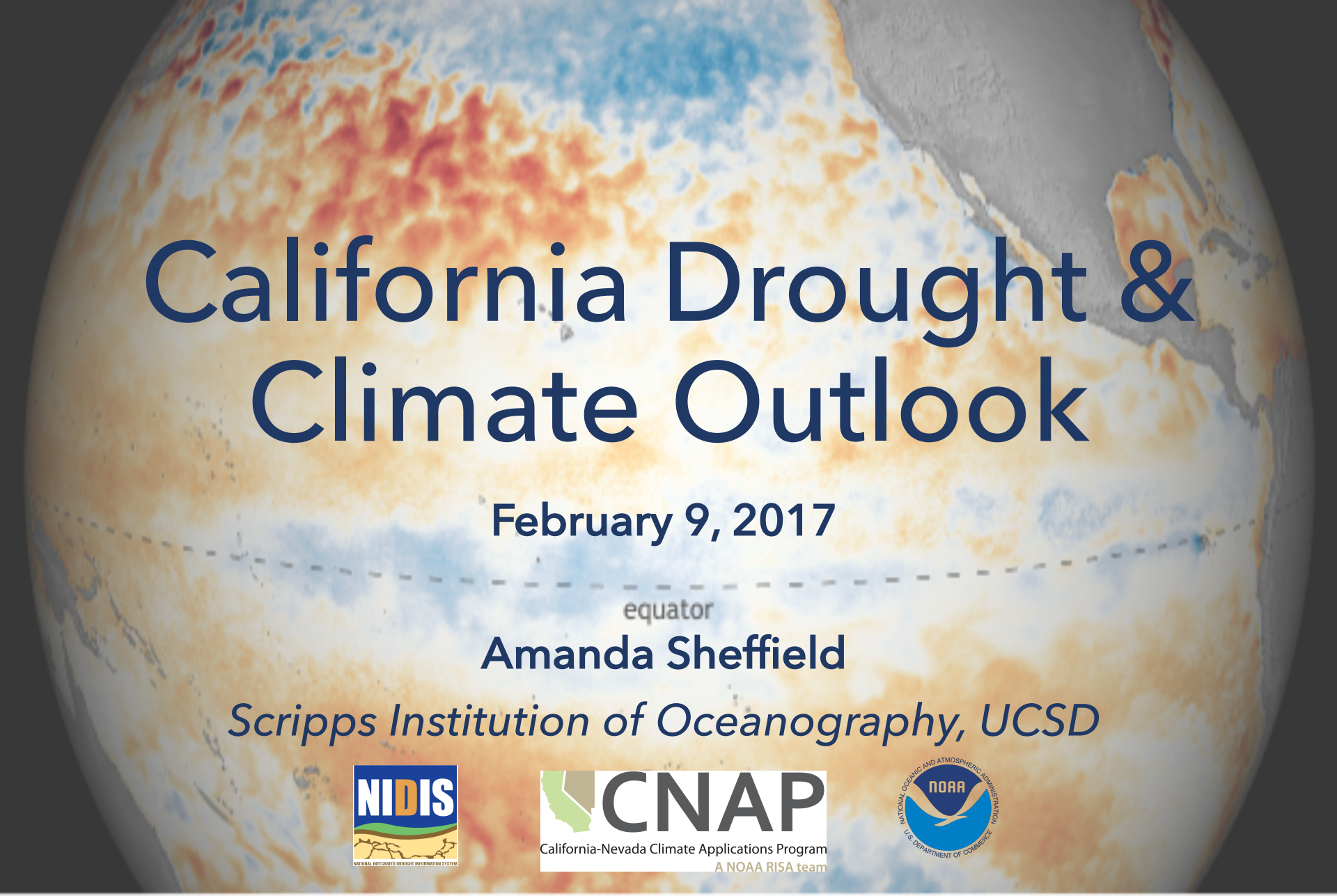



# California Drought & Climate Outlook

**February 9, 2017**


**Amanda Sheffield**

*Scripps Institution of Oceanography, UCSD*


NIDIS
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM

CNAP
California-Nevada Climate Applications Program
A NOAA RISA team

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

# California Drought & Climate Outlook

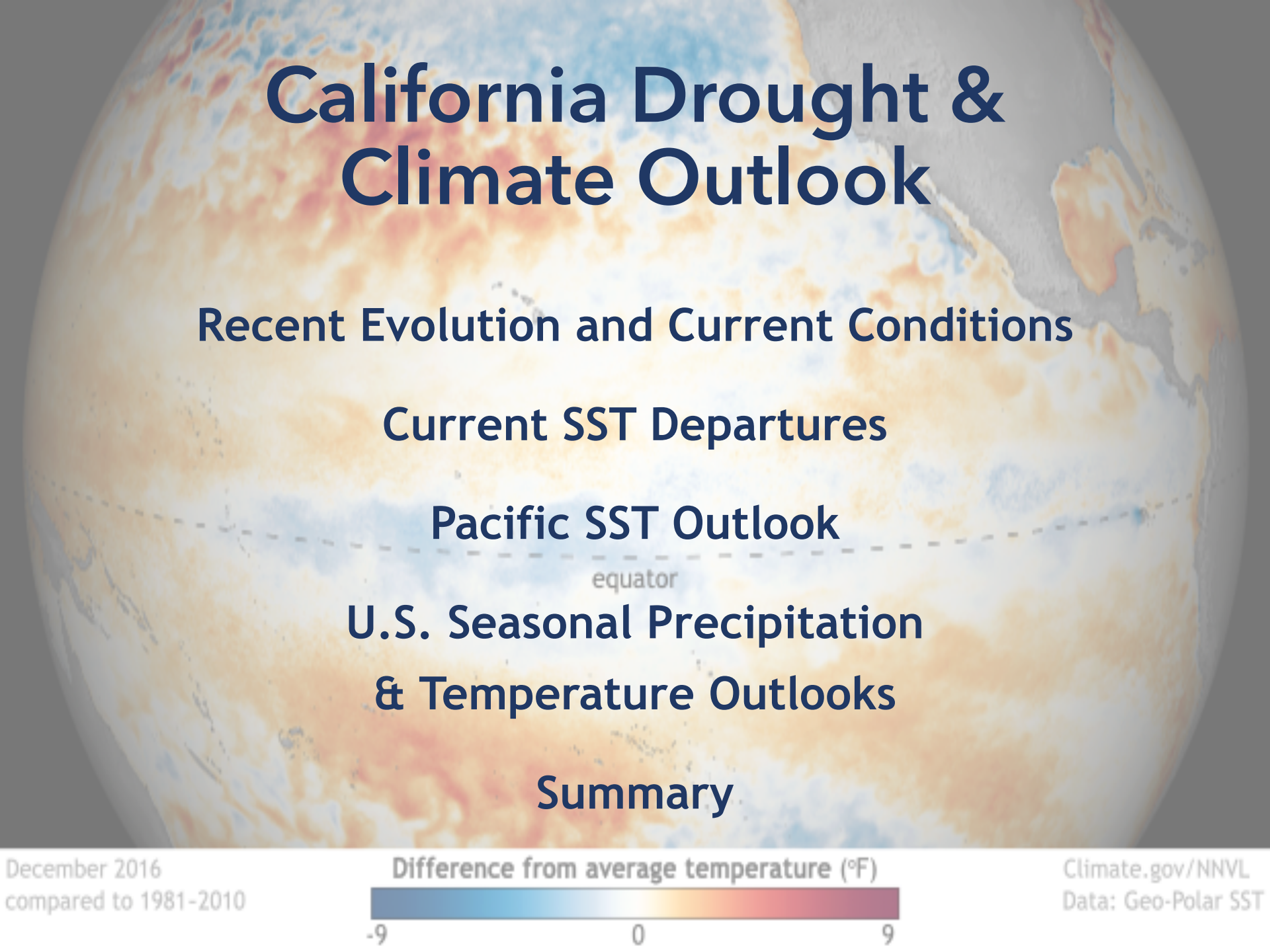
## Recent Evolution and Current Conditions

