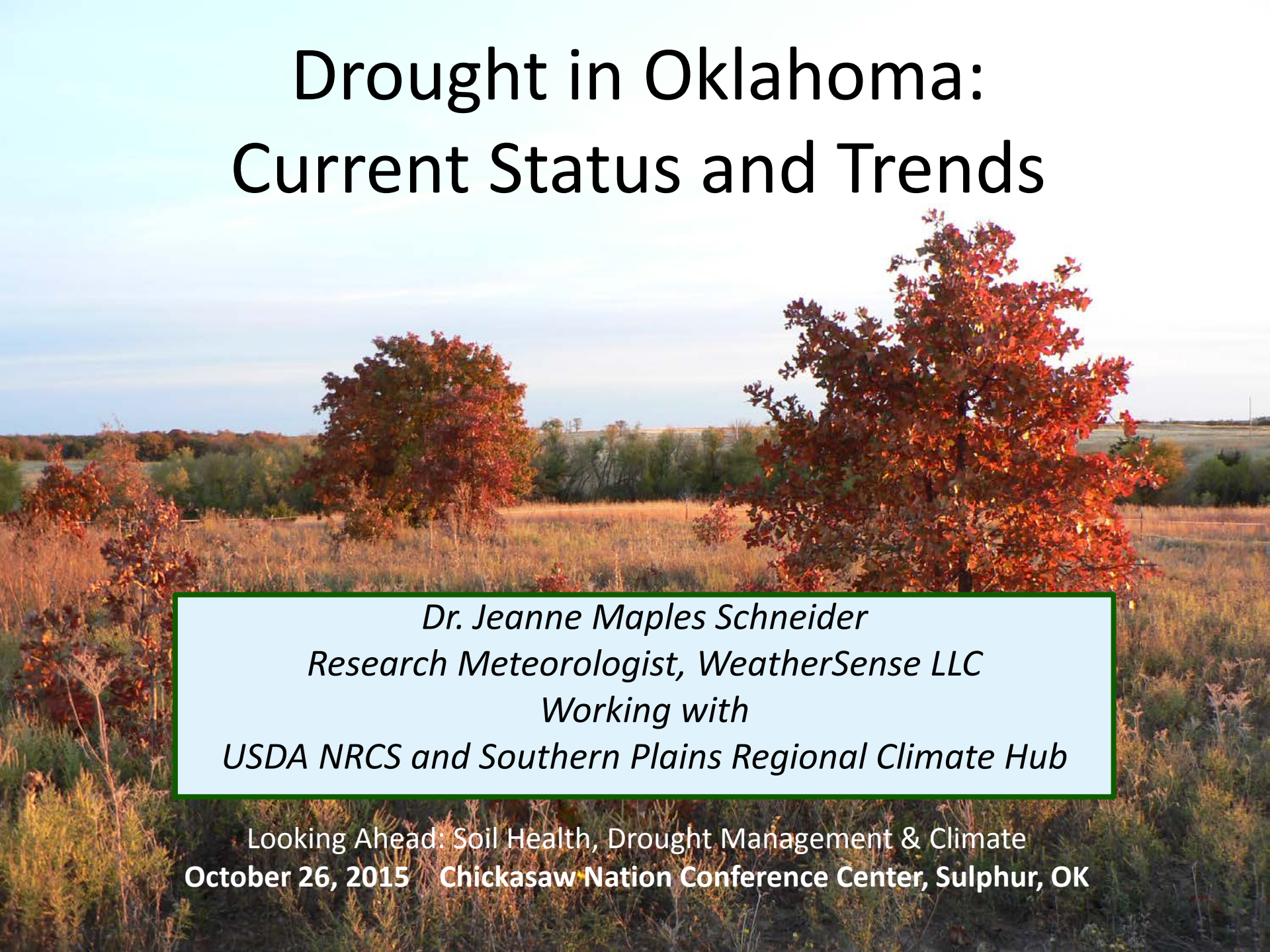
Drought in Oklahoma: Current Status and Trends



Dr. Jeanne Maples Schneider
Research Meteorologist, WeatherSense LLC
Working with
USDA NRCS and Southern Plains Regional Climate Hub

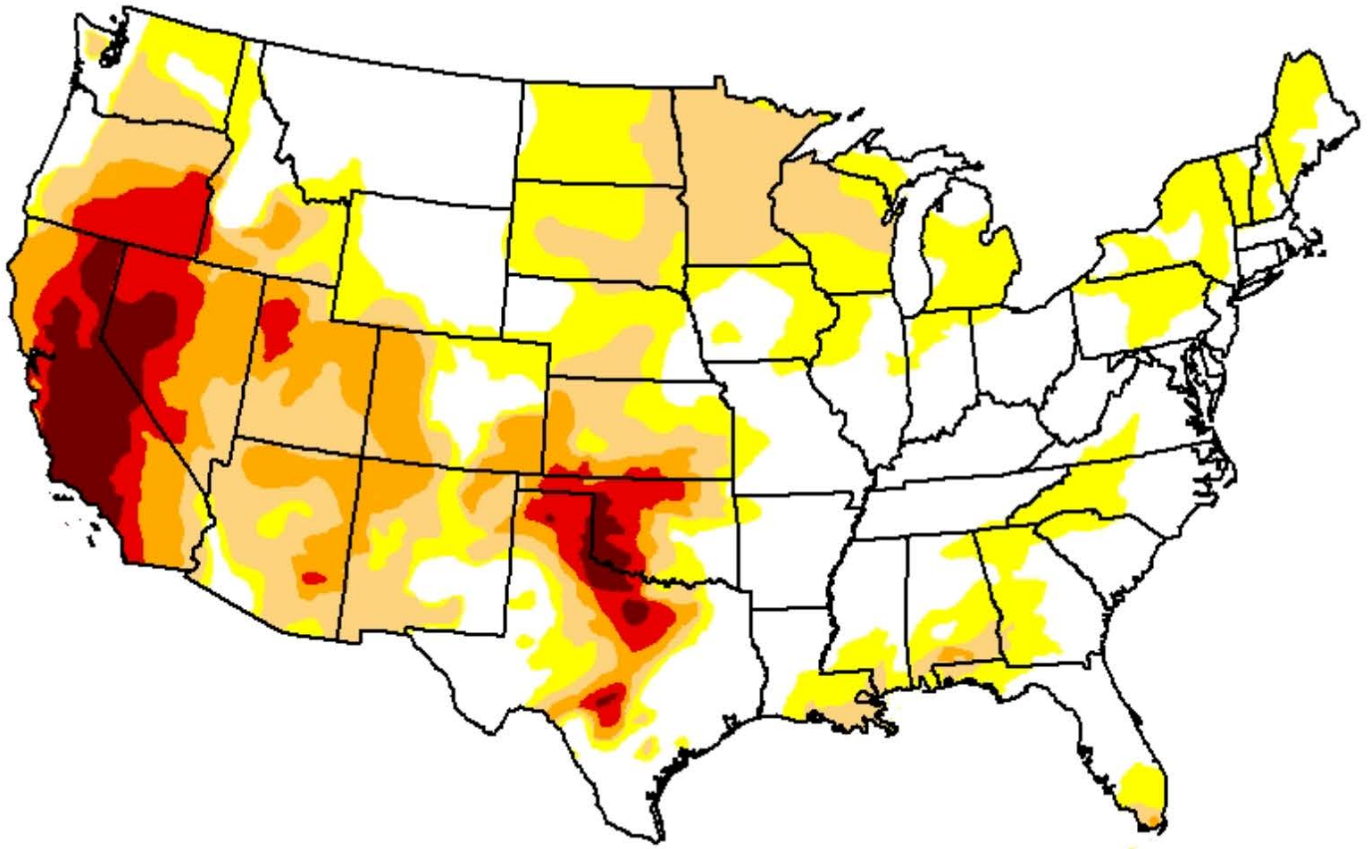
Looking Ahead: Soil Health, Drought Management & Climate
October 26, 2015 Chickasaw Nation Conference Center, Sulphur, OK

Good news: compared to recent conditions, drought in Oklahoma is not too bad right now!

Do you remember last spring?

U.S. Drought Monitor
CONUS

April 7, 2015
(Released Thursday, Apr. 9, 2015)
Valid 7 a.m. EST



Intensity:

- 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. See accompanying text summary for forecast statements.

Author:
Michael Brewer
NCDC/NOAA

http://droughtmonitor.unl.edu/

U.S. Drought Monitor
Oklahoma

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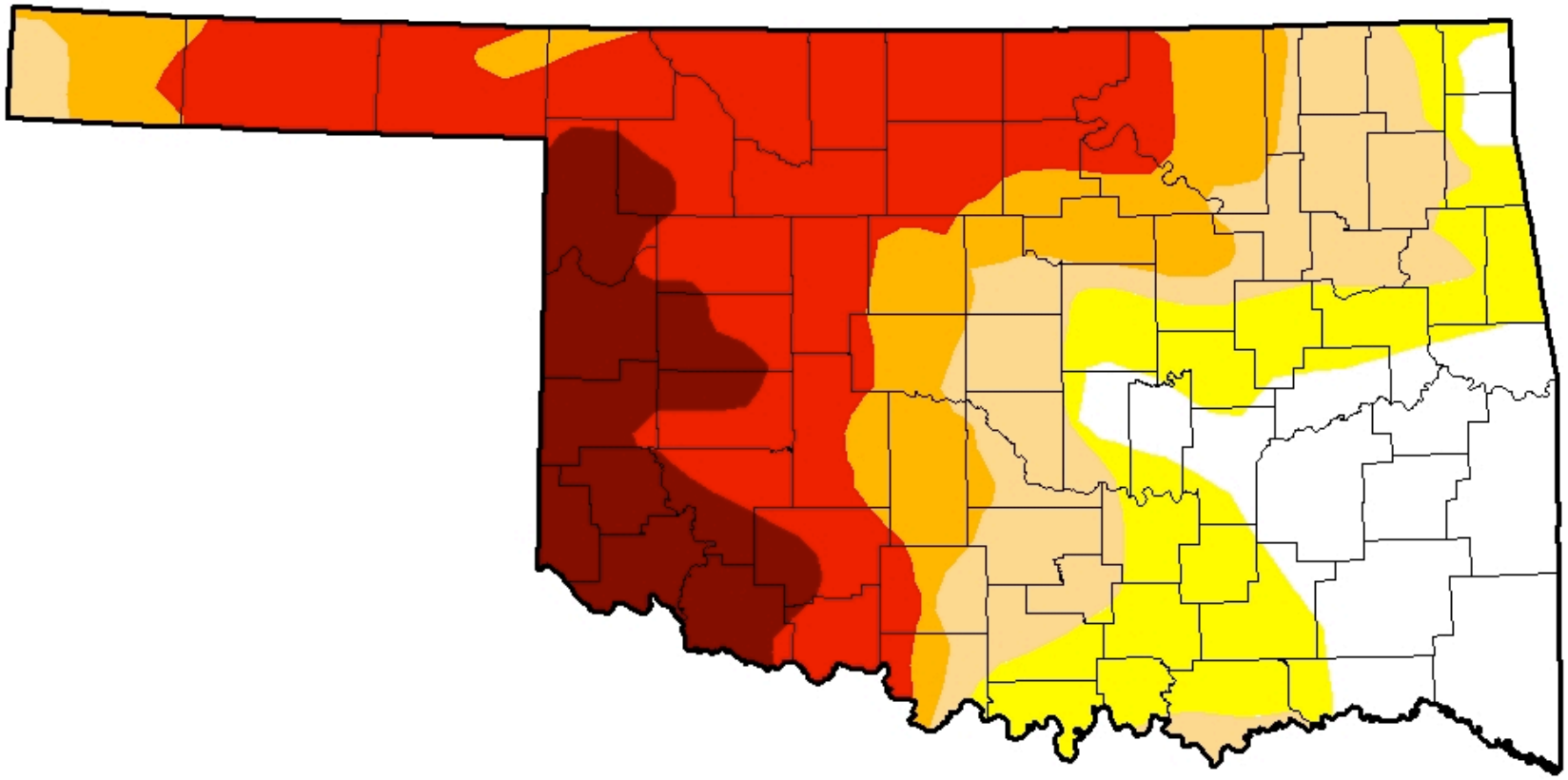

