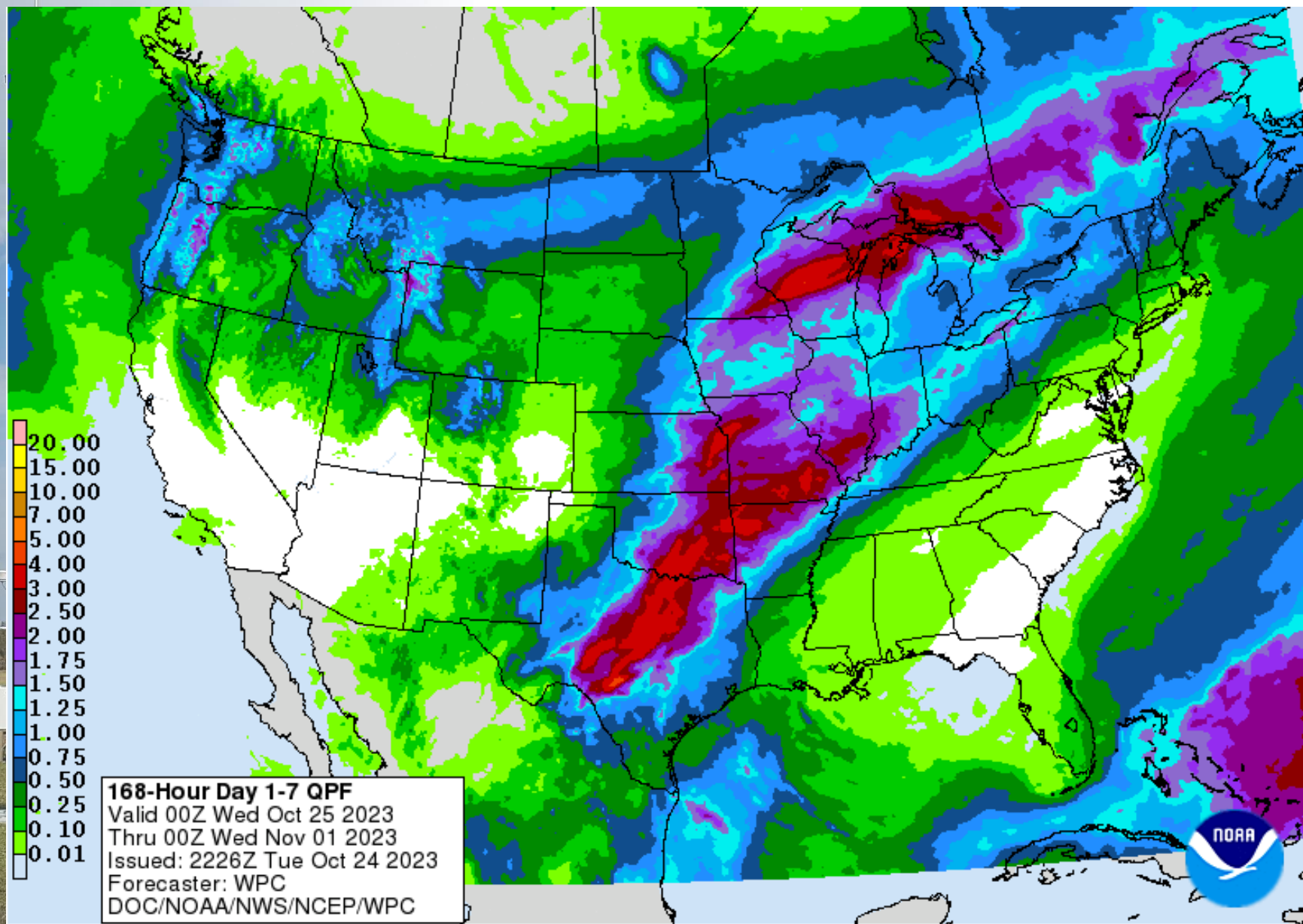
Normal - 7 Days Through Yesterday



Normal precipitation weekly precipitation is down to 0.3-0.9" expected this week.

Mesonet Data - Precip (in) at Oct 24 2023 21:45 (CDT)



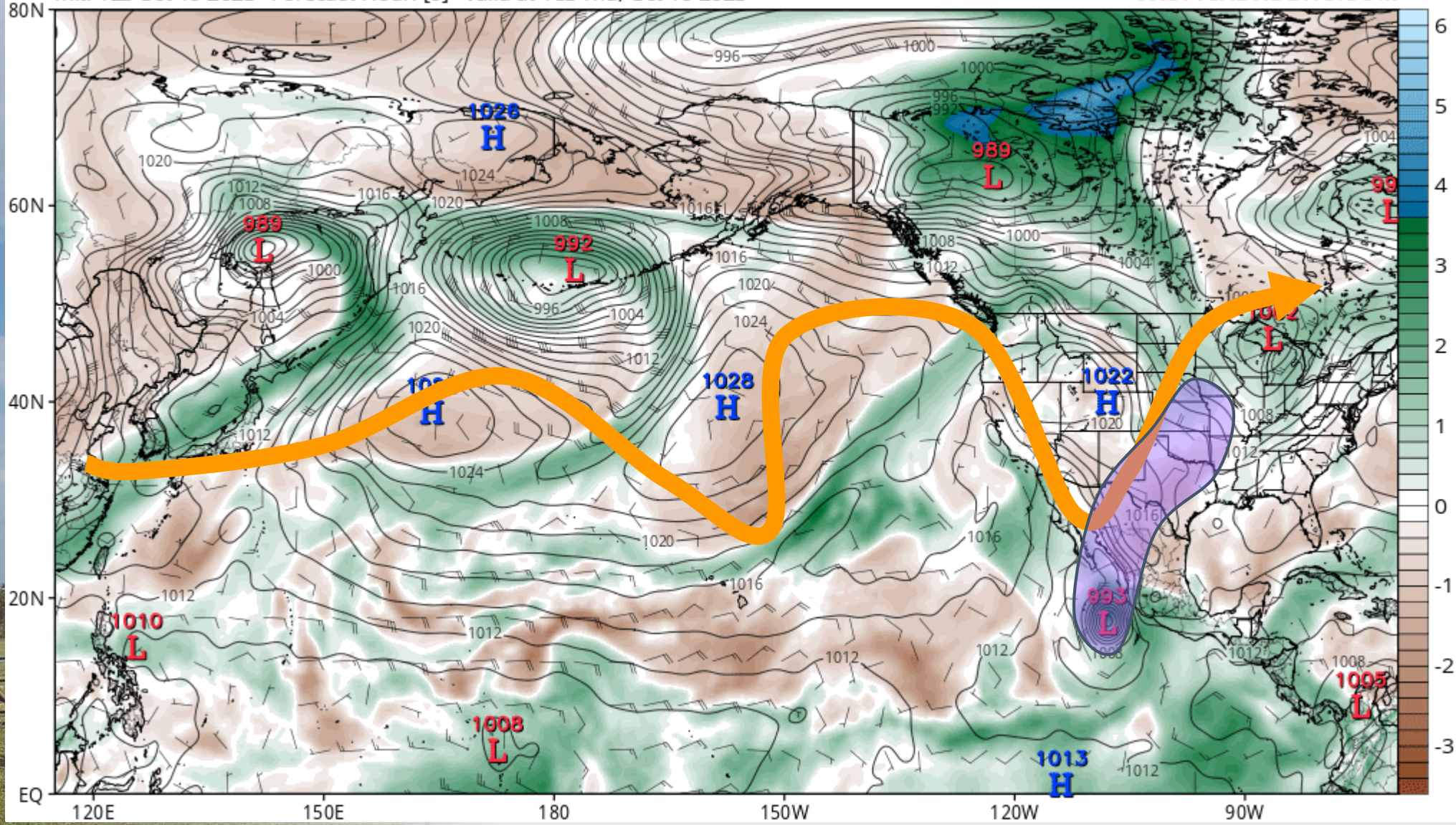


BUT! The forecast calls for above that for much of the state. Big moisture is anticipated this week in the east. This could result in some drought improvements. We average least moisture during the late fall to early spring. Therefore, only one or two potent systems can have a significant impact on the monthly and seasonal averages.

GEFS MSLP (mb), Total Precipitable Water Normalized Anomaly, & 850mb Wind (kt)

Init: 12z Oct 19 2023 Forecast Hour: [6] valid at 18z Thu, Oct 19 2023

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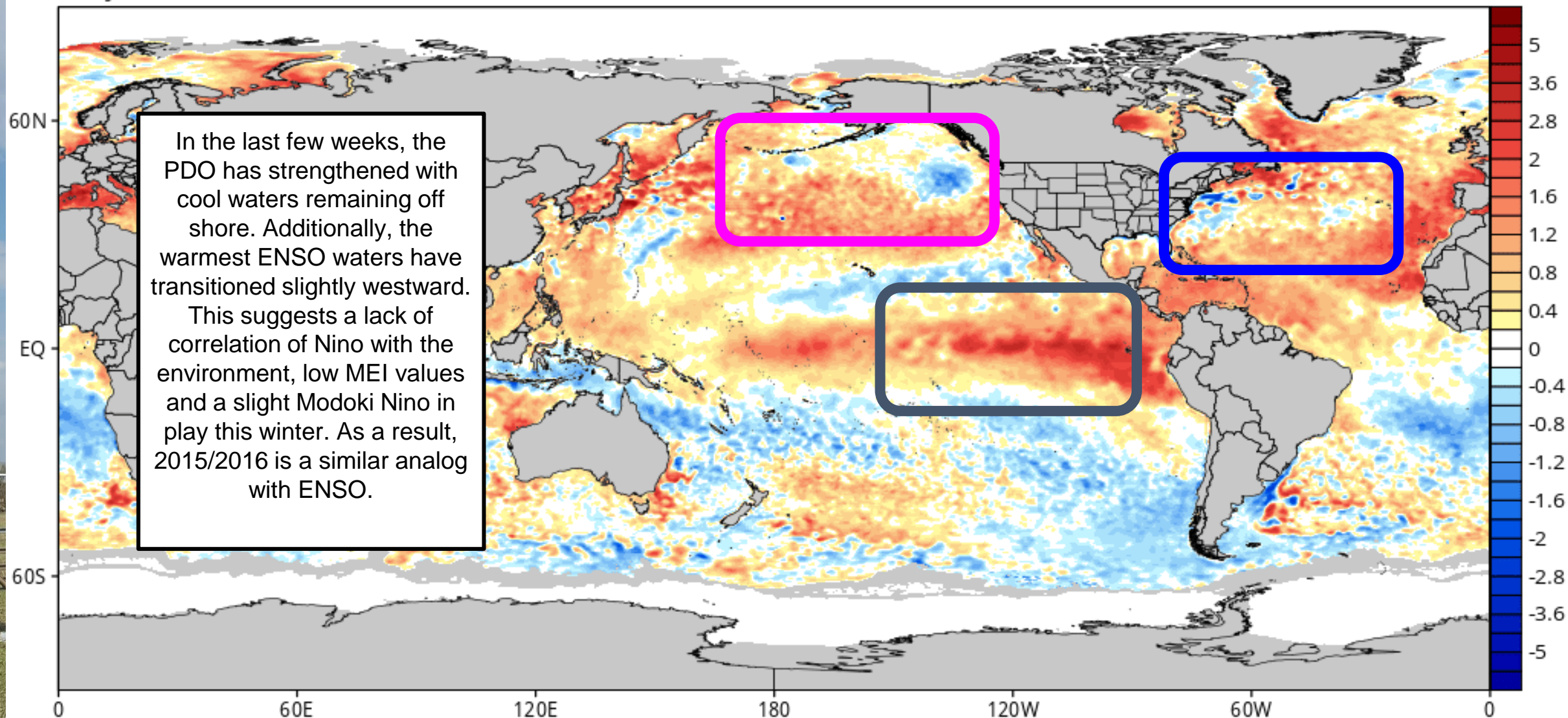


Current jetstream is phased well and is one primary jet in the northern hemisphere (yellow). This will align well with former Hurricane Norma and usher moisture northward into the central Plains. Will this be a common theme this winter?