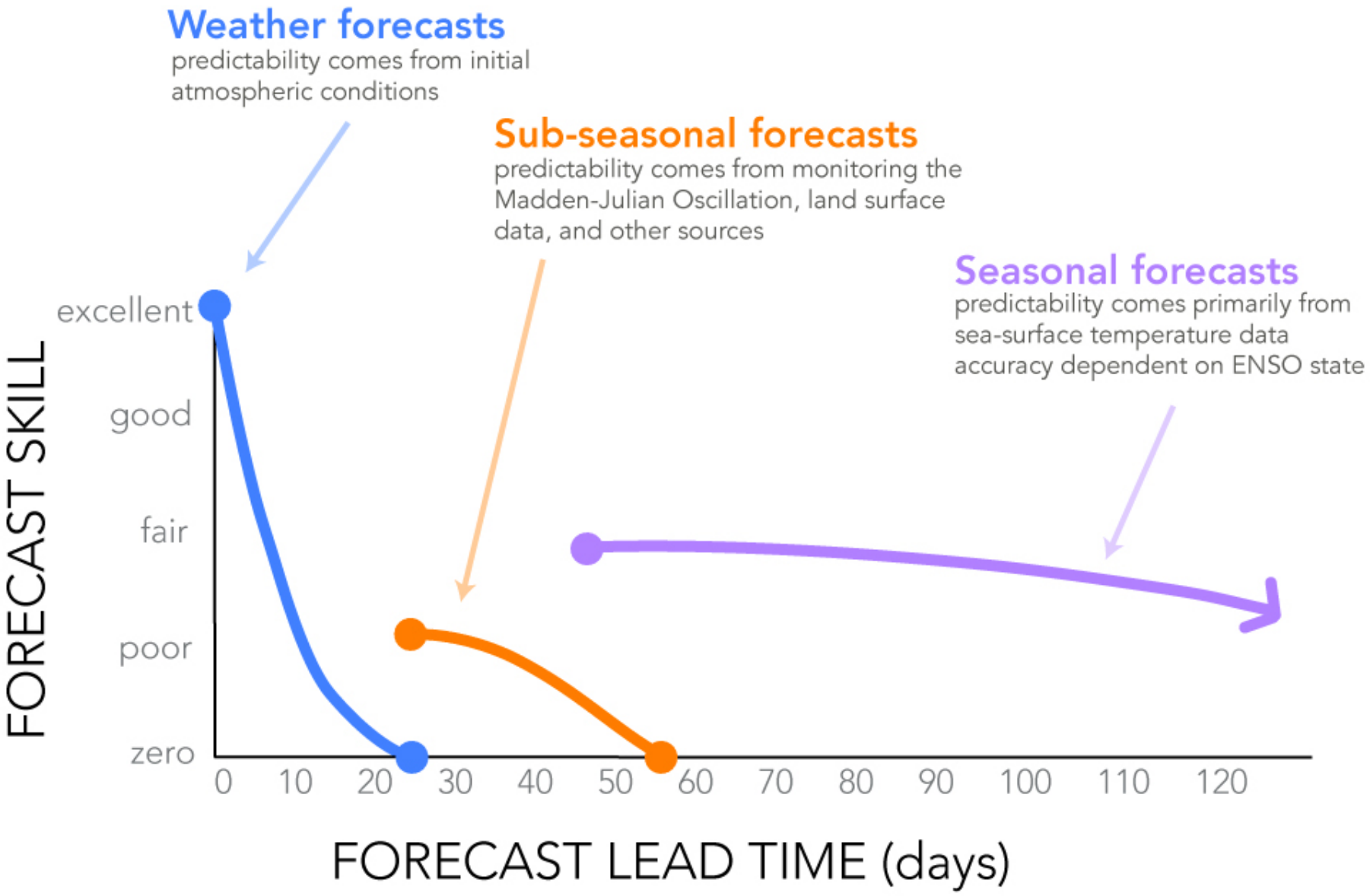
## Current SST Departures

## Pacific SST Outlook

## U.S. Seasonal Precipitation & Temperature Outlooks

## Summary

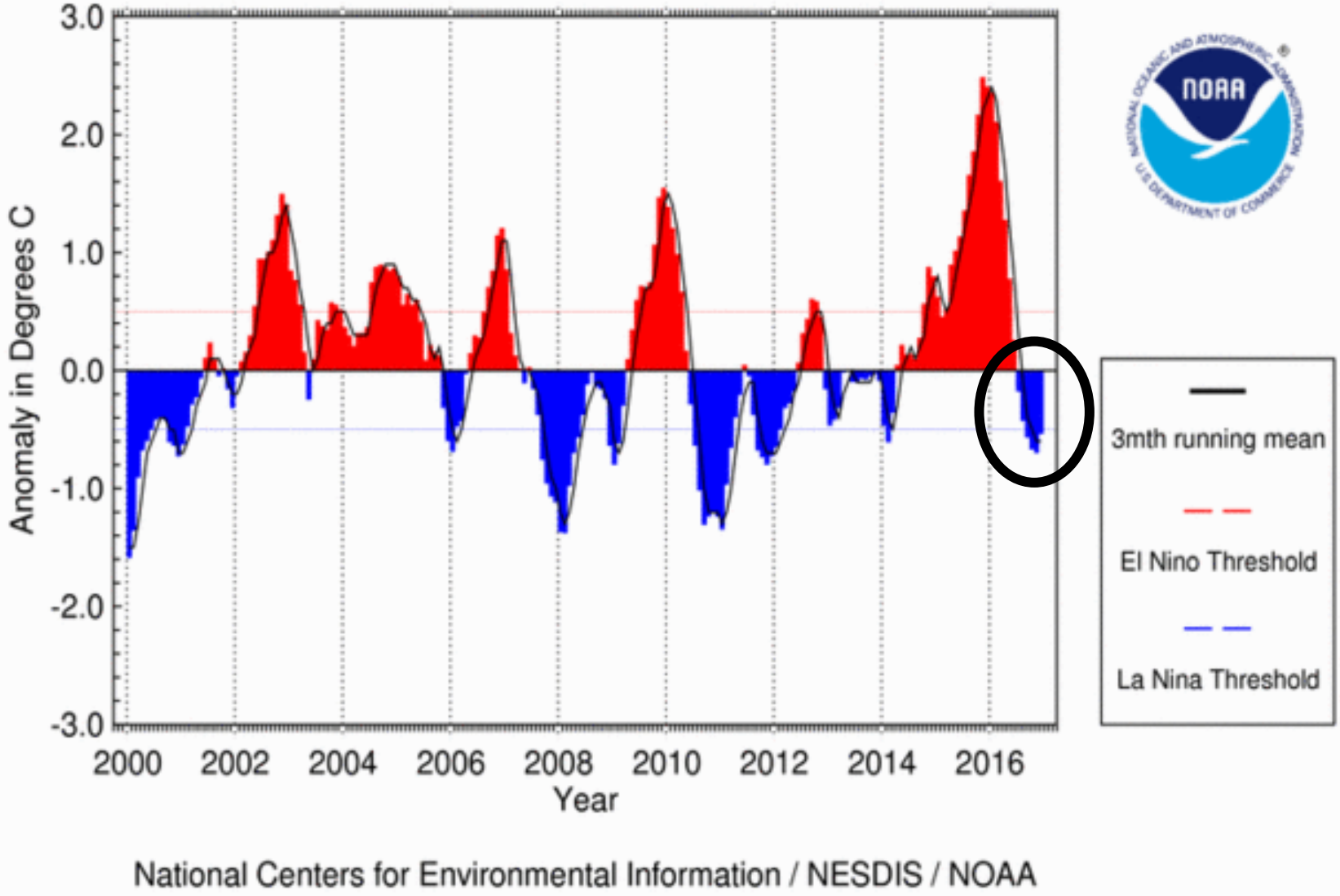





http://iri.columbia.edu/news/qa-subseasonal-prediction-project/

# Development of Cool Tropical Pacific

## Sea Surface Temperature Anomalies (Nino 3.4 Region) in 2016-2017 Following Warm El Nino Conditions of 2015-2016



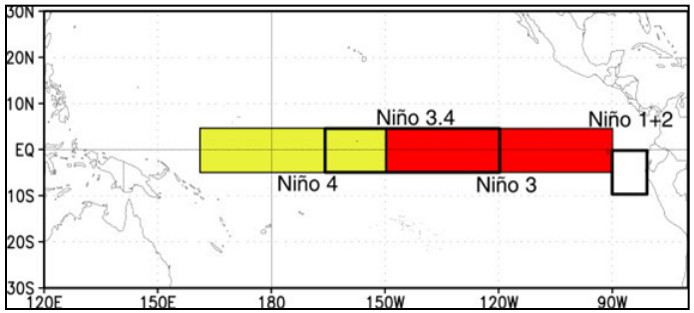

https://www.ncdc.noaa.gov/teleconnections/enso/indicators/sst.php

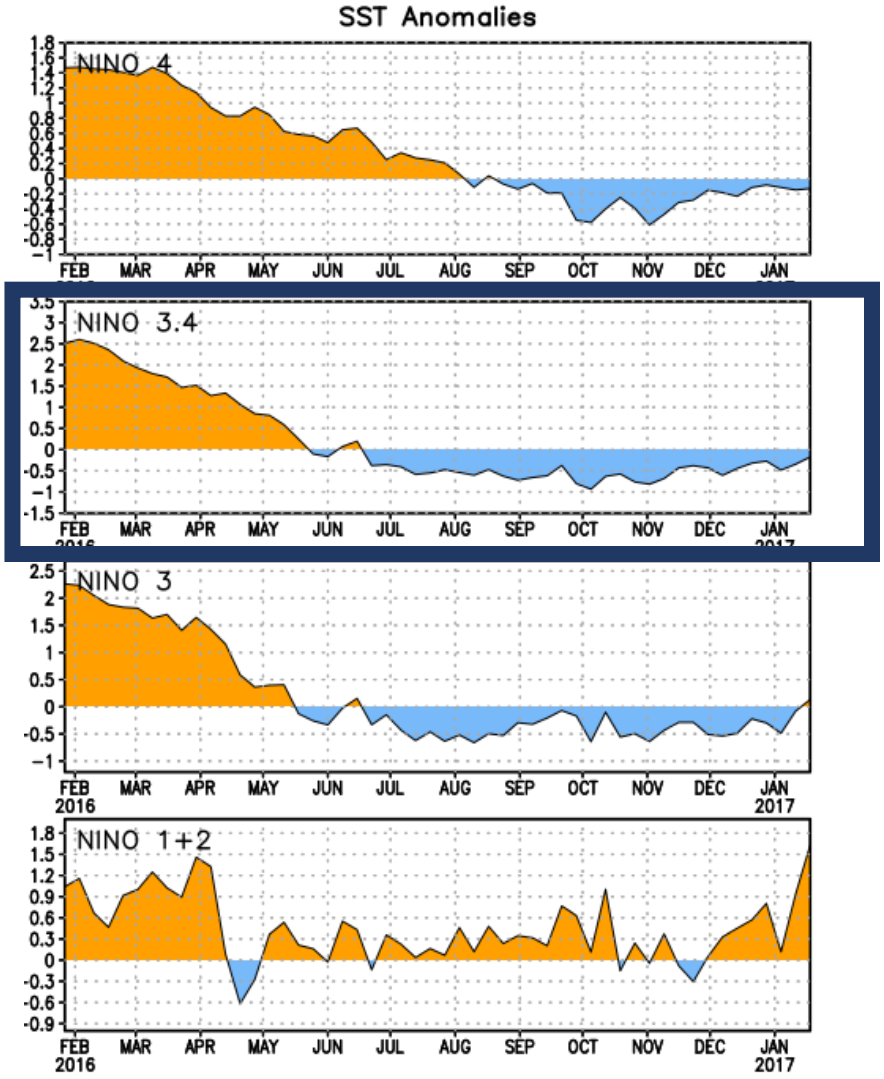
# Development of Cool Tropical Pacific

## Sea Surface Temperature Anomalies (Nino 3.4 Region) in 2016-2017 Following Warm El Nino Conditions of 2015-2016

**The latest weekly SST departures are:**

| | |
|---|---|
| Niño 4 | -0.1°C |
| Niño 3.4 | -0.2°C |
| Niño 3 | 0.1°C |
| Niño 1+2 | 1.6°C |