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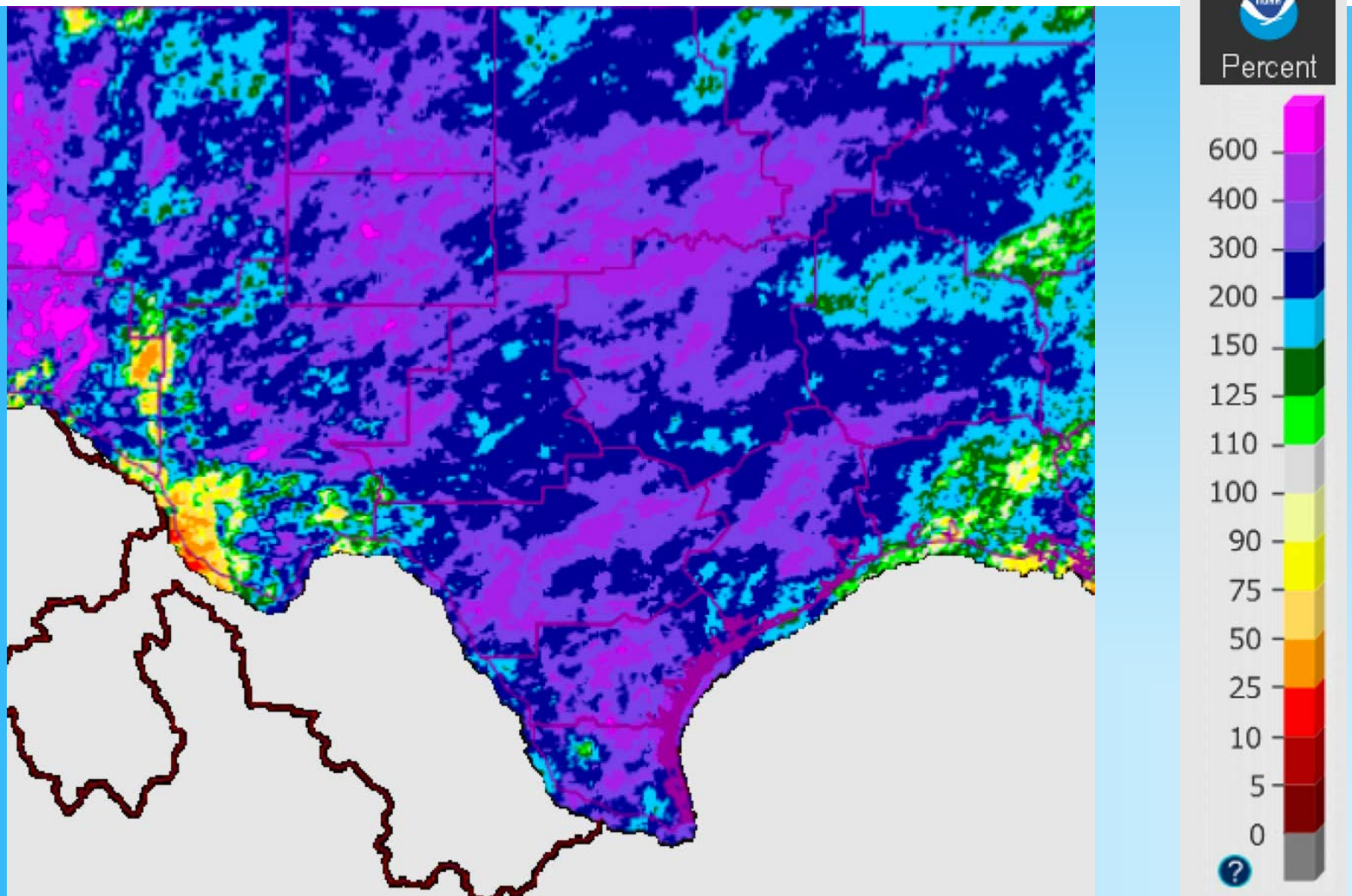
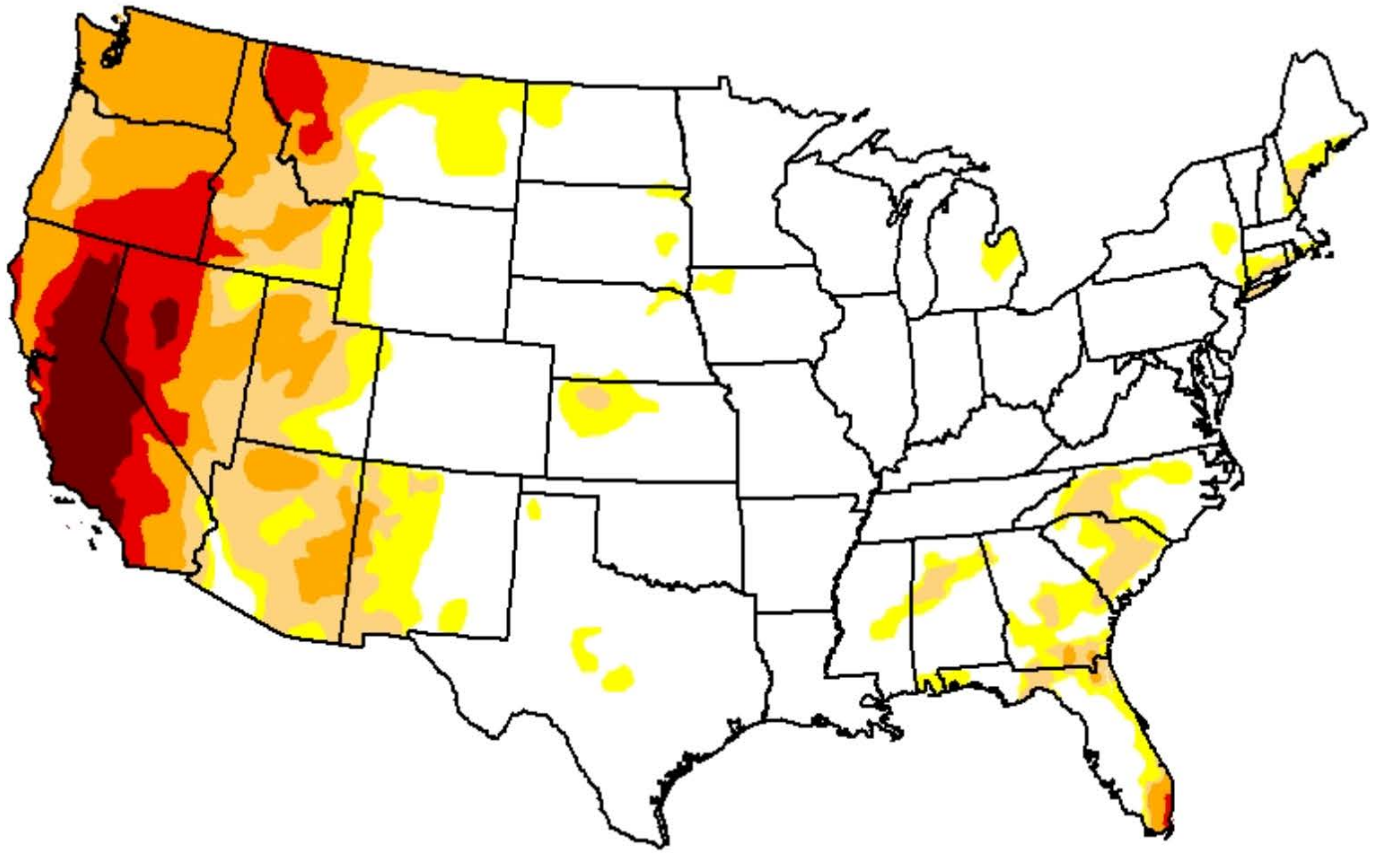
After 4 ½ years of drought, May was the wettest month on record for Oklahoma and Texas, and the wettest June for Oklahoma.



