How Much Longer? Seasonal Forecasts and Other Outlooks

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Drought Seminar, Great Plains RC&D and Deer Creek Conservation District
September 5, 2012 Weatherford, OK

Definitions of key terms:

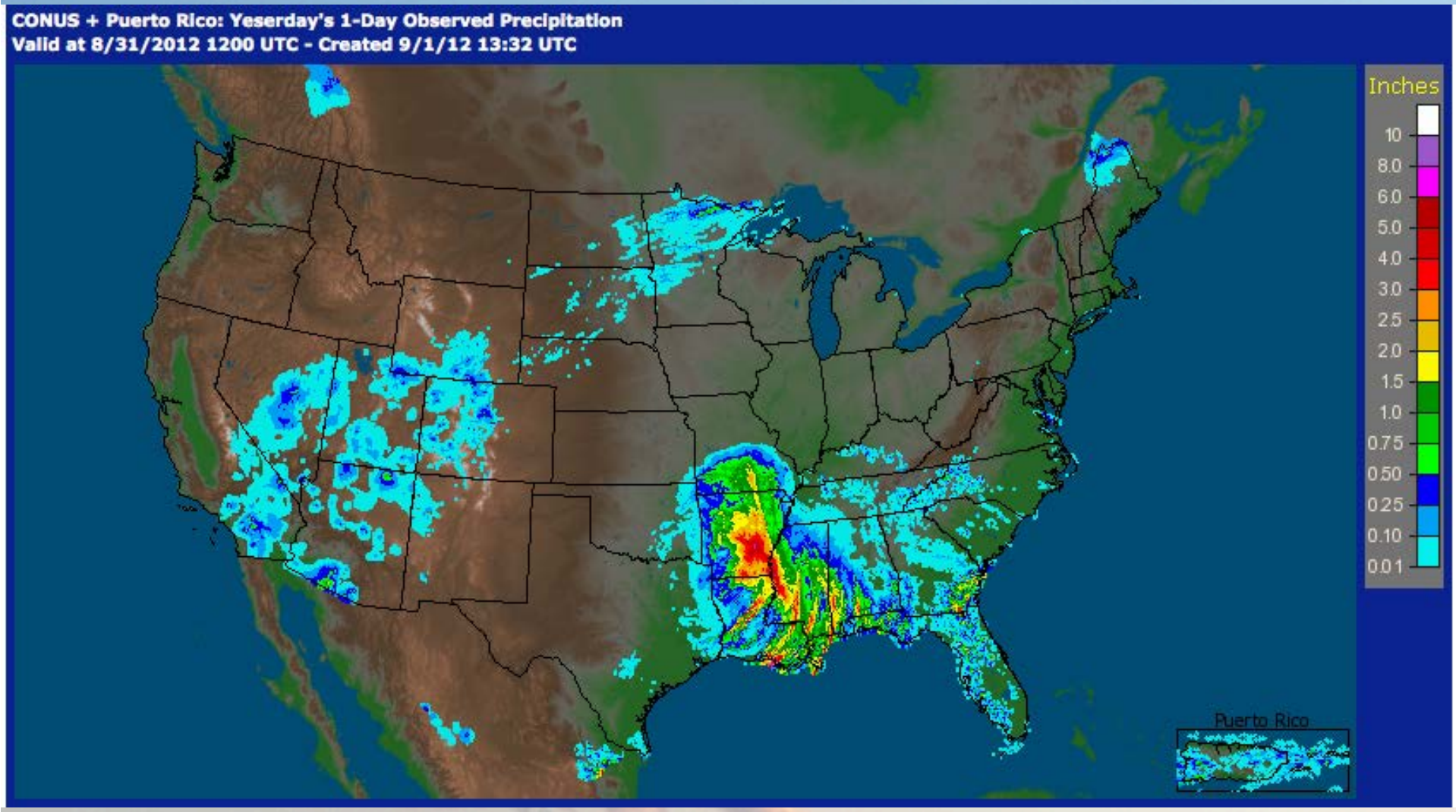
Climate – the sum or average of weather, traditionally assessed over large areas and long time periods.

Climate variability – the excursions of daily, weekly, monthly, seasonal, annual, or decadal climate around some longer-term and/or larger-area average.

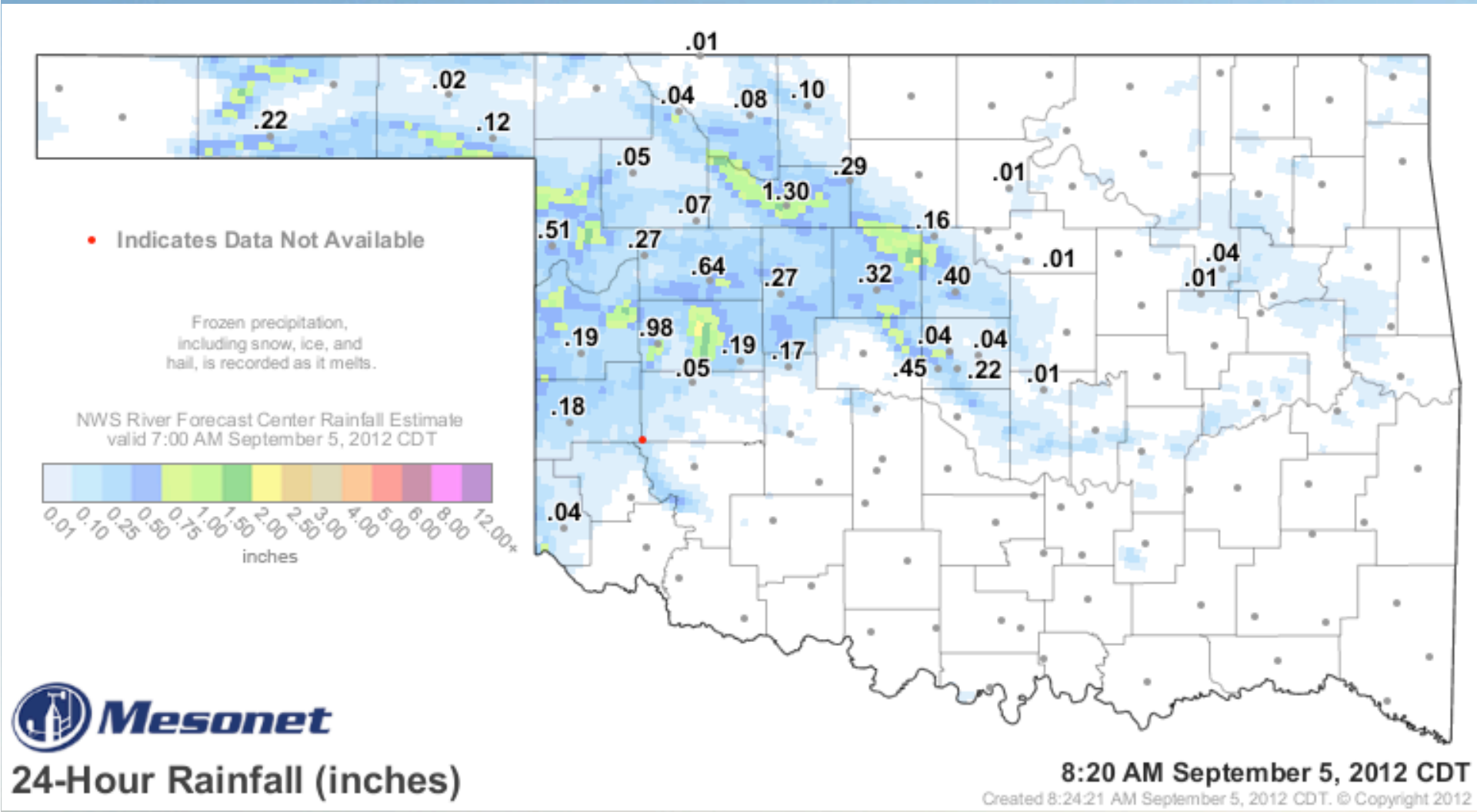
Normal – (*not what you expect…*)
relative to weather and climate, it means average.

Drought – a lack of water where and when we need it, defined in terms of "less than normal" precipitation, surface water, or soil water.

We missed our first chance this summer….

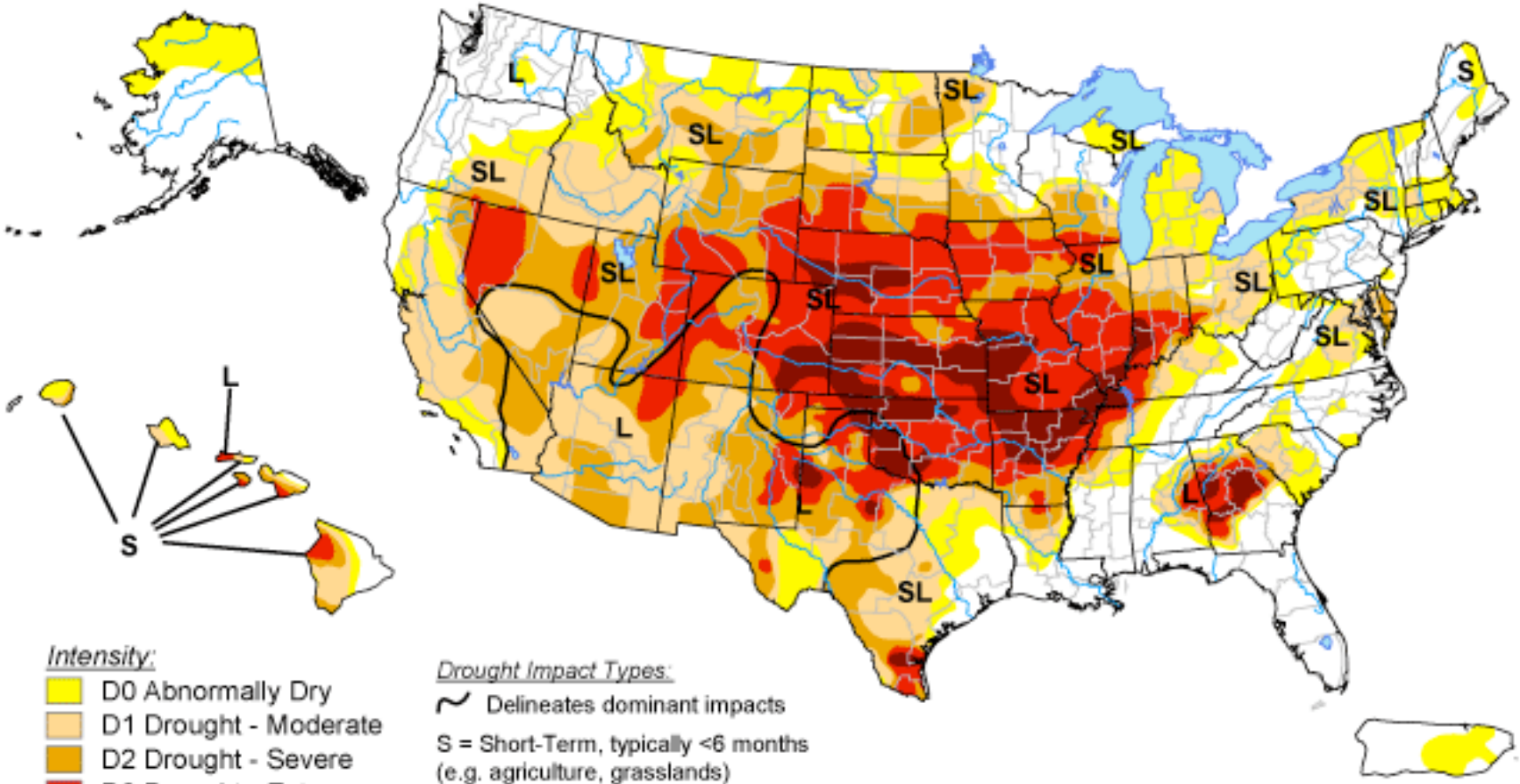


One day total rainfall from remnants of Hurricane Isaac, August 30, 2012


.01
.02
.22
.12
.04
.08
.10
.05
.29
.01
1.30
.07
.16
.51
.27
.64
.27
.32
.40
.01
.04
.01
.19
.98
.19
.17
.04
.04
.05
.45
.22
.01
.18
.04
Indicates Data Not Available
Frozen precipitation, including snow, ice, and hail, is recorded as it melts.
NWS River Forecast Center Rainfall Estimate
valid 7:00 AM September 5, 2012 CDT
0.01 0.10 0.25 0.50 0.75 1.00 1.50 2.00 2.50 3.00 4.00 5.00 6.00 8.00 12.00+
inches
Mesonet
24-Hour Rainfall (inches)
8:20 AM September 5, 2012 CDT
Created 8:24:21 AM September 5, 2012 CDT. © Copyright 2012

