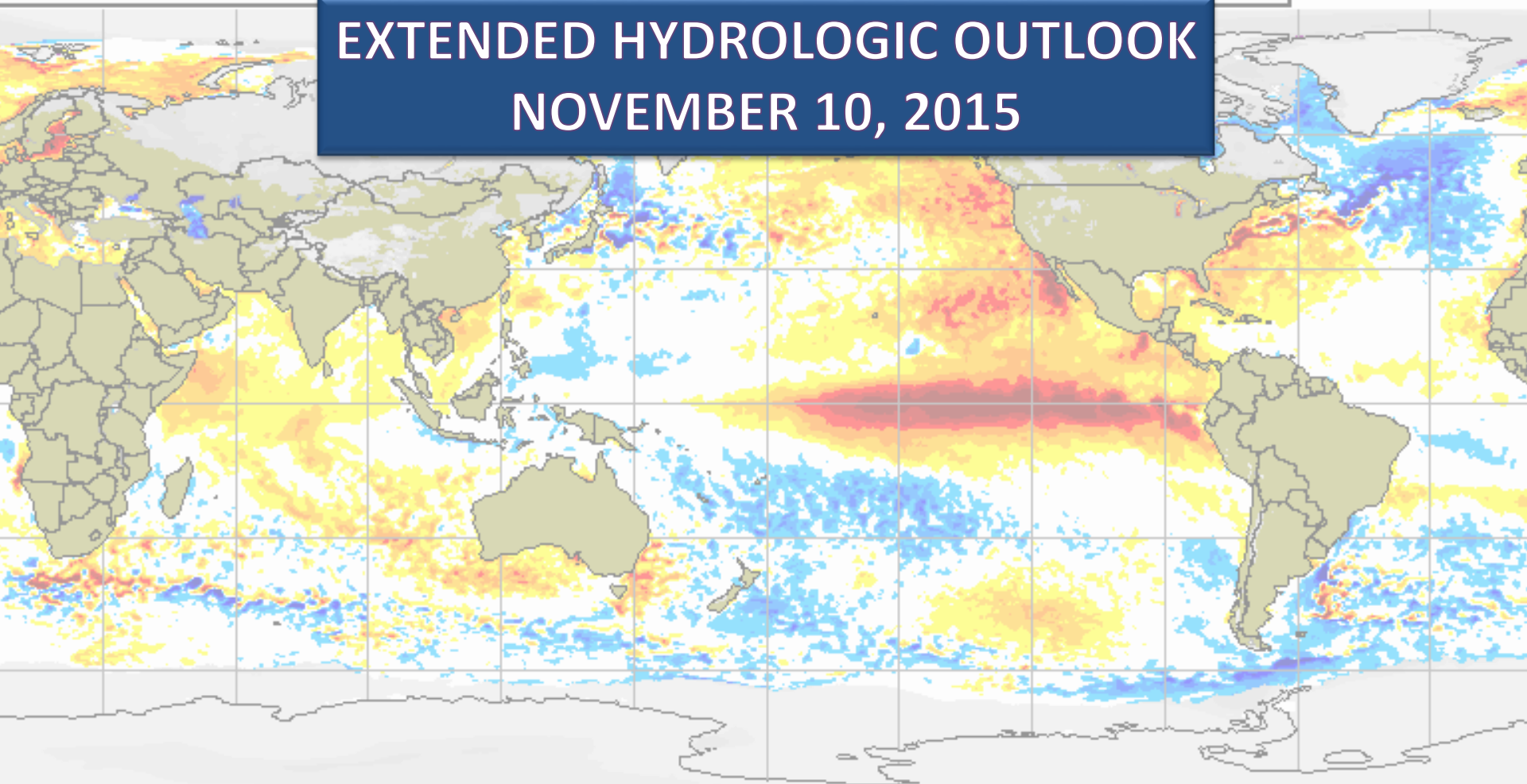


Global sea surface anomaly and snow cover  
10 Nov 2015

Anomalie de la température de la mer et épaisseur de la neige  
10 Nov 2015

# EXTENDED HYDROLOGIC OUTLOOK NOVEMBER 10, 2015



Sea surface temperature anomaly / Anomalie de la température de la mer (°C)



Snow depth / Épaisseur de la neige (cm)



Uncovered sea ice  
Glace marine à découvrir  
Climatologie 1995-2009 Climatologie



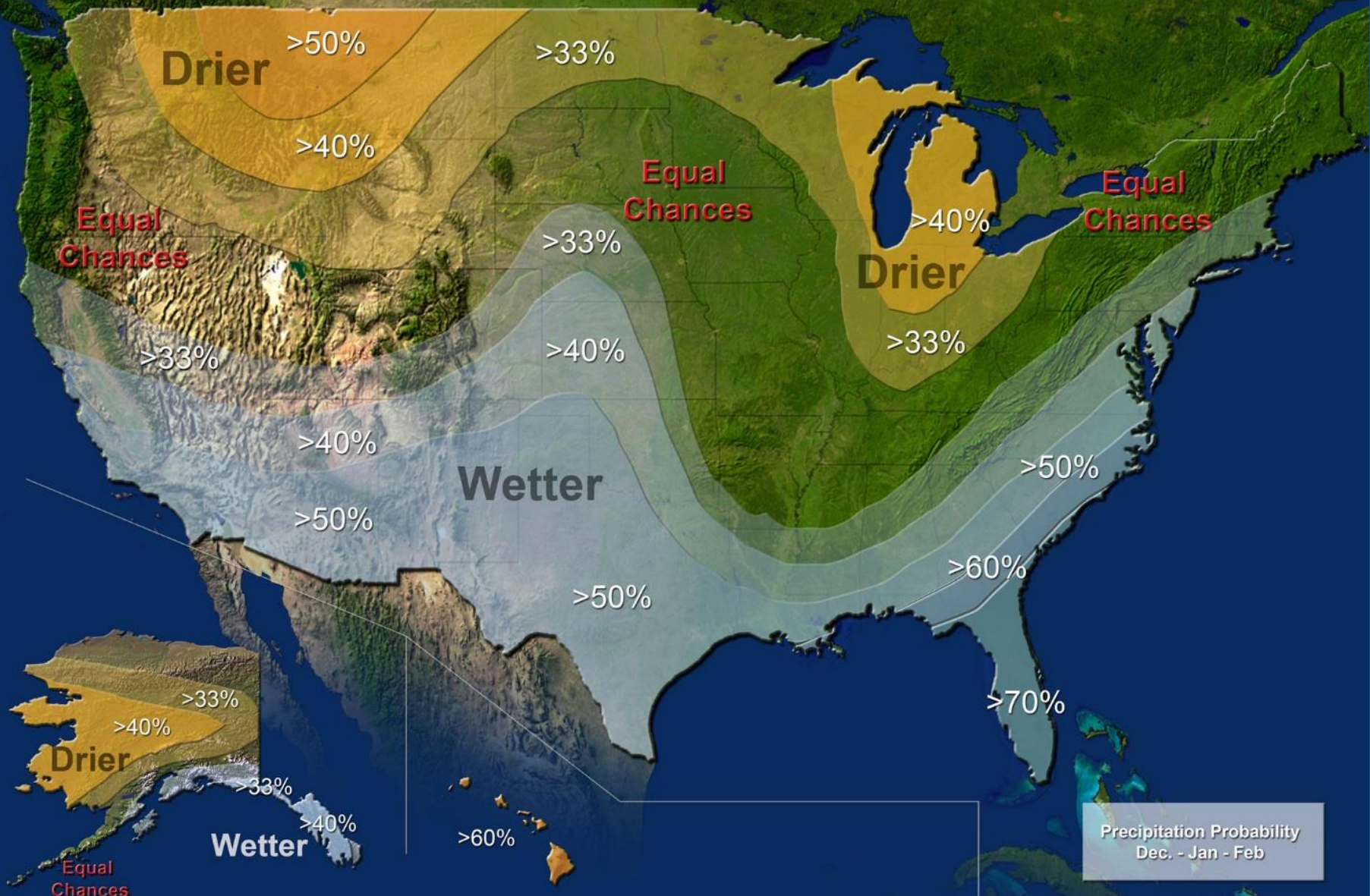
CMC Environnement Canada  
CMC Environment Canada