U.S. Drought Monitor
CONUS

July 14, 2015
(Released Thursday, Jul. 16, 2015)
Valid 8 a.m. EDT



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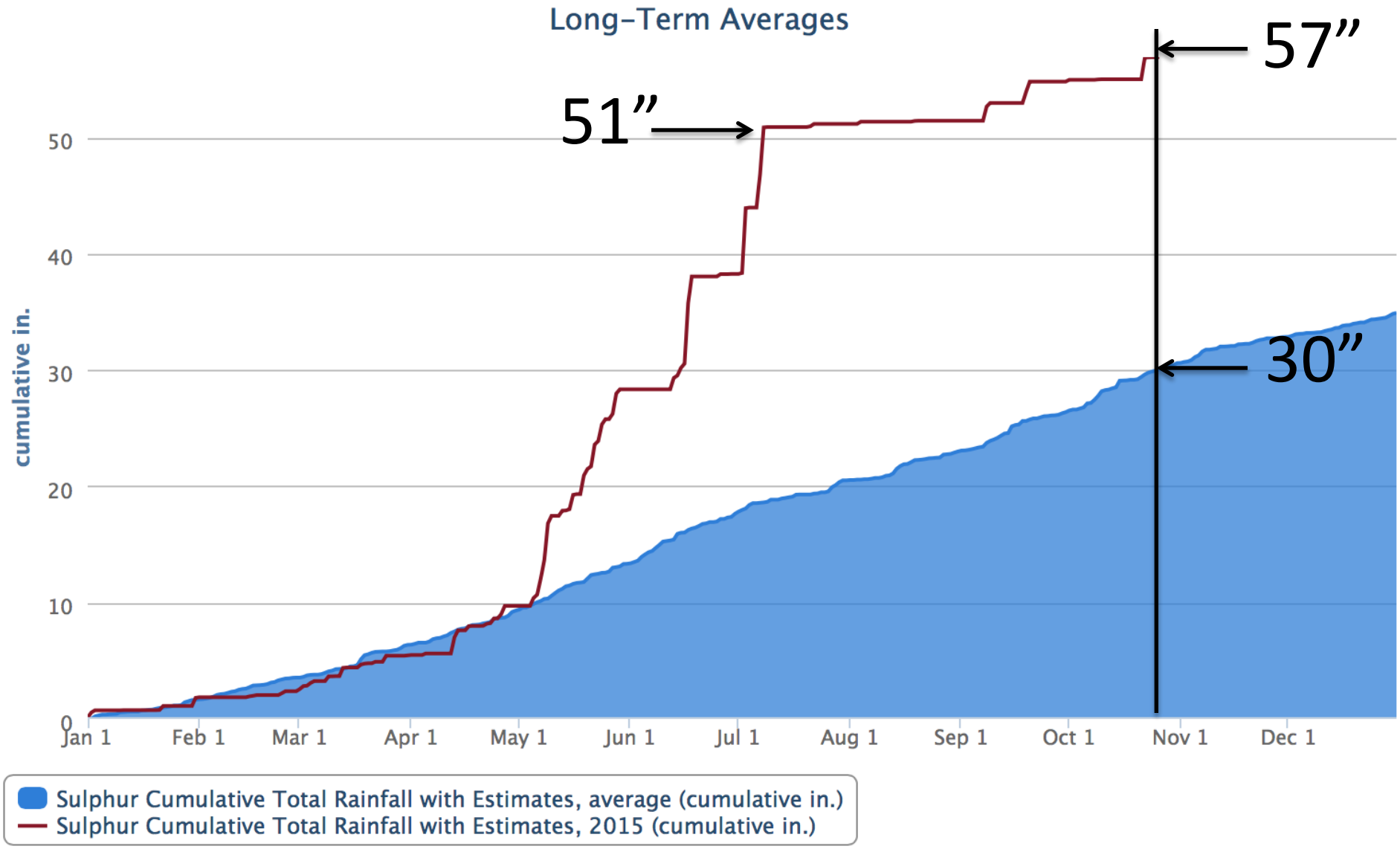
Author:
David Simeral
Western Regional Climate Center

http://droughtmonitor.unl.edu/

Cumulative Rainfall by October 26, 2015

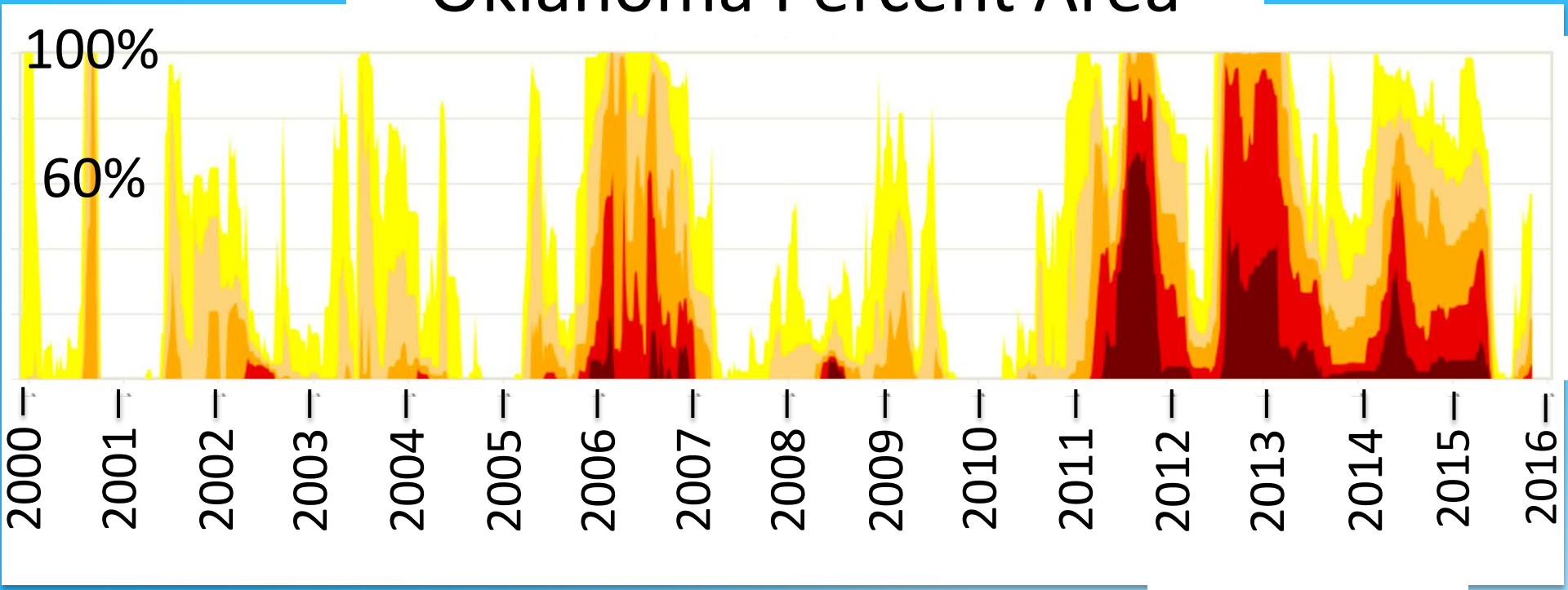


Source: Oklahoma Mesonet

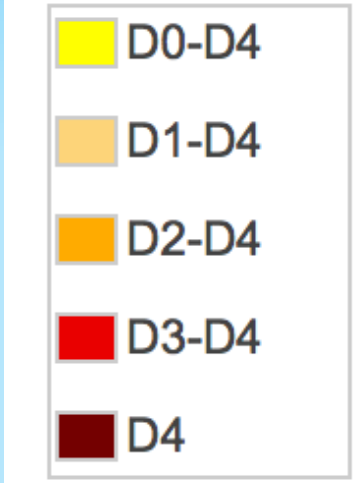
Does it seem to you that there has been a lot of news about drought?

There’s a reason for that…

Oklahoma Percent Area



http://droughtmonitor.unl.edu/MapsAndData/Graph.aspx

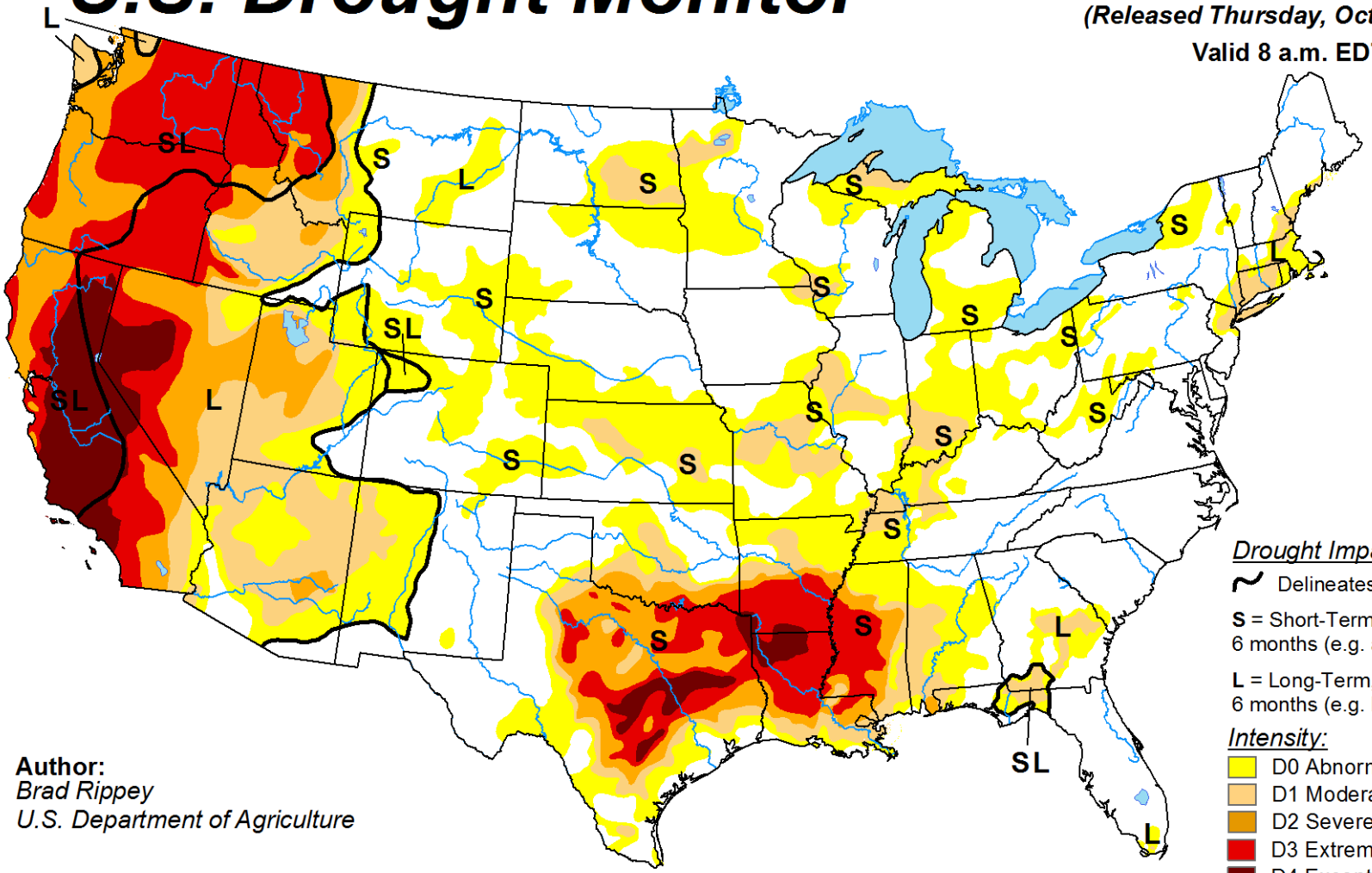


U.S. Drought Monitor

October 20, 2015

(Released Thursday, Oct. 22, 2015)