U.S. Drought Monitor

August 28, 2012
Valid 7 a.m. EDT



Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

~ Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/

Released Thursday, August 30, 2012

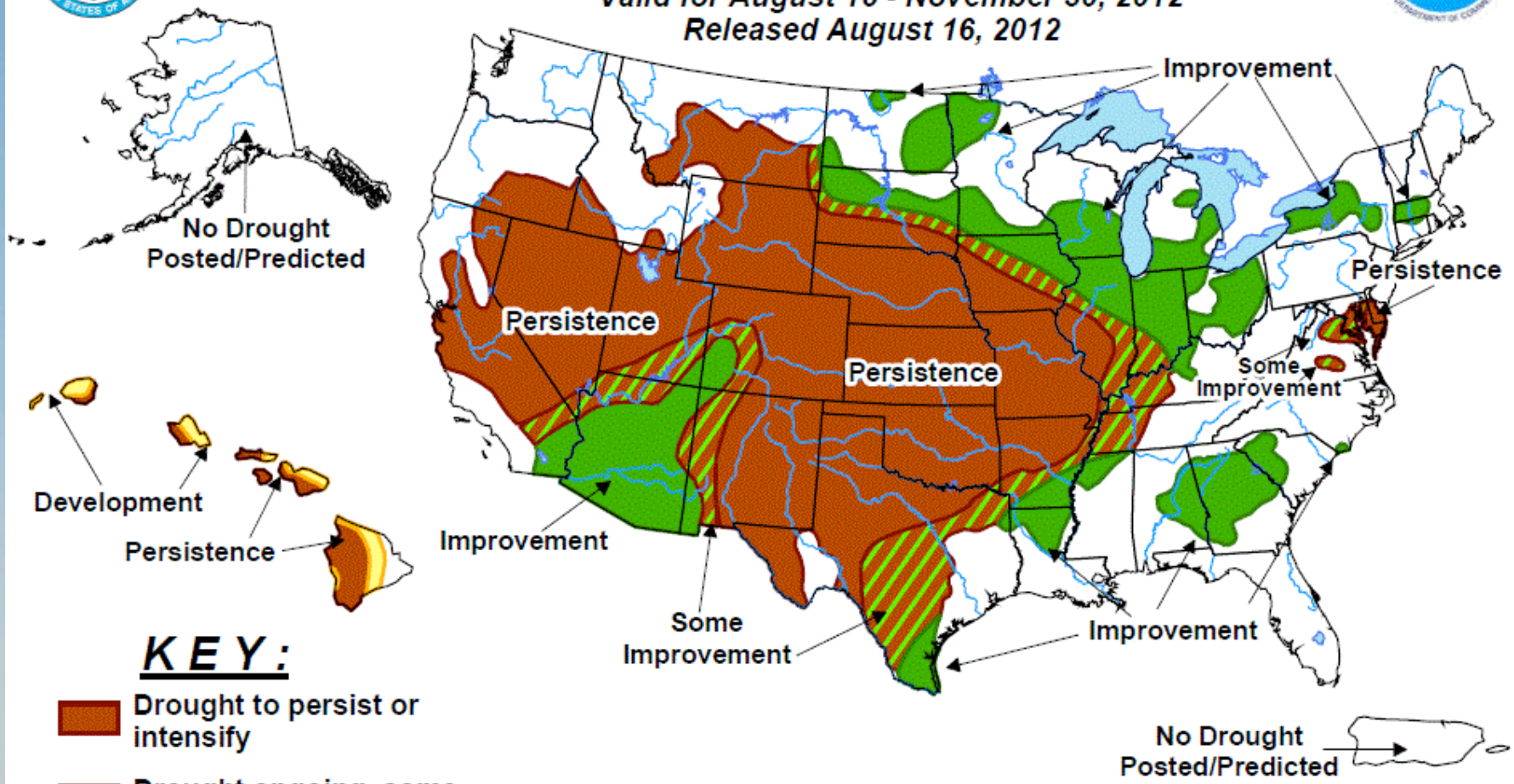
Author: Brian Fuchs, National Drought Mitigation Center

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for August 16 - November 30, 2012

Released August 16, 2012



KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

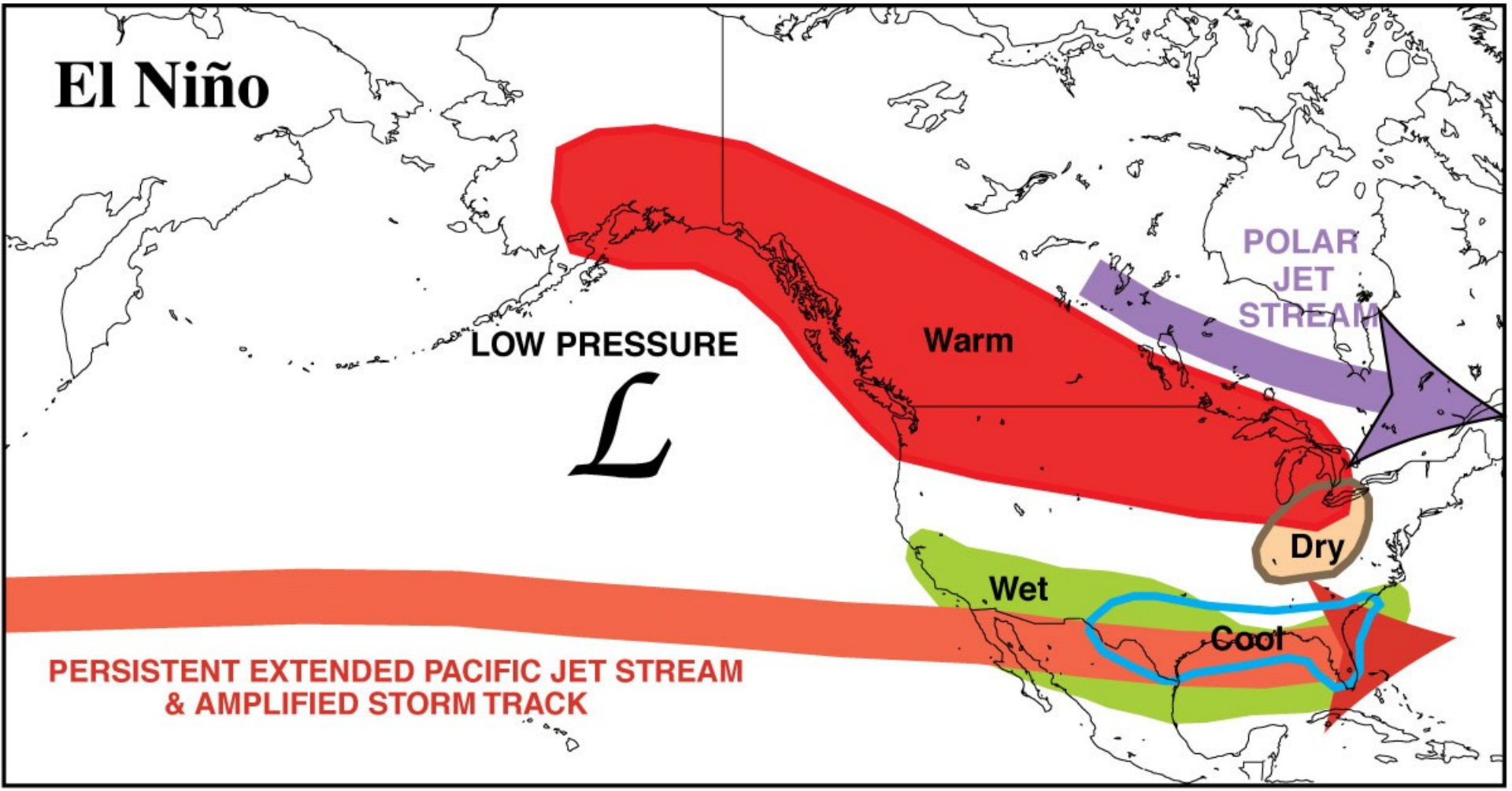
Why this forecast?

Because droughts reinforce themselves dynamically, and there is no strong forecast from any source to suggest that significant, repeated, drought-ending precipitation will occur within the next several months.

NOAA Climate Prediction Center ENSO Forecast

"…it is likely that an El Niño event of weak to moderate amplitude is likely to begin during Sept-Oct-Nov, and continue through the late winter."

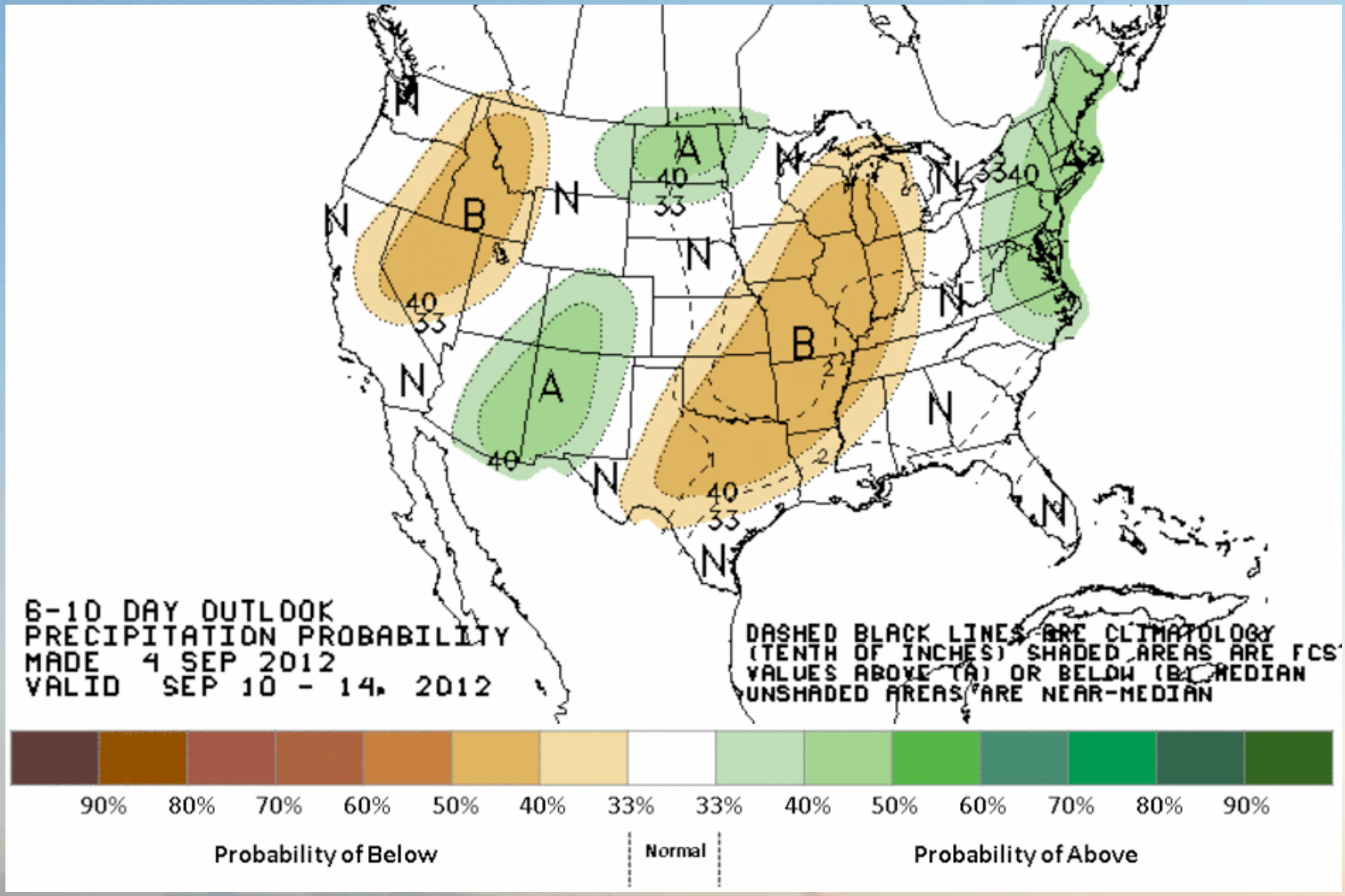
TYPICAL JANUARY-MARCH WEATHER ANOMALIES AND ATMOSPHERIC CIRCULATION DURING MODERATE TO STRONG EL NIÑO & LA NIÑA



