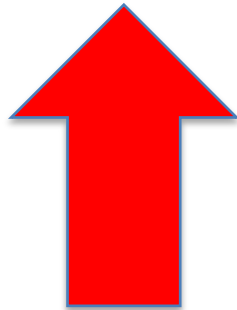


# **El Niño-Southern Oscillation (ENSO) Update**

**NOAA Eastern Region Climate Services**

**Michelle L'Heureux  
Climate Prediction Center / NCEP/ NOAA  
29 November 2018**



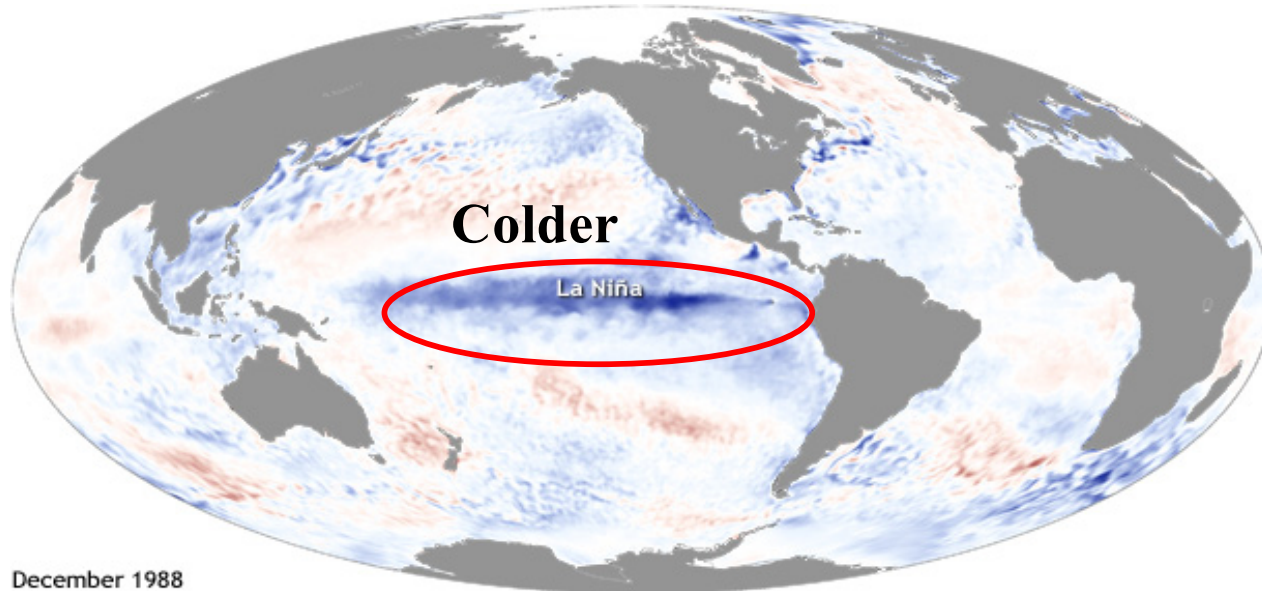
**We are in an El Niño Watch!**

El Niño is expected to form and continue through the Northern Hemisphere winter 2018-19 (~80% chance) and into spring (55-60% chance).

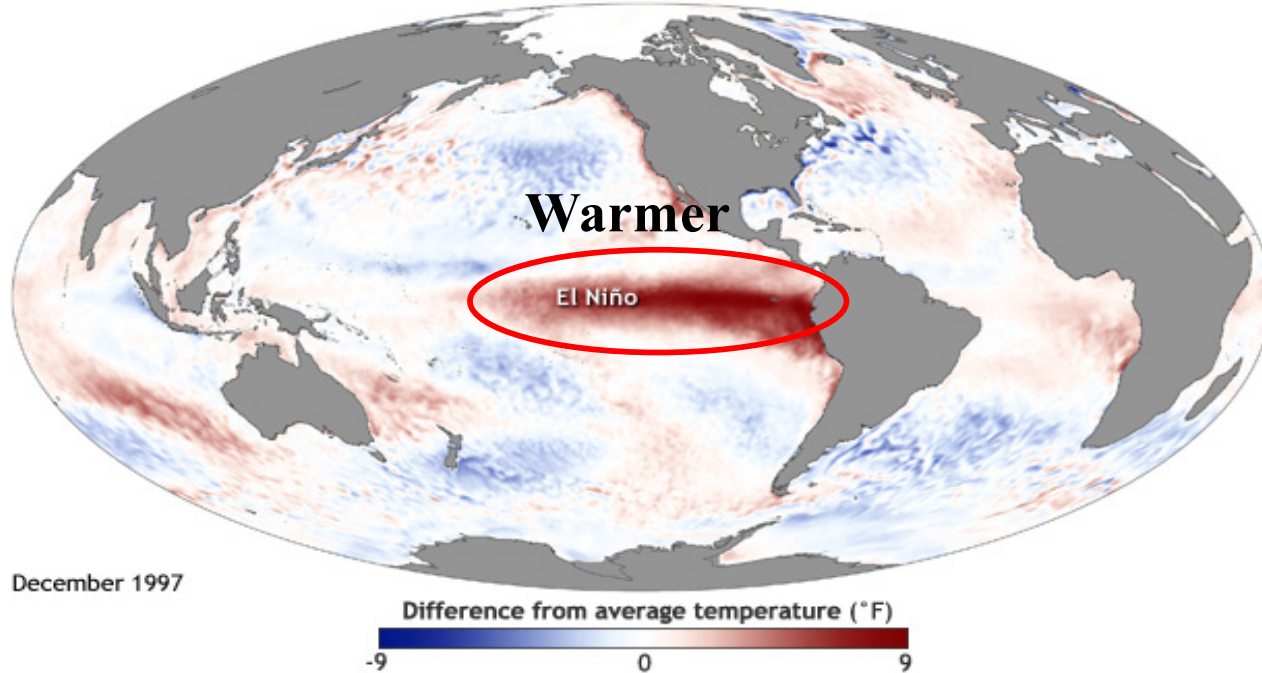
For the Eastern region, El Niño can increase rainfall/snowfall closer to the coast. For regions more inland (western NY, PA, Ohio valley) it can decrease rainfall/snowfall.