CDAS Sea Surface Temperature Anomaly (°C) (based on CFSR 1981-2010 Climatology)

Analysis Time: 12z Oct 19 2023

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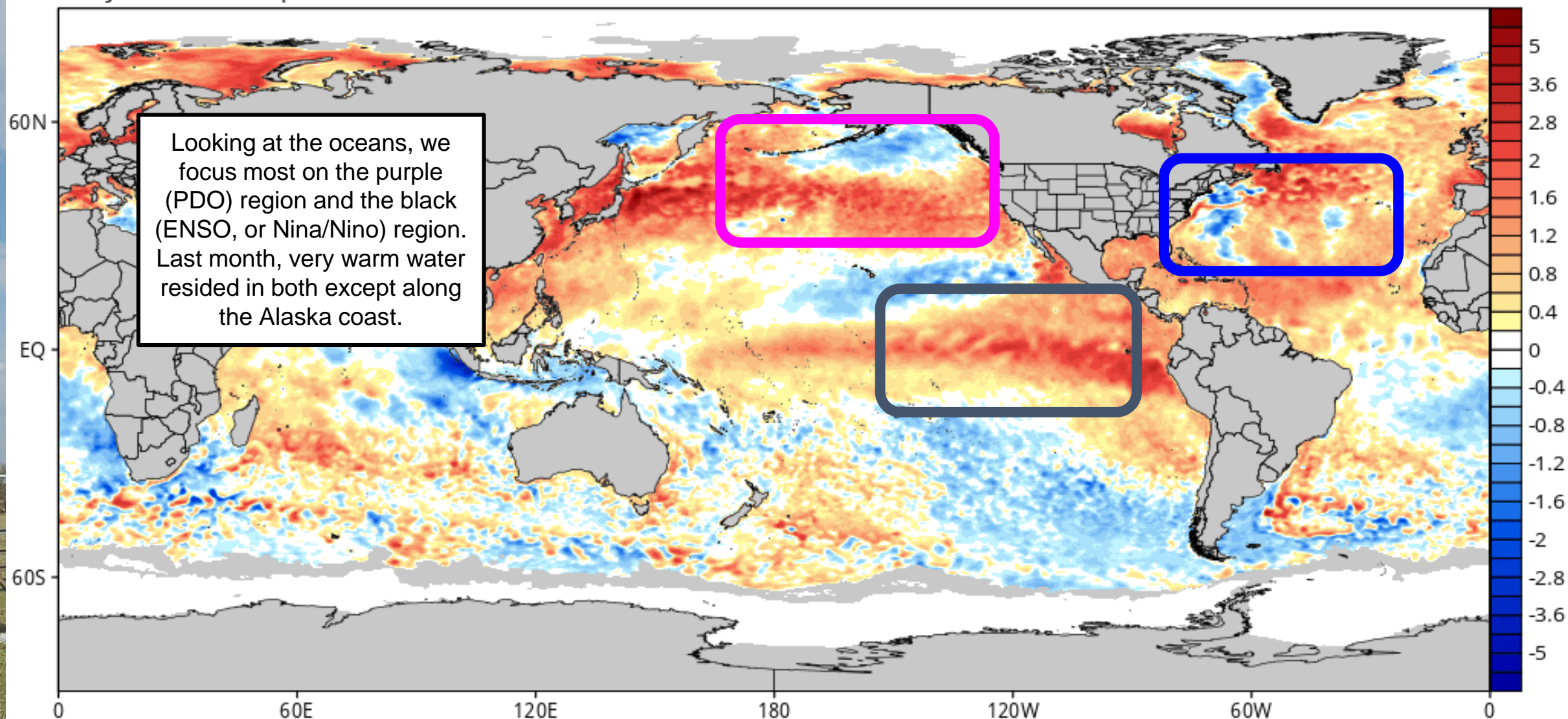
In the last few weeks, the PDO has strengthened with cool waters remaining off shore. Additionally, the warmest ENSO waters have transitioned slightly westward.

This suggests a lack of correlation of Nino with the environment, low MEI values and a slight Modoki Nino in play this winter. As a result, 2015/2016 is a similar analog with ENSO.

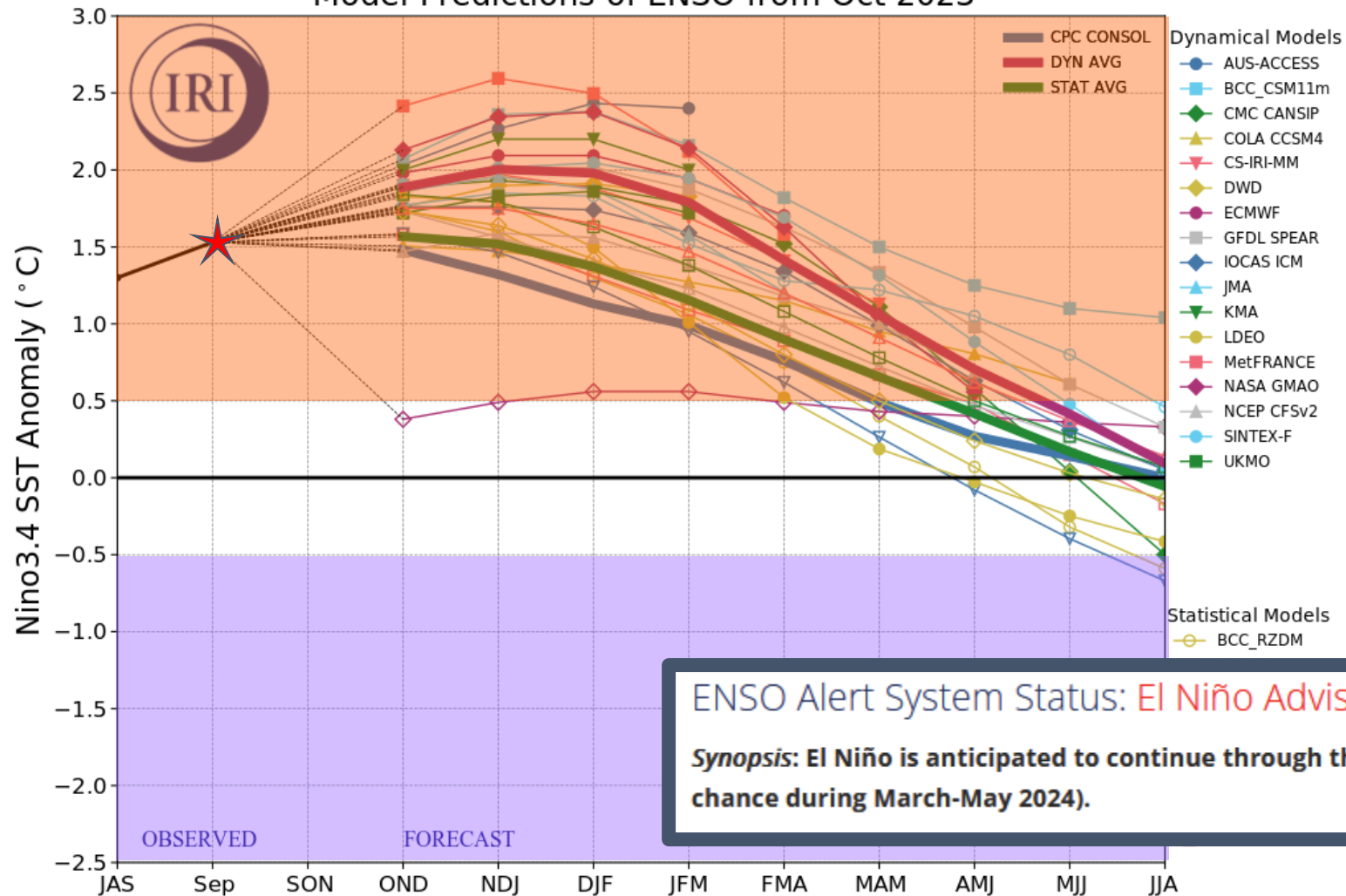
CDAS Sea Surface Temperature Anomaly ($^{\circ}\text{C}$) (based on CFSR 1981-2010 Climatology)

Analysis Time: 00z Sep 22 2023

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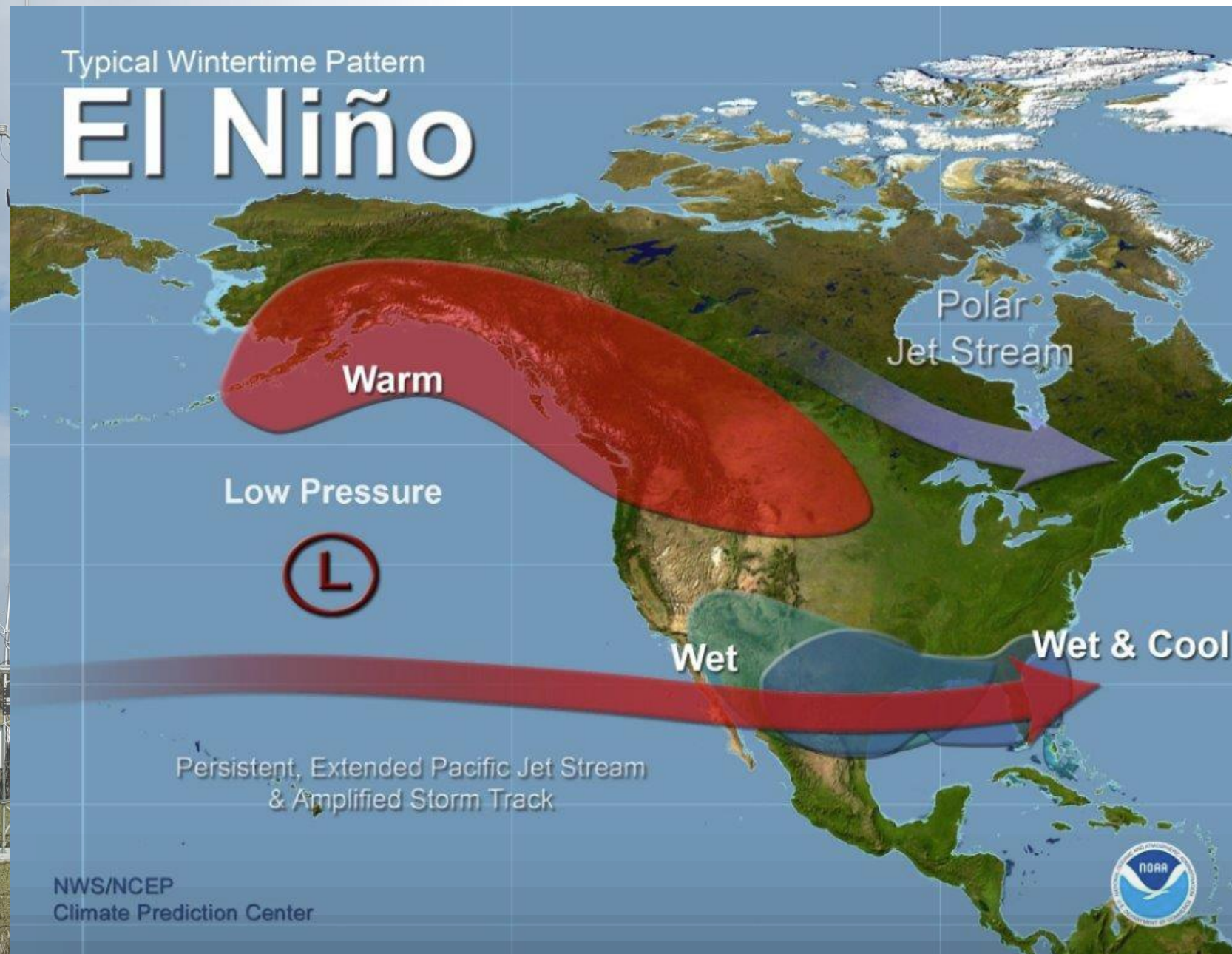
Model Predictions of ENSO from Oct 2023