# Summary

- The Climate Prediction Center (CPC) is forecasting above-normal rainfall for November through January. NOAA is forecasting a 70% likelihood of being in the wettest tercile through winter 2016.
- Strong El Niño conditions are present. A strong El Niño is likely to persist through winter 2016 and to weaken through spring 2016. There are increased chances of above normal rainfall for the 2015-2016 dry season.
- The current switch from the negative phase to a strong positive phase of the Pacific Decadal Oscillation increases the potential for above normal rainfall in the winter and a greater number of El Niño events for multi-year periods.

# U.S. Winter Outlook

## Precipitation



Precipitation Probability  
Dec. - Jan - Feb



# National Weather Service Melbourne DRY SEASON FORECAST

## Oct 2015

### The Forecast

#### November – December - January

##### STRONG EL NINO

WEAK EL NINO  
NEUTRAL  
WEAK LA NINA  
STRONG LA NINA

ENSO State

WELL ABOVE NORMAL  
ABOVE NORMAL

##### NEAR NORMAL

BELOW NORMAL  
WELL BELOW NORMAL

Temperature

##### WELL ABOVE NORMAL

ABOVE NORMAL  
NEAR NORMAL  
BELOW NORMAL  
WELL BELOW NORMAL

Precipitation

##### WELL ABOVE NORMAL

ABOVE NORMAL  
NEAR NORMAL  
BELOW NORMAL  
WELL BELOW NORMAL

Storminess

#### February – March - April

##### STRONG EL NINO

WEAK EL NINO  
NEUTRAL  
WEAK LA NINA  
STRONG LA NINA

ENSO State

WELL ABOVE NORMAL  
ABOVE NORMAL  
NEAR NORMAL

##### BELOW NORMAL

WELL BELOW NORMAL

Temperature

##### WELL ABOVE NORMAL

ABOVE NORMAL  
NEAR NORMAL  
BELOW NORMAL  
WELL BELOW NORMAL

Precipitation

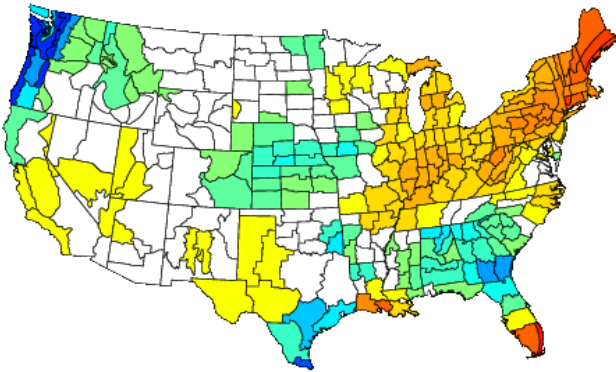
##### WELL ABOVE NORMAL

ABOVE NORMAL  
NEAR NORMAL  
BELOW NORMAL  
WELL BELOW NORMAL

Storminess

# Very Strong 1997-98 El Niño and PDO Positive

NOAA/NCDC Climate Division Precipitation Anomalies (in)  
Oct 1997  
Versus 1981-2010 Longterm Average

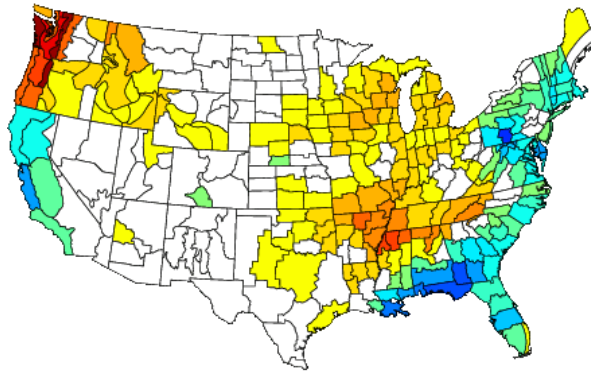


NOAA/ESRL PSD and CIRES-CU

-5.0 -4.0 -3.0 -2.0 -1.0 0.0 1.0 2.0 3.0 4.0 5.0

October

NOAA/NCDC Climate Division Precipitation Anomalies (in)  
Nov 1997  
Versus 1981-2010 Longterm Average

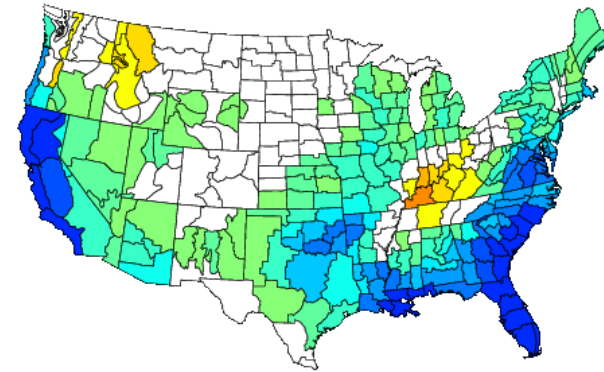


NOAA/ESRL PSD and CIRES-CU

-5.0 -4.0 -3.0 -2.0 -1.0 0.0 1.0 2.0 3.0 4.0 5.0

November

NOAA/NCDC Climate Division Precipitation Anomalies (in)  
Dec to Mar 1997-98  
Versus 1981-2010 Longterm Average