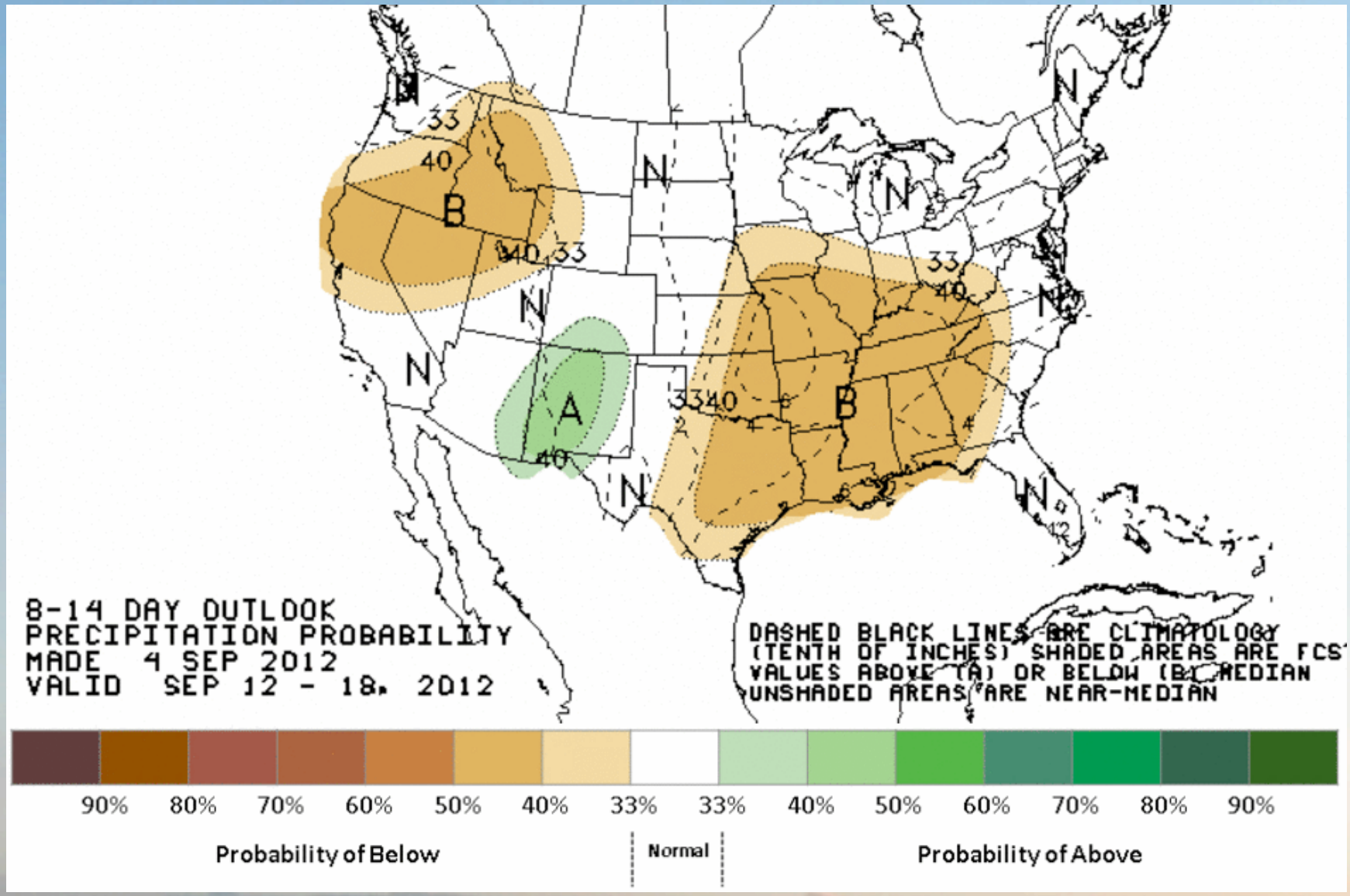
7-DAY FORECAST

Today	A 20 percent chance of showers and thunderstorms. Mostly sunny and hot, with a high near 102. South southeast wind around 7 mph.	QPF = 0.06”
Tonight	A 50 percent chance of showers and thunderstorms. Mostly cloudy, with a low around 71. East wind around 7 mph.	QPF = 0.21”
Thursday	A 20 percent chance of showers and thunderstorms. Mostly sunny and hot, with a high near 98. Southeast wind 5 to 9 mph.	QPF = 0.03”
Thursday Night	A 30 percent chance of showers and thunderstorms. Mostly cloudy, with a low around 73. South southeast wind 8 to 14 mph, with gusts as high as 20 mph.	QPF = 0.05”
Friday	A 30 percent chance of showers and thunderstorms. Partly sunny, with a high near 96. South southwest wind 5 to 14 mph becoming north northwest in the afternoon. Winds could gust as high as 20 mph.	QPF = 0.15”
Friday Night	A 30 percent chance of showers and thunderstorms, mainly before 1am. Mostly cloudy, with a low around 63.	QPF = 0.03”
Saturday	Mostly sunny, with a high near 80.	
Saturday Night	Partly cloudy, with a low around 56.	
Sunday	Sunny, with a high near 85.	
Sunday Night	Mostly clear, with a low around 58.	
Monday	Sunny, with a high near 91.	
Monday Night	Partly cloudy, with a low around 61.	
Tuesday	Sunny, with a high near 96.	

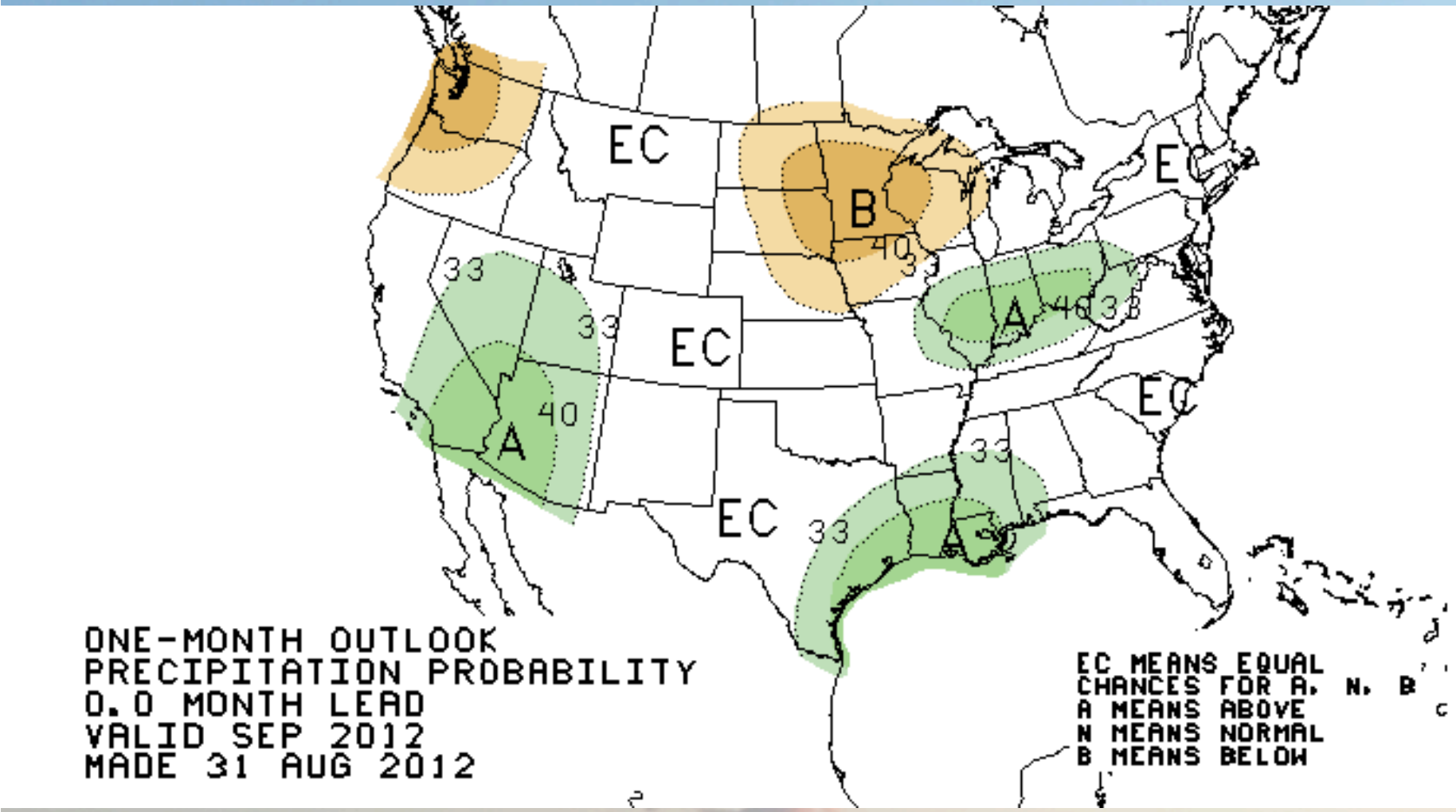
Precipitation Forecast for the next 6 -10 days



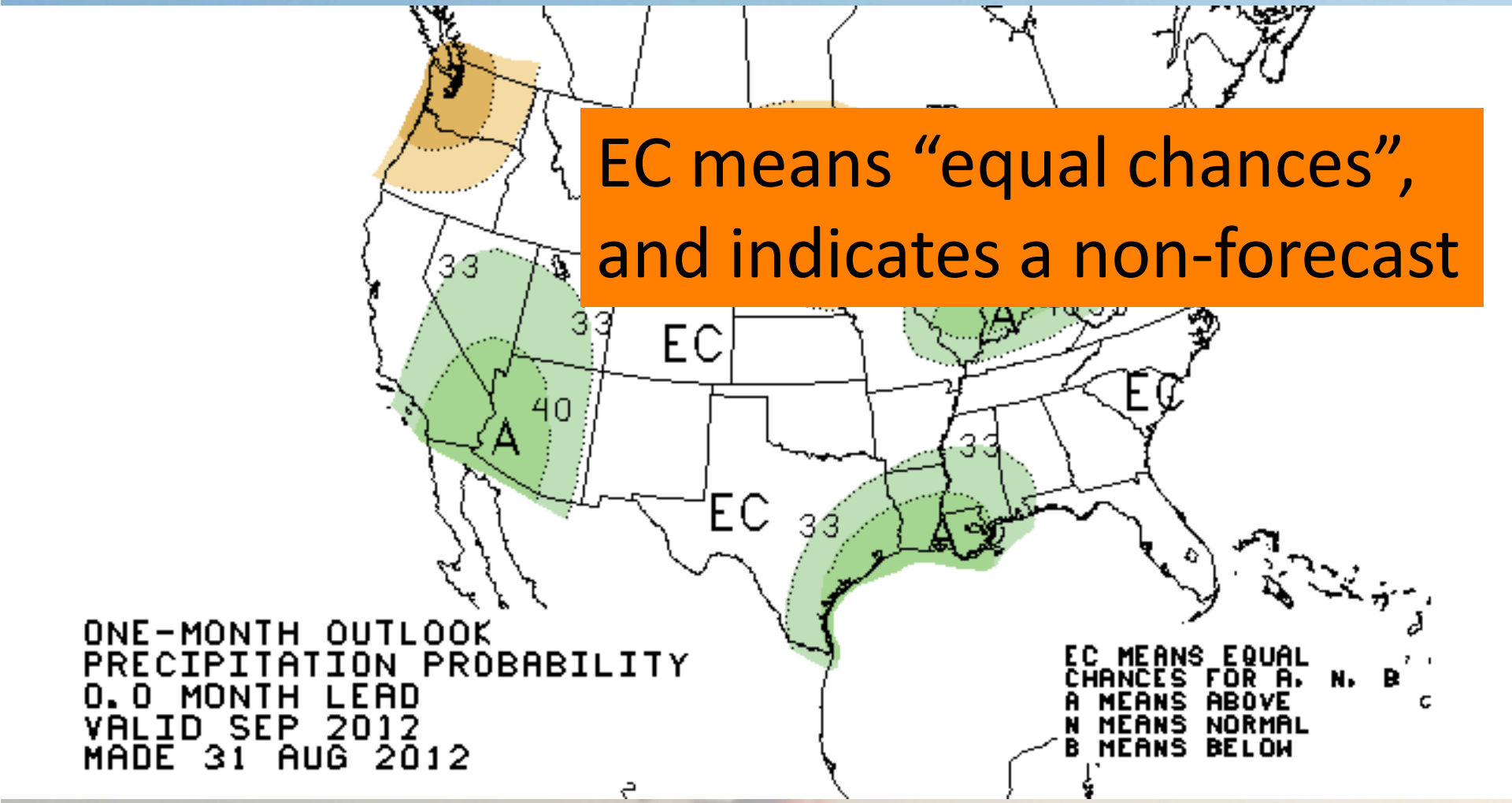
Precipitation Forecast for the next 8 - 14 days