# The El Niño-Southern Oscillation (or “ENSO”)

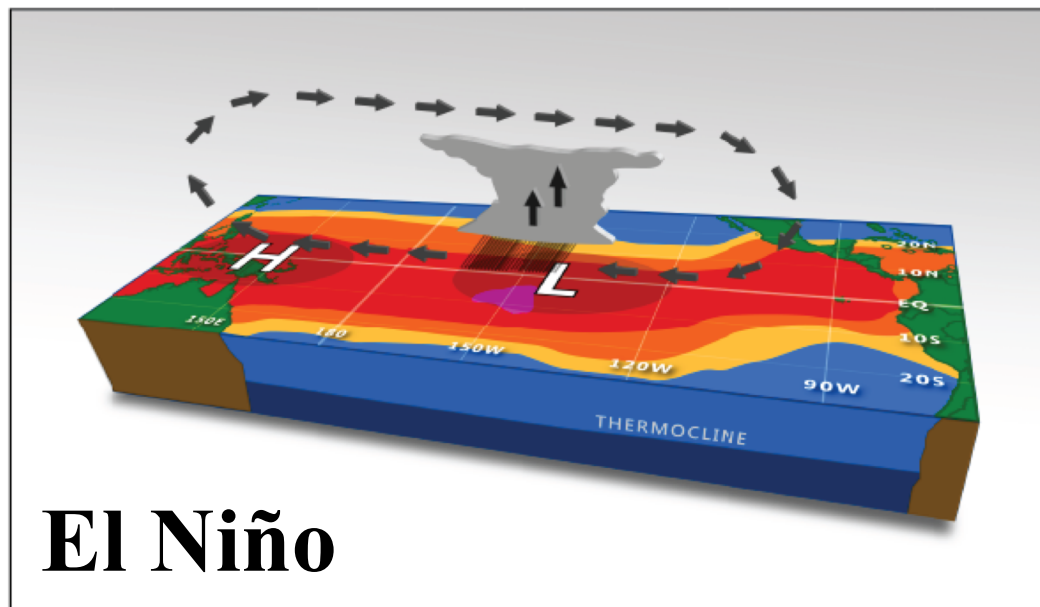
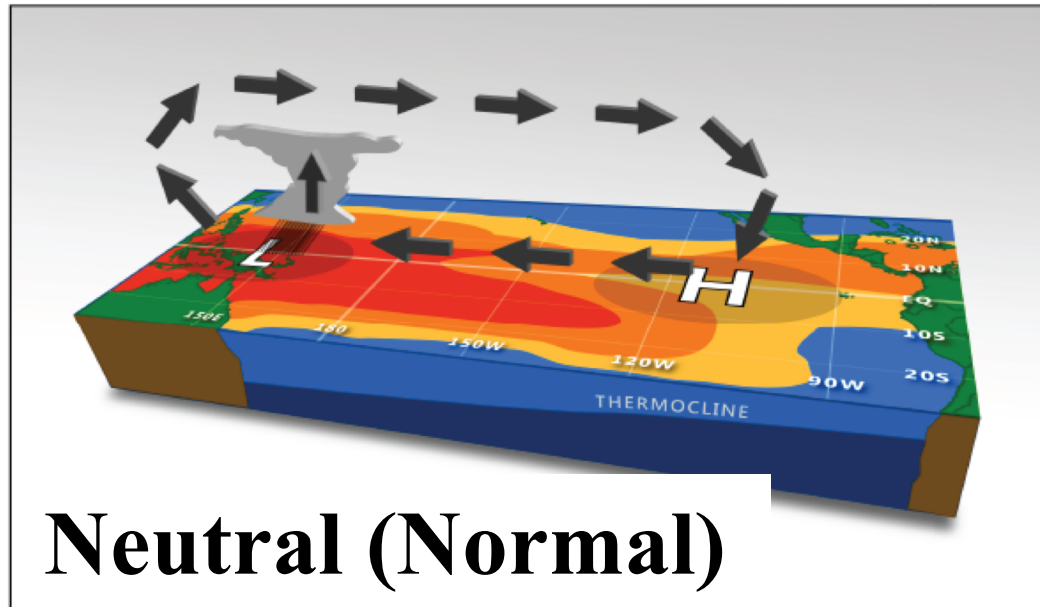
**La Niña**



**El Niño**



**ENSO is “coupled” meaning that the atmosphere and ocean in the tropical Pacific reinforce each other.**



# El Niño (and La Niña) Life Cycle

Typically last 9-12 months. Occur every 3-5 years or so.

Develop mid-to-late summer or fall



Photo courtesy <https://www.countryliving.com>

Summer/ fall impacts:

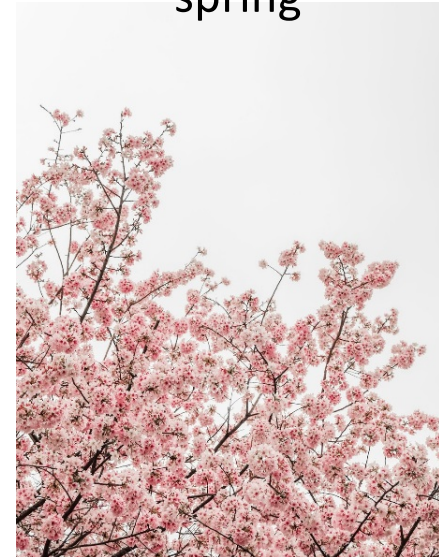
- Hurricanes
- Tropics

Strongest in winter



<https://unsplash.com/search/photos/>

Dissipate/weaken in spring

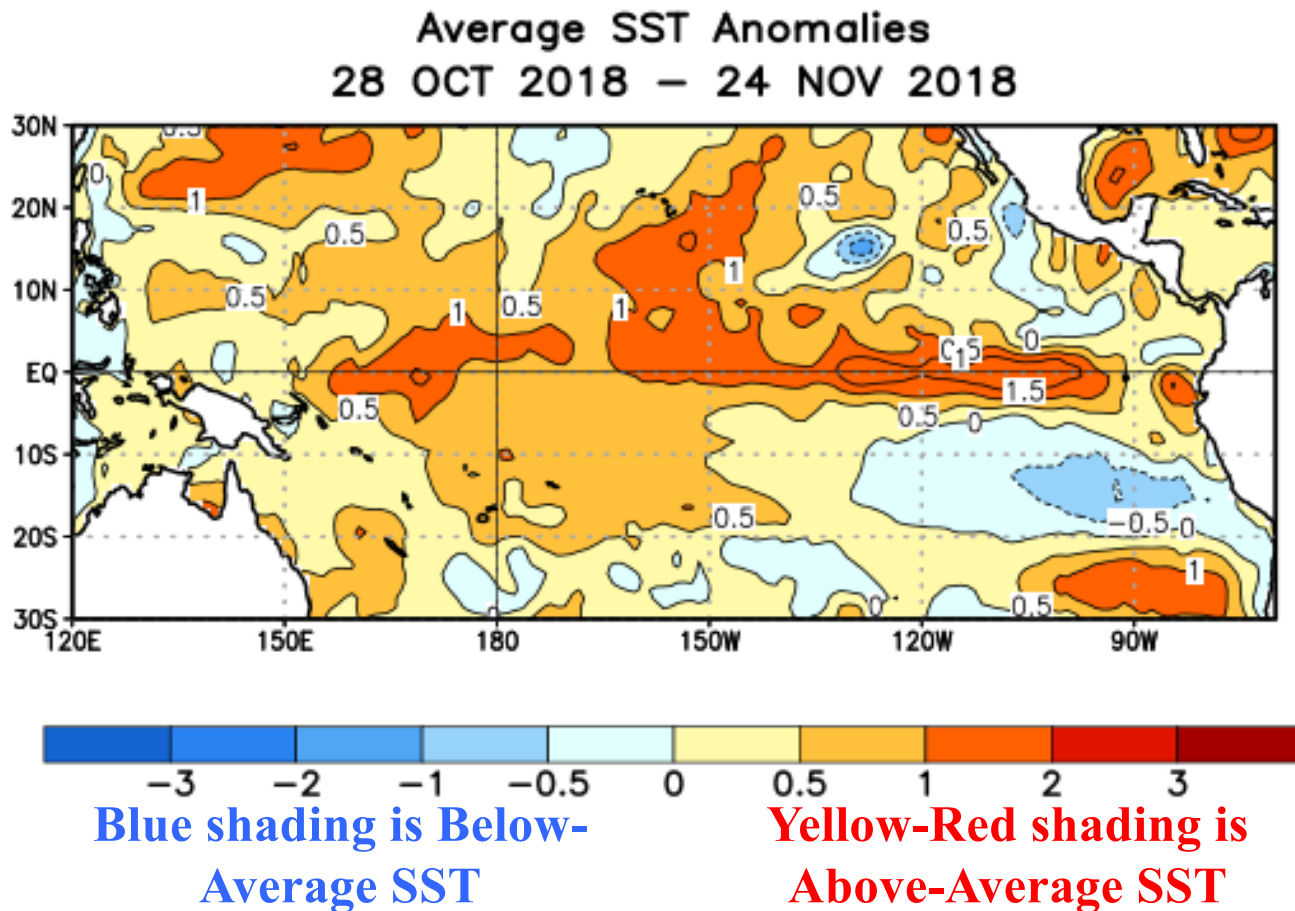


U.S. Impacts during winter into spring:

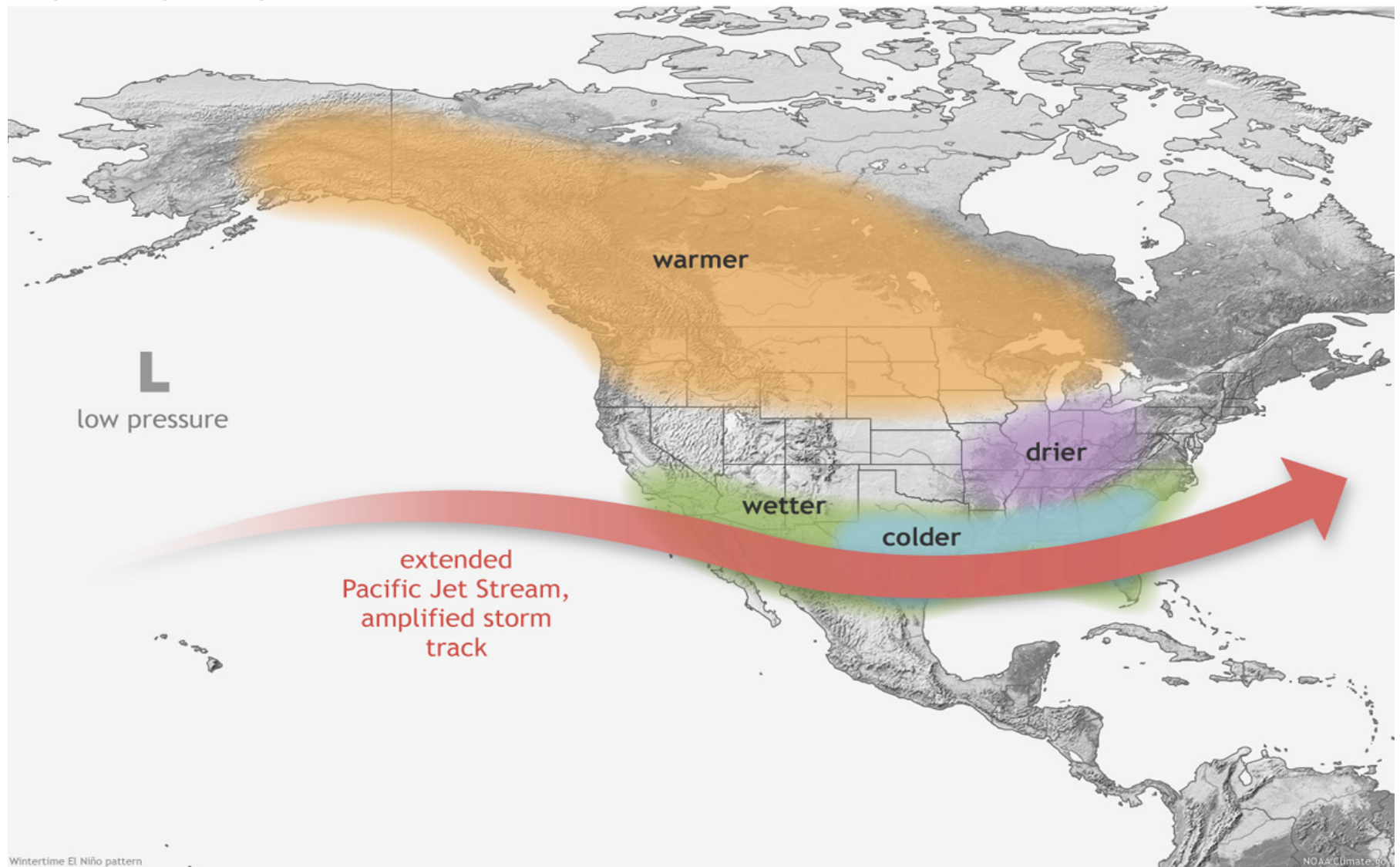
- Jet streams,
- Storm tracks/ storm location
- Temperature
- Rain, snowfall, snowpack
- Drought formation/ intensification/ relief



# Sea surface temperatures (SST) anomalies over the last Month



## TYPICAL EL NIÑO WINTERS



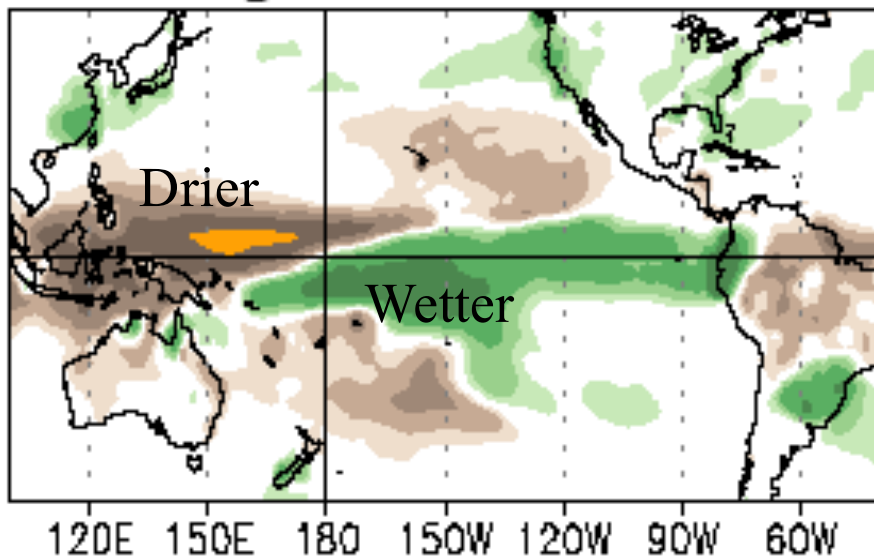
Keep in mind this pattern is not the case for EVERY El Niño winter. It will vary considerably from El Niño event to El Niño event, which is why related impacts are expressed as **PROBABILITIES (% Chance Of)**.