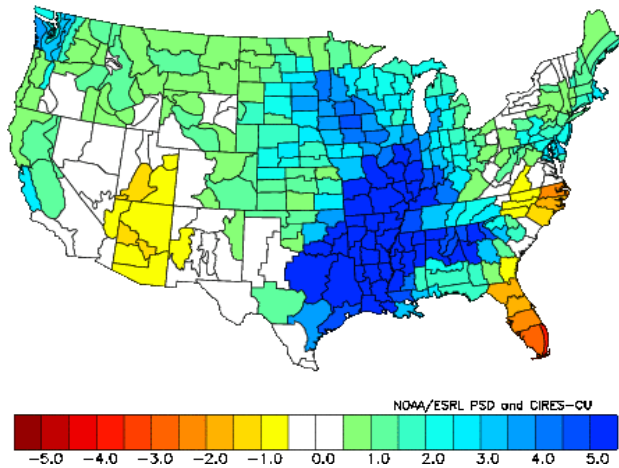
NOAA/ESRL PSD and CIRES-CU

-10.0 -8.0 -6.0 -4.0 -2.0 0.0 2.0 4.0 6.0 8.0 10.0

December-March

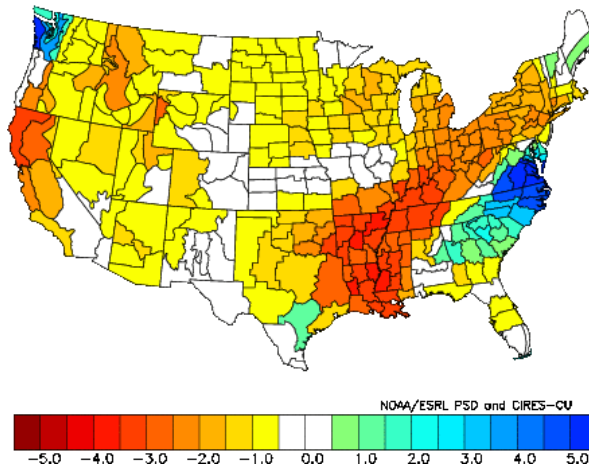
# Moderate 2009-2010 El Niño and PDO Positive

NOAA/NCDC Climate Division Precipitation Anomalies (in)  
Oct 2009  
Versus 1981–2010 Longterm Average



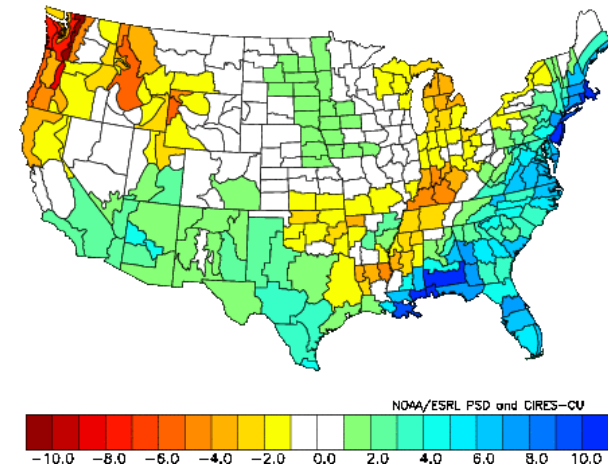
**October**

NOAA/NCDC Climate Division Precipitation Anomalies (in)  
Nov 2009  
Versus 1981–2010 Longterm Average



**November**

NOAA/NCDC Climate Division Precipitation Anomalies (in)  
Dec to Mar 2009–10  
Versus 1981–2010 Longterm Average

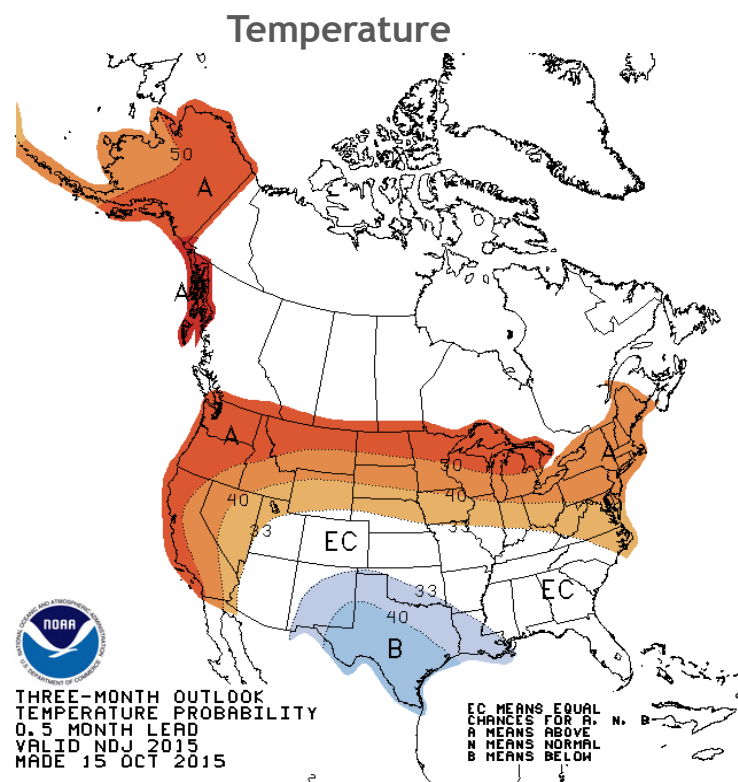
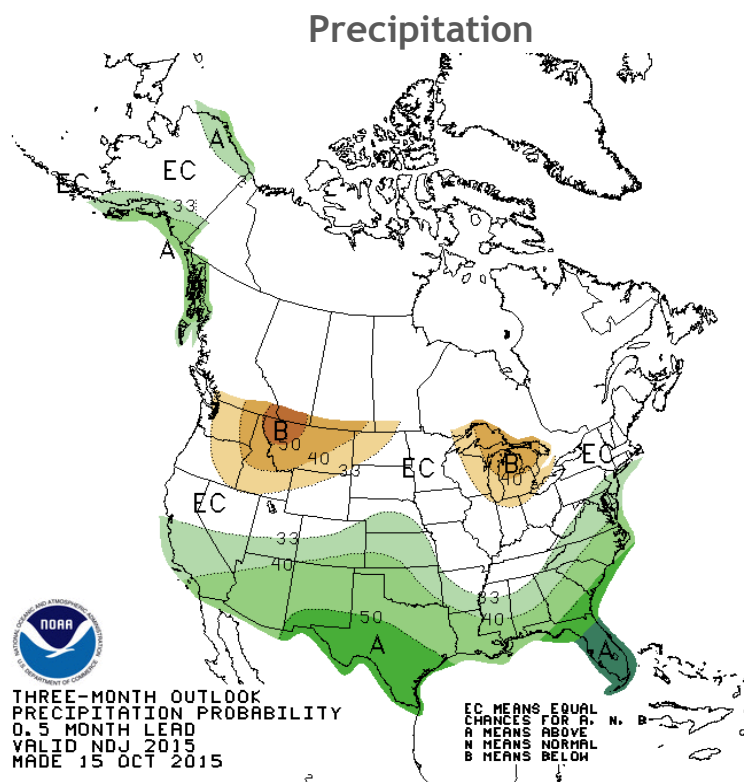