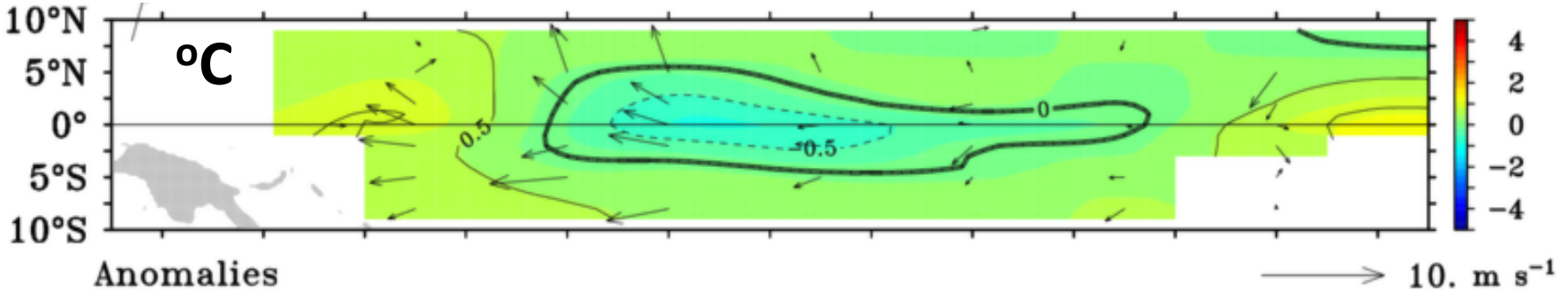




http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

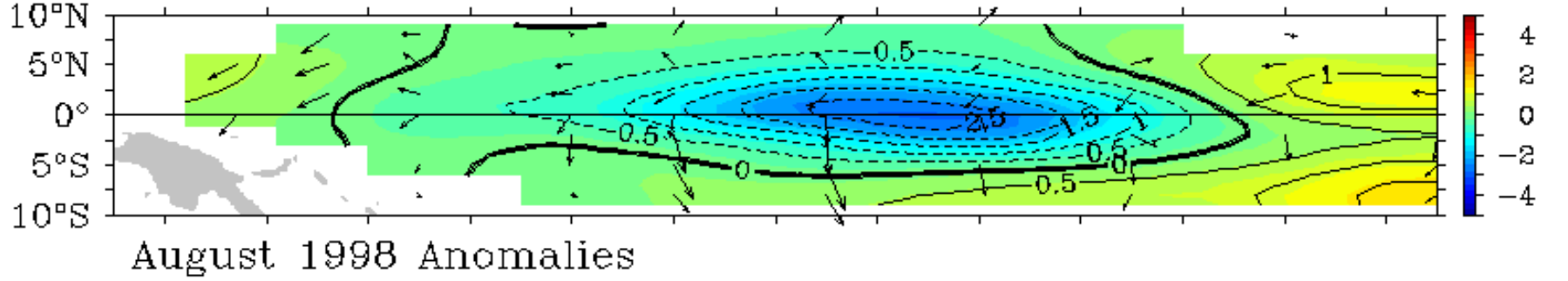
# Current Ocean Temperature Conditions

(Departure from normal for this time of year, °C)