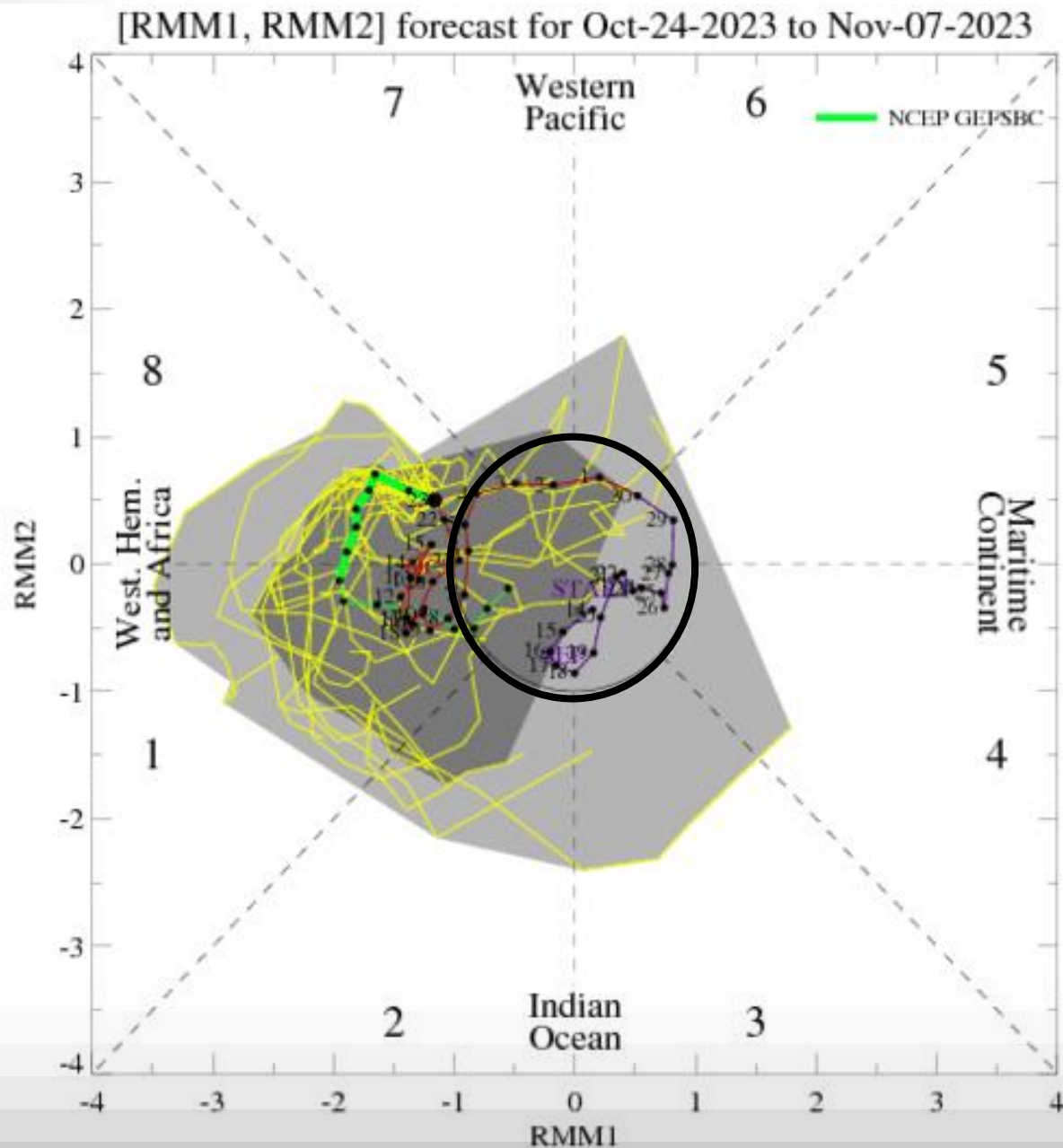
ENSO has reached the moderate stage and borderline strong. Models remain confident that Nino will persist into late spring. Then, probably of bigger concern long term, a strong signal that neutral conditions may return. This will be something to watch later. First....winter...

Typical Wintertime Pattern

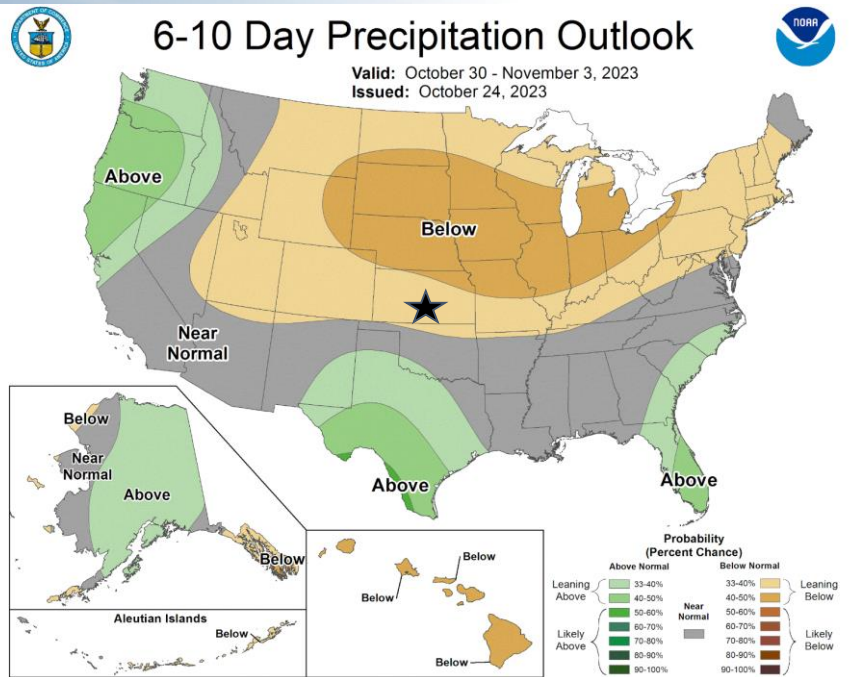
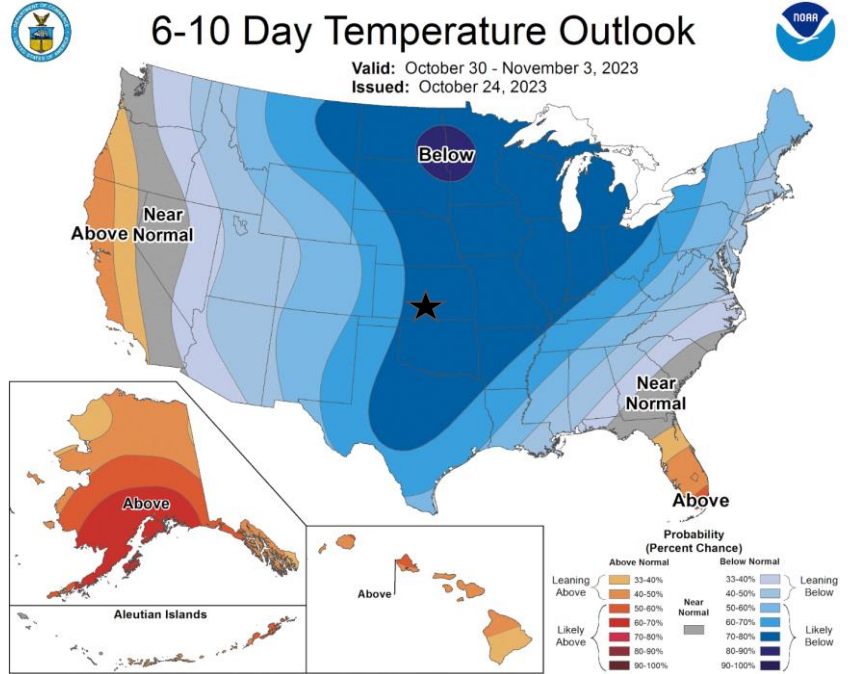
El Niño



El Niño favors a more active pattern which will ultimately end up further south later in winter (the season with the greatest ENSO impacts).



While weak, the MJO has moved into the 1/8 regions which results in some weak coupling with an increase in upward motion in the atmosphere in similar equatorial longitudes as the Americas. This aids in above normal moisture in the central Plains. This looks to be a brief influencer as it isn't projected to revolve around the black circle (aka, earth) in any way after the next few weeks.

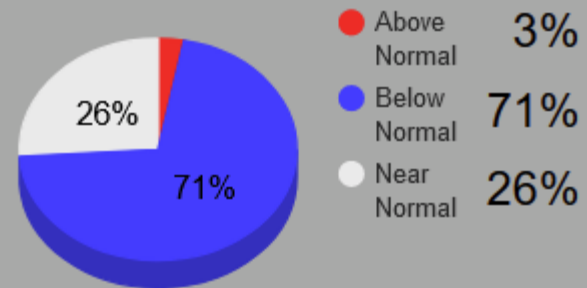


7 Day Forecast for Russell, KS

Three Category Temperature Outlook

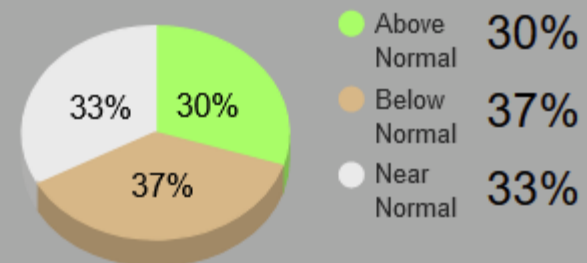
Normal Maximum Temperature: **61**

Normal Minimum Temperature: **36**



Three Category Precipitation Outlook

Normal Precipitation: **0.21**

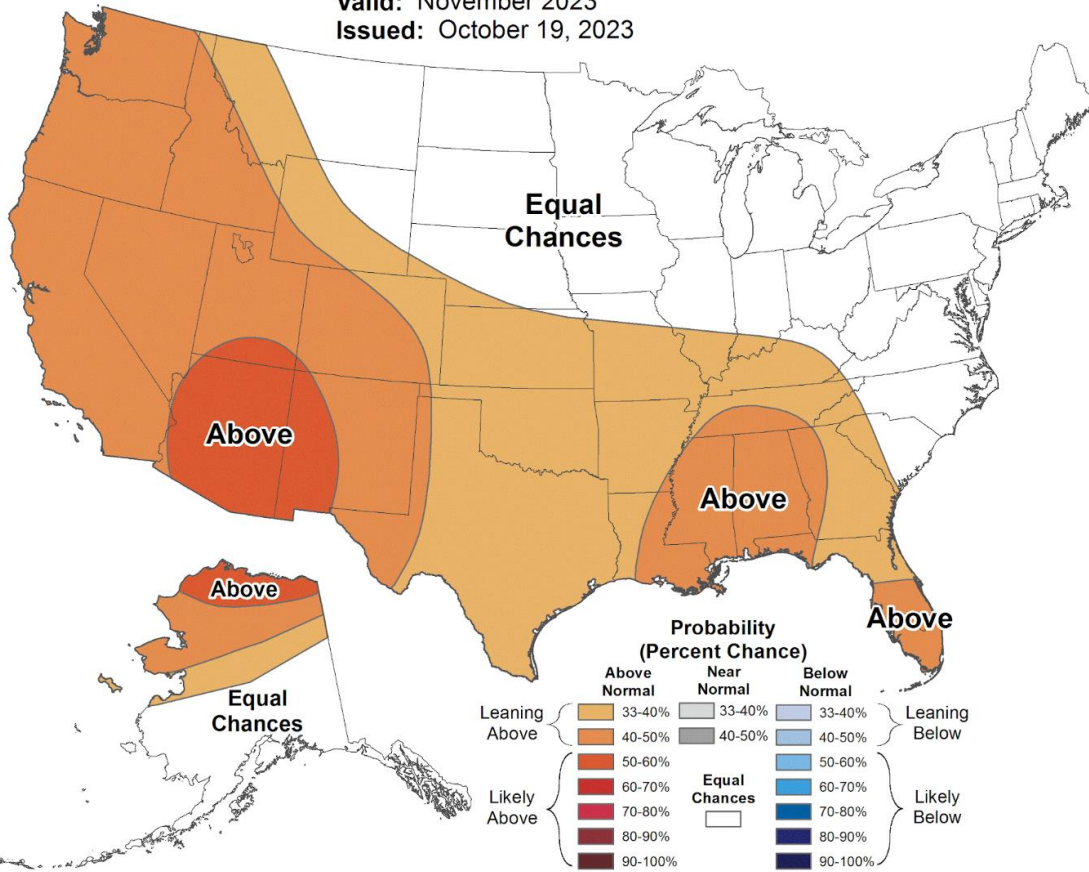


Cold weather is imminent with greater than 70% chance of below normal temperatures to start the month of November. However, the influence of the MJO and Norma are expected to diminish with drier than normal conditions emerging for Kansas.

The cooler conditions are a bit in the air of how long they will last. As a result, CPC added some above normal temperature thoughts for the state in November. This would be middle of the month as the pattern begins to transition back to El Nino influence. The moisture forecast is heavily weighted by the Nino influence late month.