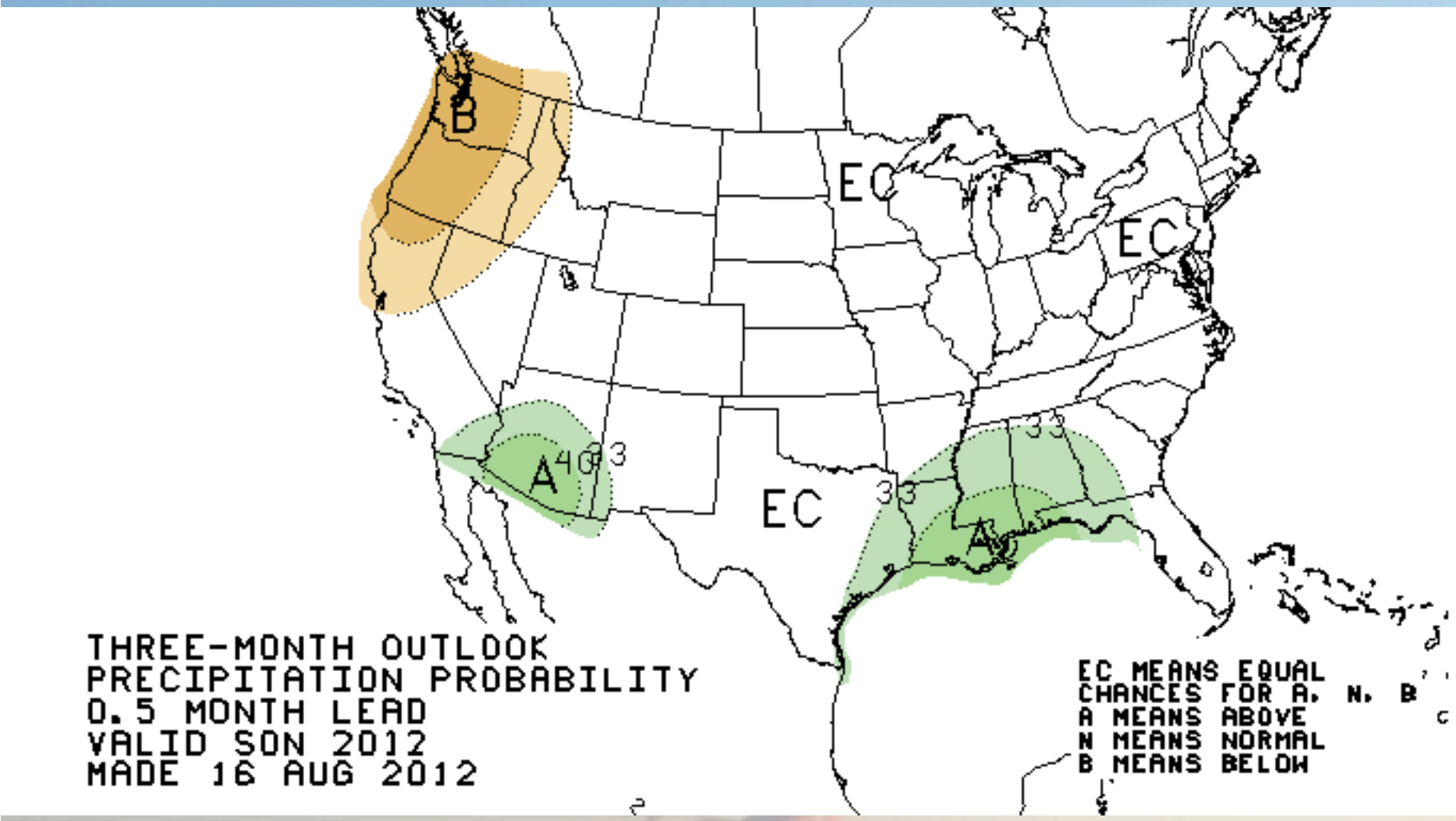
Precipitation Forecast for September



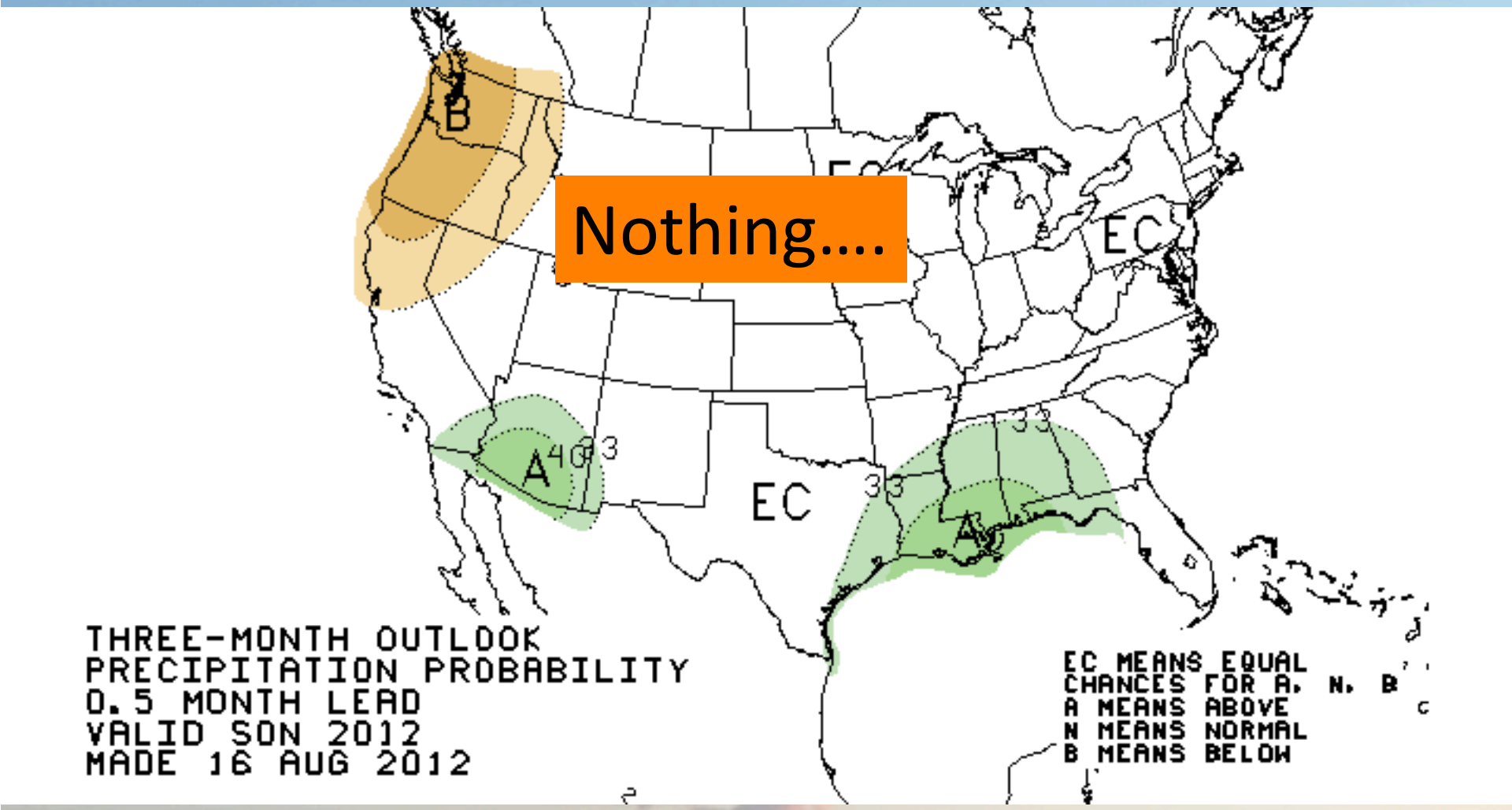
Precipitation Forecast for September



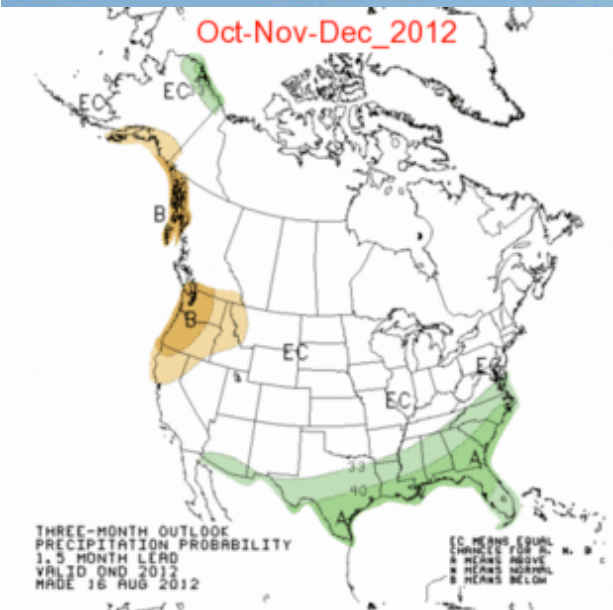
Precipitation Forecast for Sept-Oct-Nov

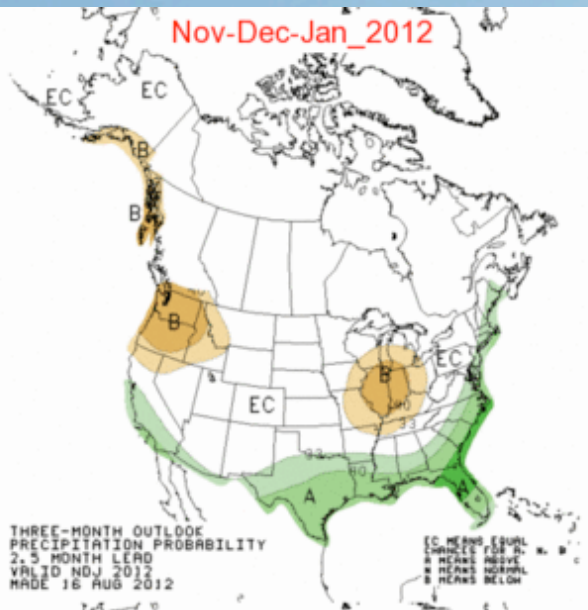


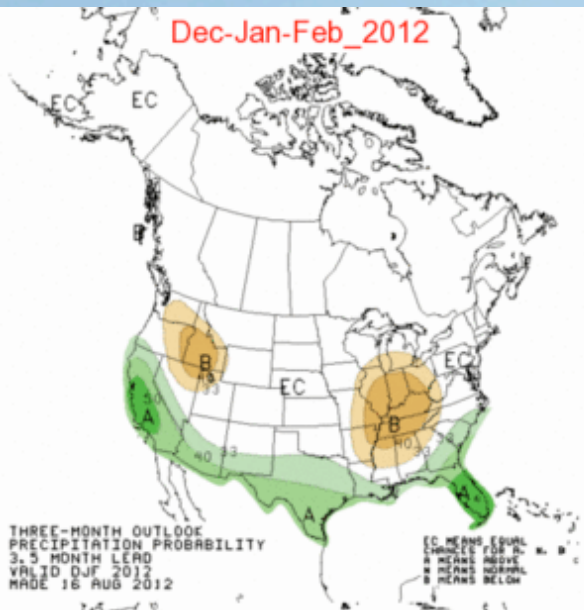
Precipitation Forecast for Sept-Oct-Nov

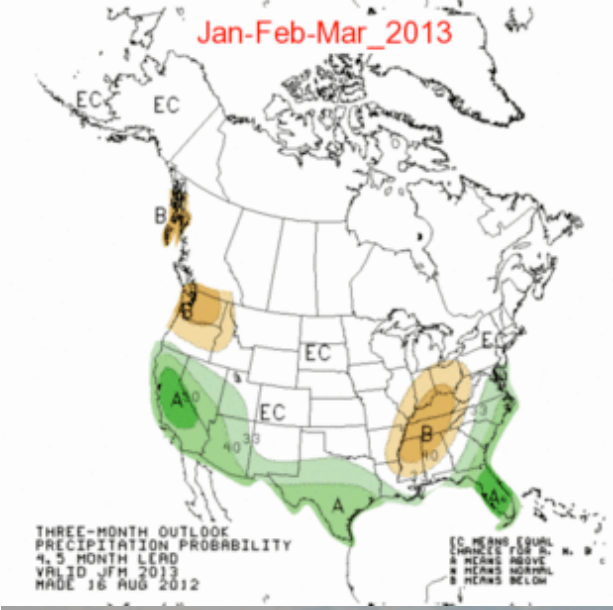


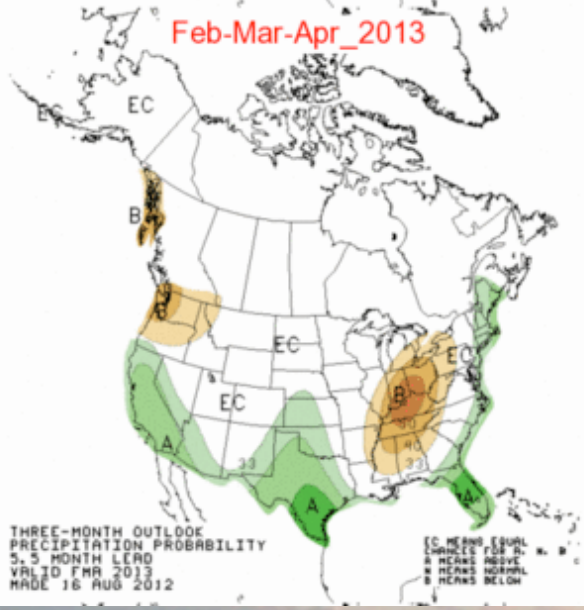
Precipitation Forecasts for the Next Six Months

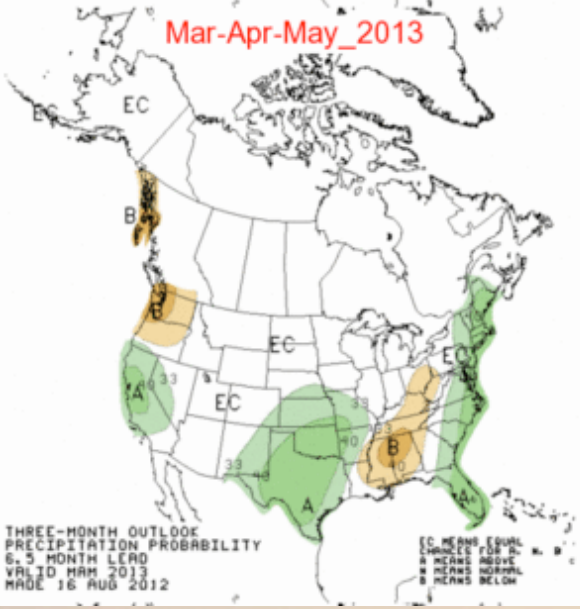