Valid 8 a.m. EDT



Author:
Brad Rippey
U.S. Department of Agriculture

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:

- D0 Abnormally Dry
- D1 Moderate Drought
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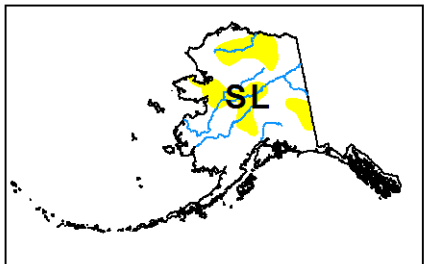
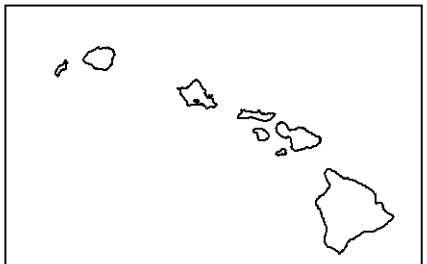
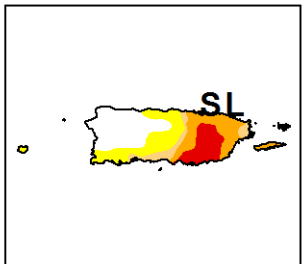




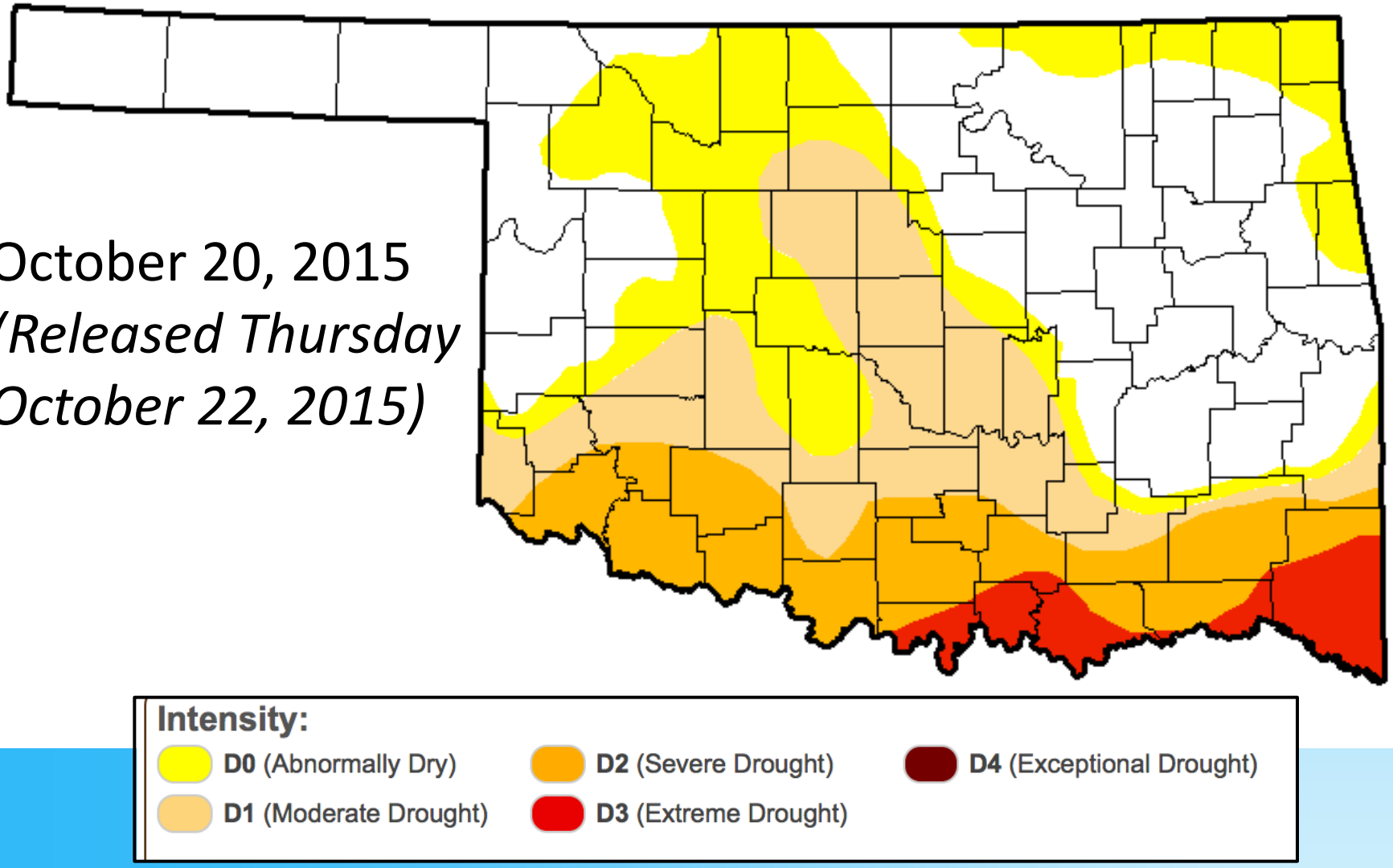


USDA National Drought Mitigation Center

http://droughtmonitor.unl.edu/

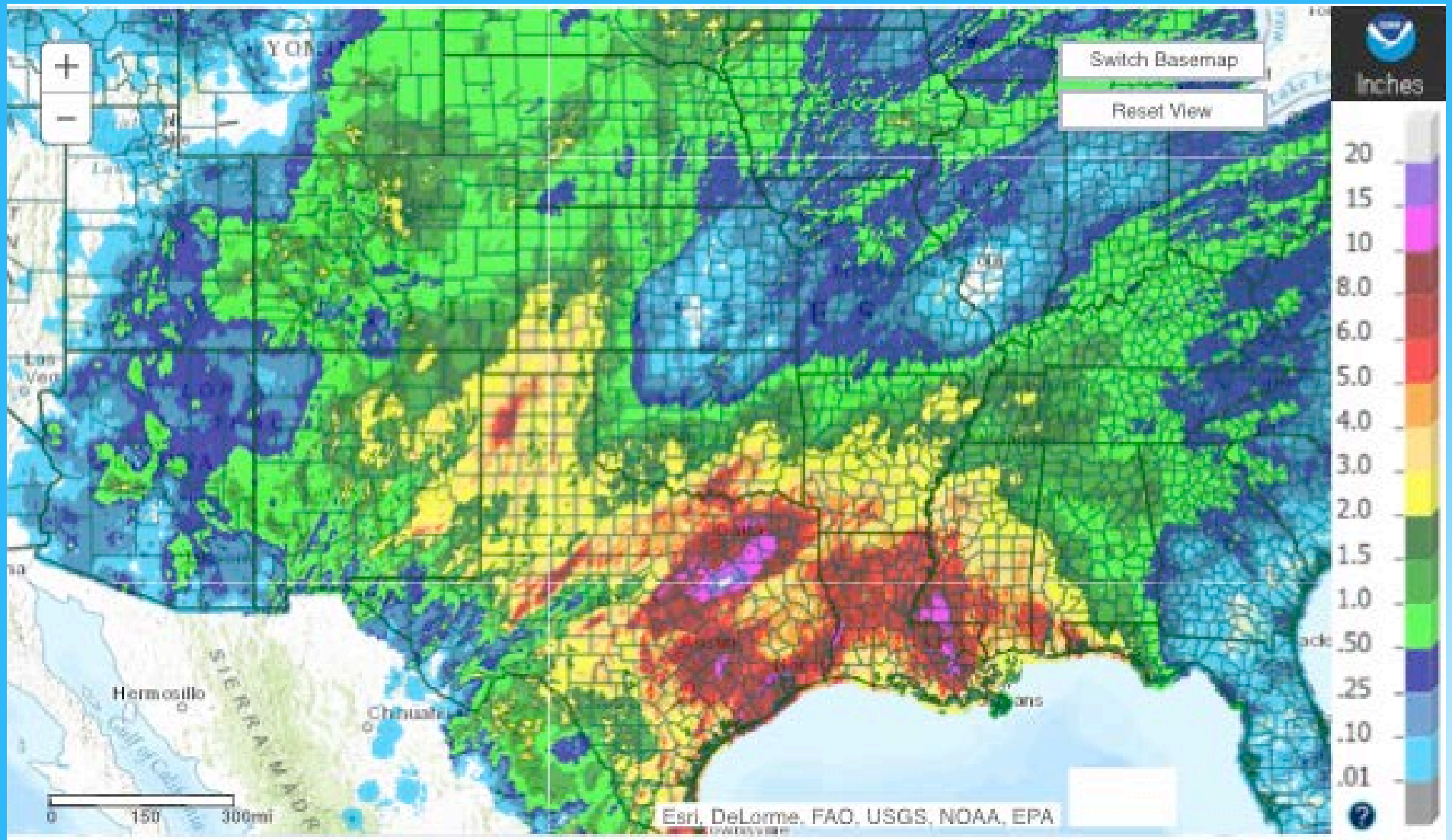
U.S. Drought Monitor for Oklahoma

October 20, 2015
(Released Thursday October 22, 2015)



The quick return of the drought
this late summer and fall
in southern and central Oklahoma
is called “flash drought”.

But then it rained…and flooded….again.