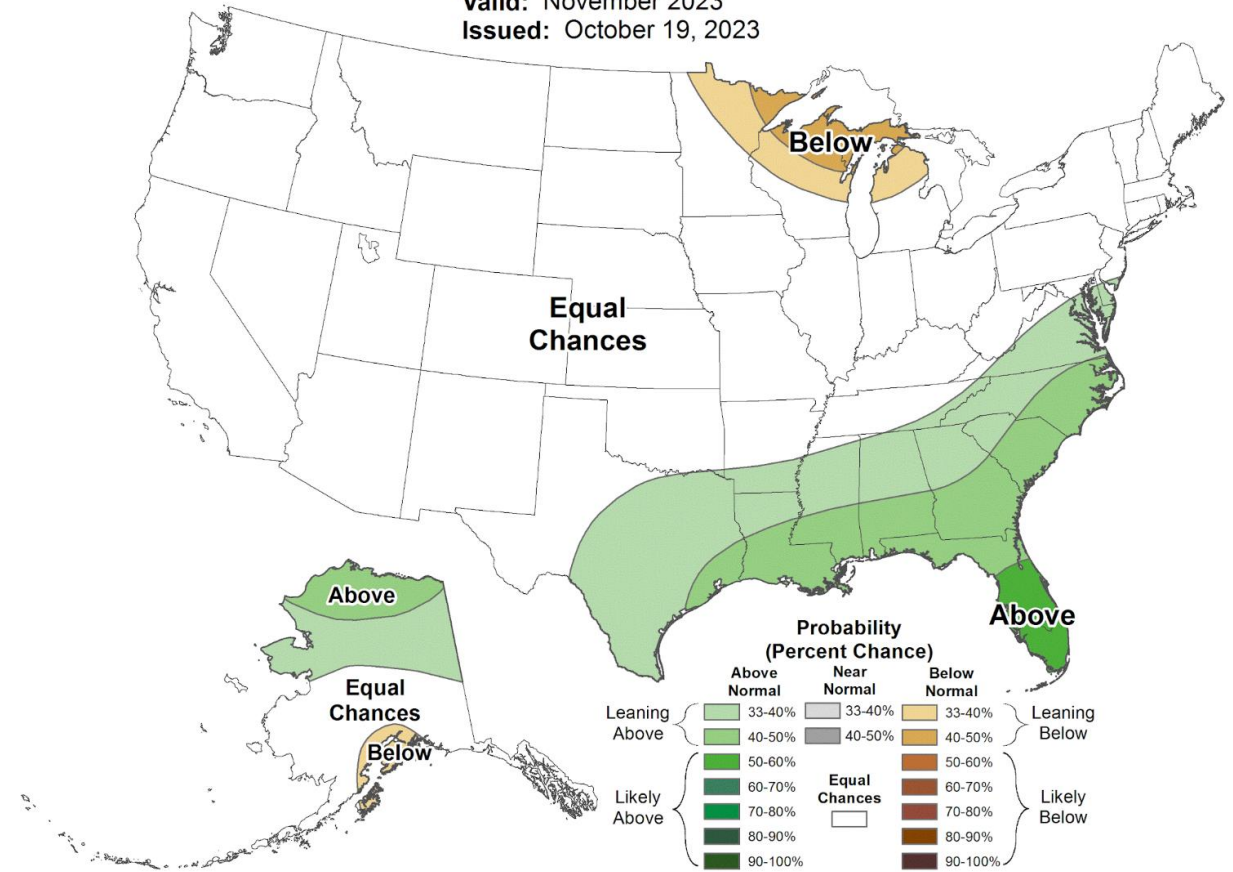
Monthly Temperature Outlook

Valid: November 2023
Issued: October 19, 2023

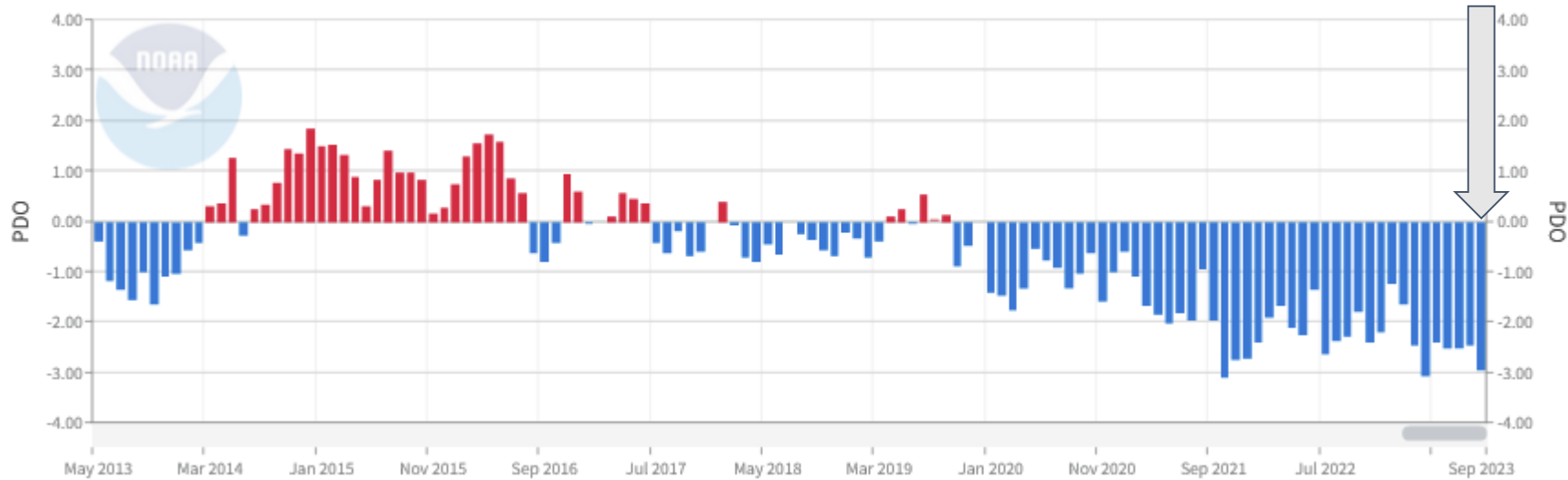


Monthly Precipitation Outlook

Valid: November 2023
Issued: October 19, 2023



Pacific Decadal Oscillation (PDO)

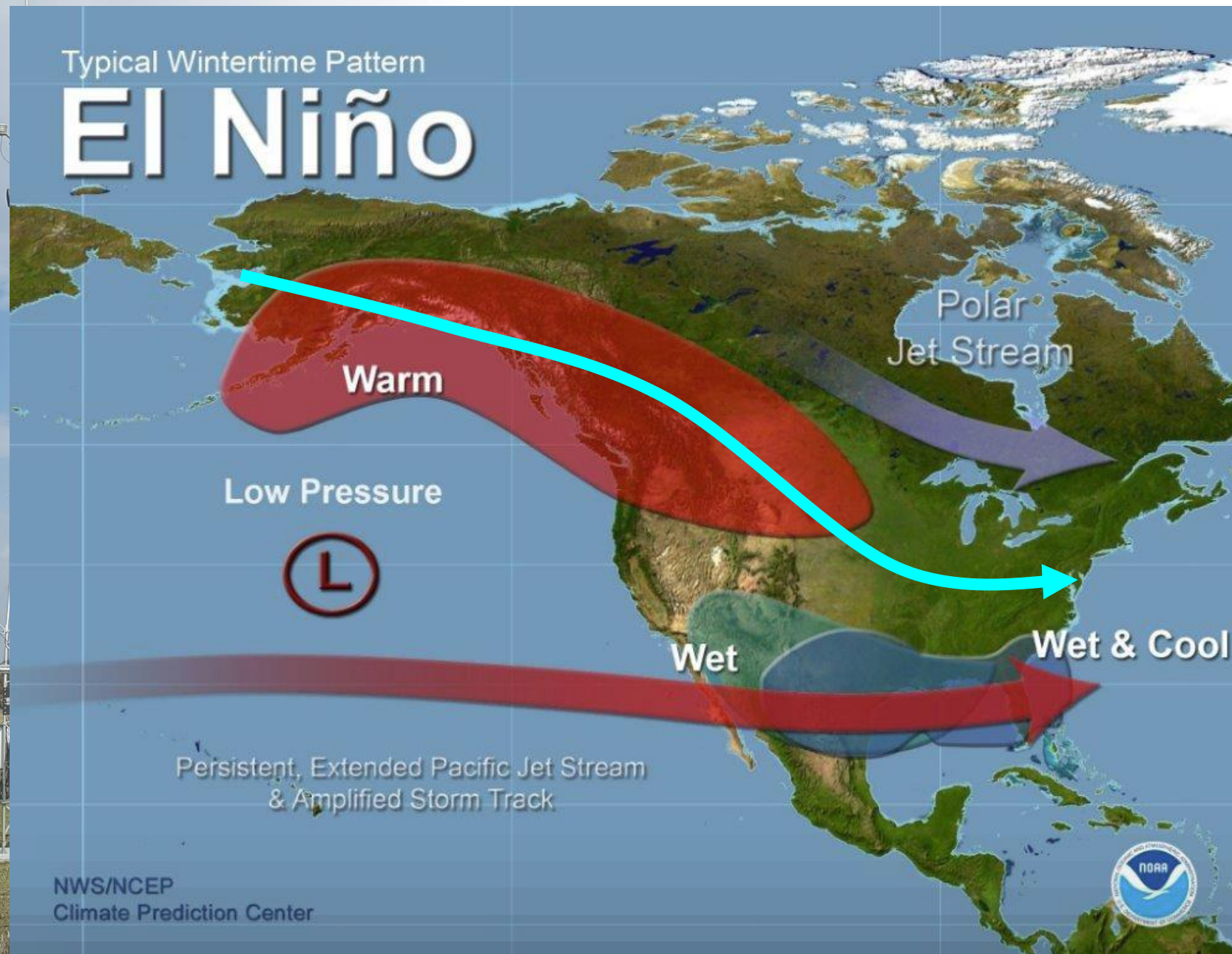


Source: <https://www.ncei.noaa.gov/pub/data/cmb/ersst/v5/index/ersst.v5.pdo.dat>

Powered by ZingChart

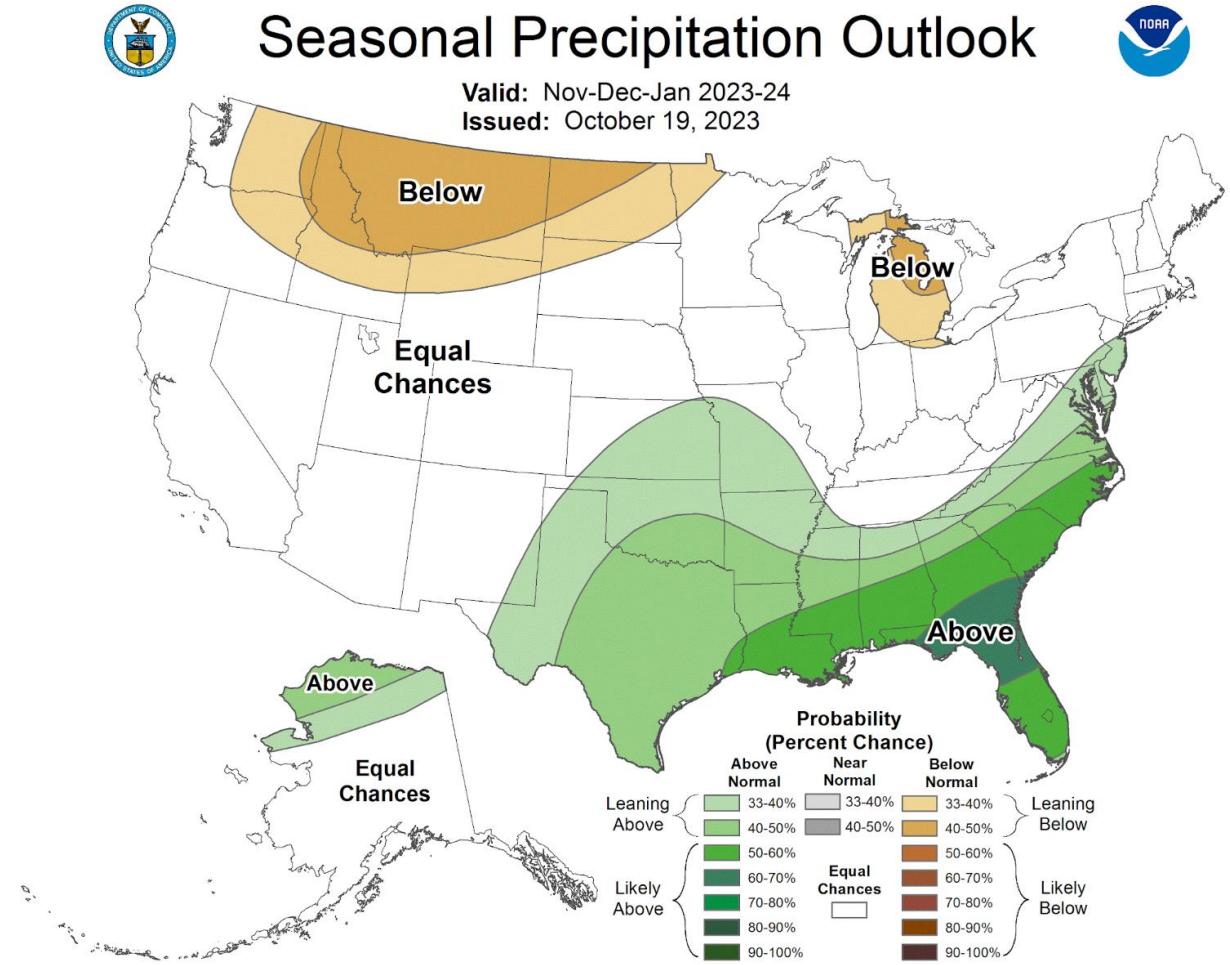
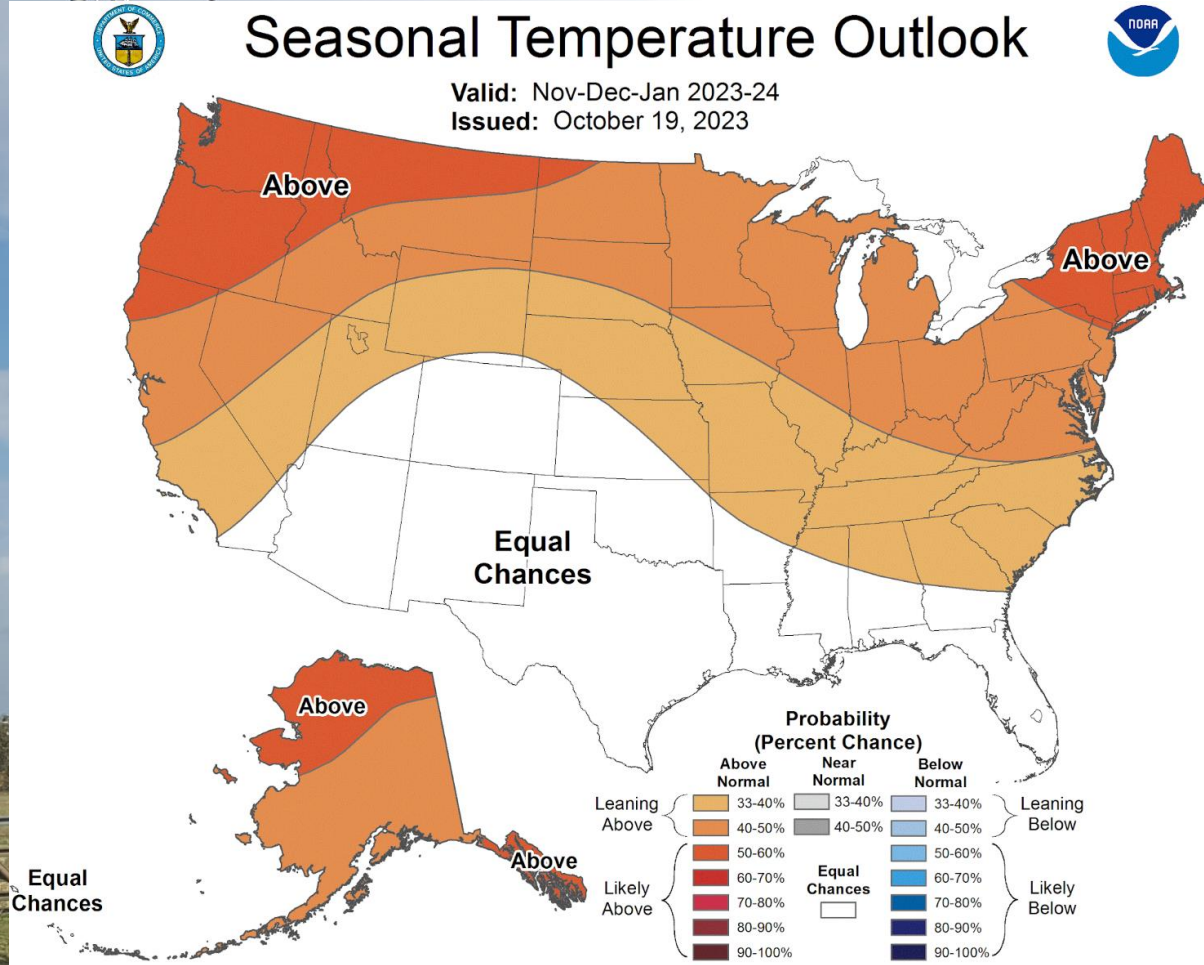
A negative PDO still persists and has in fact strengthened over the last month. This opens the door for a westward shifted jet stream. As a result, there would be an increased potential for cold air to push south from the northern latitudes into the central US this winter.