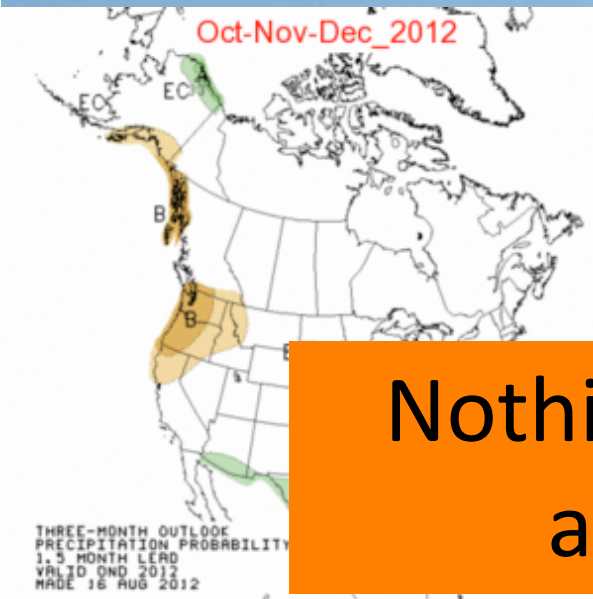




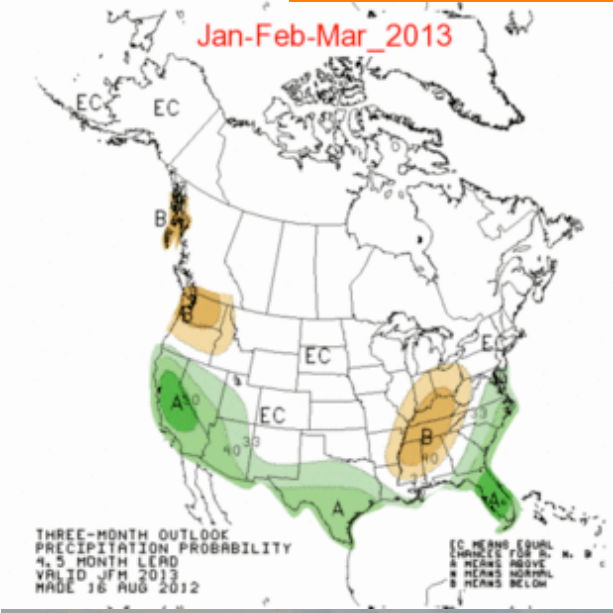


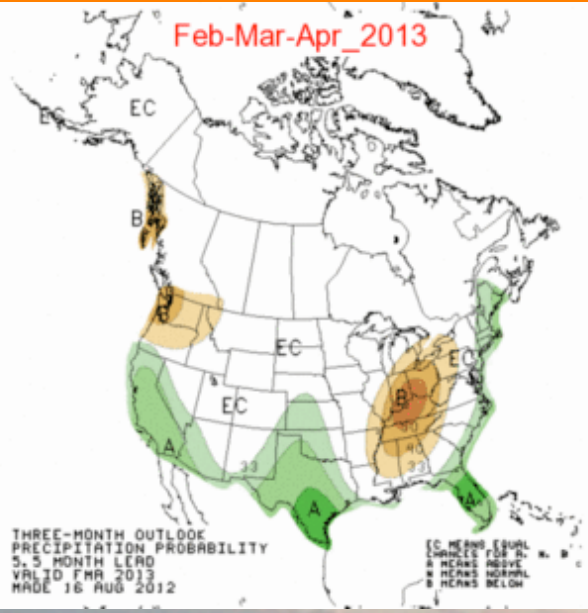


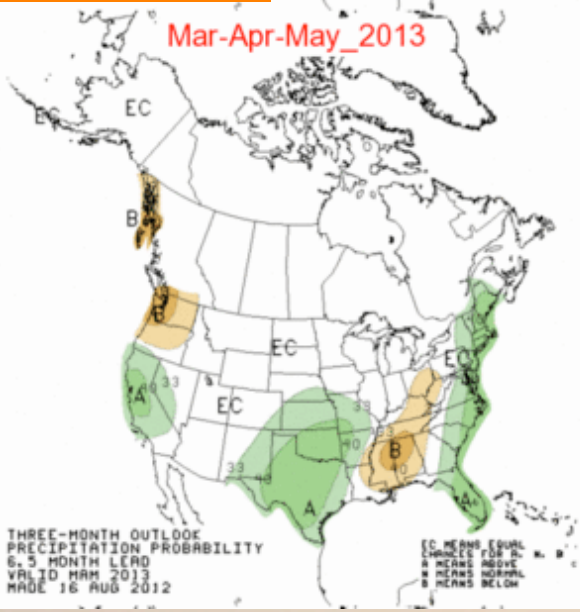
Precipitation Forecasts for the Next Six Months



Nothing until Feb-Mar-April,
and not much then!





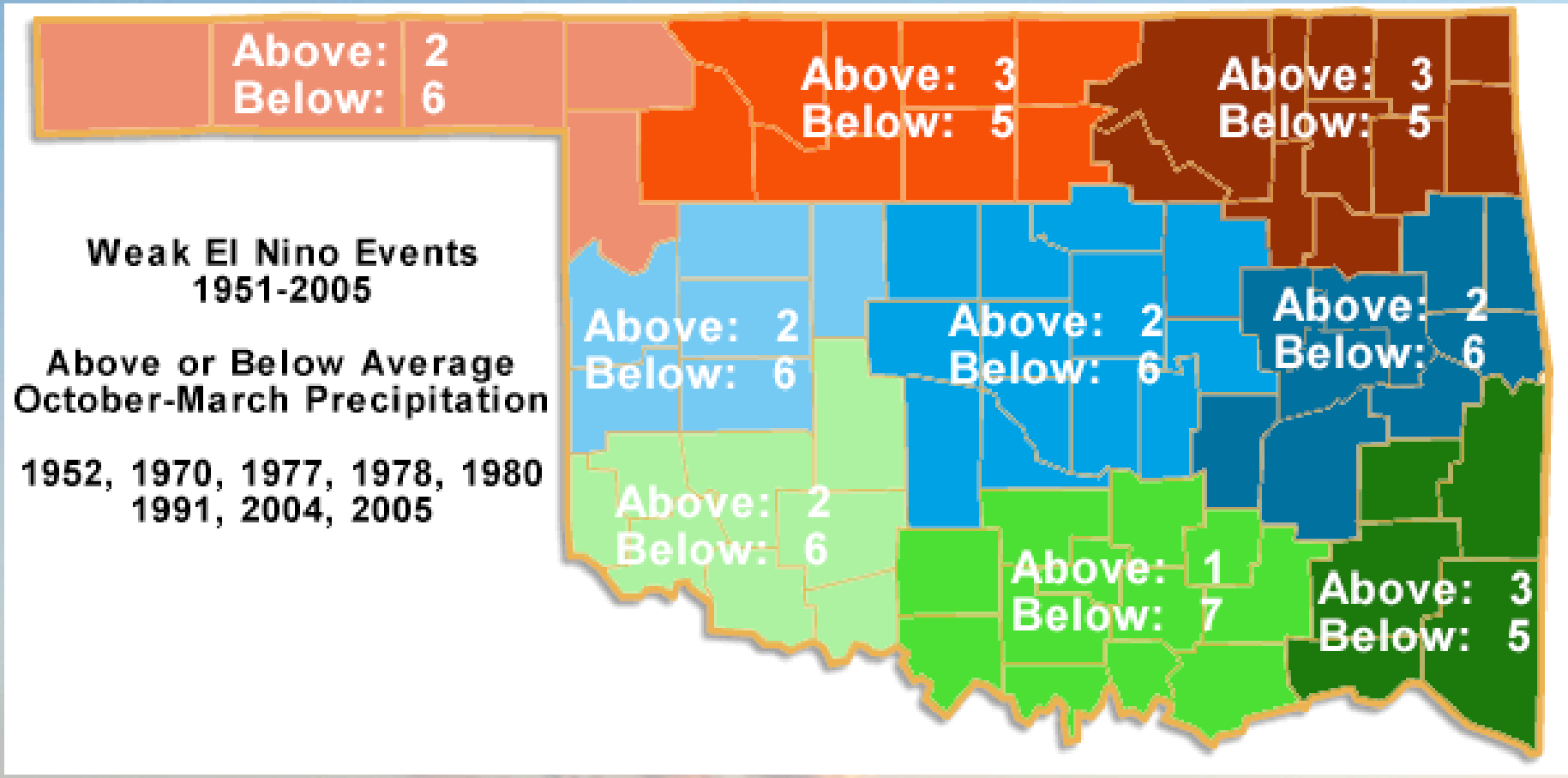


NOAA Climate Prediction Center ENSO Forecast

"…it is likely that an El Niño event of weak to moderate amplitude is likely to begin during Sept-Oct-Nov, and continue through the late winter."