# Why El Niño Affects Our Winter Weather

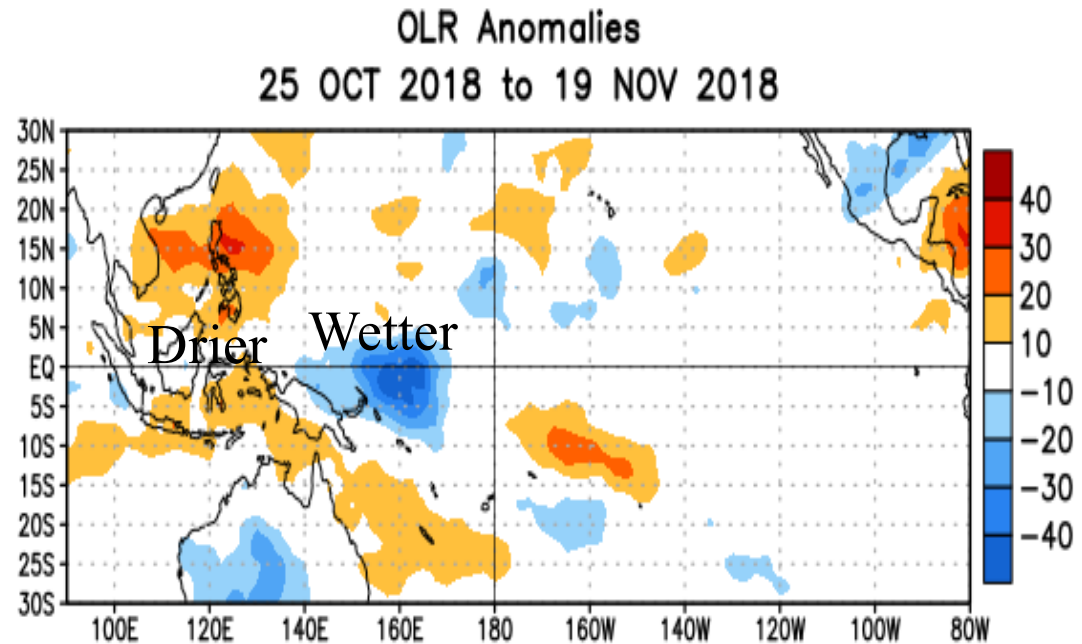
## Affects Tropical Rainfall Patterns

El Niño and La Niña alter the normal patterns of tropical rainfall/ convection from Indonesia to South America—a distance of about  $\frac{1}{2}$  way around the globe. Tropical convection then impacts the jet streams.