El Niño



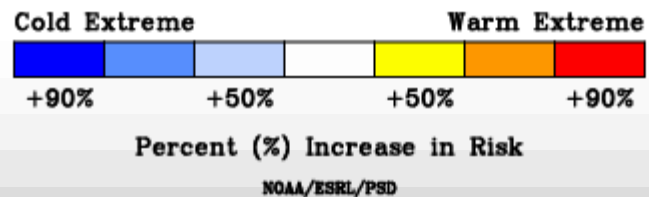
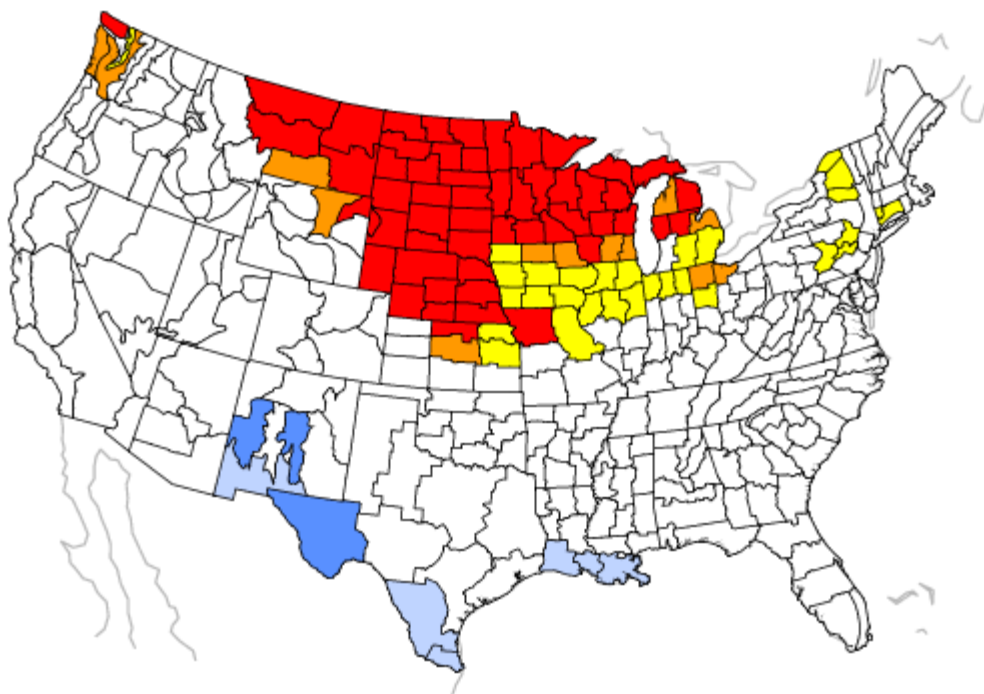
Here is a depiction of where the northern polar jet stream gets shunted westward by the -PDO and -AO if they align this winter. This could shift where storms form and open the door for cool/wet conditions to be slightly further west and north than a typical El Nino winter pattern.

CPC suggests that much of the “cooler” potential isn’t going to be Arctic origin with above normal temperatures across the northern US. Precipitation wise though, they align well with these considerations.

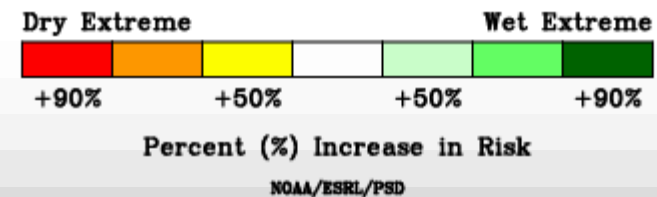
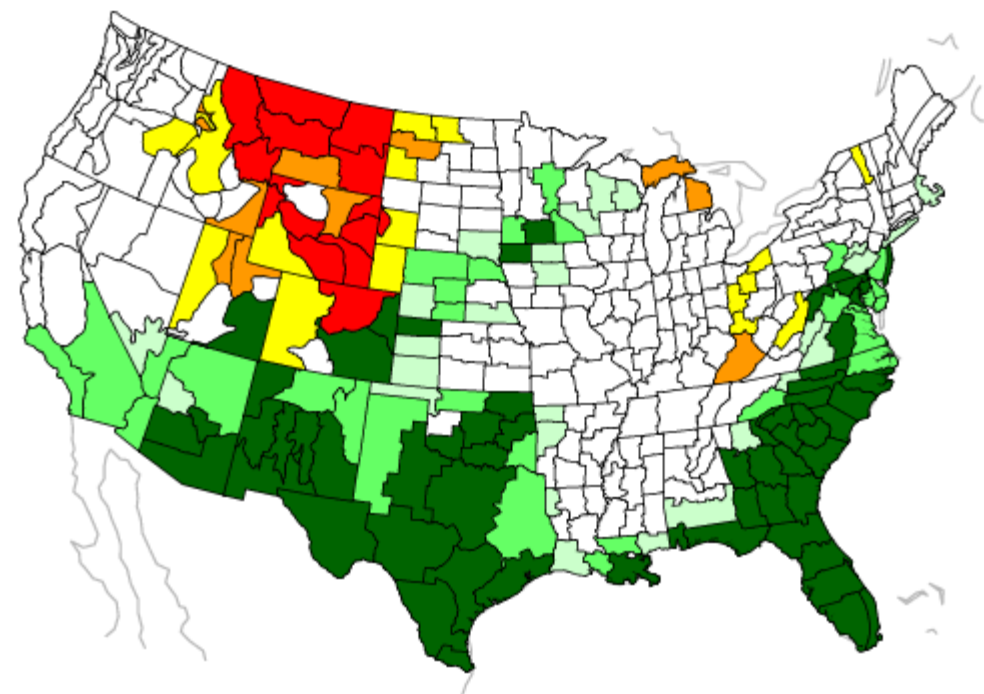


Historically for El Nino, Kansas remains in the battle ground for precipitation extremes (right) and swings slightly towards above normal temperature heat extremes in the winter months (left).

NDJ Temperature During El Nino
Increased Risk of Warm or Cold Extremes



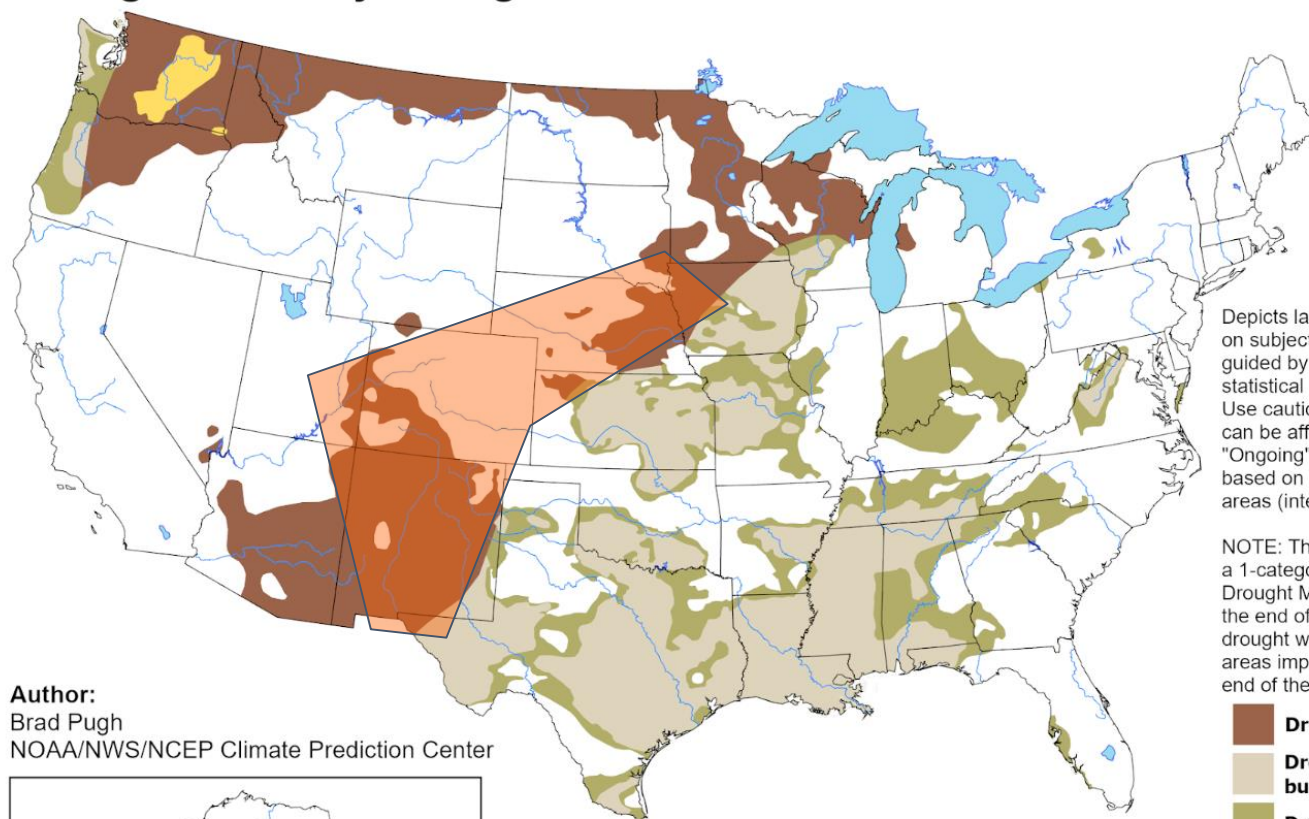
NDJ Precipitation During El Nino
Increased Risk of Wet or Dry Extremes



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 19, 2023 - January 31, 2024
Released October 19, 2023

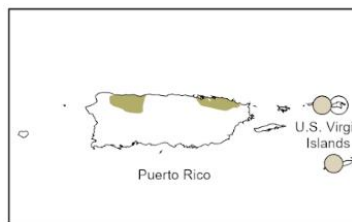
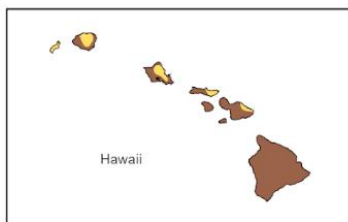


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to 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**
- No drought**

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



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

Notably, there have been some adjustments to the seasonal drought outlook on the western edge of the current drought. They have added "drought persists" for these regions as drier than normal conditions are expected to emerge. Regardless, drought is expected to persist across much of the central Plains even if there is some marginal improvements.