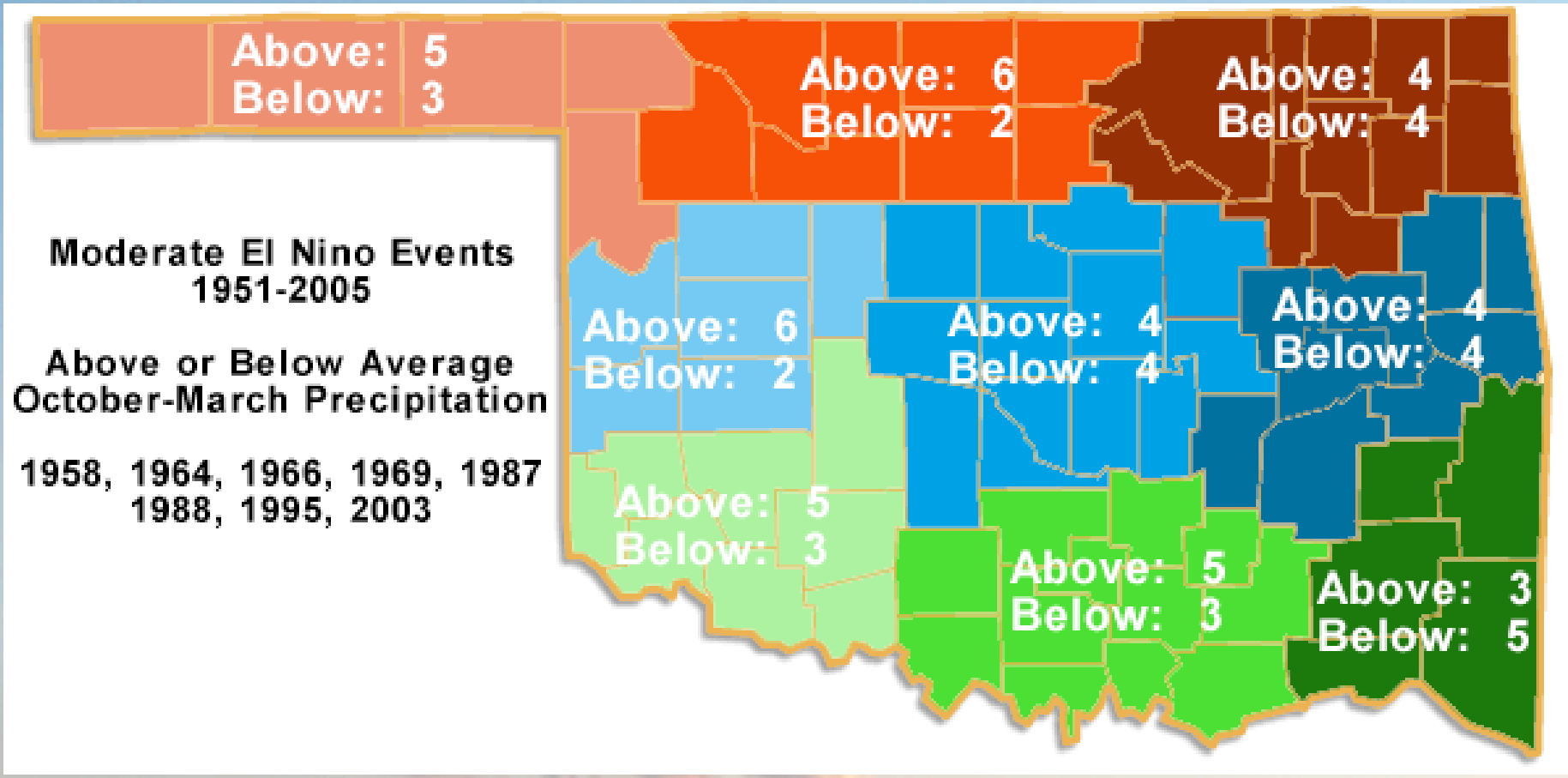
We are currently still ENSO-neutral, no atmospheric response yet to the warming Pacific waters, but it's early.

What has happened before during El Niños?



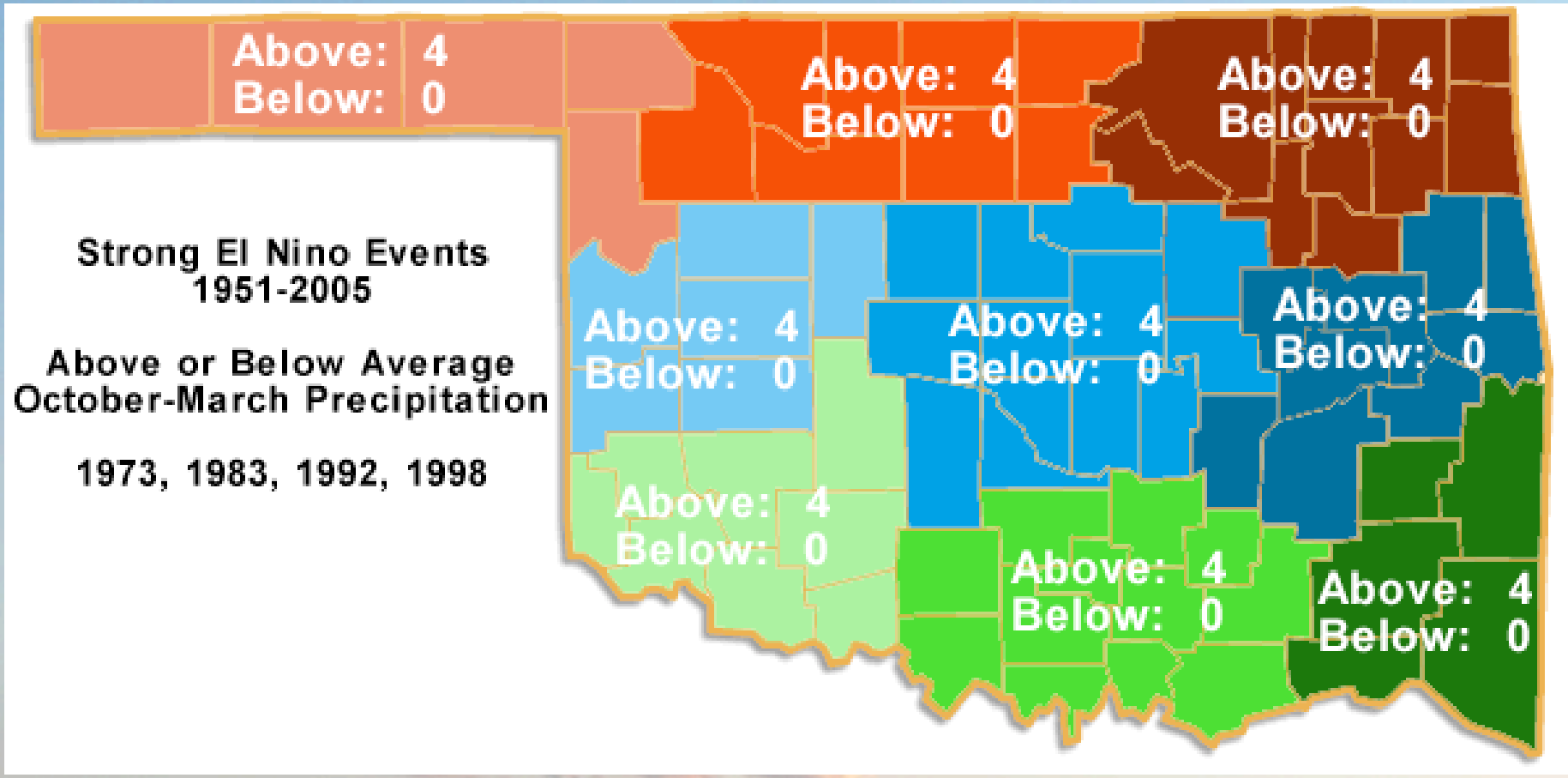
http://ticker.mesonet.org/archive/20120822/weak_ok_cd.png

What has happened before during El Niños?



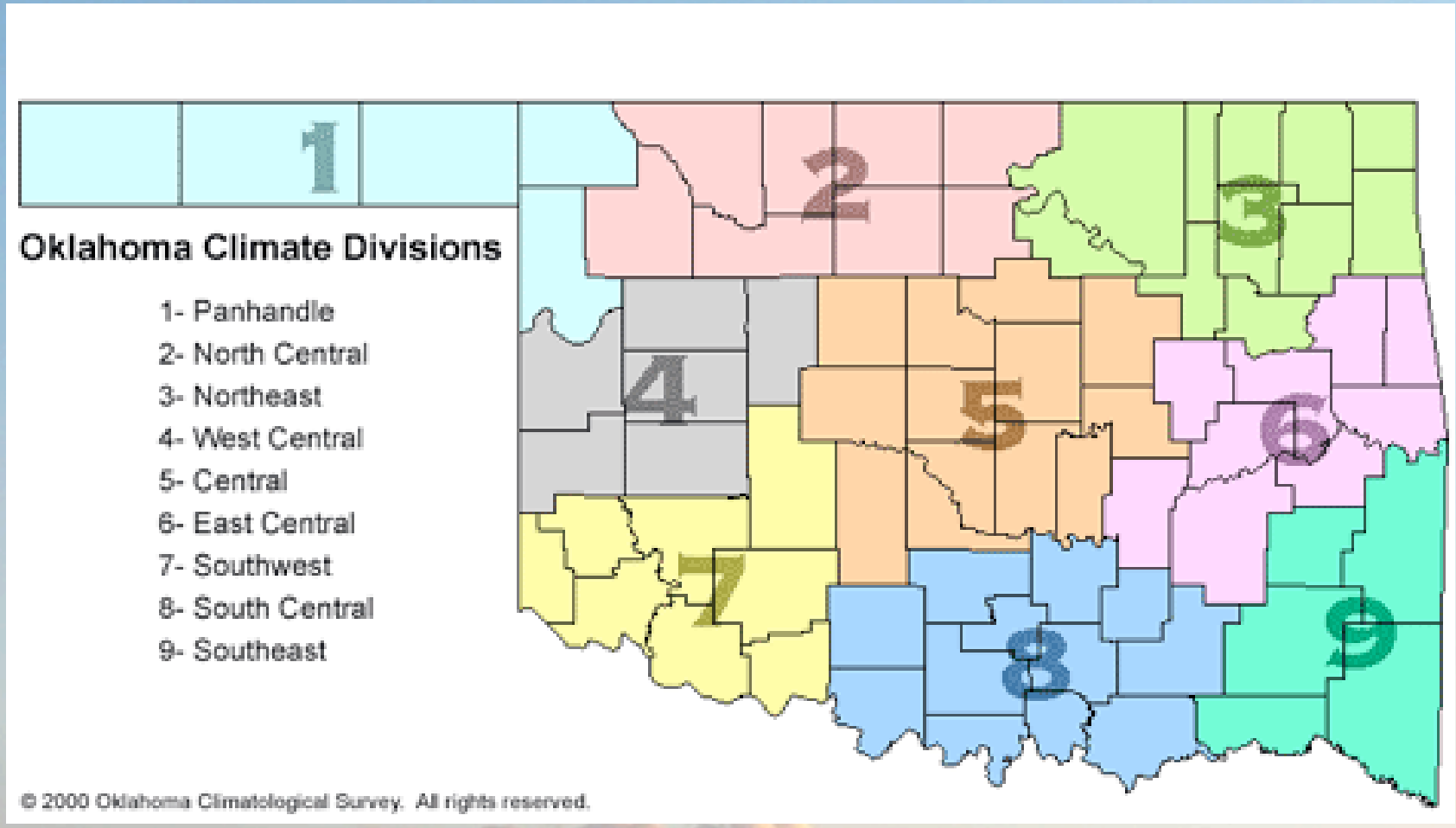
http://ticker.mesonet.org/archive/20120822/moderate_ok_cd.png