February 5, 2017




August, 1998

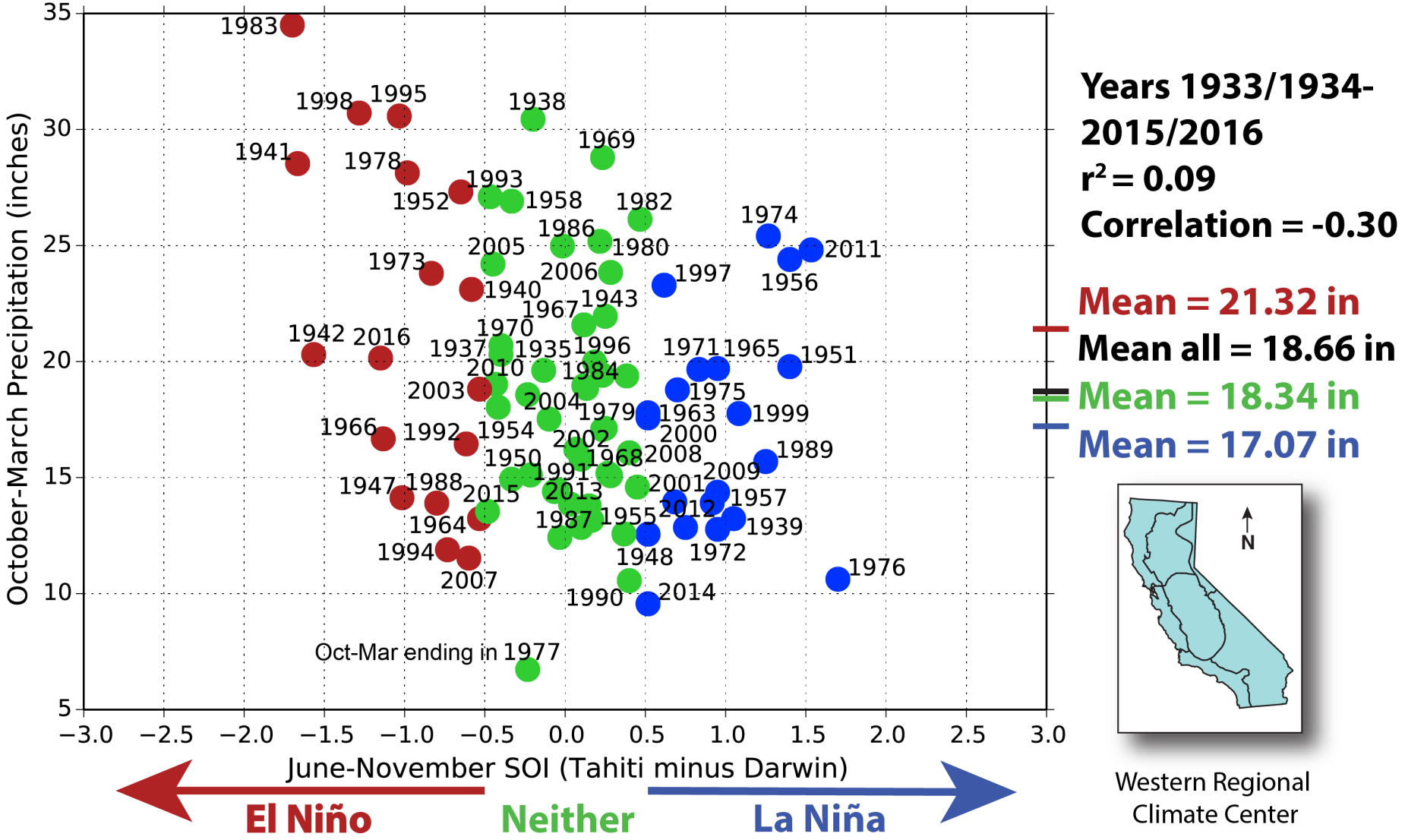



TAO Project Office/PMEL/NOAA

Aug 20 2016

# CA Statewide October-March Precipitation

## (versus Southern Oscillation Index for prior June-November)




**Years 1933/1934-2015/2016**

**$r^2 = 0.09$**

**Correlation = -0.30**

**Mean = 21.32 in**

**Mean all = 18.66 in**

**Mean = 18.34 in**

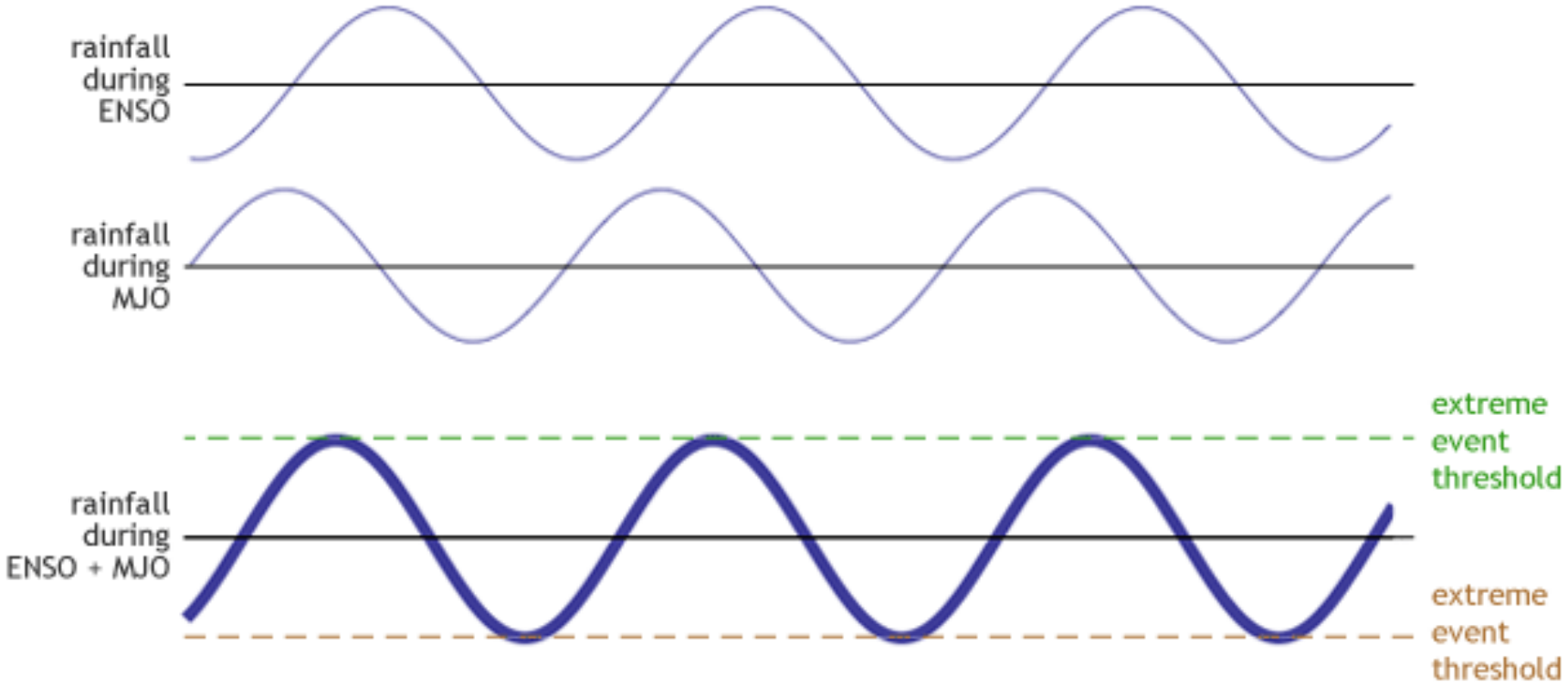
**Mean = 17.07 in**




Western Regional Climate Center

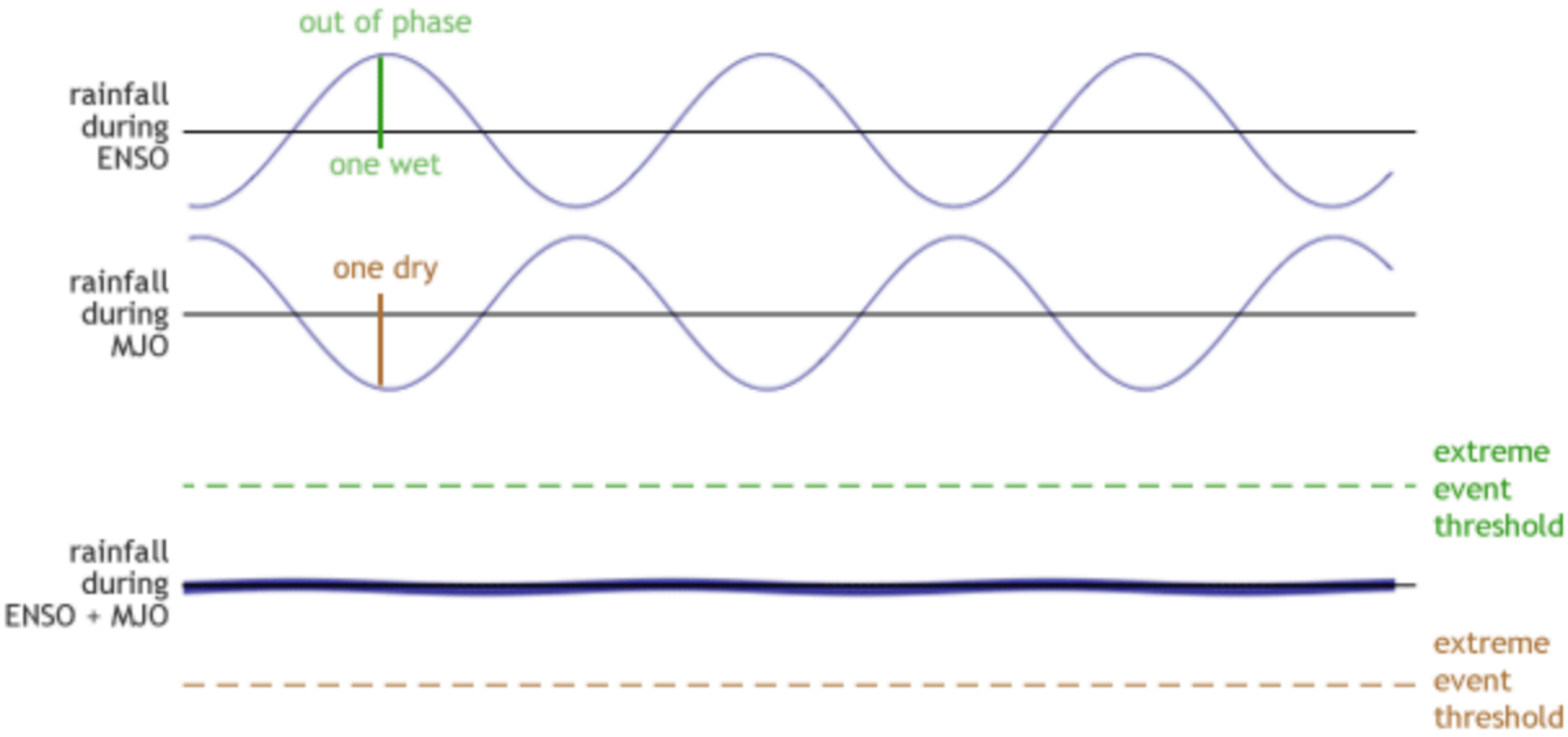
# “Global Climate Symphony”

*“At other times, like the present weak La Niña, the competing effects of other climate phenomena can be so important that they modify the typical ENSO rainfall patterns in several parts of the world.”*