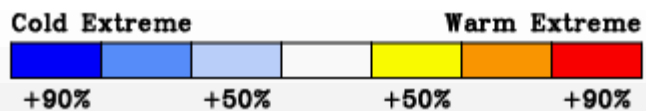
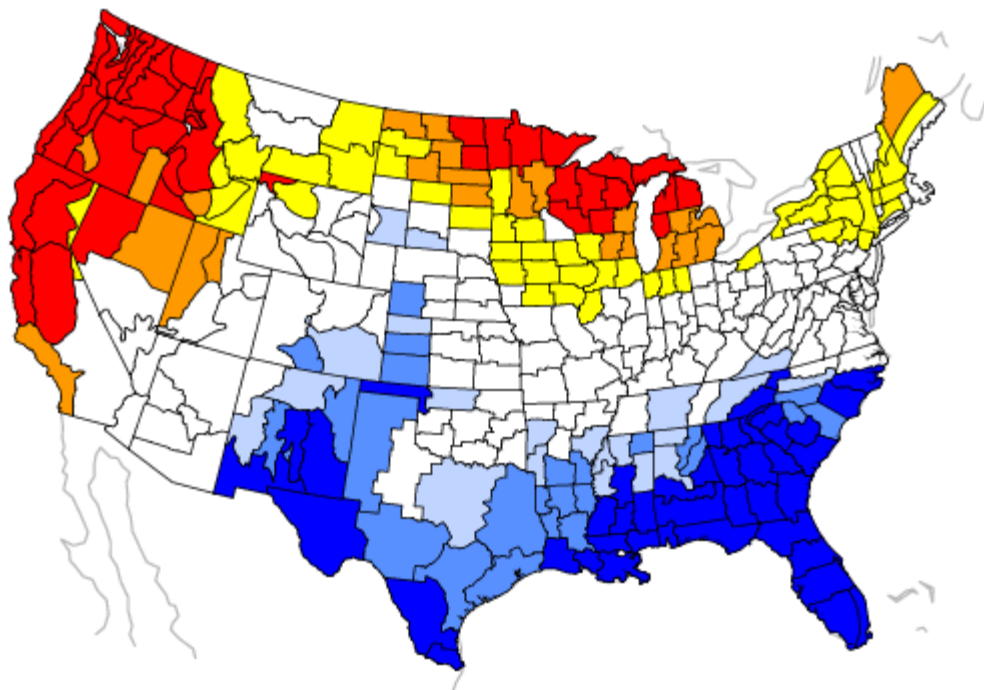
A tall, silver weather station tower stands in a grassy field under a blue sky with light clouds. The tower has various sensors and a solar panel attached to its base. In the background, there are trees and a fence.

Seasonal Forecast (Nov, Dec, Jan)

- Heavy influence of one or two storms through the period
- Overall dry outside of that system(s)
- Short term cold potential increasing in early winter
- Isolated areas of drought improvements, otherwise persistence
- Above normal grass amounts in west and south-central driving fire season

Looking at the extremes further into Winter and early Spring, precipitation become more confident in a wetter result. While the coldest extremes remain the highest to the south, wetter weather typically results in an increase in clouds which keep afternoon highs lower. Moisture chances definitely on the upswing by early spring and coincide with some potential for drought relief. This could be a ample recipe for late season snow storms (and ICE).

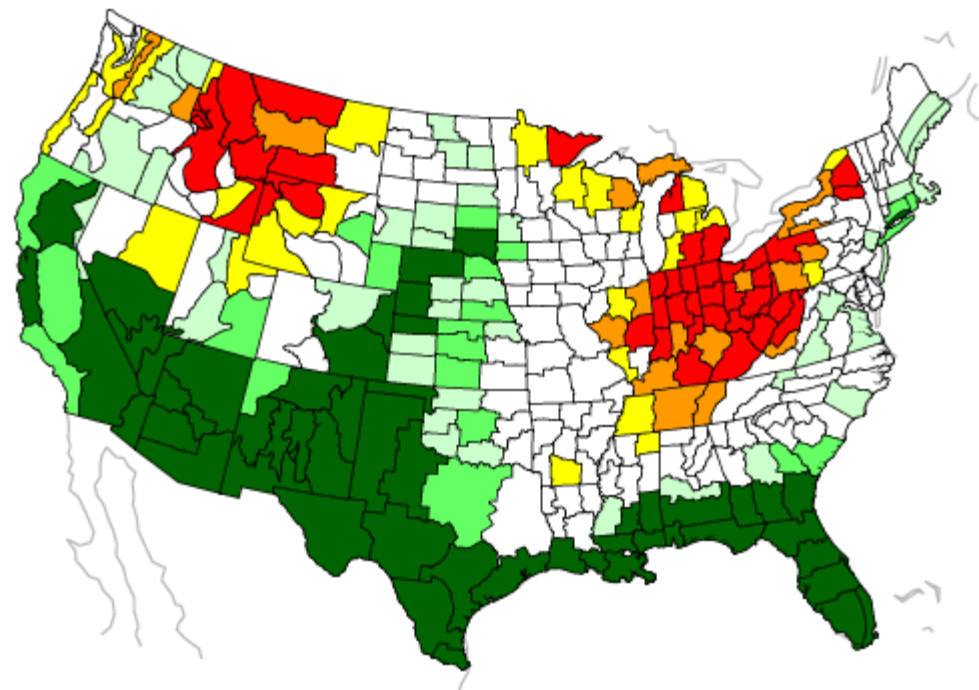
JFM Temperature During El Nino
Increased Risk of Warm or Cold Extremes



Percent (%) Increase in Risk

NOAA/ESRL/PSD

JFM Precipitation During El Nino
Increased Risk of Wet or Dry Extremes



Percent (%) Increase in Risk

NOAA/ESRL/PSD

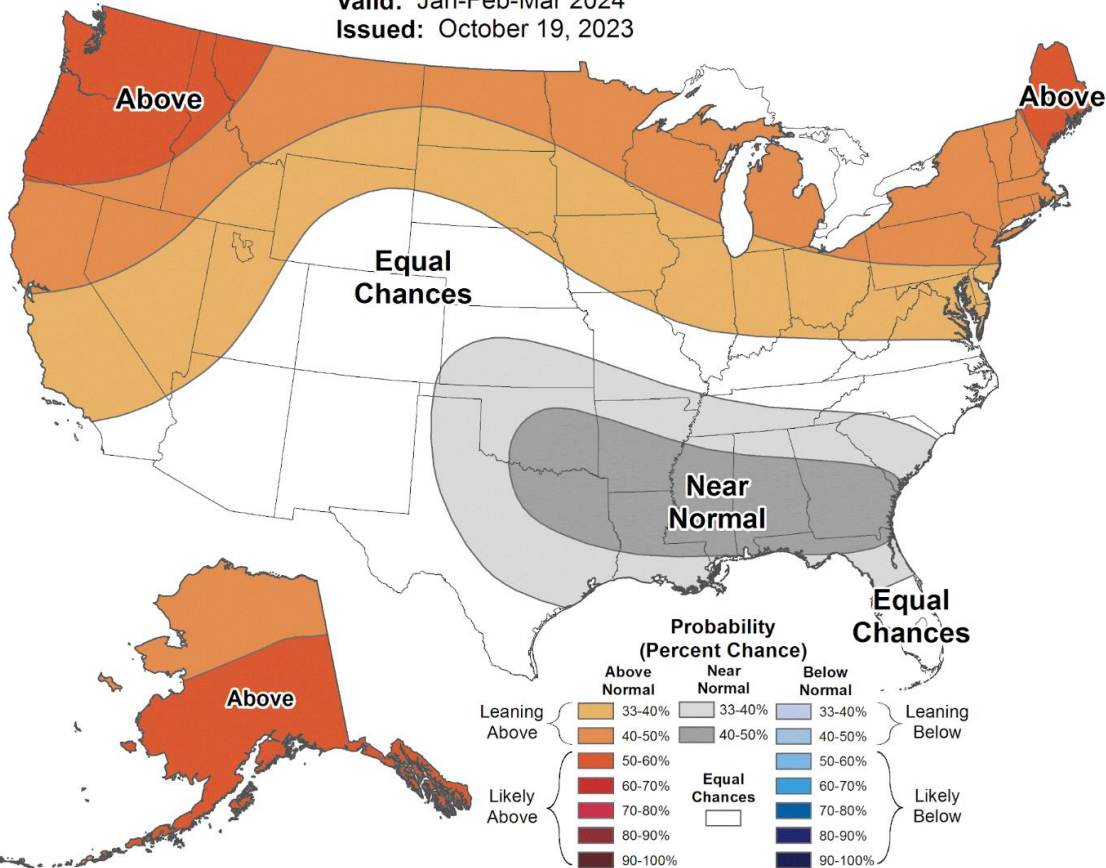
CPC holds on to a classic El Nino pattern into the heart of the winter. It also picks up on the increased potential for an active storm track with enhanced potential for a storm or two to skew statistics across the central Plains resulting in above normal precipitation for the region.



Seasonal Temperature Outlook



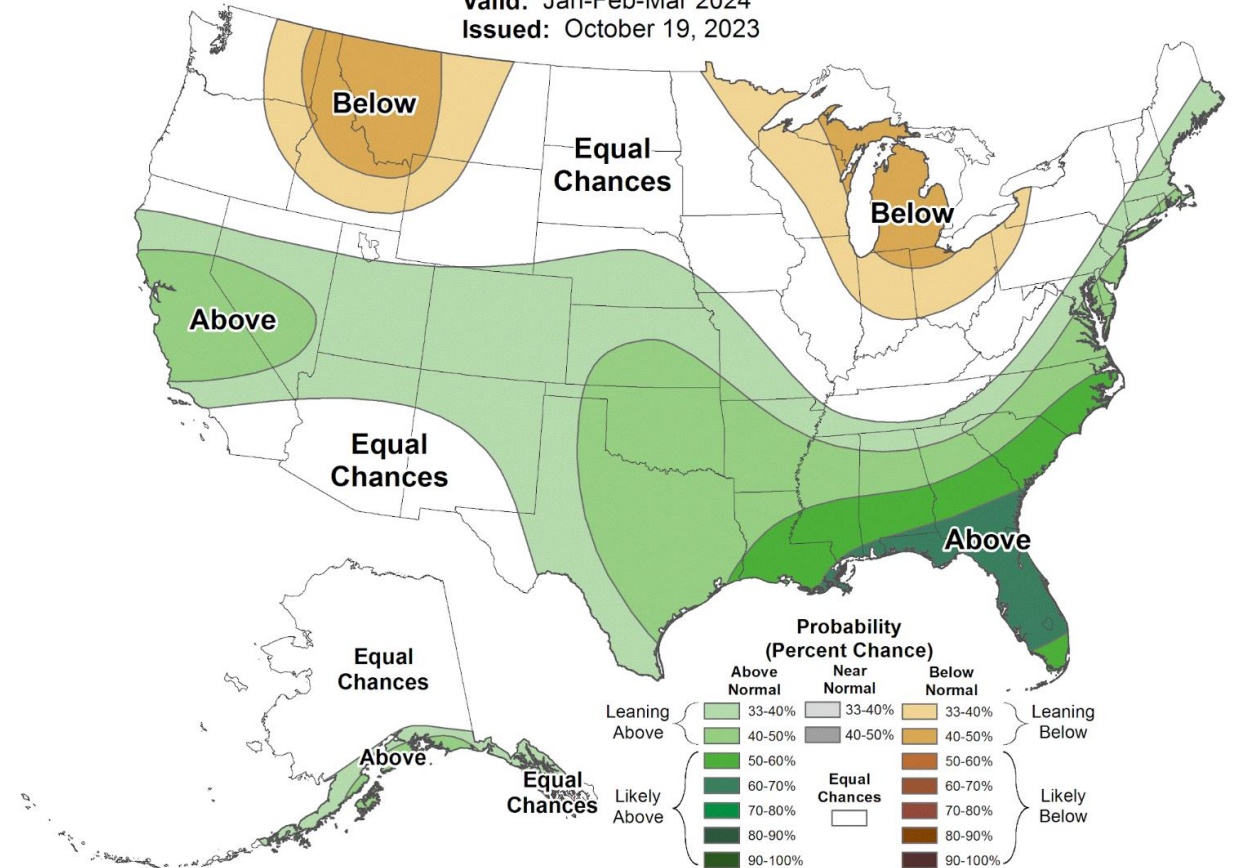
Valid: Jan-Feb-Mar 2024
Issued: October 19, 2023