**December-March**

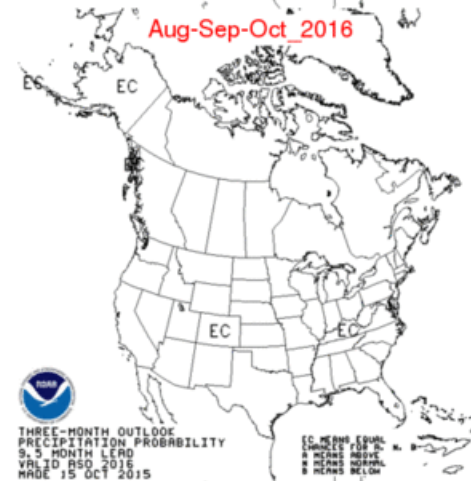
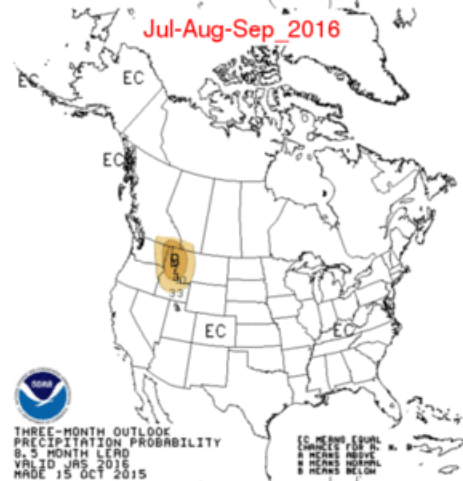
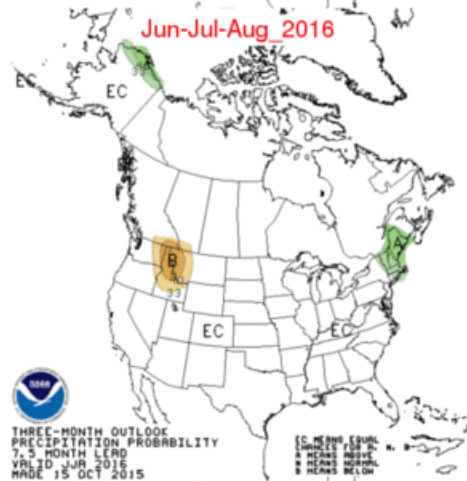
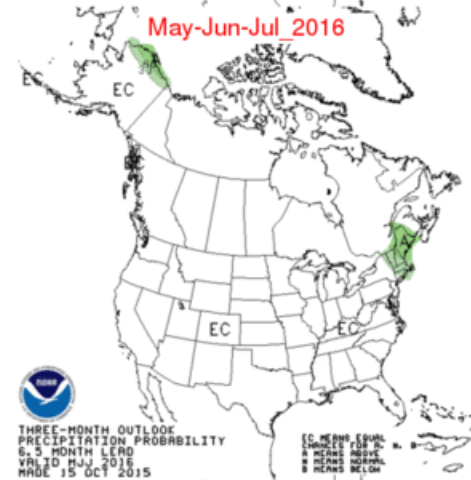
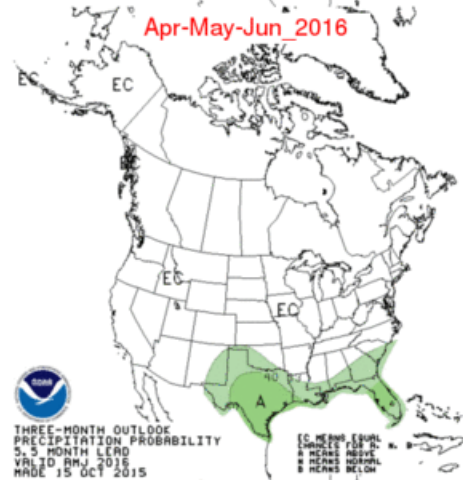
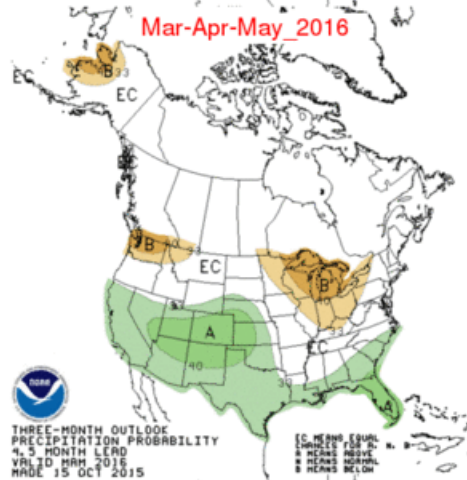
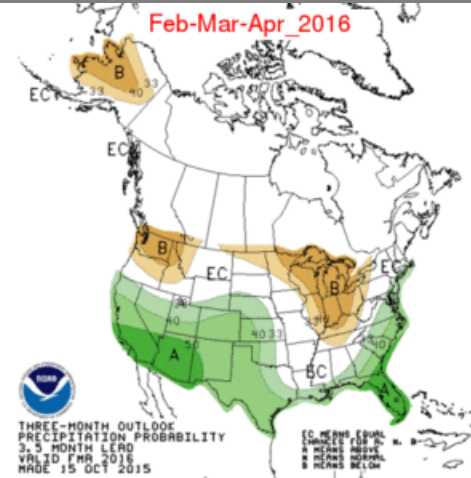
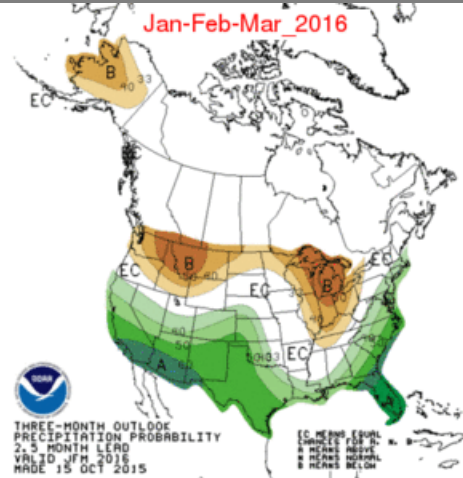
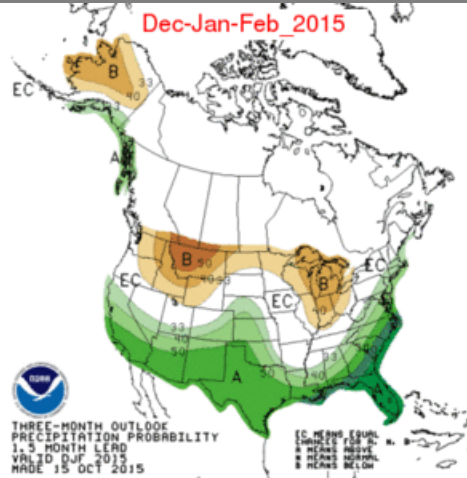
# U. S. Seasonal Outlooks