7-Day Precipitation ending October 27, 2015

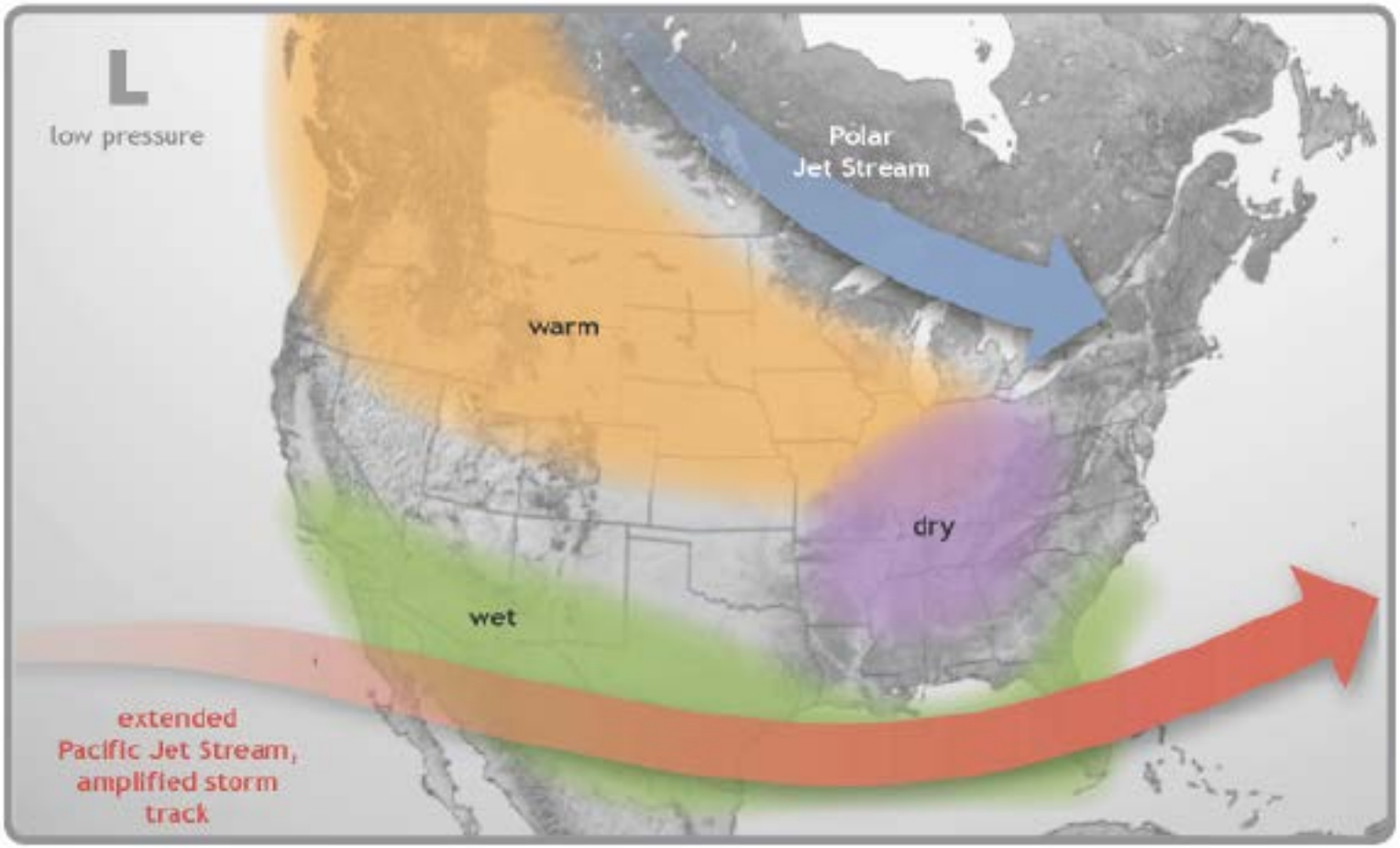
So expect the
Drought Monitor Map for Oklahoma
to look a bit better this week!

What about the rest of the fall,
winter, and spring?

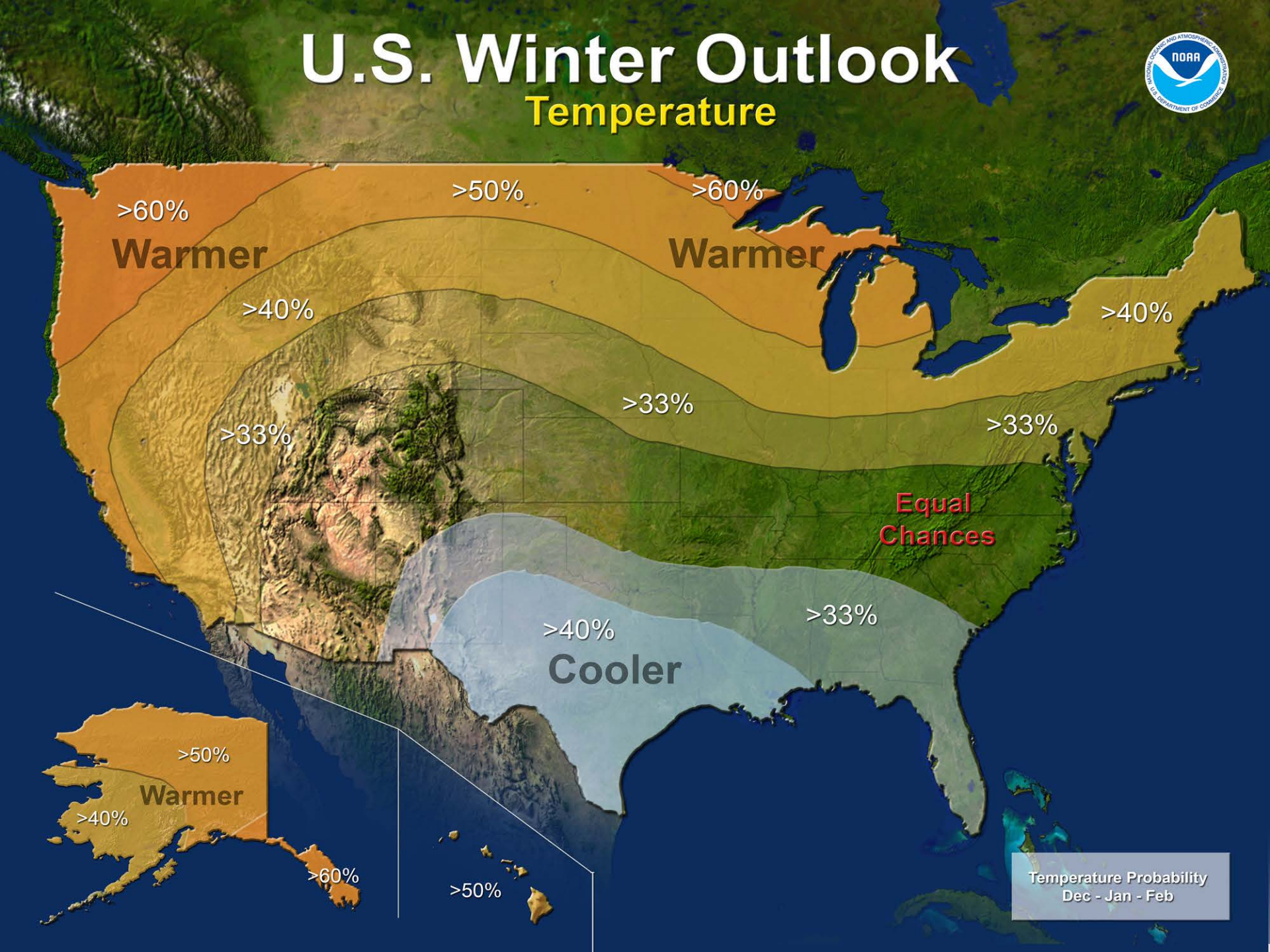
Godzilla **El Niño** headed for California CBS **News**

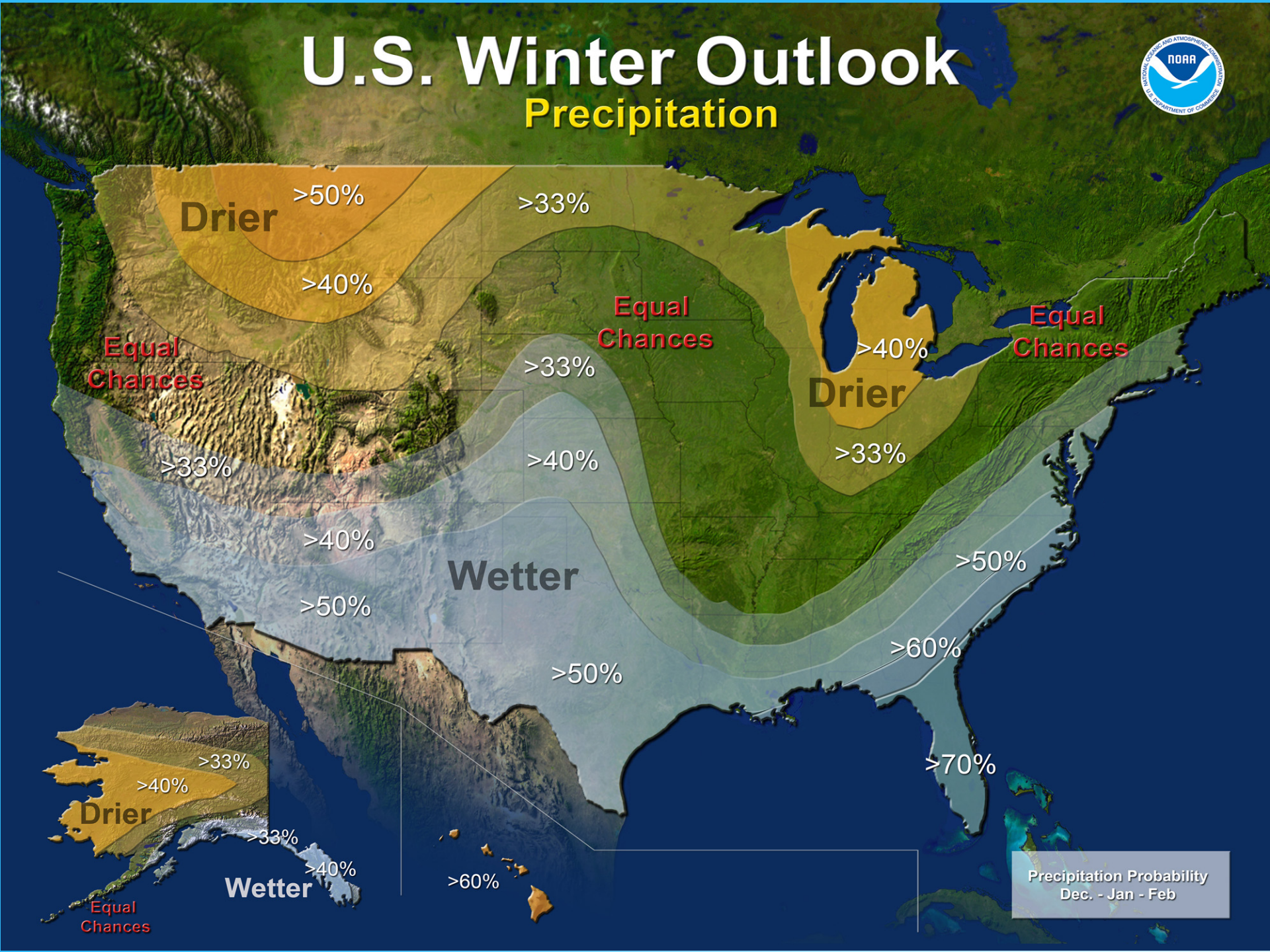
The Strongest **El Nino** in Decades Is Going to Mess With Everything **…**
http://www.bloomberg.com/

El Nino may cause 'substantial weather event' - BBC **News**



The image above shows the typical pattern in the winter during El Niño events. The polar jet stream tends to stay to the north of the Missouri Basin region, while the Pacific jet stream remains across the southern U.S. With the Missouri Basin isolated between the storm tracks, warmer and possibly drier conditions can develop during El Niño events.