Seasonal Precipitation Outlook

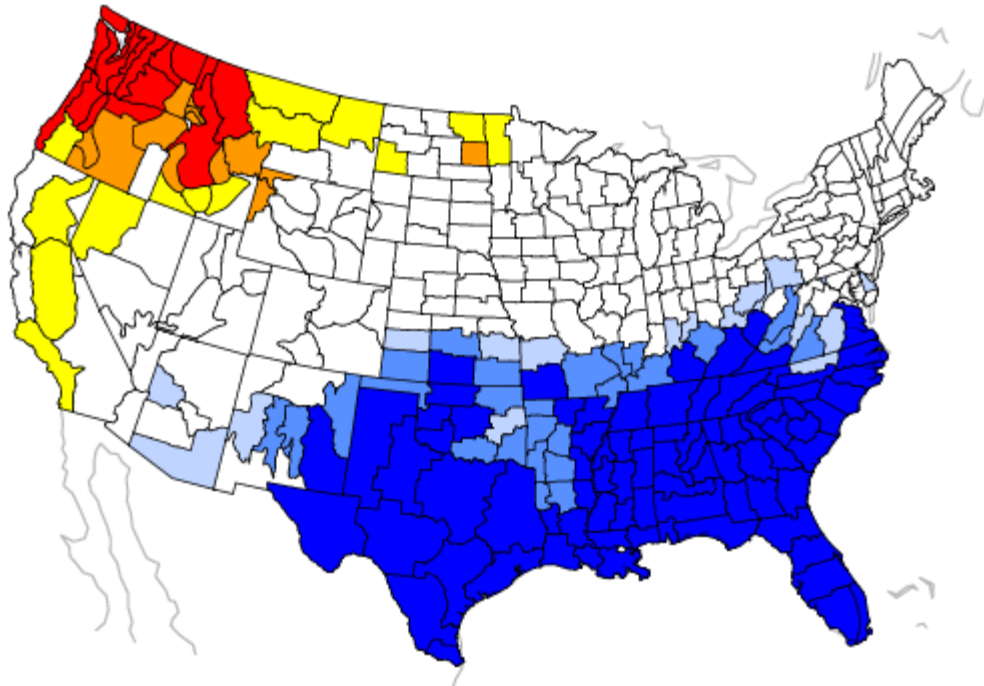


Valid: Jan-Feb-Mar 2024
Issued: October 19, 2023



Looking at the extremes further into Winter and early Spring, while the coldest extremes remain the highest to the south. Moisture chances definitely on the upswing by early spring and coincide with some potential for drought relief. This could be a ample recipe for late season snow storms (and ICE).

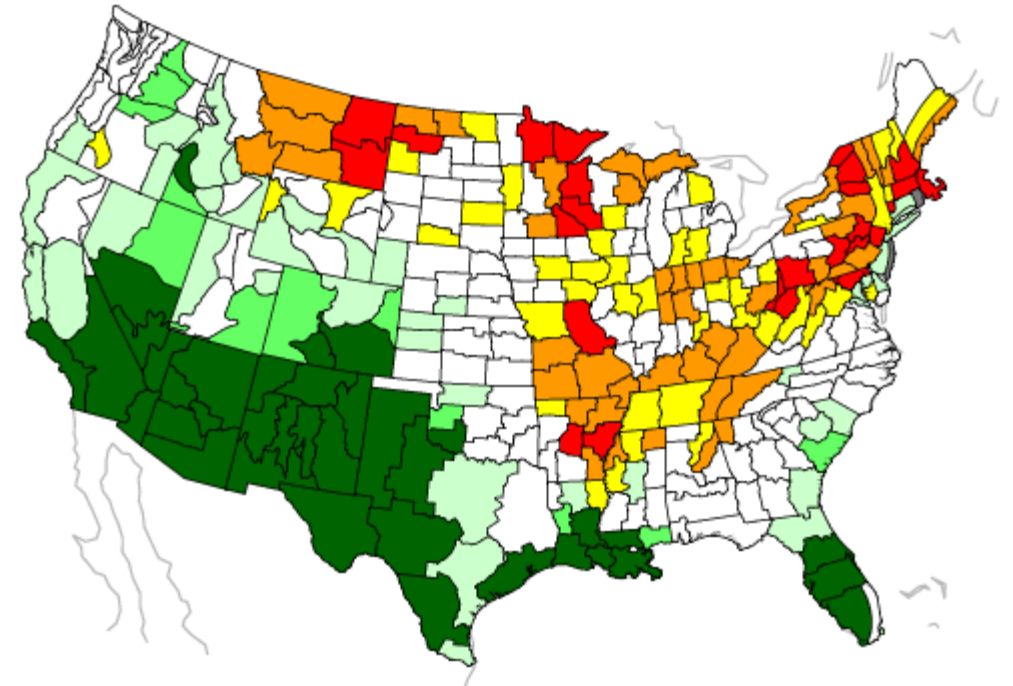
MAM Temperature During El Nino
Increased Risk of Warm or Cold Extremes



Percent (%) Increase in Risk

NOAA/ESRL/PSD

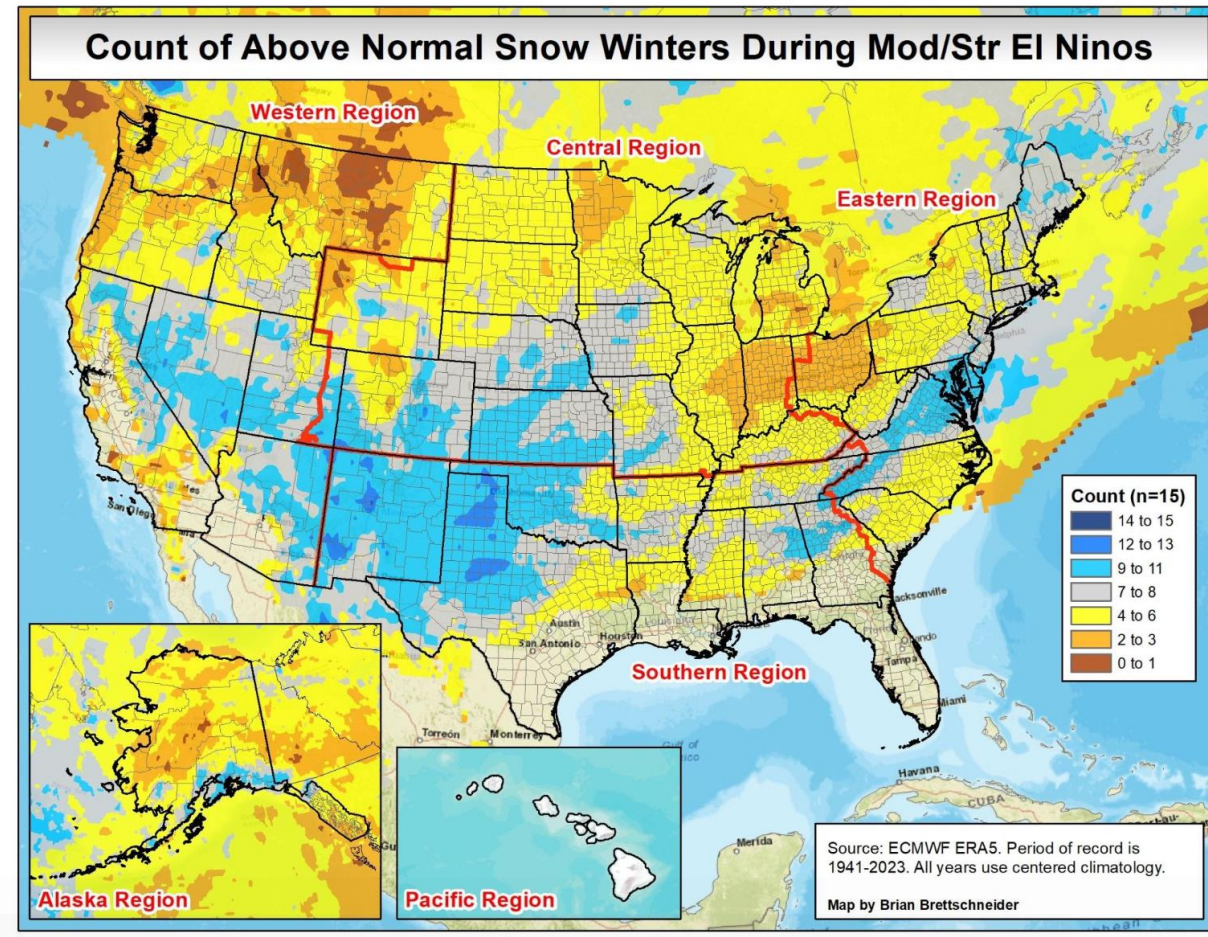
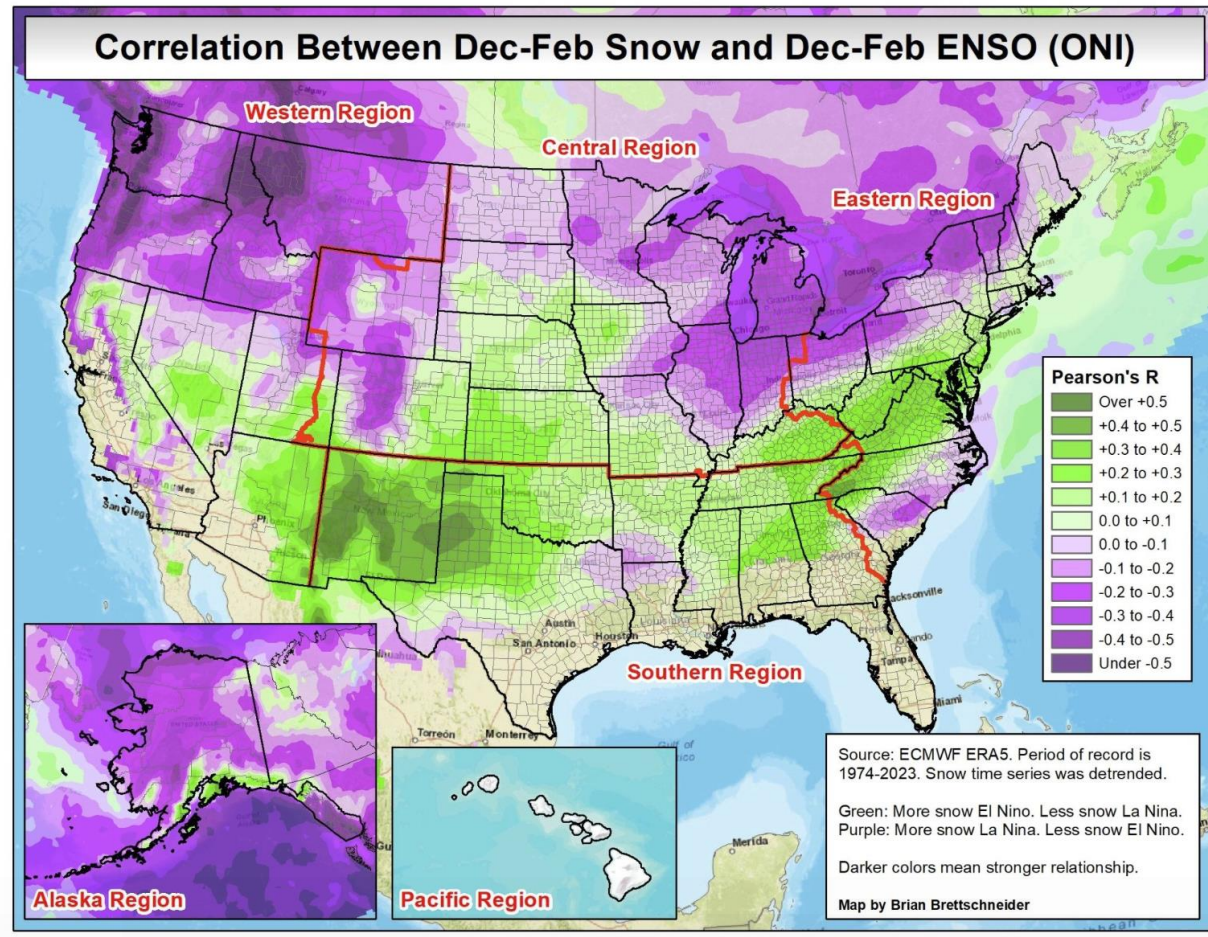
MAM Precipitation During El Nino
Increased Risk of Wet or Dry Extremes



Percent (%) Increase in Risk

NOAA/ESRL/PSD

Snow probability increases with access to additional moisture during an El Nino winter. With early winter cold potential, this could be optimized for more snow than previous years (almost guaranteed).