https://www.climate.gov/news-features/blogs/enso/la-niña-did-you-orchestrate

# “Global Climate Symphony”

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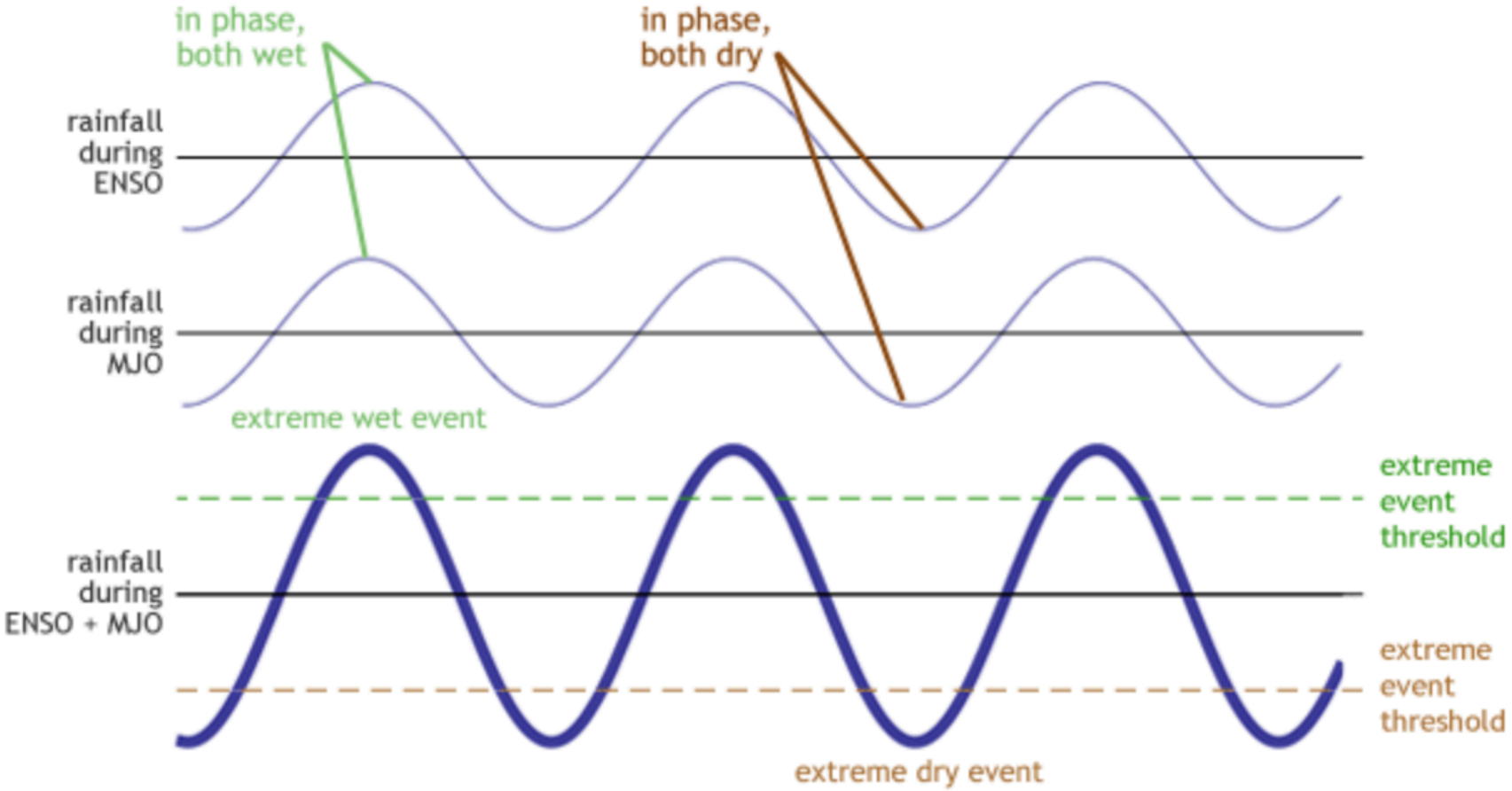
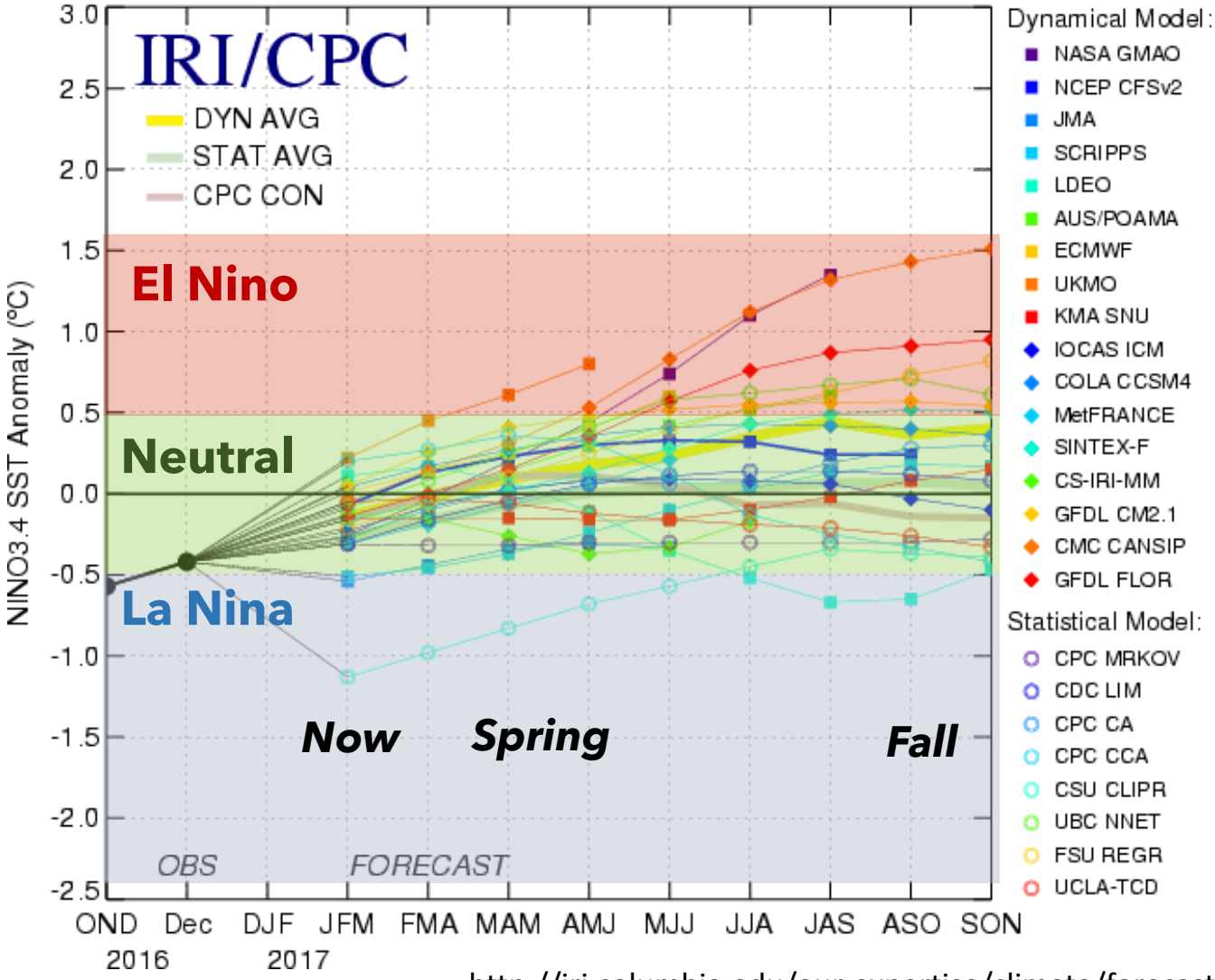
# “Global Climate Symphony”