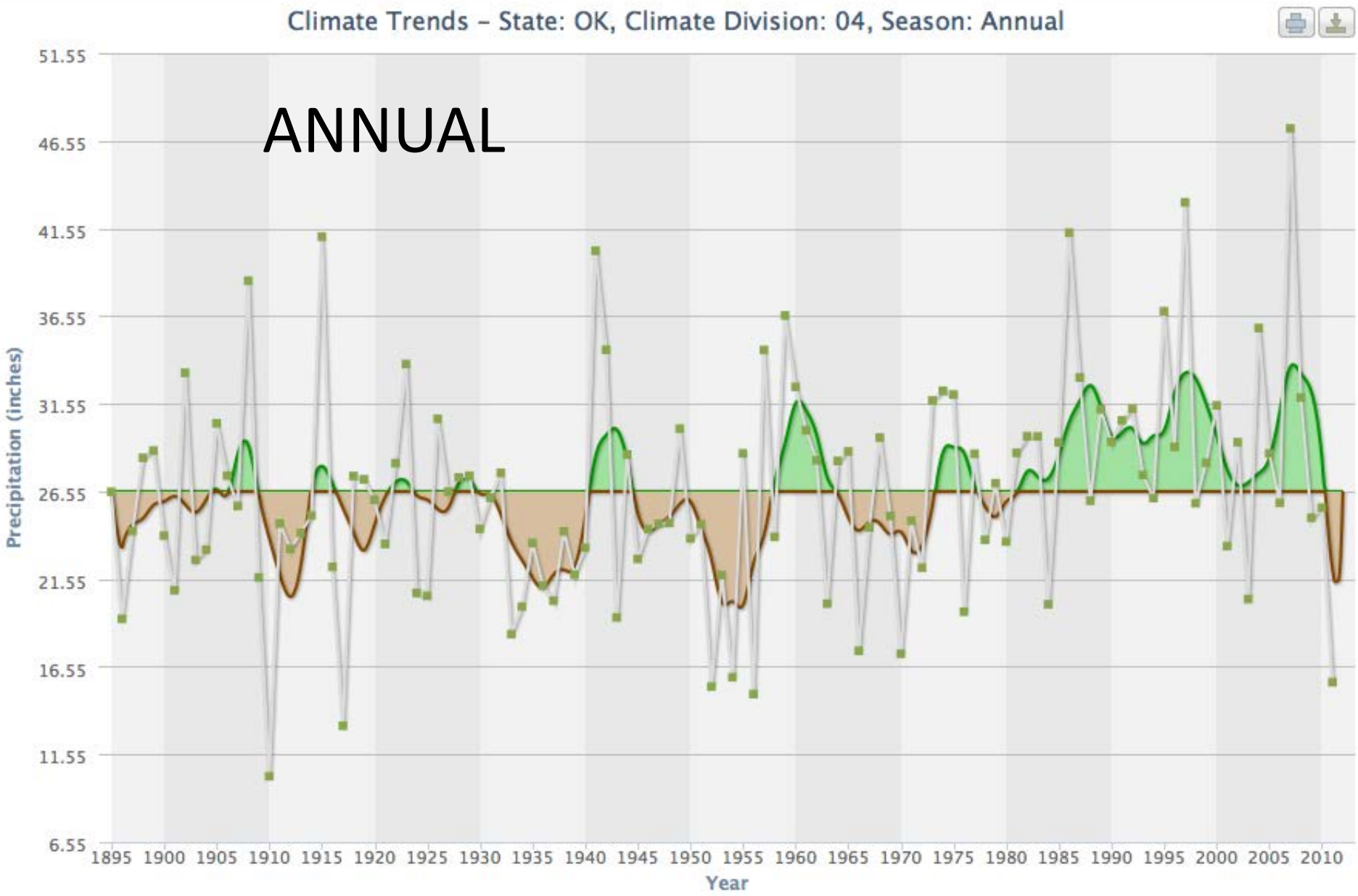
What has happened before during El Niños?



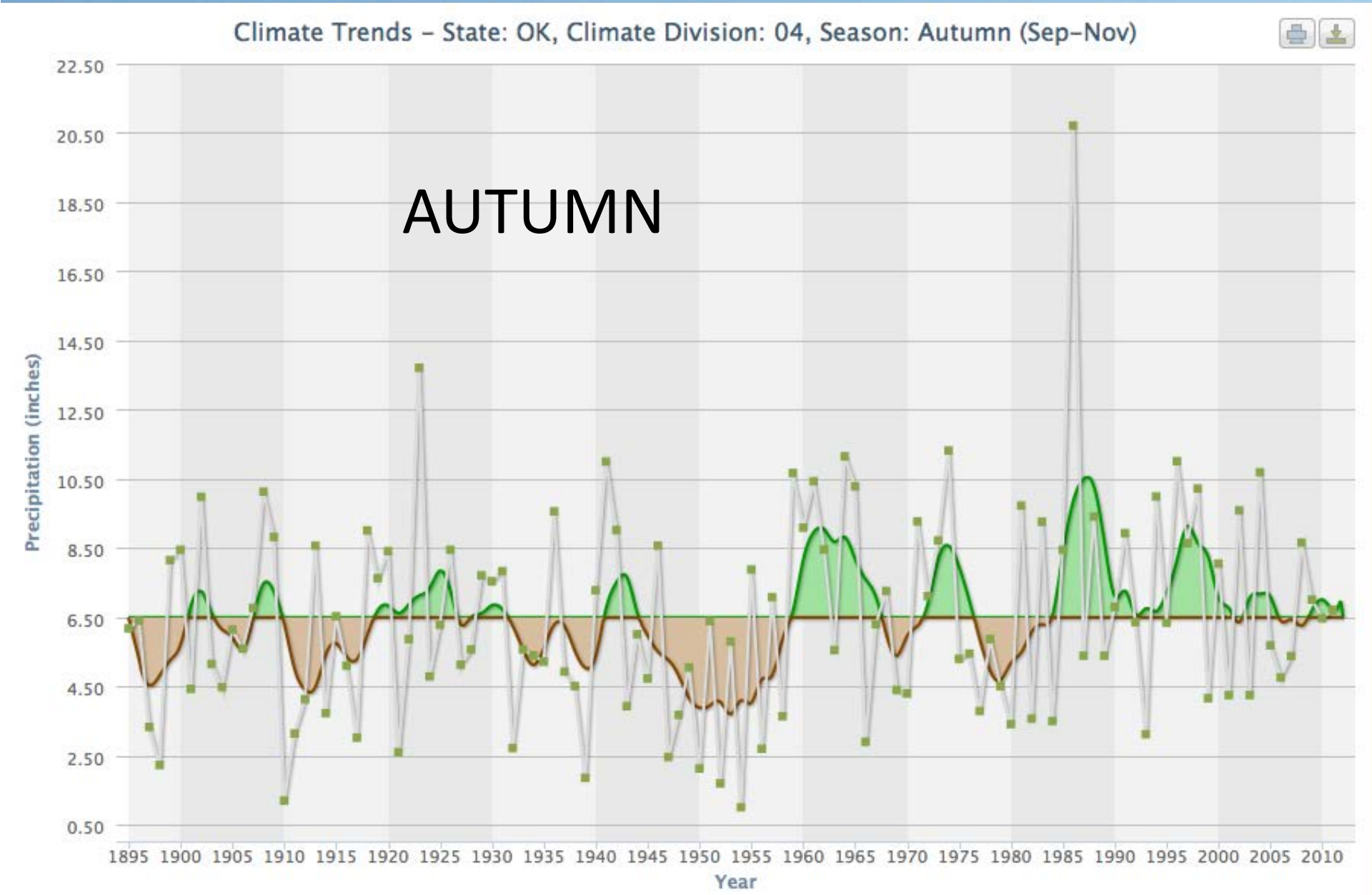
http://ticker.mesonet.org/archive/20120822/strong_ok_cd.png

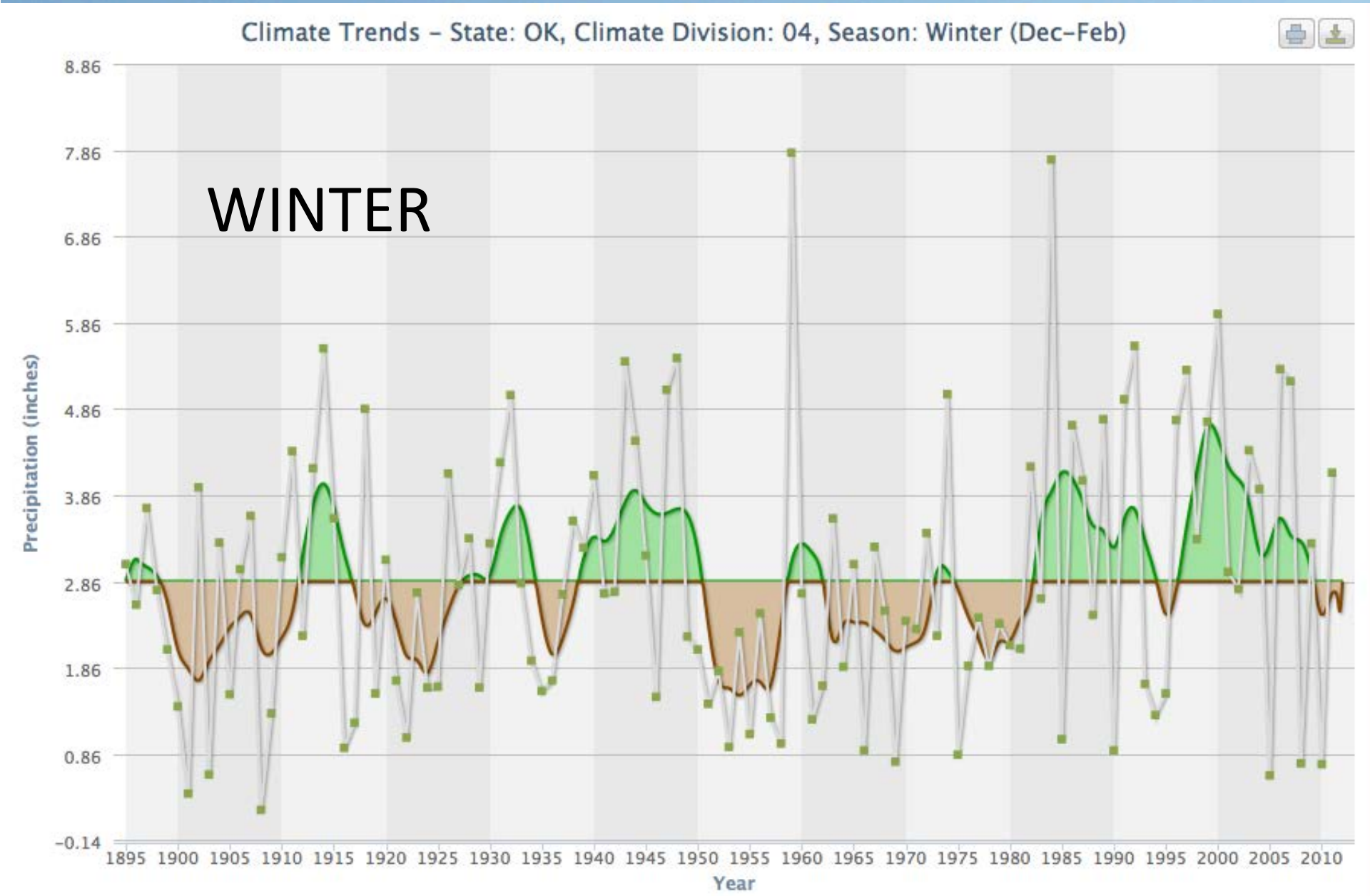
Let’s look back even further….