November 2015 - January 2016

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





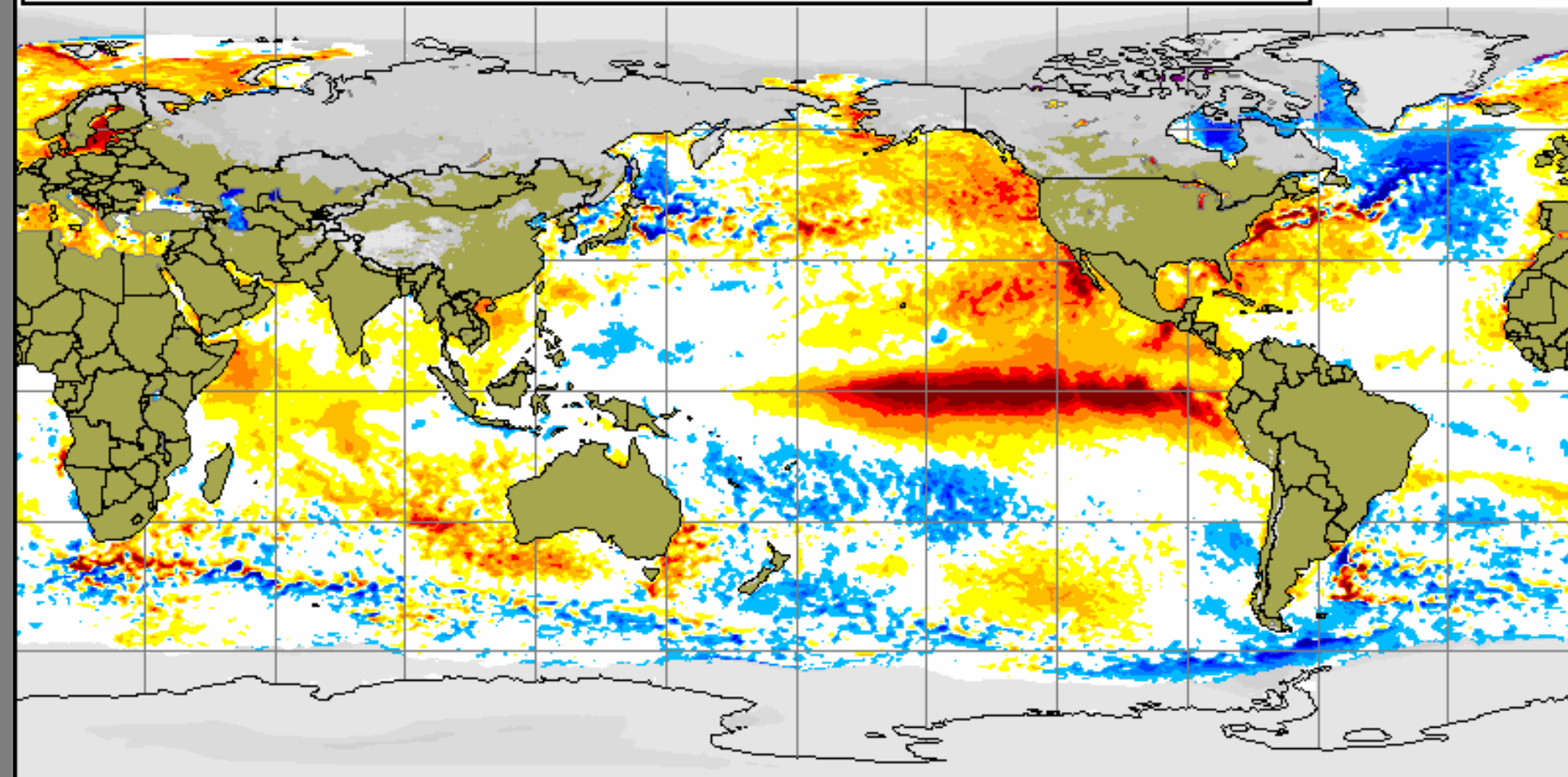




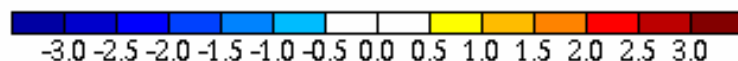
# Current Global Sea Surface Temperature Anomalies

Global sea surface anomaly and snow cover  
12 Nov 2015

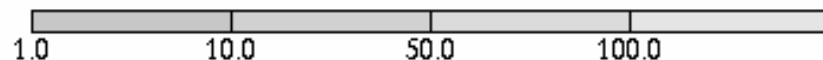
Anomalie de la température de la mer et épaisseur de la neige  
12 Nov 2015



Sea surface temperature anomaly / Anomalie de la température de la mer (C)



Snow depth / Épaisseur de la neige (cm)



Uncovered sea ice

Glace marine à découvert

Climatologie 1995-2009 Climatologie

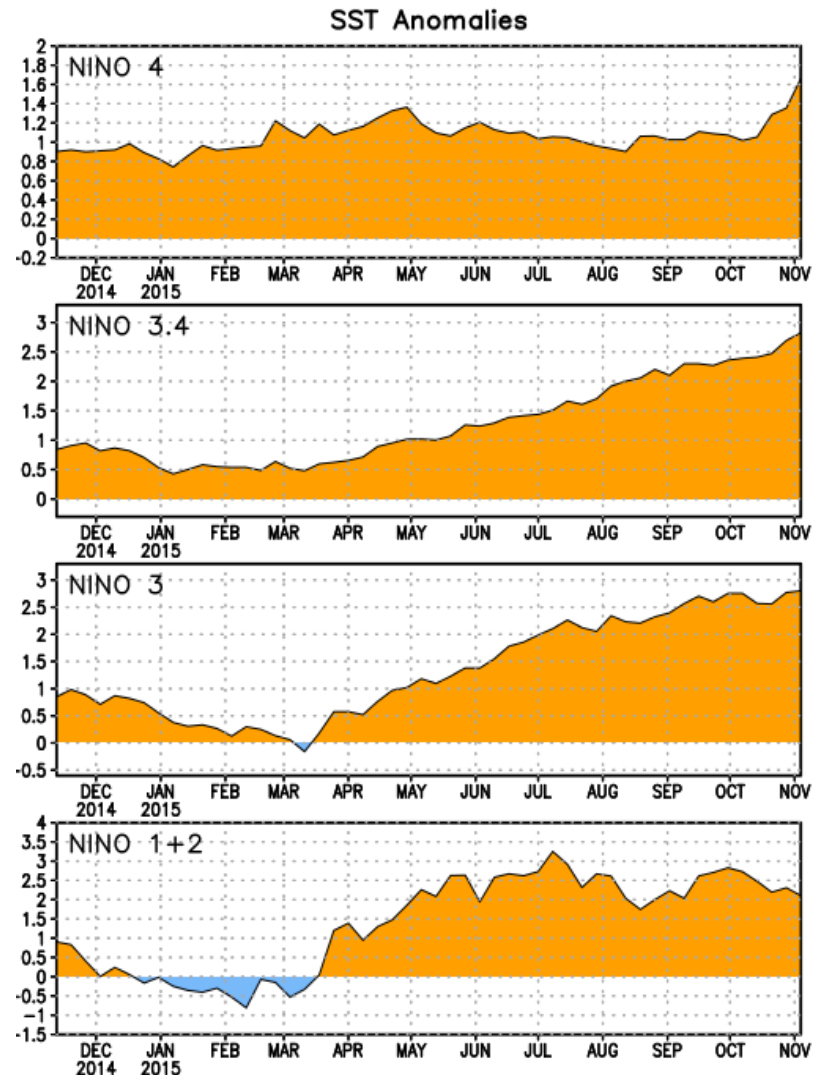
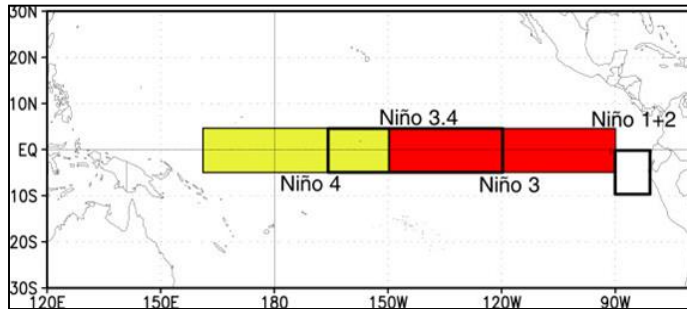