### Strong El Niño: Wintertime Rainfall Departures

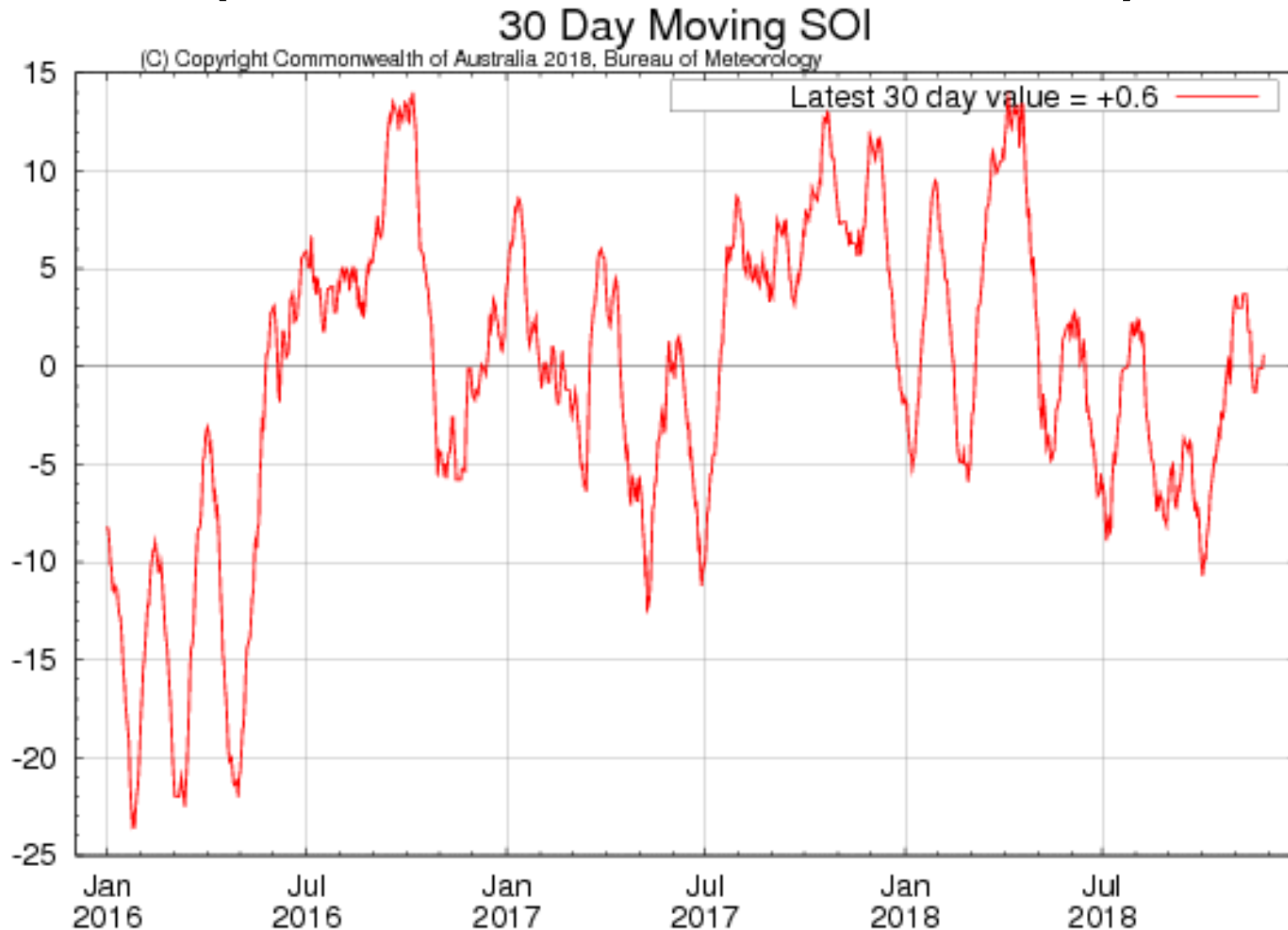


### Current 30-day Average Pattern

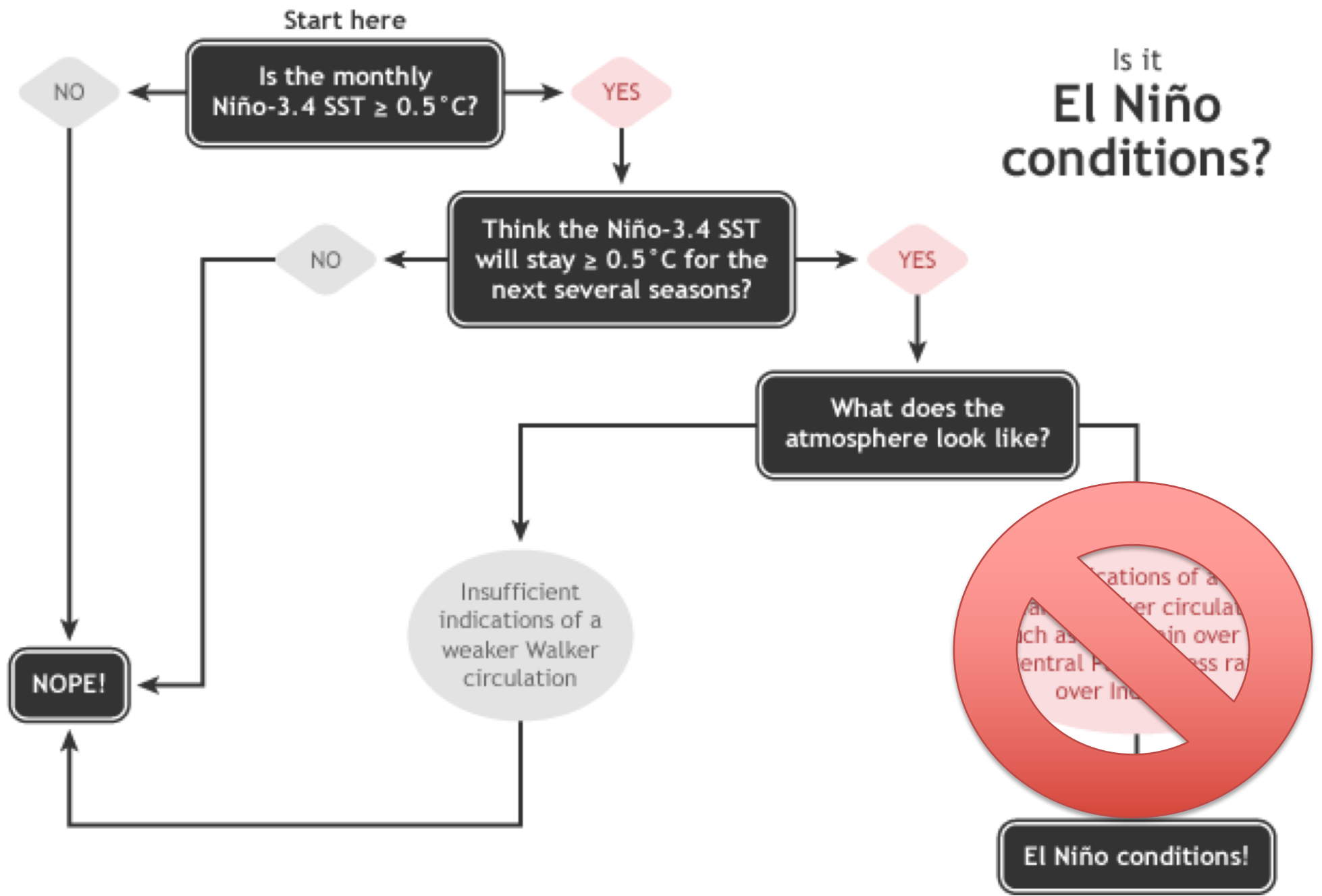




# Southern Oscillation Index (another measure of ENSO)

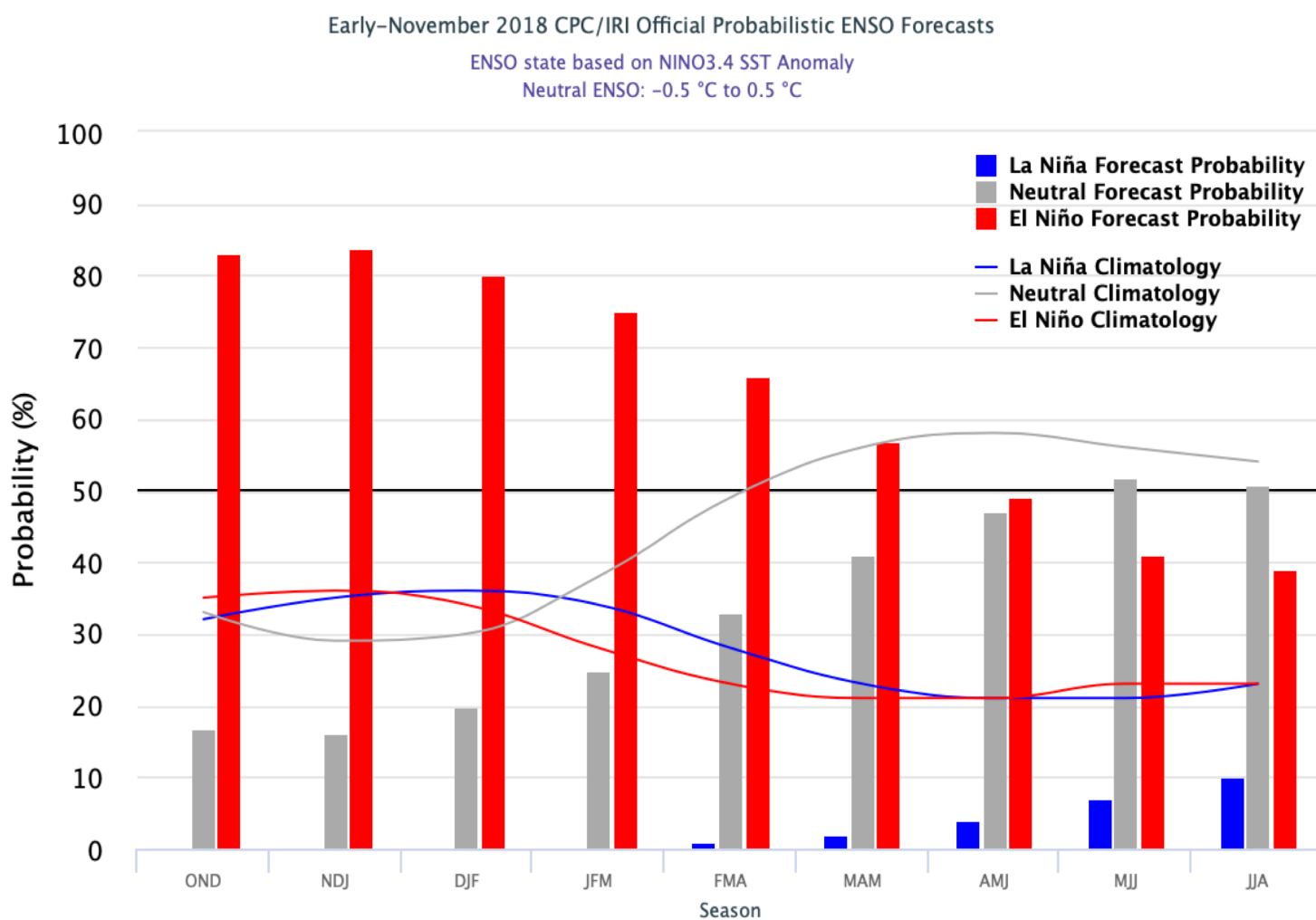


Right now the SOI is near zero, meaning consistent with “ENSO-neutral” or average conditions. Not reflecting El Niño yet.