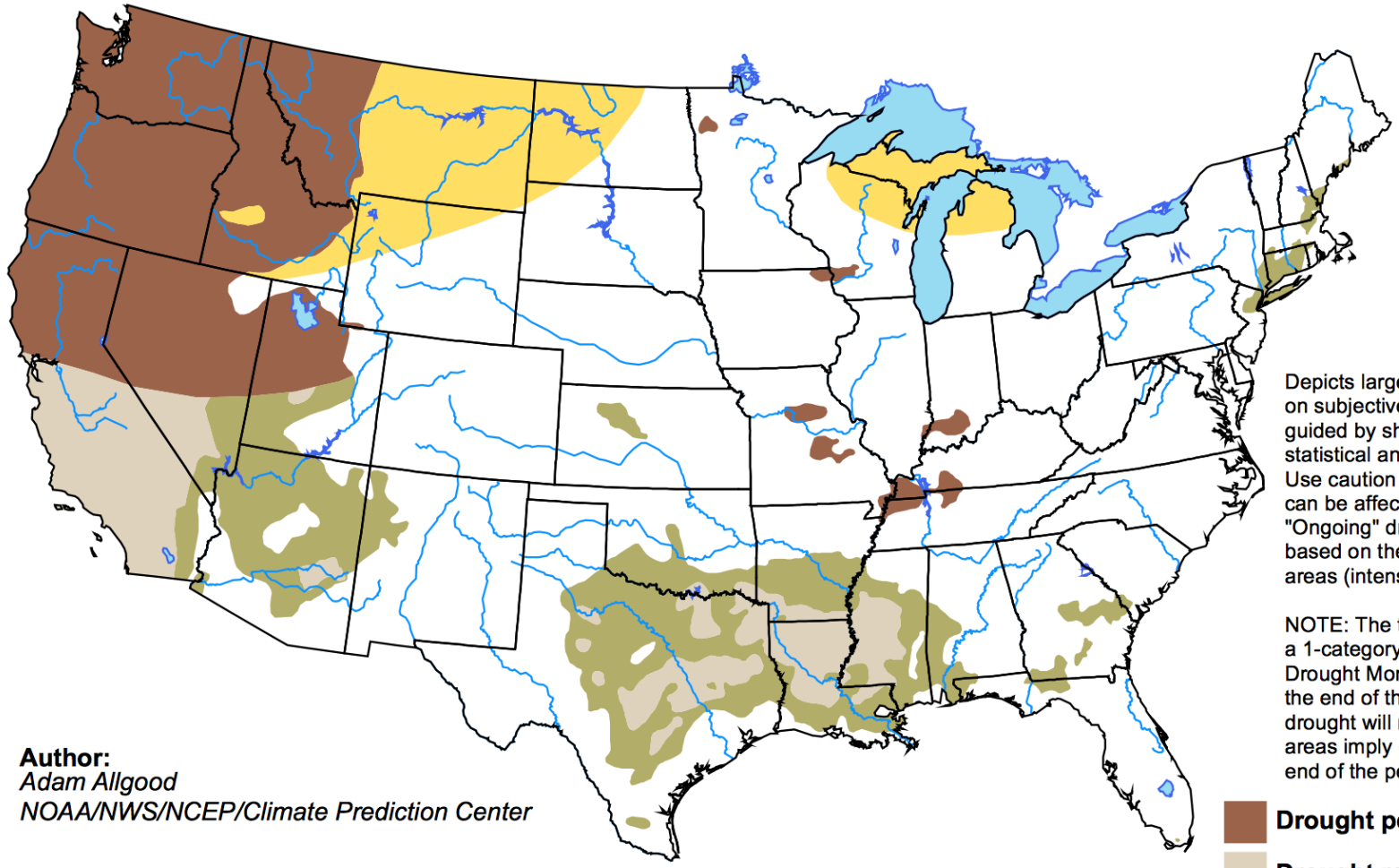

U.S. Winter Outlook
Temperature
>60%
Warmer
>50%
>60%
Warmer
>40%
>40%
>33%
>33%
>33%
Equal
Chances
>33%
>40%
Cooler
>50%
Warmer
>40%
>60%
>50%
Temperature Probability
Dec - Jan - Feb


U.S. Winter Outlook
Precipitation
Drier
>50%
>33%
>40%
Equal Chances
Equal Chances
>33%
Equal Chances
>40%
Drier
>33%
>33%
>40%
>40%
Wetter
>50%
>50%
>50%
>60%
>70%
>33%
>40%
Drier
>33%
>40%
Wetter
Equal Chances
>60%
Precipitation Probability
Dec. - Jan - Feb

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 15 - January 31, 2016
Released October 15, 2015



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).

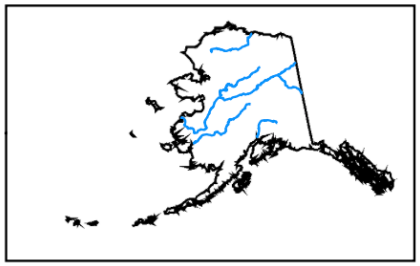
Drought persists/intensifies

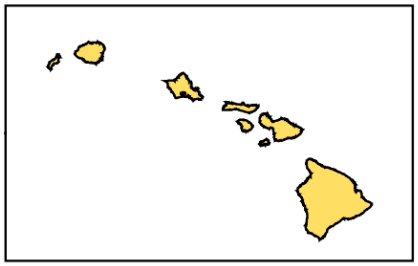
Drought remains but improves

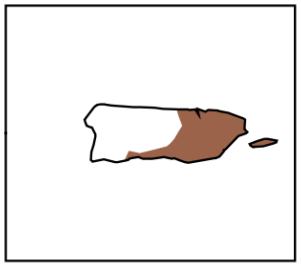
Drought removal likely

Drought development likely

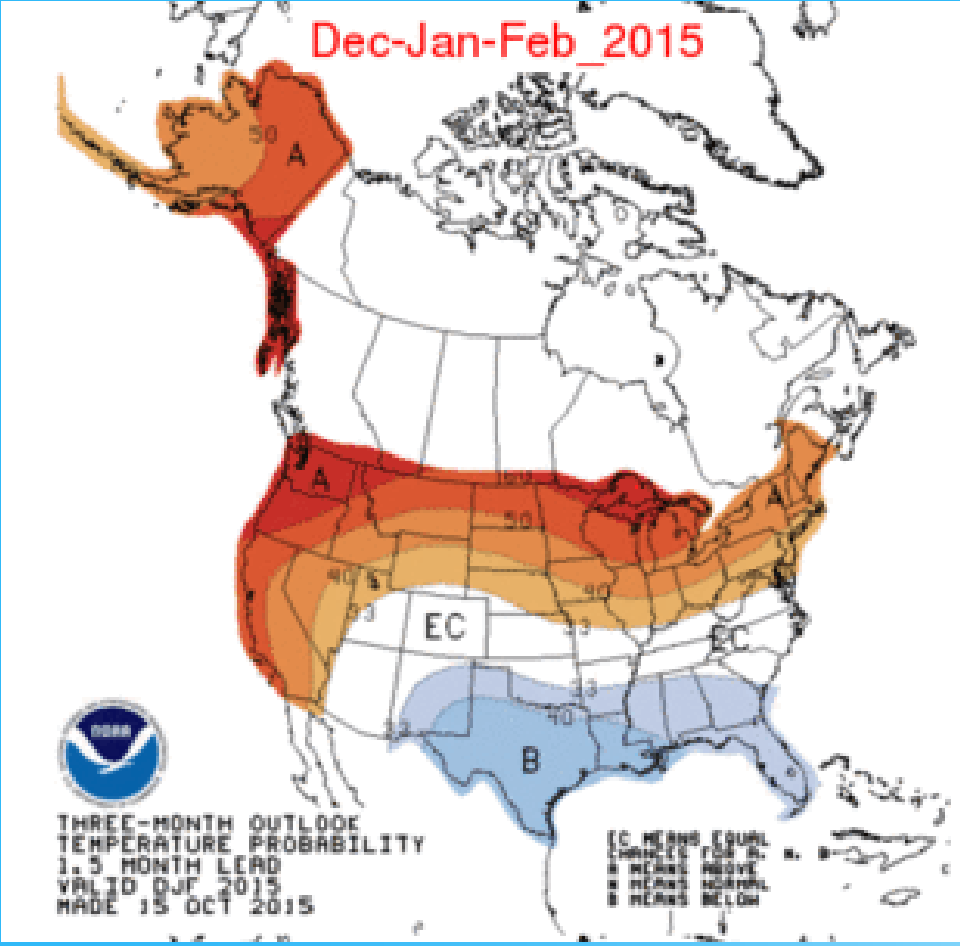
Author:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center