CMC Environnement Canada  
CMC Environnement Canada

# Niño Region SST Departures (°C) Recent Evolution

The latest weekly SST departures are:

Niño 4	1.7°C
Niño 3.4	2.8°C
Niño 3	2.8°C
Niño 1+2	2.1°C



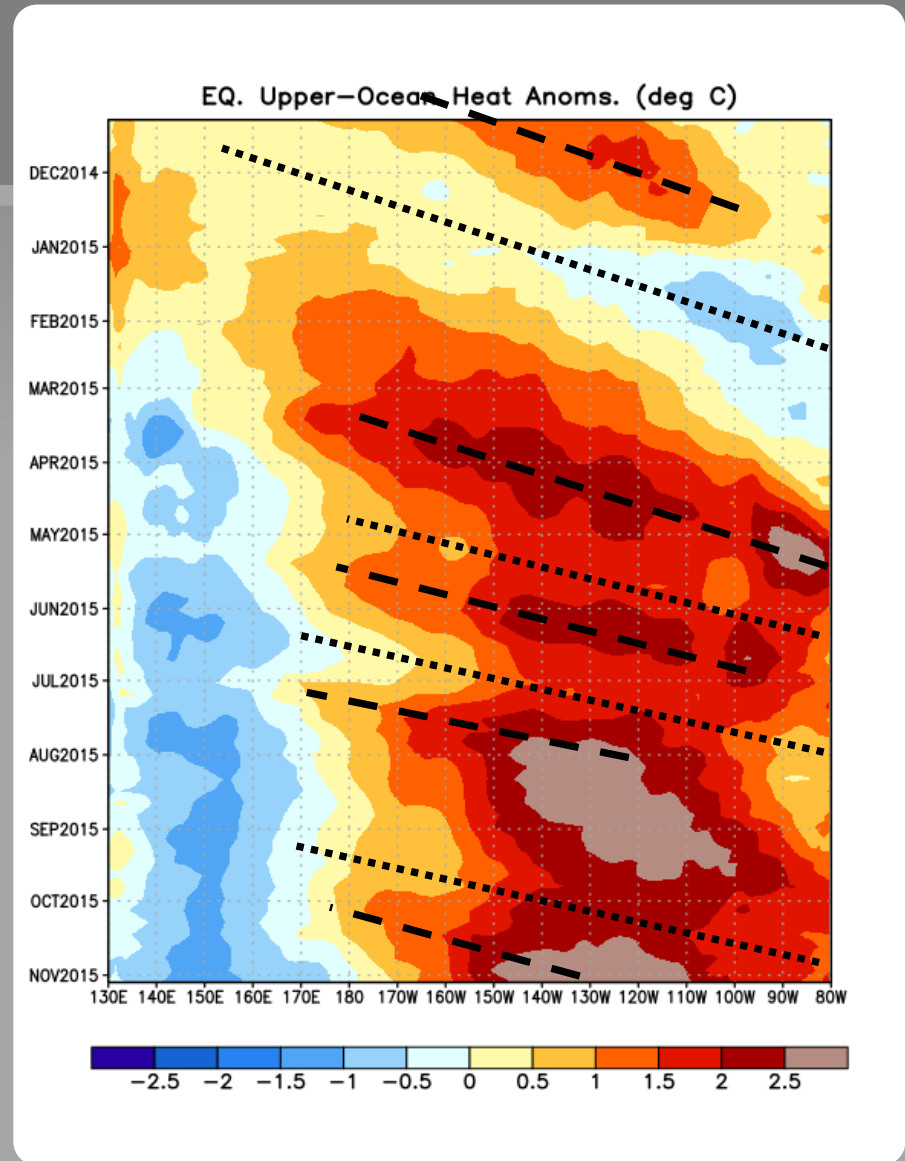
# Weekly Heat Content Evolution in the Equatorial Pacific

Downwelling phases of a Kelvin wave were observed in March-April, mid-May to late June, and July to August.

During August and September, positive subsurface temperature anomalies slowly shifted eastward.

Another downwelling Kelvin wave was initiated in early October.