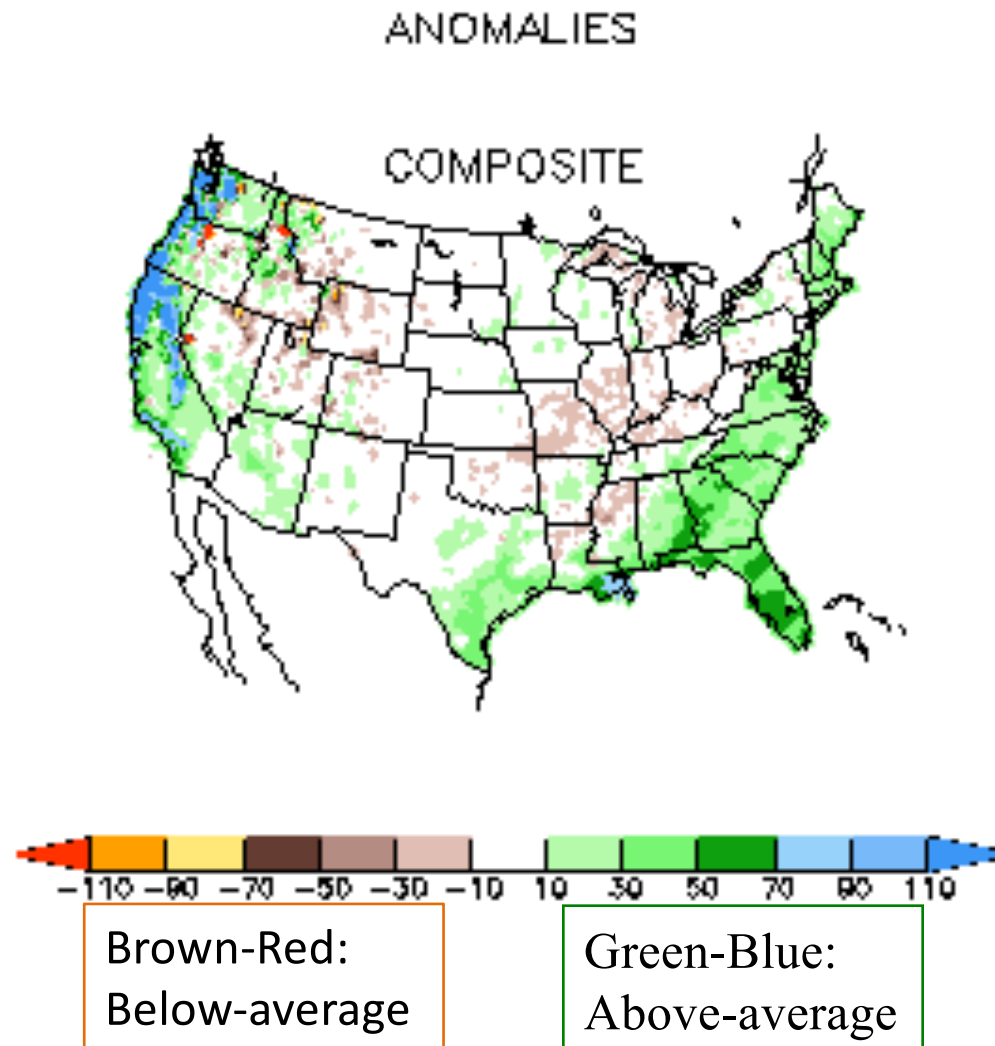


# Current ENSO Probabilities or Chances (8 November 2018)

El Niño is expected to form and continue through the Northern Hemisphere winter 2018-19 (~80% chance) and into spring (55-60% chance).