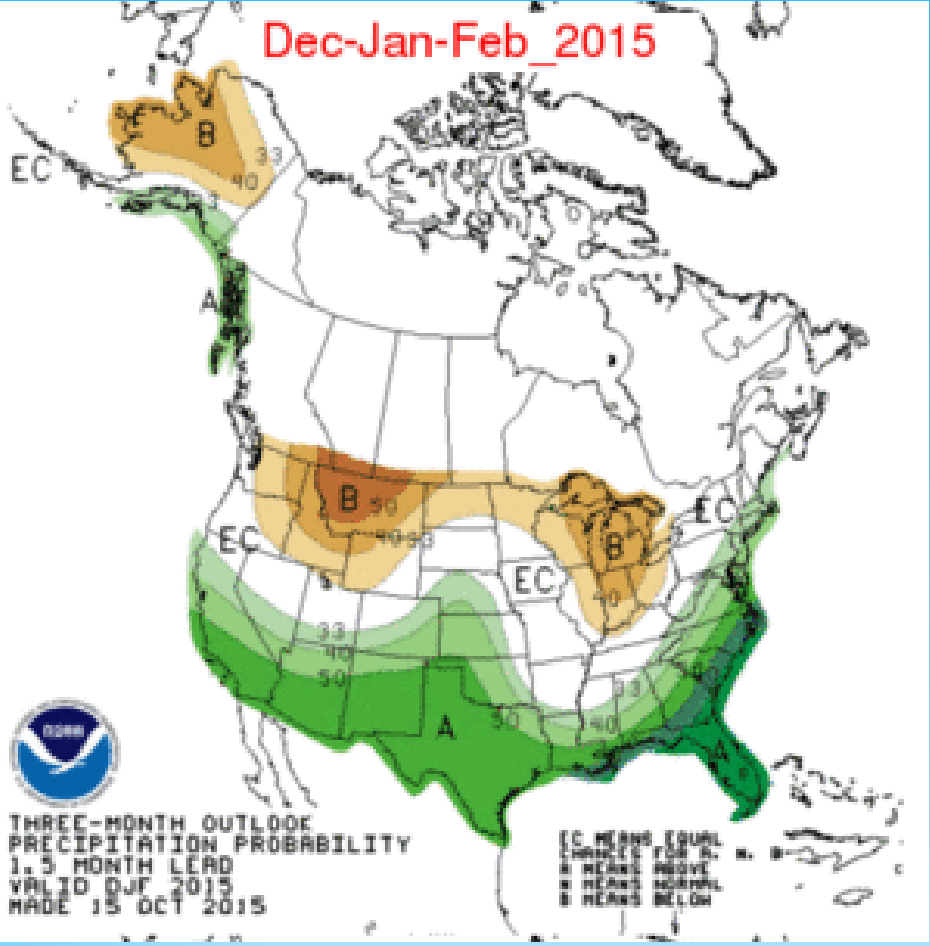






http://go.usa.gov/3eZ73

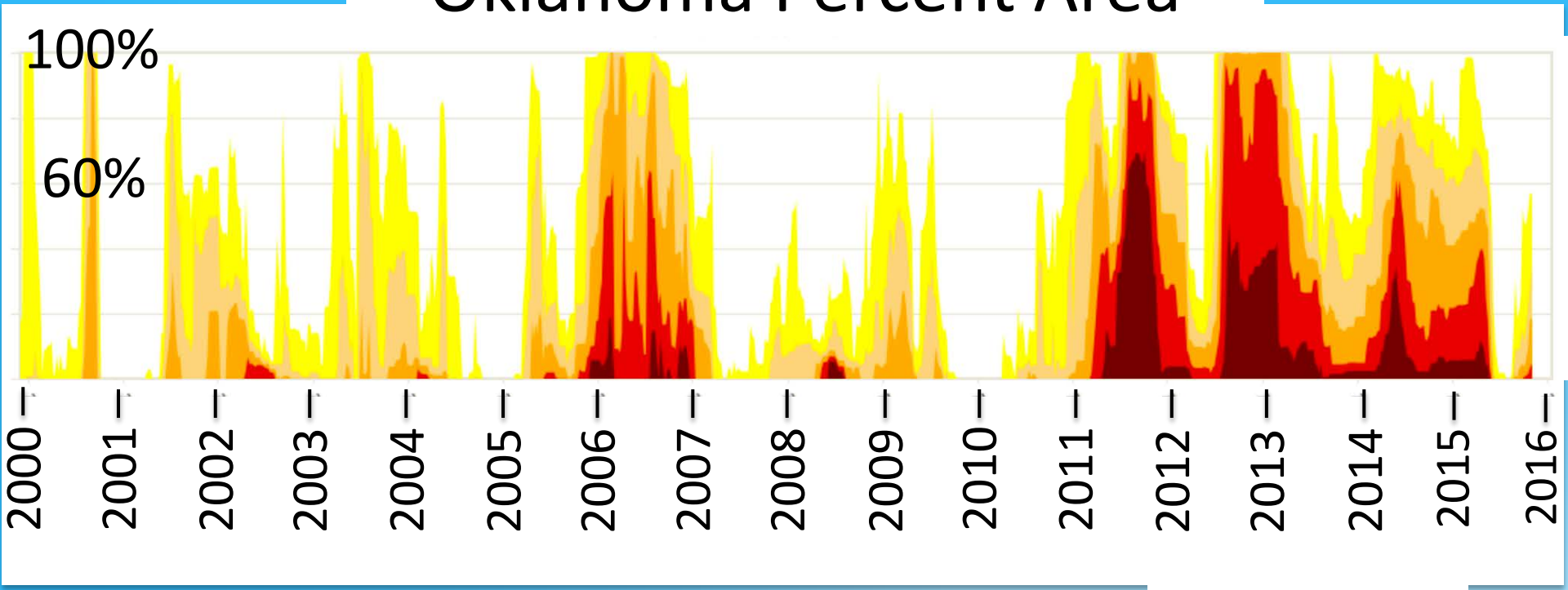




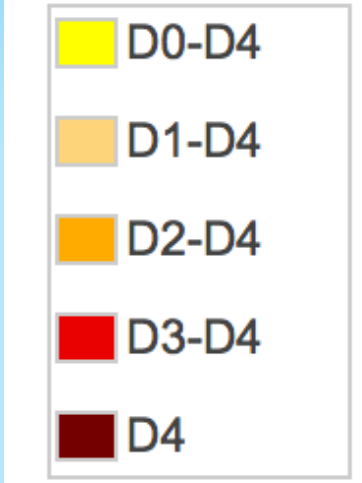
WARNING – These seasonal forecasts for wetter or cooler than average conditions have very poor forecast skill for Oklahoma.

So what about next summer?
And the coming decades?

Oklahoma Percent Area

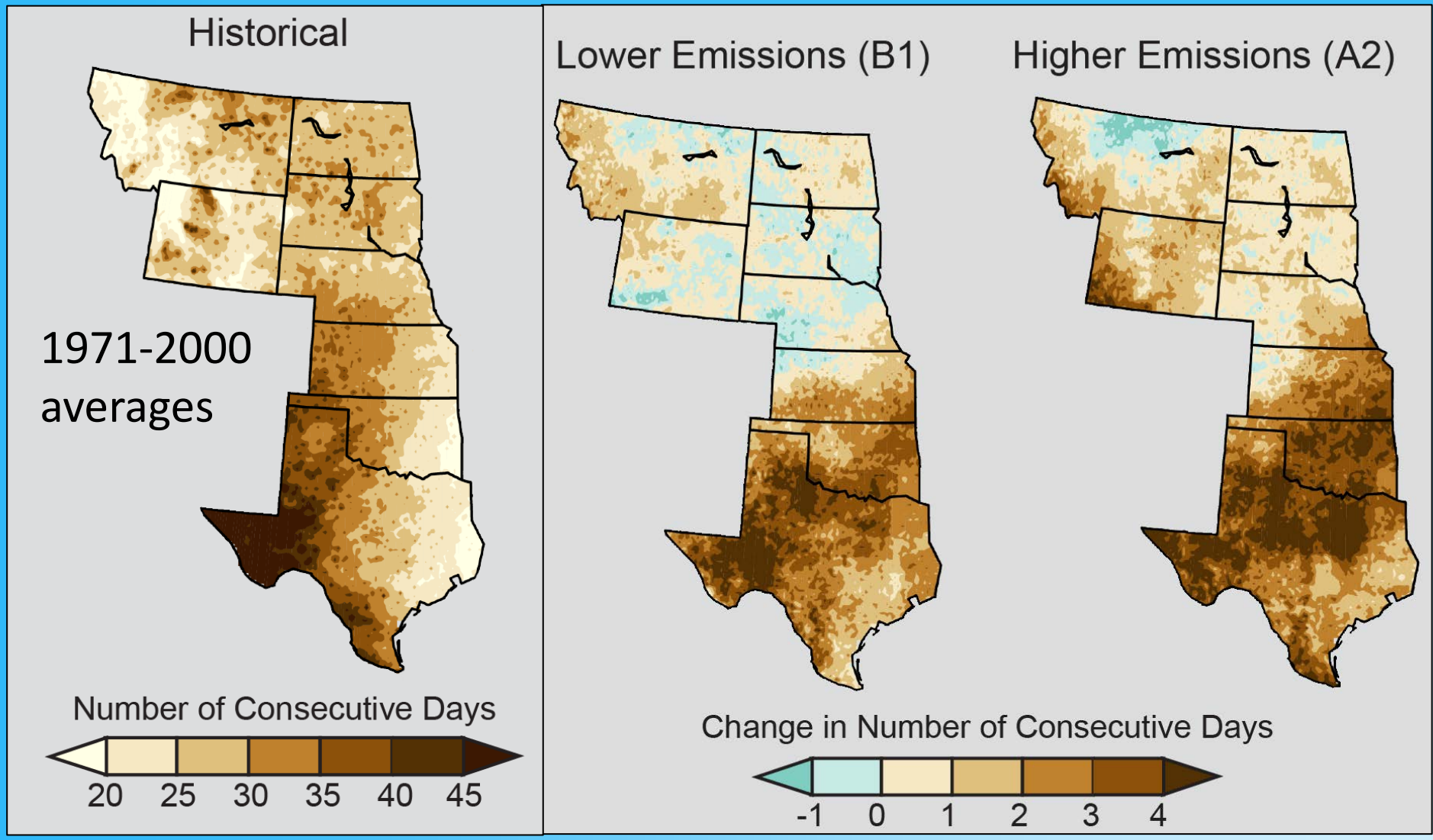


http://droughtmonitor.unl.edu/MapsAndData/Graph.aspx



Climate studies concentrate on averages, but averages tell us little to nothing about the succession of daily weather and extreme events that impacts crops, forages, livestock… or water supplies and infrastructure. What matters more are the variations, especially the extreme weather events.

Projected Change in Number of Consecutive Dry Days, 2041-2070:

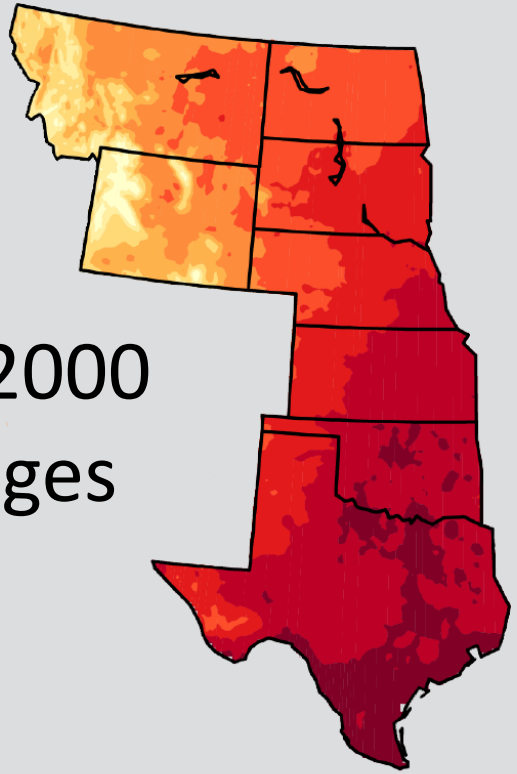


From the National Climate Assessment, 2014

Average temperatures continue to climb, but most of the change in Oklahoma is due to warmer overnight temperatures.