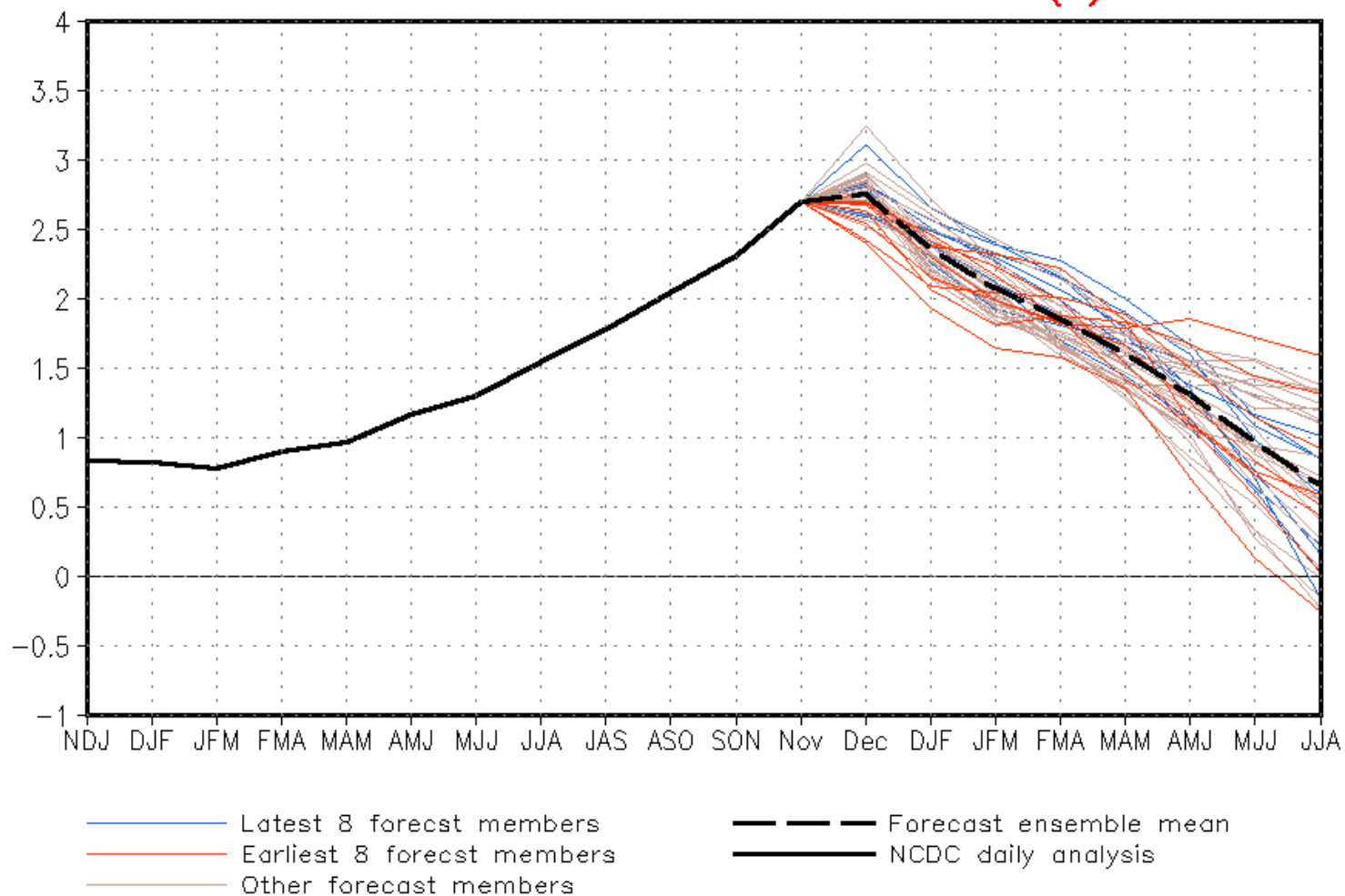
Oceanic Kelvin waves have alternating warm and cold phases. The warm phase is indicated by dashed lines. Down-welling and warming occur in the leading portion of a Kelvin wave, and up-welling and cooling occur in the trailing portion.







### CFSv2 forecast Nino3.4 SST anomalies (K)



# IRI/CPC Pacific Niño

## 3.4 SST Model Outlook

Most models indicate that Niño 3.4 will be above +1.5°C (a “strong” El Niño) during late 2015 into early 2016.

Positive anomalies are predicted to weaken through the Northern Hemisphere Spring 2016.

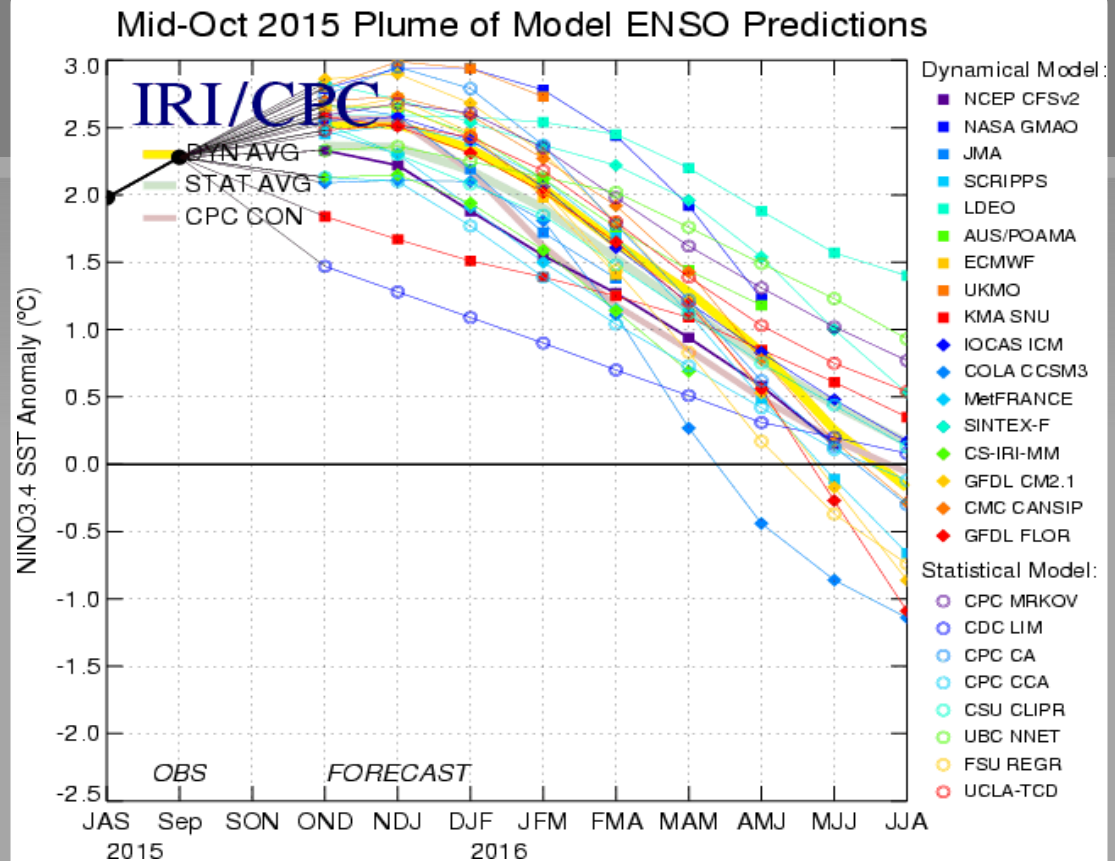
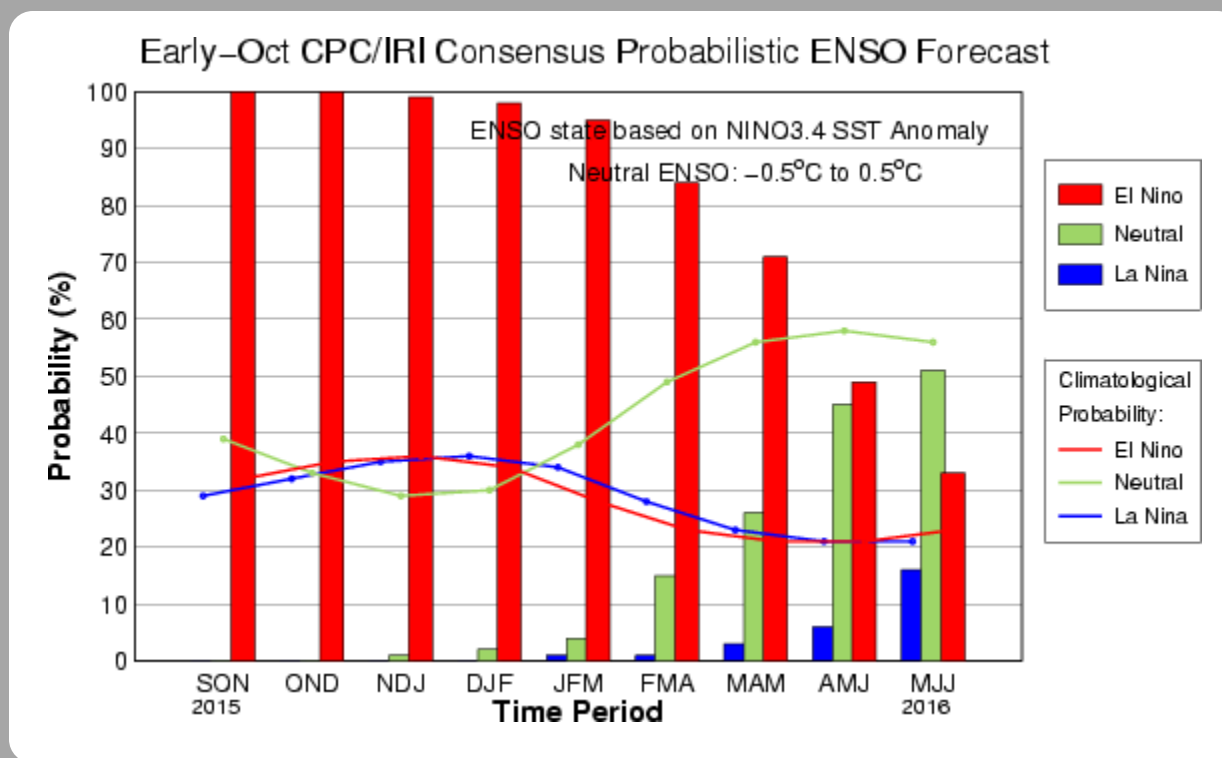