https://www.climate.gov/news-features/blogs/enso/la-niña-did-you-orchestrate

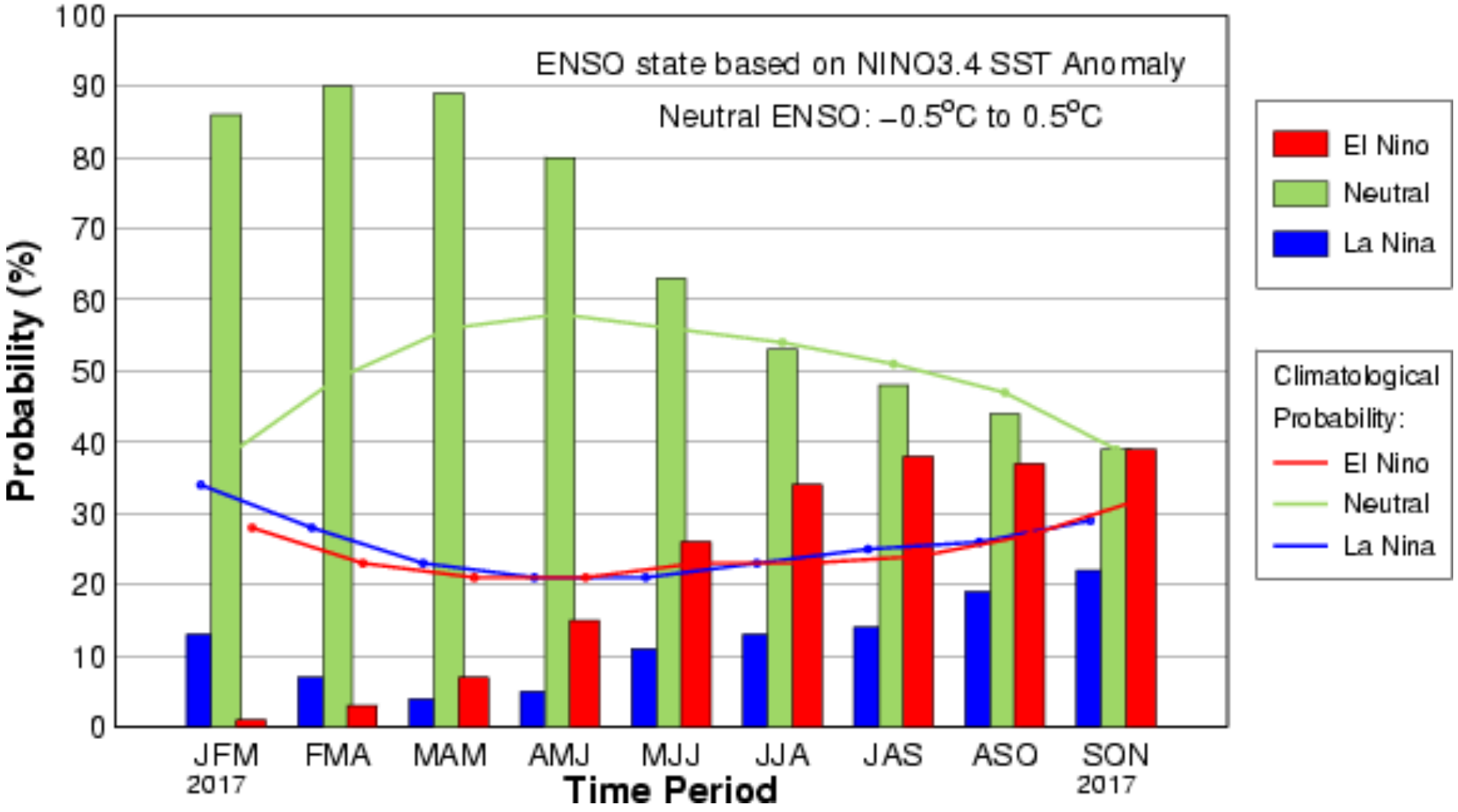
# ENSO Neutral Forecasted

## Plume of Predictions of Tropical Pacific El Niño/La Niña Status through the Coming Season (from mid-January 2017)

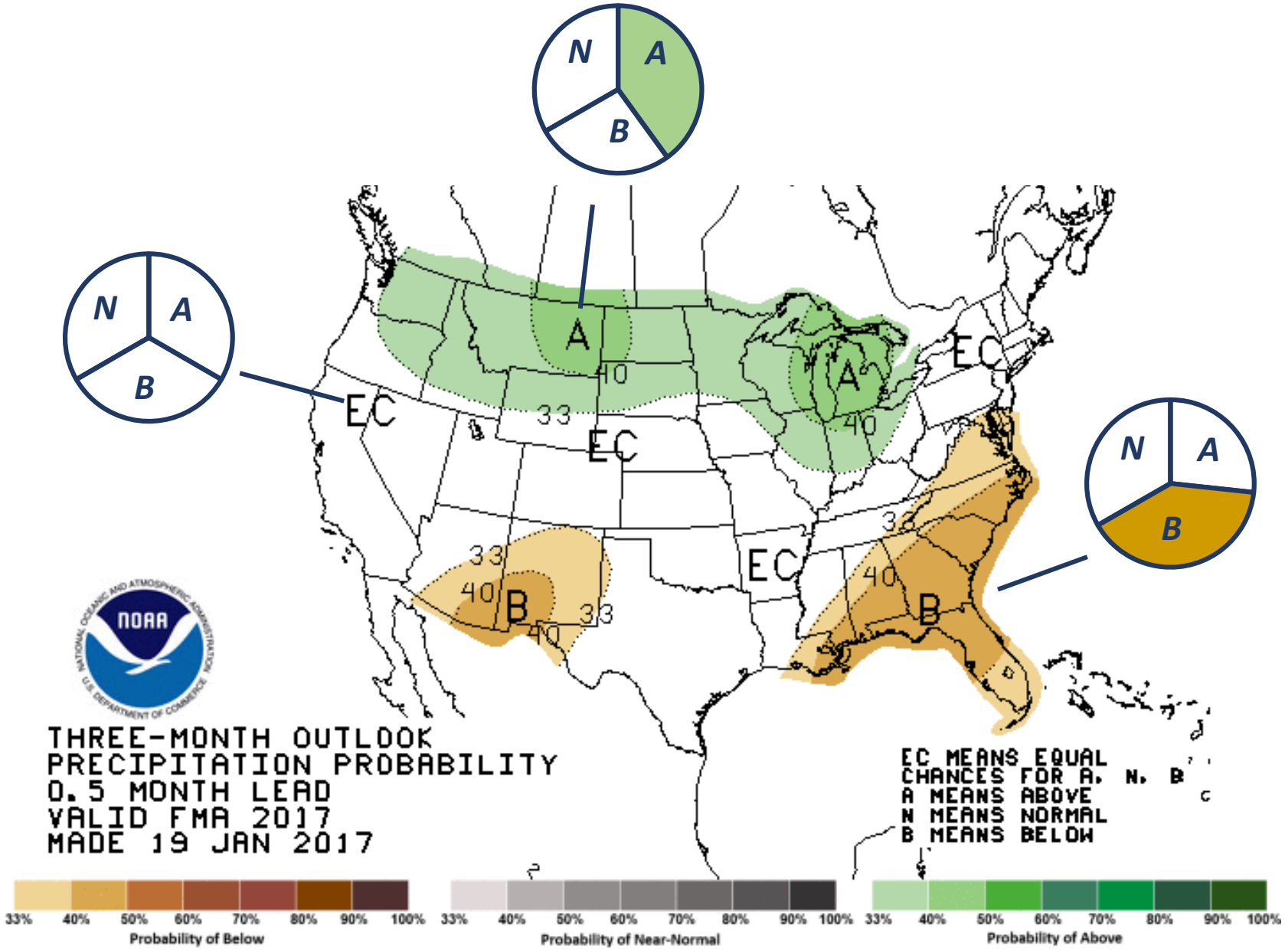


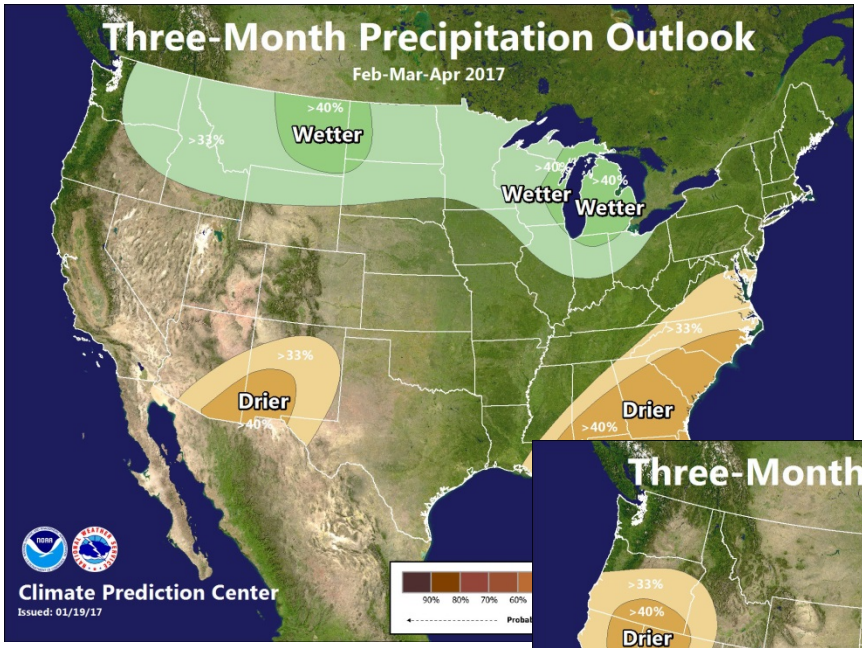

http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/

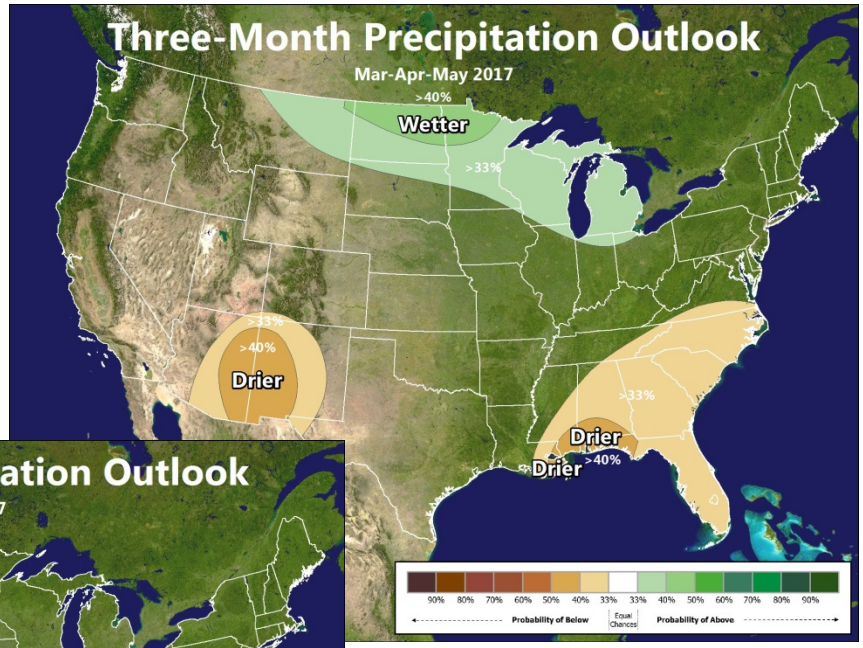
# Probabilistic ENSO Forecast through the Coming Season (from mid-January 2017)