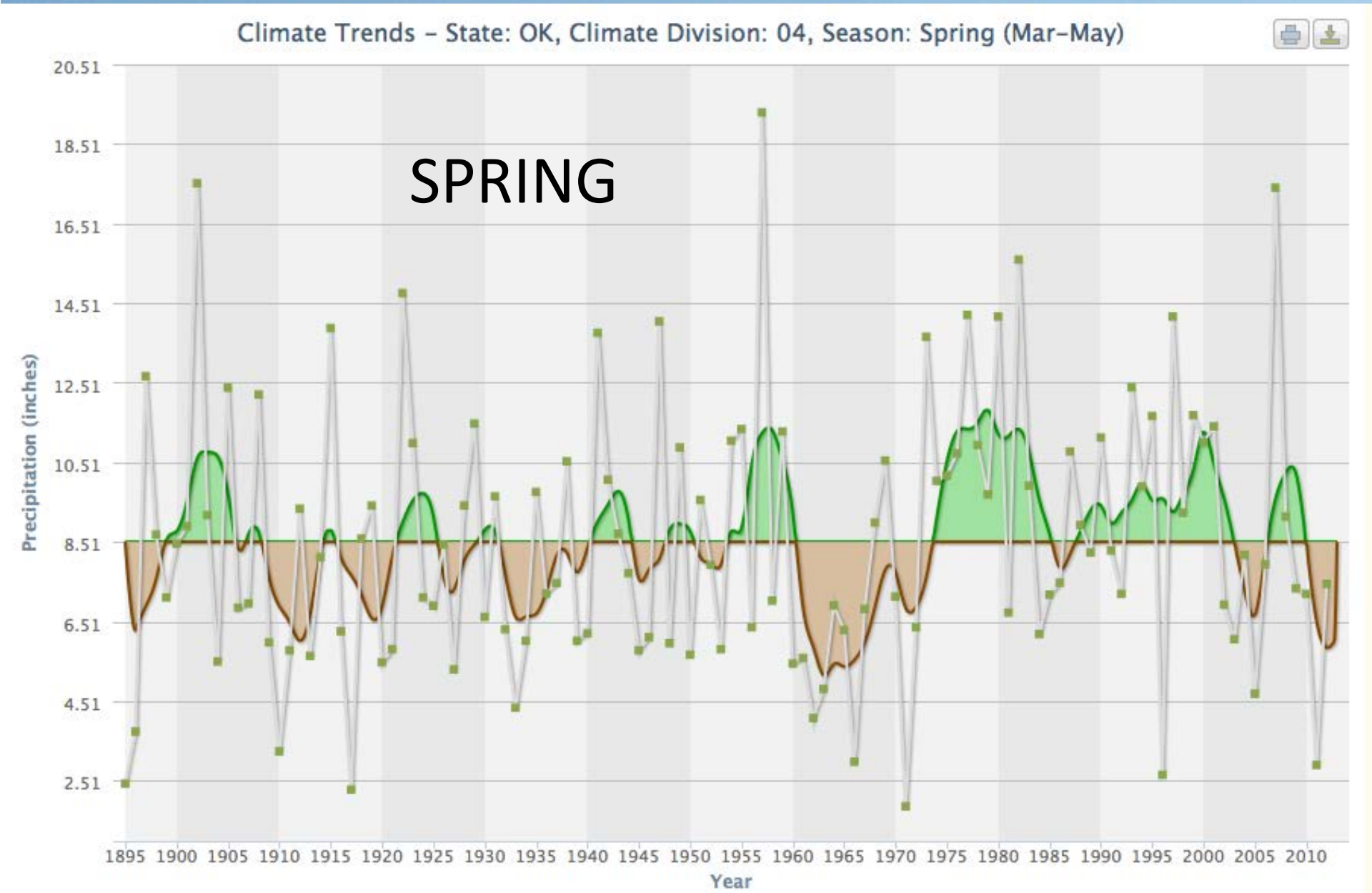


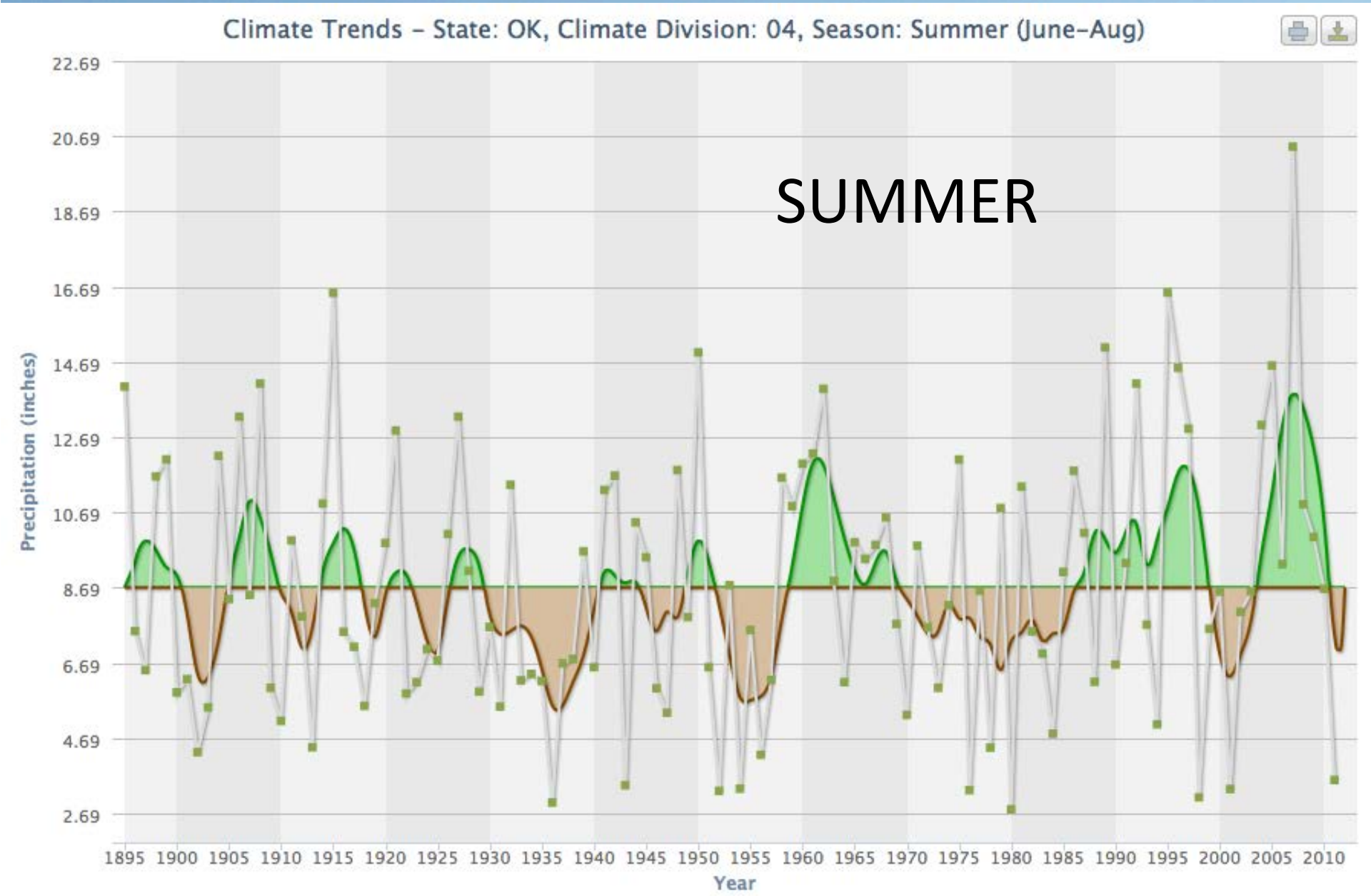


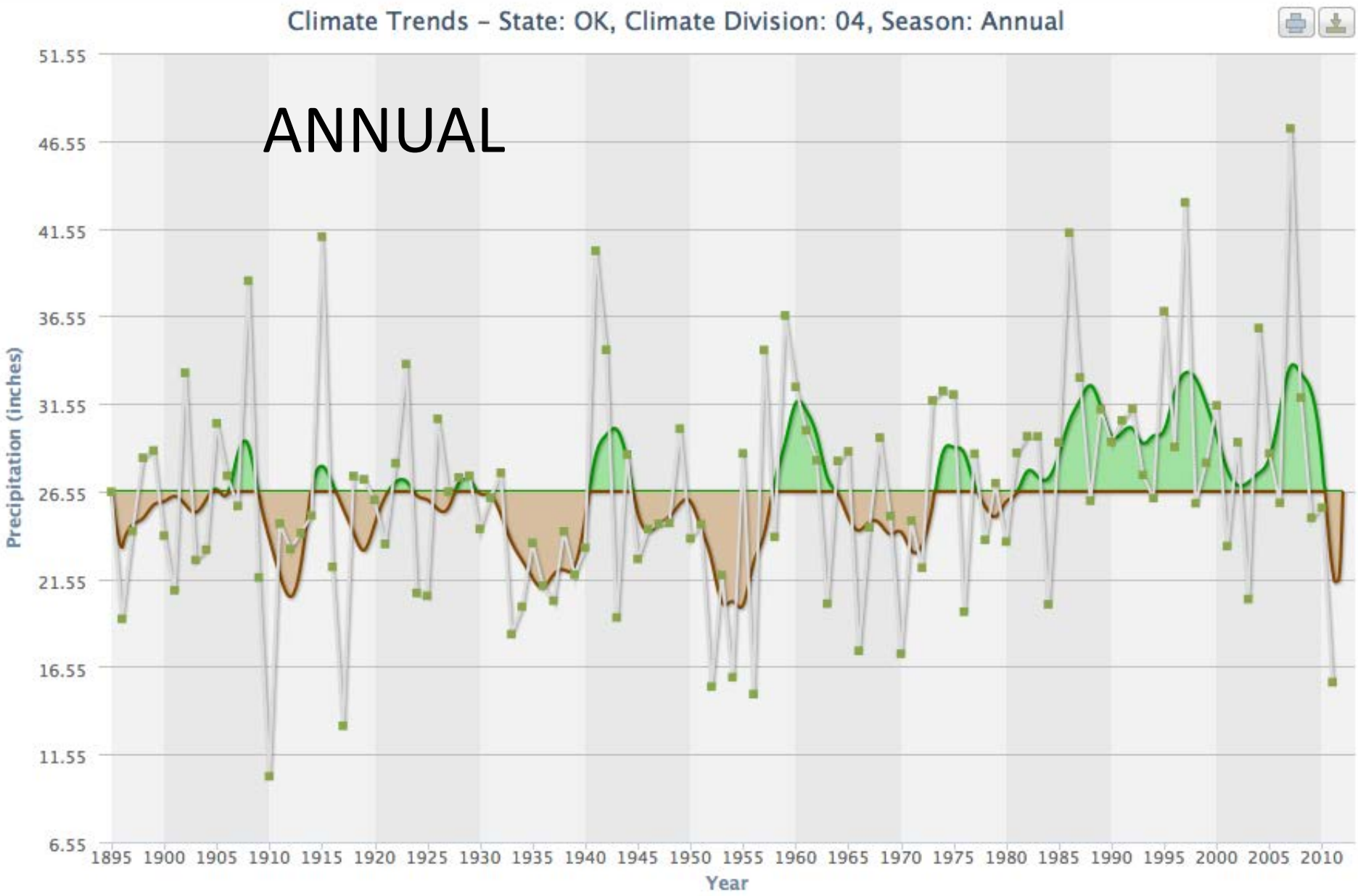
http://www.southernclimate.org/products/trends.php


Climate Trends – State: OK, Climate Division: 04, Season: Autumn (Sep–Nov)
AUTUMN
Precipitation (inches)
22.50
20.50
18.50
16.50
14.50
12.50
10.50
8.50
6.50
4.50
2.50
0.50
1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010
Year


Climate Trends – State: OK, Climate Division: 04, Season: Winter (Dec–Feb)
WINTER
Precipitation (inches)
8.86
7.86
6.86
5.86
4.86
3.86
2.86
1.86
0.86
-0.14
1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010
Year


Climate Trends – State: OK, Climate Division: 04, Season: Spring (Mar–May)
SPRING
Precipitation (inches)
20.51
18.51
16.51
14.51
12.51
10.51
8.51
6.51
4.51
2.51
1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010
Year


Climate Trends – State: OK, Climate Division: 04, Season: Summer (June–Aug)
SUMMER
Precipitation (inches)
22.69
20.69
18.69
16.69
14.69
12.69
10.69
8.69
6.69
4.69
2.69
1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010
Year



http://www.southernclimate.org/products/trends.php

I was asked for my forecast for when this drought will end….

IF we don't get significant rainfall from a tropical system by Thanksgiving, then I predict that the coming 12 months will look a lot like the last 12 months:

- just enough rainfall this autumn to tease us;
- enough rainfall/snow this winter and early spring to replenish soil moisture in the top foot or so;
- an early warm spring**; and
- drought again late spring, summer, and early autumn in 2013.

My scientific opinion is that seasonal drought is our new "normal" in Oklahoma, with annual droughts significantly more likely than during the last few decades of the 20th century.

Wildfires are a fact of life now, occurring whenever we have a period of decent soil water followed by drought.

Worse, when it rains, it will tend to pour - droughts will be punctuated by major flooding events.

Questions?

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