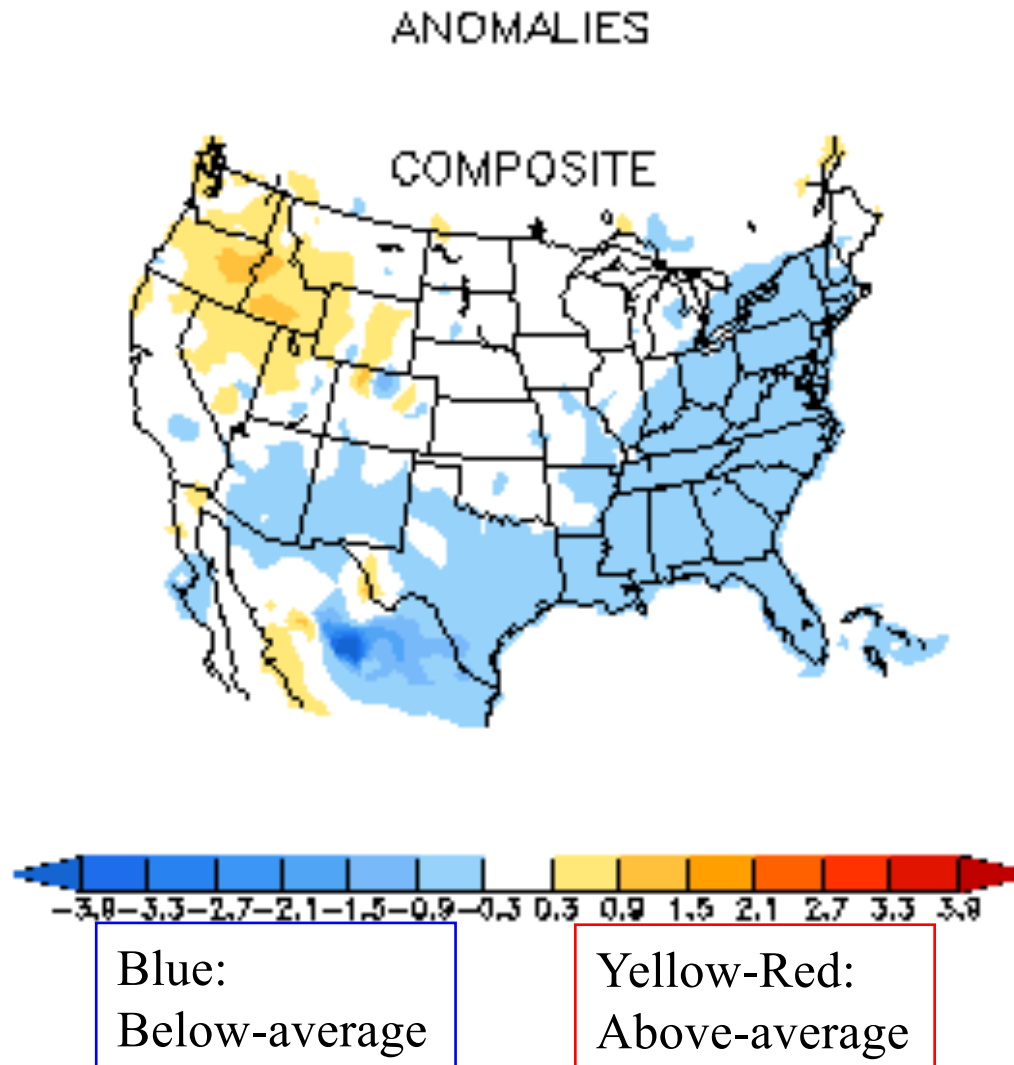


# “Typical” December-February Precipitation Anomalies associated with El Niño

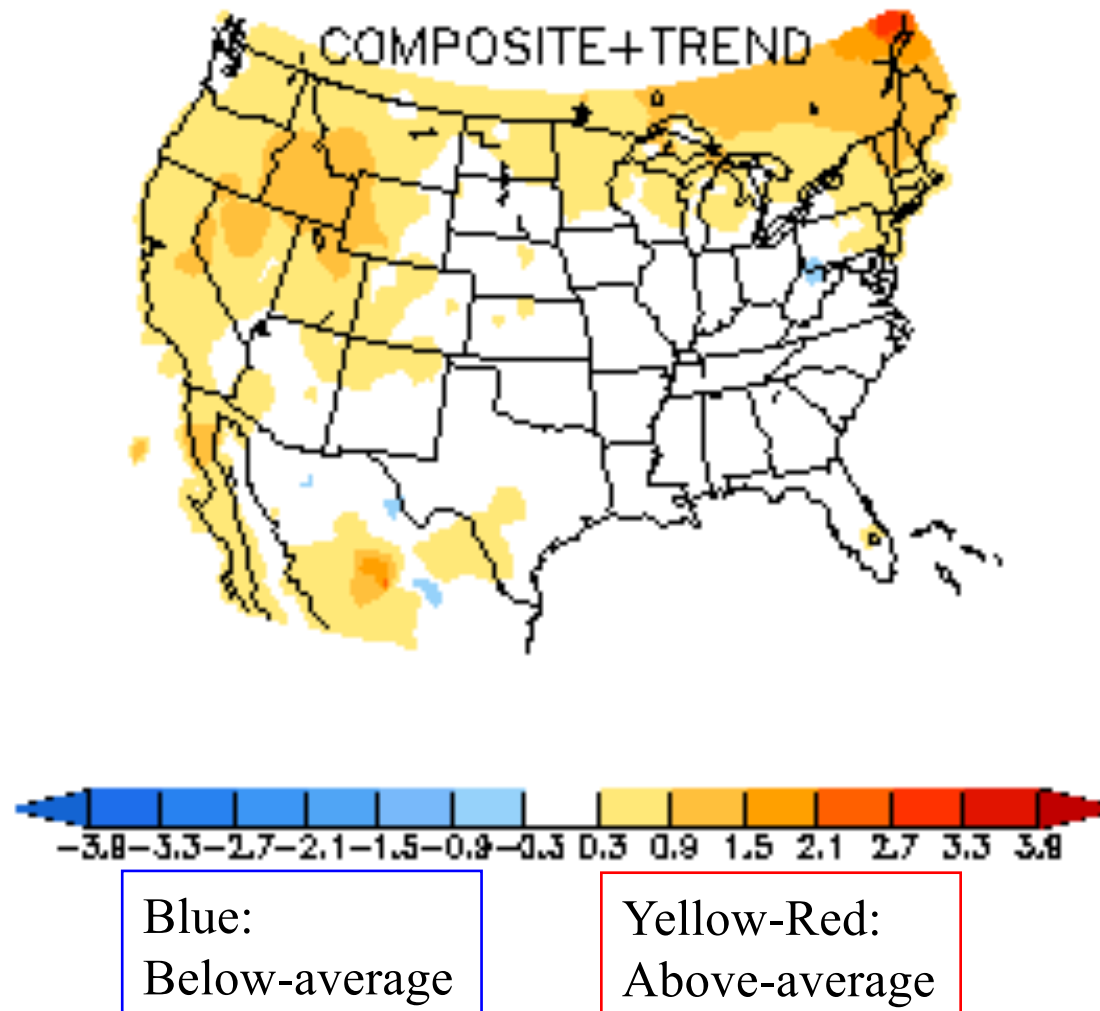




# “Typical” December-February Temperature Anomalies associated with El Niño

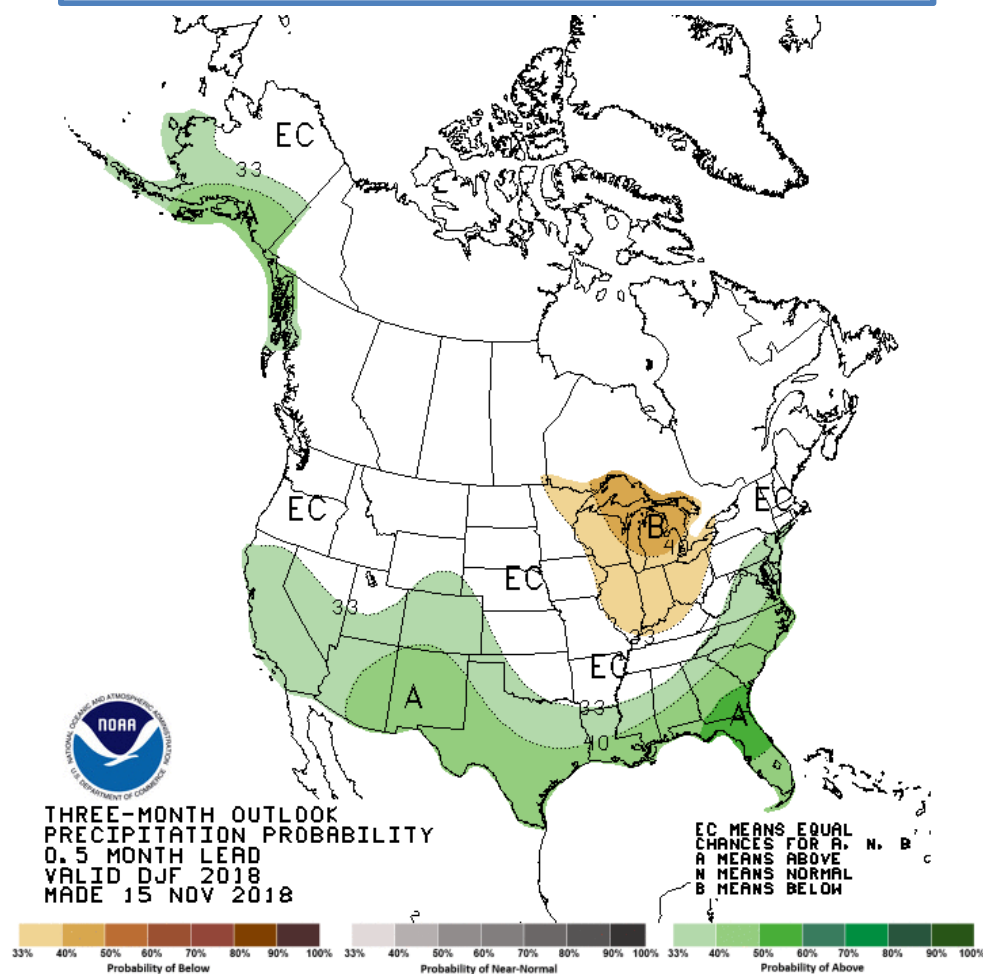


# December-February Temperature Anomalies associated with El Niño + Trends

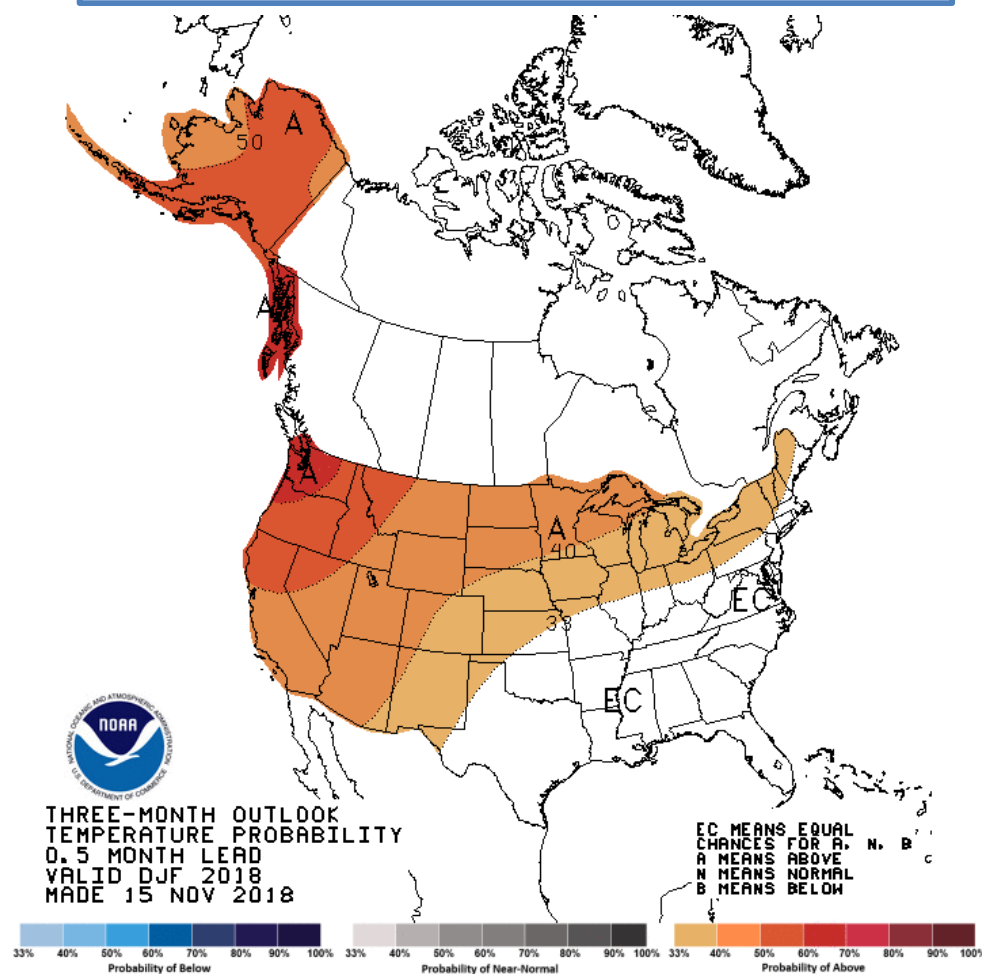


# December-January-February (DJF) Outlook 2018-19

## Precipitation Chances



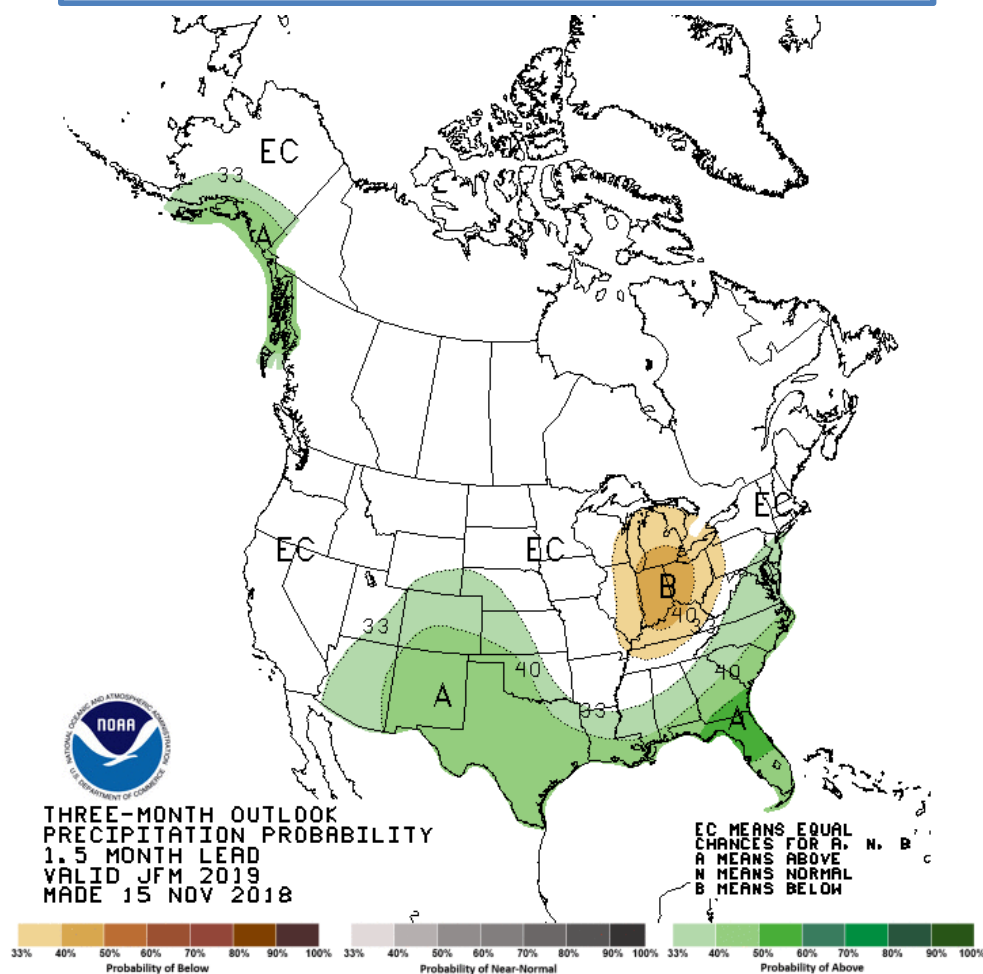
## Temperature Chances



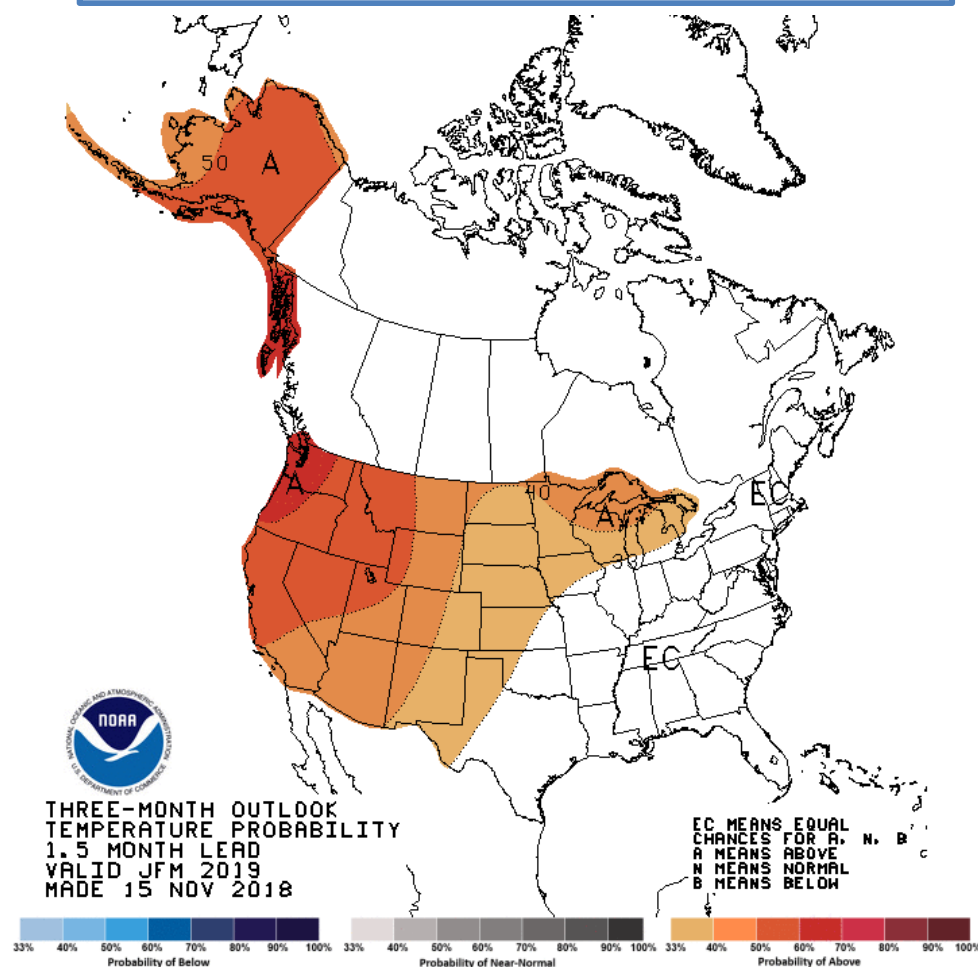
[http://www.cpc.ncep.noaa.gov/products/predictions/long\\_range/](http://www.cpc.ncep.noaa.gov/products/predictions/long_range/)

# January-February-March (JFM) Outlook 2019

## Precipitation Chances



## Temperature Chances



[http://www.cpc.ncep.noaa.gov/products/predictions/long\\_range/](http://www.cpc.ncep.noaa.gov/products/predictions/long_range/)



# Summary

- Currently, ENSO-neutral with an El Niño Watch (conditions favorable for the development of El Niño).
- Equatorial sea surface temperatures (SSTs) are above average across most of the Pacific Ocean.
- We're still waiting on an atmospheric response consistent with El Niño.
- El Niño is expected to form and continue through the Northern Hemisphere winter 2018-19 (~80% chance) and into spring (55-60% chance).

## ENSO Diagnostics Discussion

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/enso\\_advisory/ensodisc.html](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.html)

**ENSO Blog** <http://www.climate.gov/news-features/departments/enso-blog>