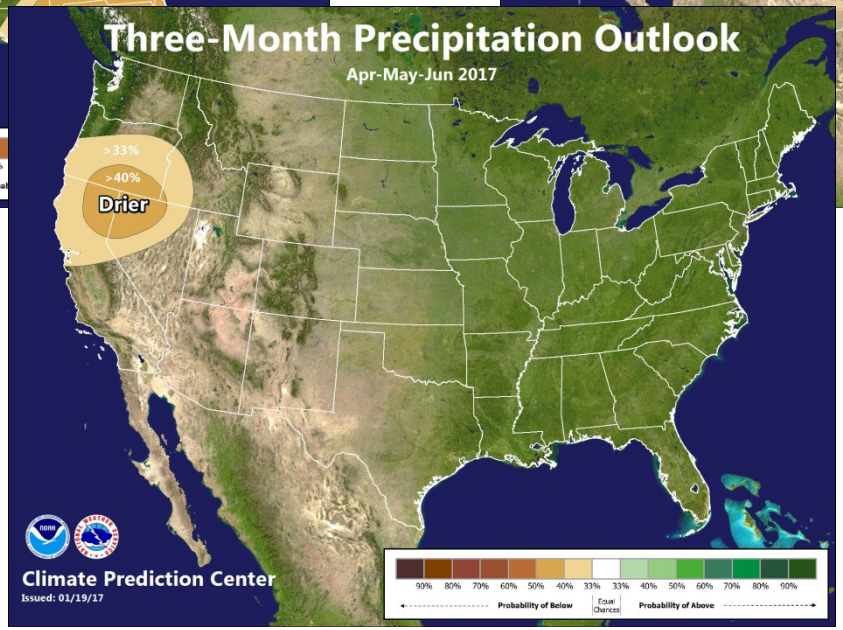


# Three Month Precipitation Outlook

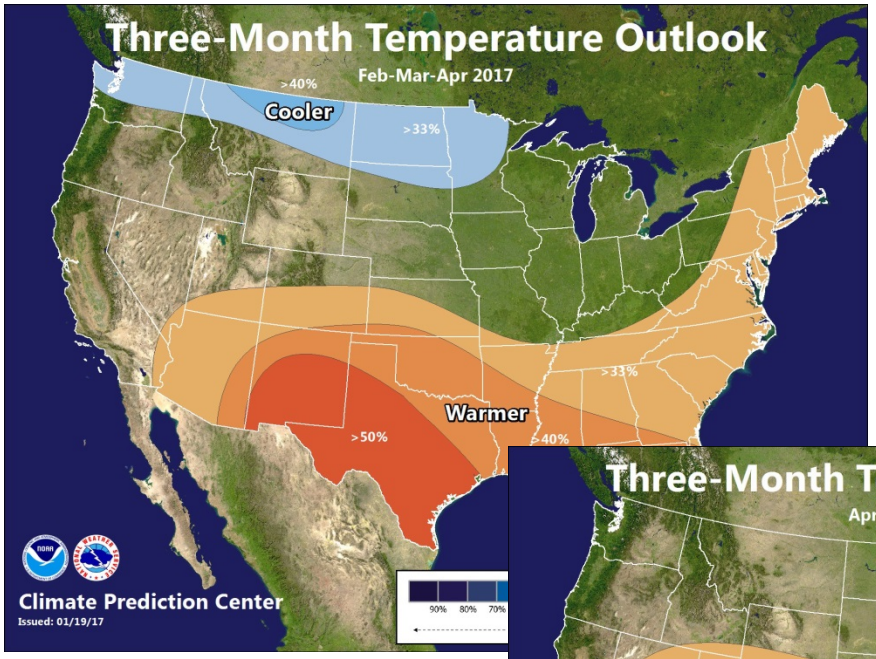


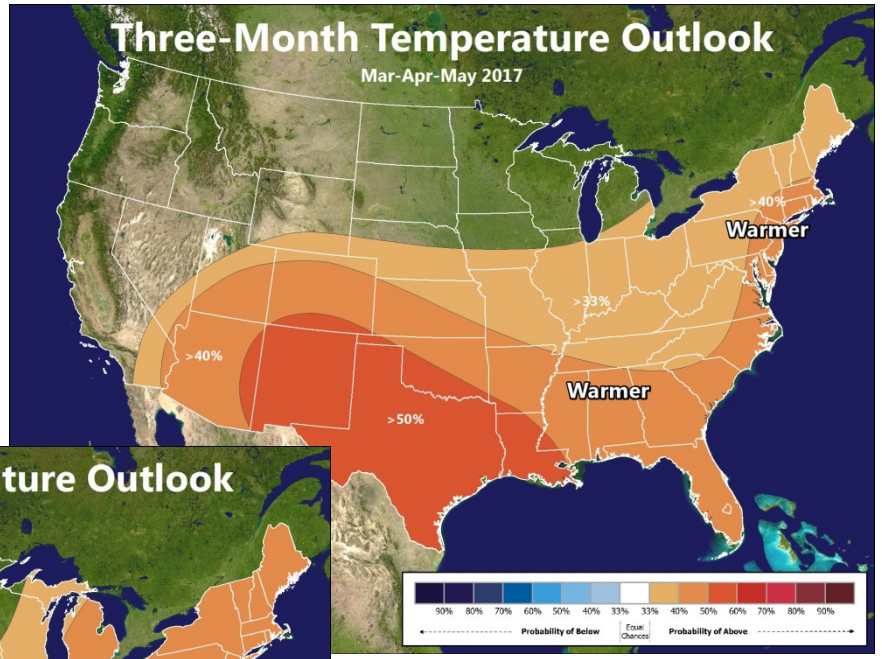


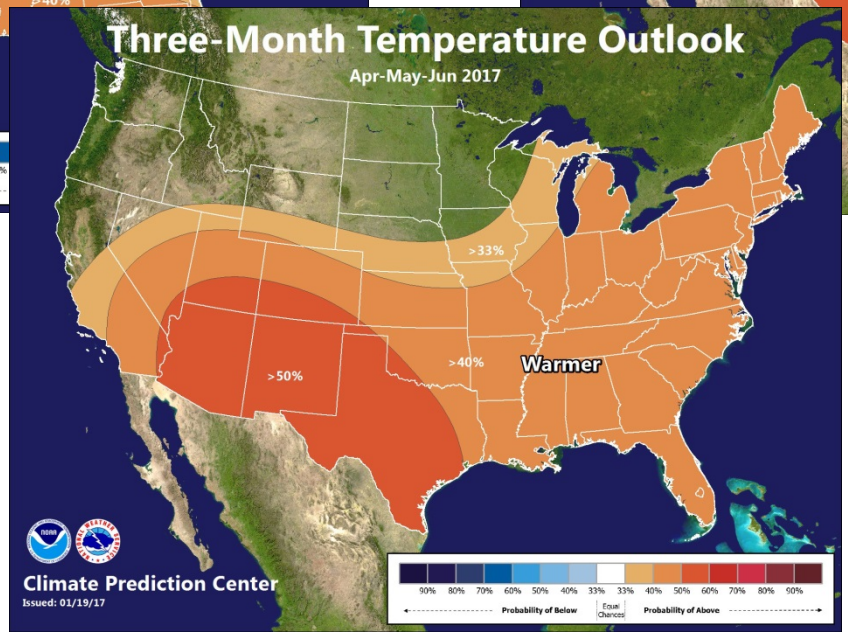




The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.


Three-Month Temperature Outlook
Feb-Mar-Apr 2017
>40%
Cooler
>33%
>33%
Warmer
>50%
>40%
Climate Prediction Center
Issued: 01/19/17


Three-Month Temperature Outlook
Mar-Apr-May 2017
>40%
Warmer
>33%
>40%
Warmer
>50%
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Equal Chances
Probability of Above


Three-Month Temperature Outlook
Apr-May-Jun 2017
>33%
>40%
Warmer
>50%
Climate Prediction Center
Issued: 01/19/17
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
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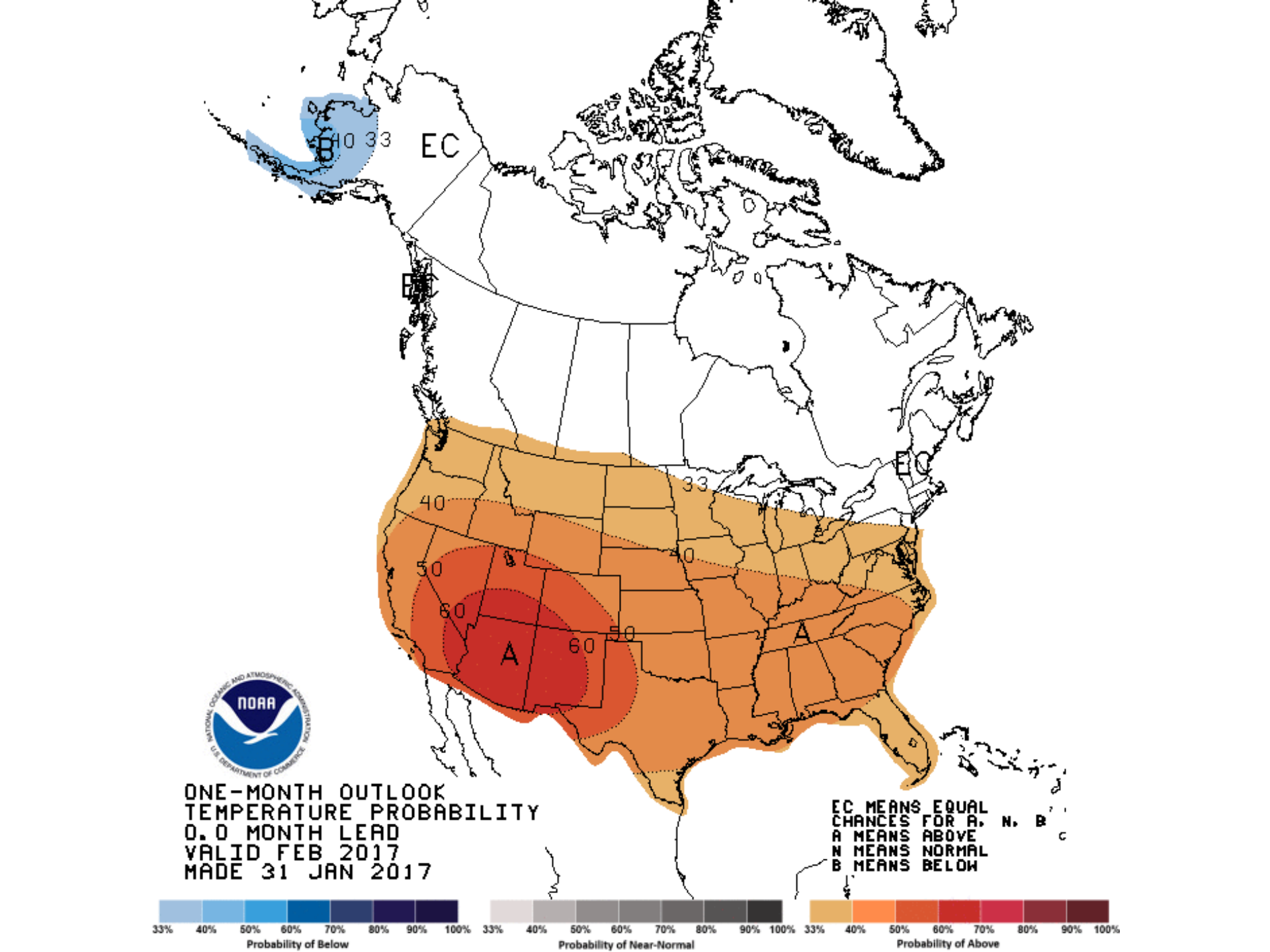
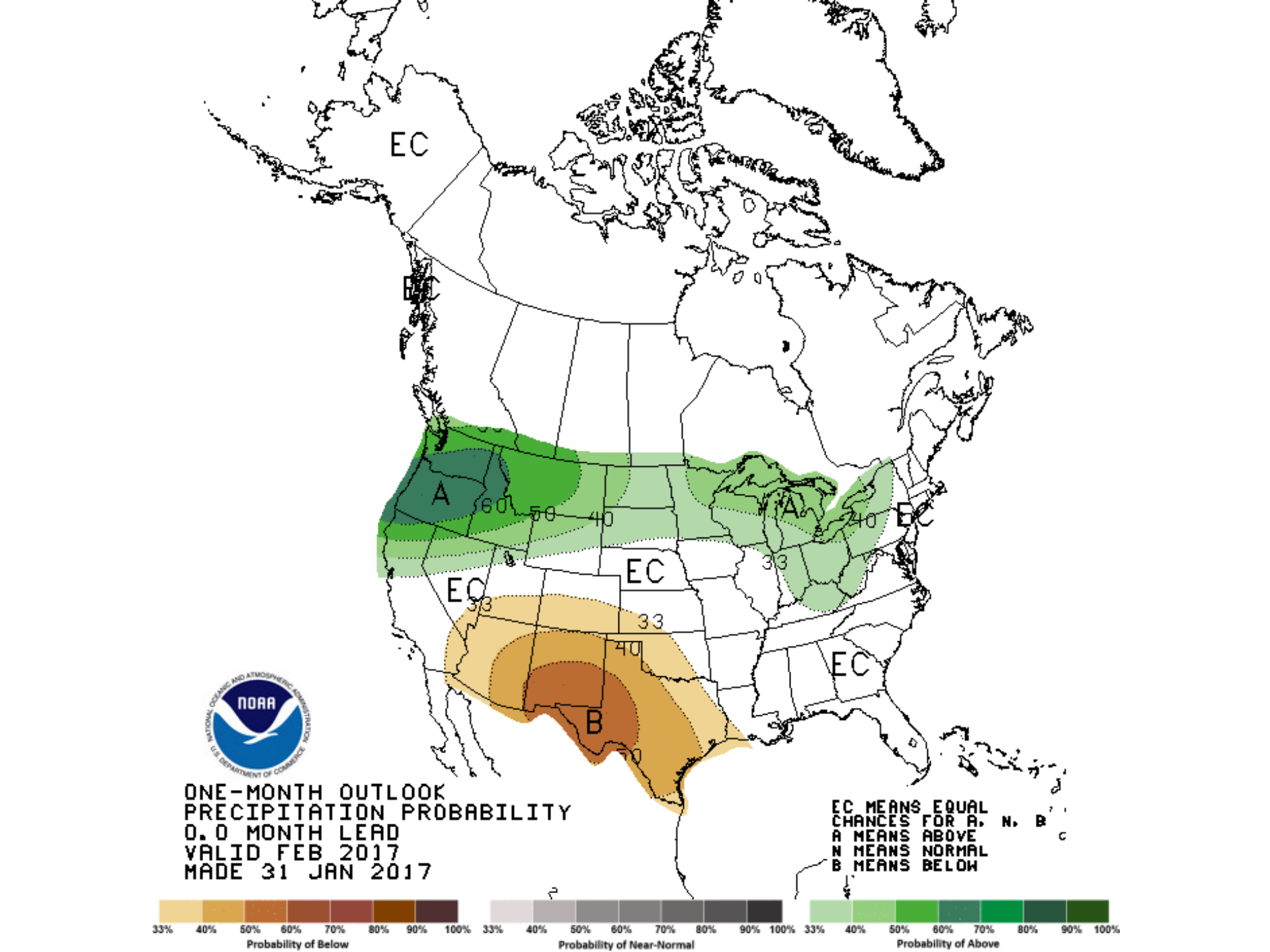