Historical Temperature on the 7 Warmest Nights of the Year

1971-2000 averages

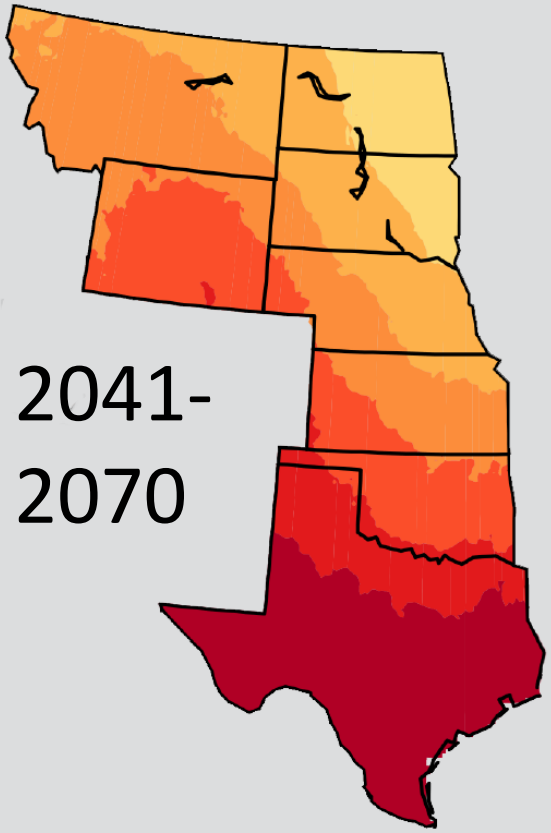


Hottest Temperature (ºF)

40 45 50 55 60 65 70 75

Higher Emissions (A2)

2041-2070

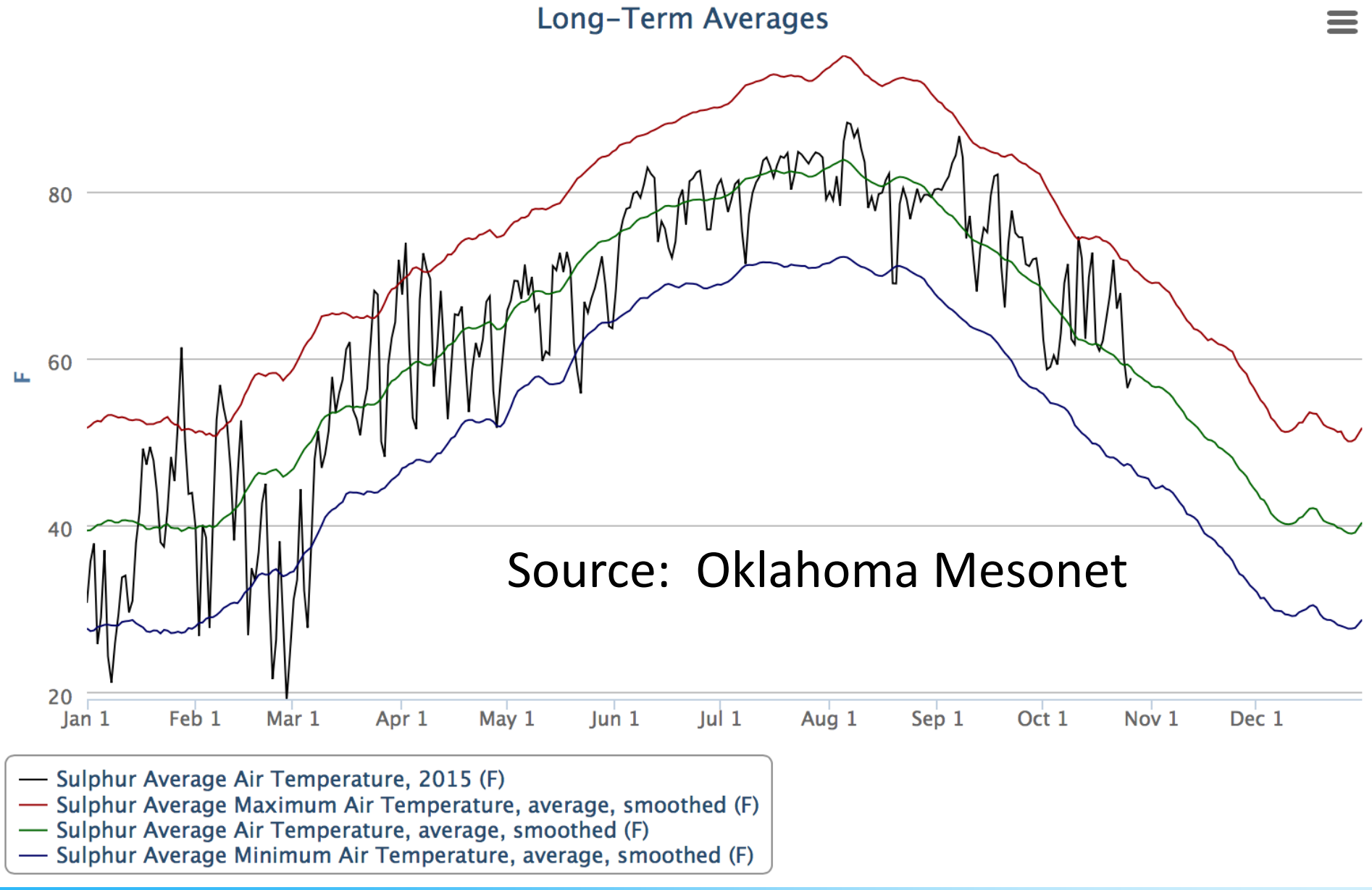


Change in Number of Days

20 25 30 35 40 45

Projected Change in Number of Warm Nights

Daily Average Air Temperature, 2015



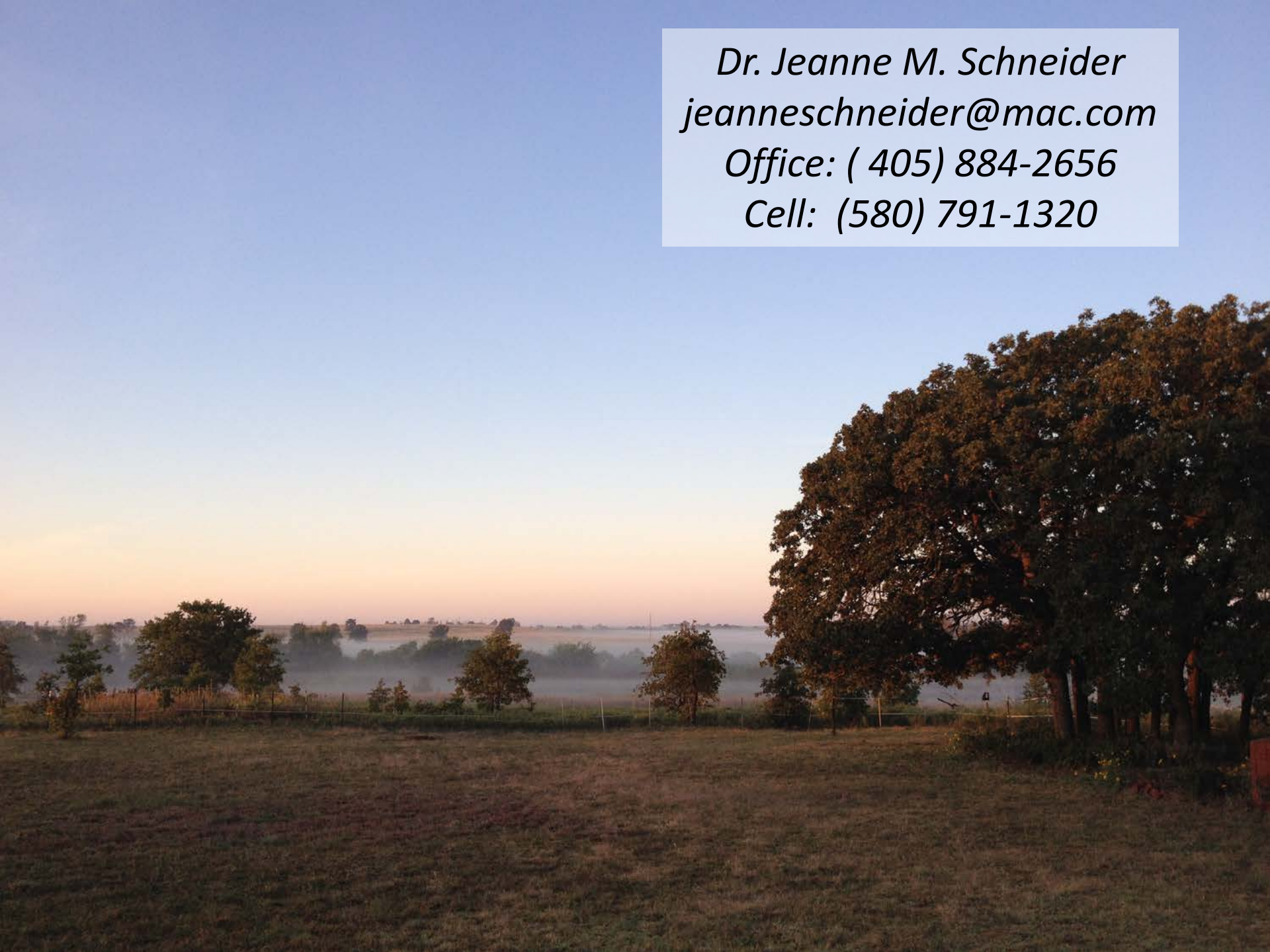
My thumbnail summary for climate and weather in Oklahoma over the next 5 – 20 years:
more of what we already have…
increased variability!

Drought punctuated by flood.
Too hot alternating with too cold.

Bad news: drought will return.
It will be at least as bad,
and probably worse, than we have
experienced recently.

Our primary tool for adaptation to
all of the weather extremes,
including drought and flood,
is to improve our soil health
(recall the demo earlier),
but you can't implement changes
during a drought!

So now is the time to prepare,
to adjust your plans, and to get your
pastures and prairies ready!



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Cell: (580) 791-1320