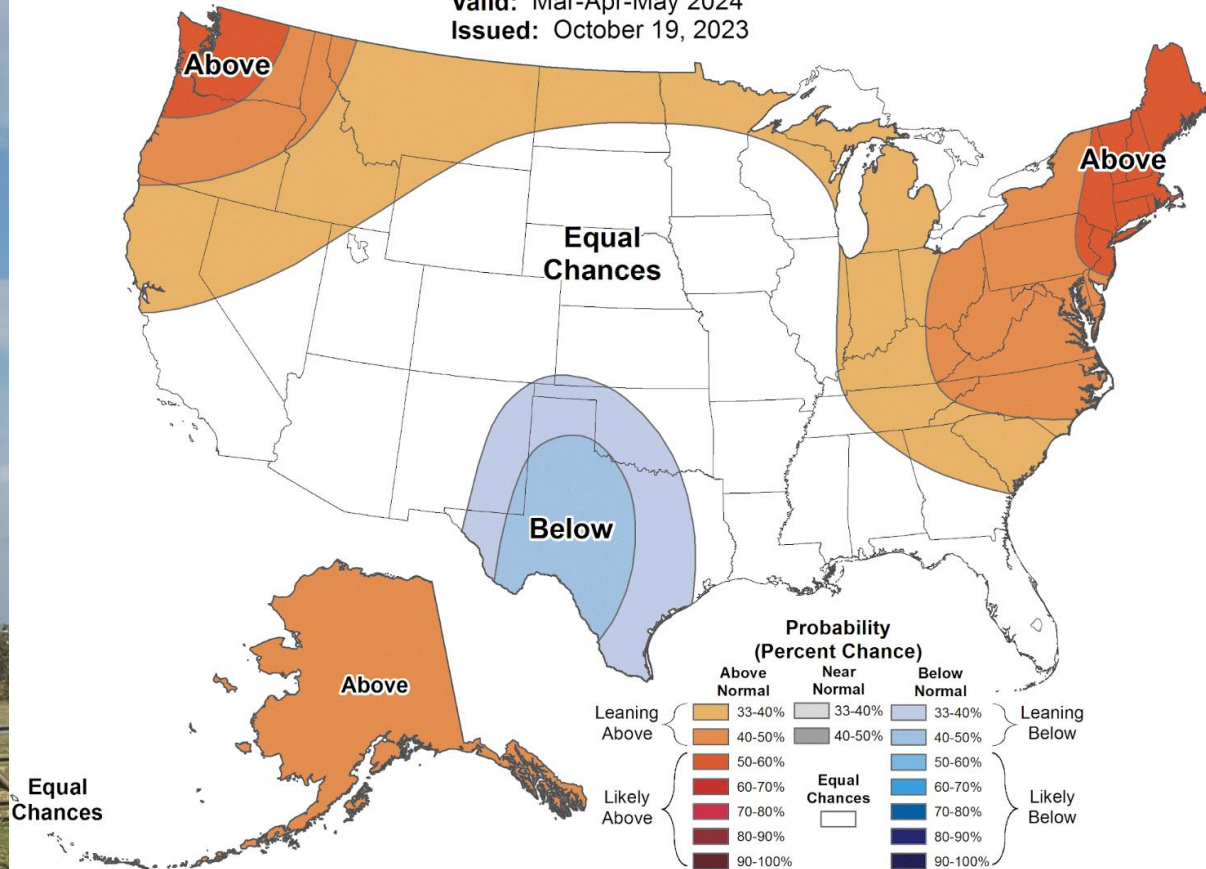
CPC tosses out that temperature NMME result but leans heavily on the Nino influenced pattern for precipitation. Also remember, this is the average over the three month period. Early spring looking wetter than normal. This would have implications on fire season - in a good way! Could also mean an increase in early severe weather potential as well.



Seasonal Temperature Outlook



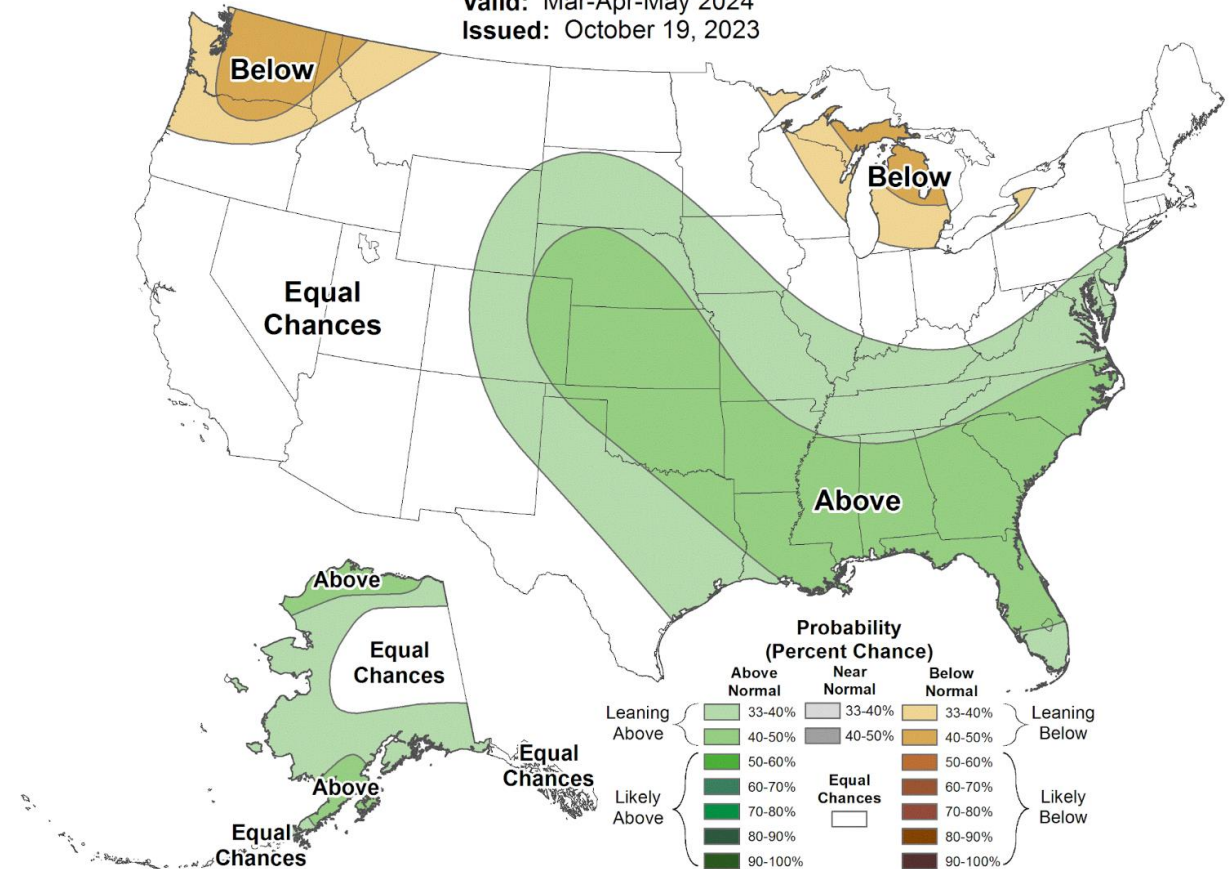
Valid: Mar-Apr-May 2024
Issued: October 19, 2023

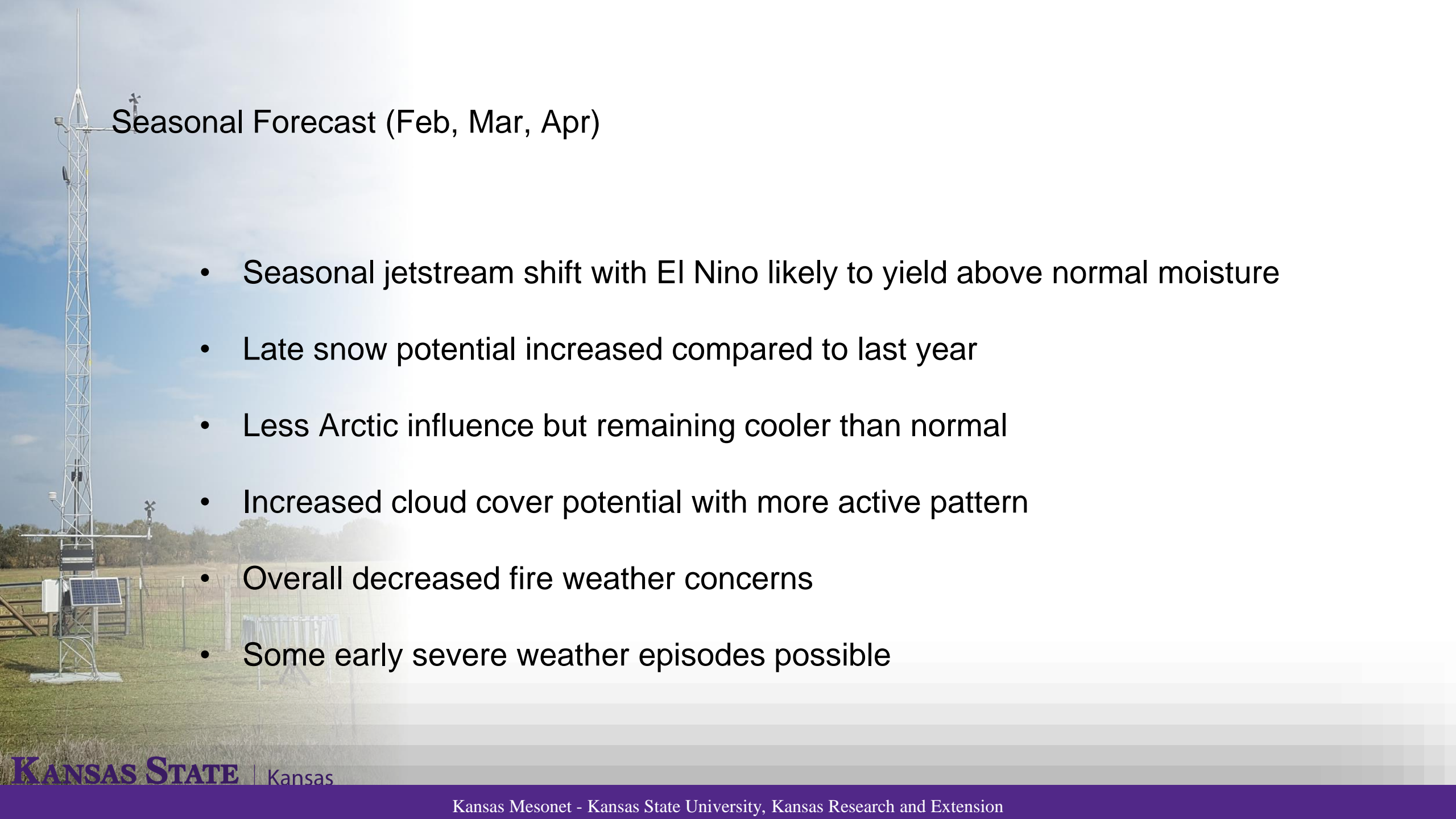


Seasonal Precipitation Outlook



Valid: Mar-Apr-May 2024
Issued: October 19, 2023



A tall, silver weather station tower stands in a grassy field under a blue sky with light clouds. The tower is equipped with various sensors and a solar panel at its base. The text 'Seasonal Forecast (Feb, Mar, Apr)' is overlaid on the image.

Seasonal Forecast (Feb, Mar, Apr)

- Seasonal jetstream shift with El Nino likely to yield above normal moisture
- Late snow potential increased compared to last year
- Less Arctic influence but remaining cooler than normal
- Increased cloud cover potential with more active pattern
- Overall decreased fire weather concerns
- Some early severe weather episodes possible



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christopherredmond@k-state.edu
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Make a CMOR Report: <http://go.unl.edu/CMOR>



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- [Click Here to Shop for Drought and Rainfall Information](#)

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[Hazardous Weather Outlook](#) ■

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Last Map Update: Fri, Jul. 22, 2022 at 11:07:57 am CDT

NWS Springfield has had a big response with adding link to their webpage headlines!