B
40 33
EC
33
40
50
60
60
50
A
A
EC
NOAA
ONE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.0 MONTH LEAD
VALID FEB 2017
MADE 31 JAN 2017
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Below
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Near-Normal
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Above


EC
A
60
50
40
A
40
EC
EC
33
EC
33
33
40
B
EC
ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.0 MONTH LEAD
VALID FEB 2017
MADE 31 JAN 2017
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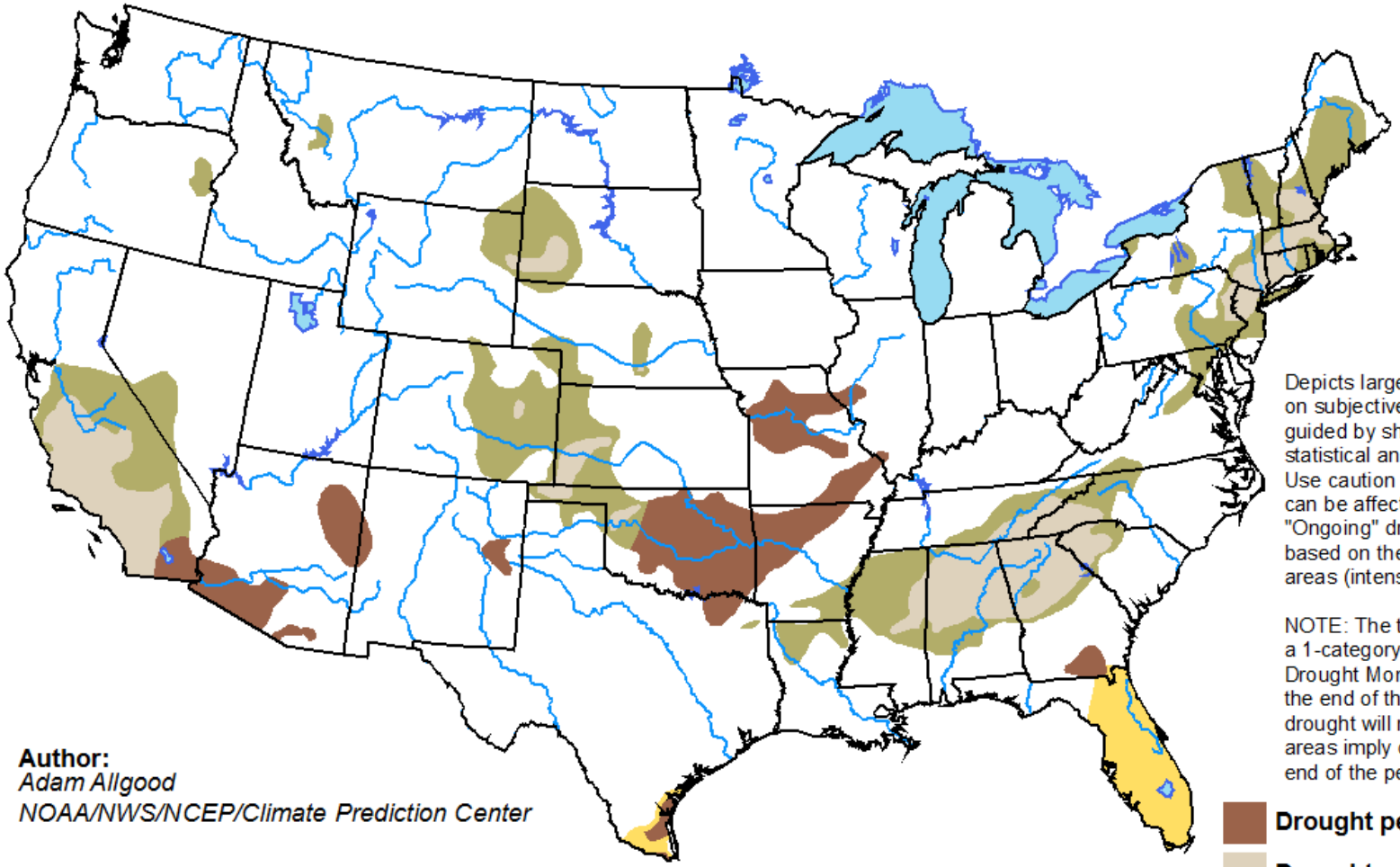
Probability of Below
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Near-Normal
33% 40% 50% 60% 70% 80% 90% 100%
Probability of Above

# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

*Valid for January 19 - April 30, 2017*
*Released January 19, 2017*



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).

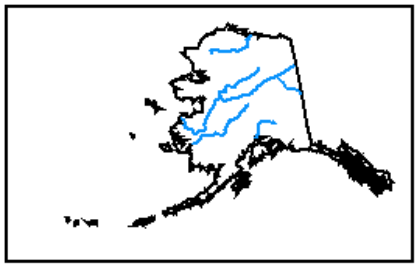
**Drought persists**

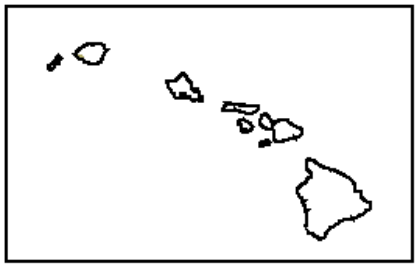
**Drought remains but improves**

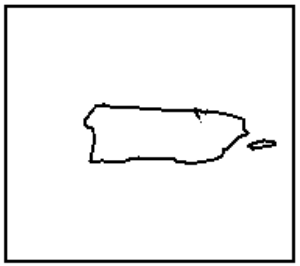
**Drought removal likely**

**Drought development likely**

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







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

# Summary

- Extended range prediction beyond the two week time frame relies on more slowly changing elements of the climate system that have been connected to our weather and climate – such as ENSO
- Last year's warmer ocean conditions, or El Niño conditions, ended earlier this summer
- **La Niña conditions are still present, but weak**. The tropical ocean and atmosphere are forecasted to shift to a **state of neutral conditions**. Models (as of mid-January) are projecting this state to prevail into early summer.
- **Equal chances of above, below, and normal precipitation in out region through Spring**

- **Next CPC Forecast Update: February 16th**