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 13 October 2015).

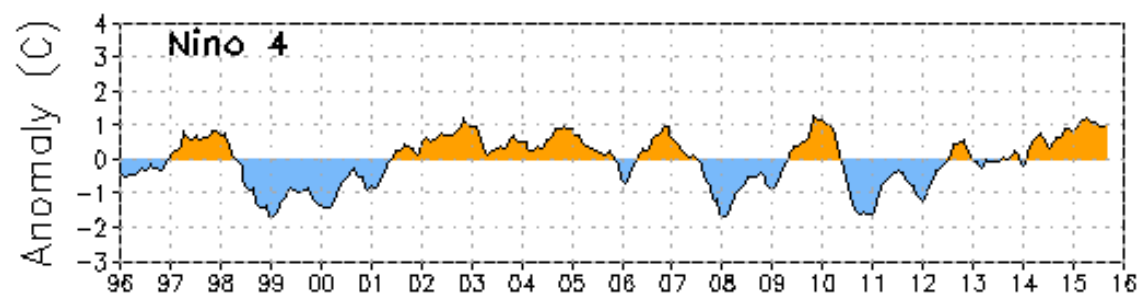
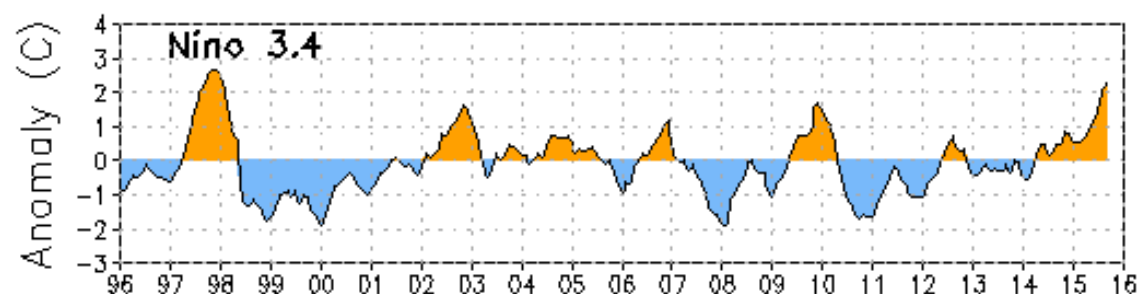
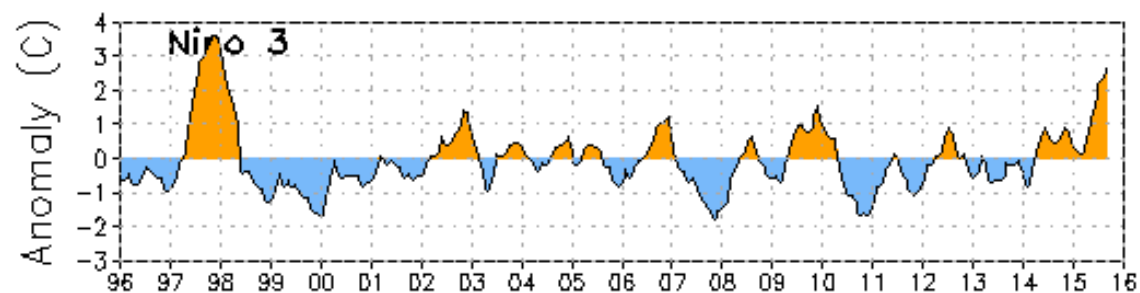
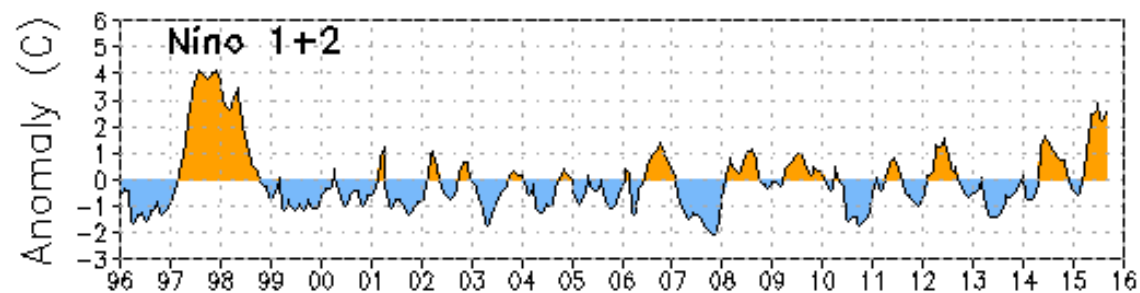
# CPC/IRI Probabilistic ENSO Outlook

Updated: 8 October 2015

The chance of El Niño is approximately 95% through Northern Hemisphere winter and is just under 50% by late spring (AMJ) 2016.

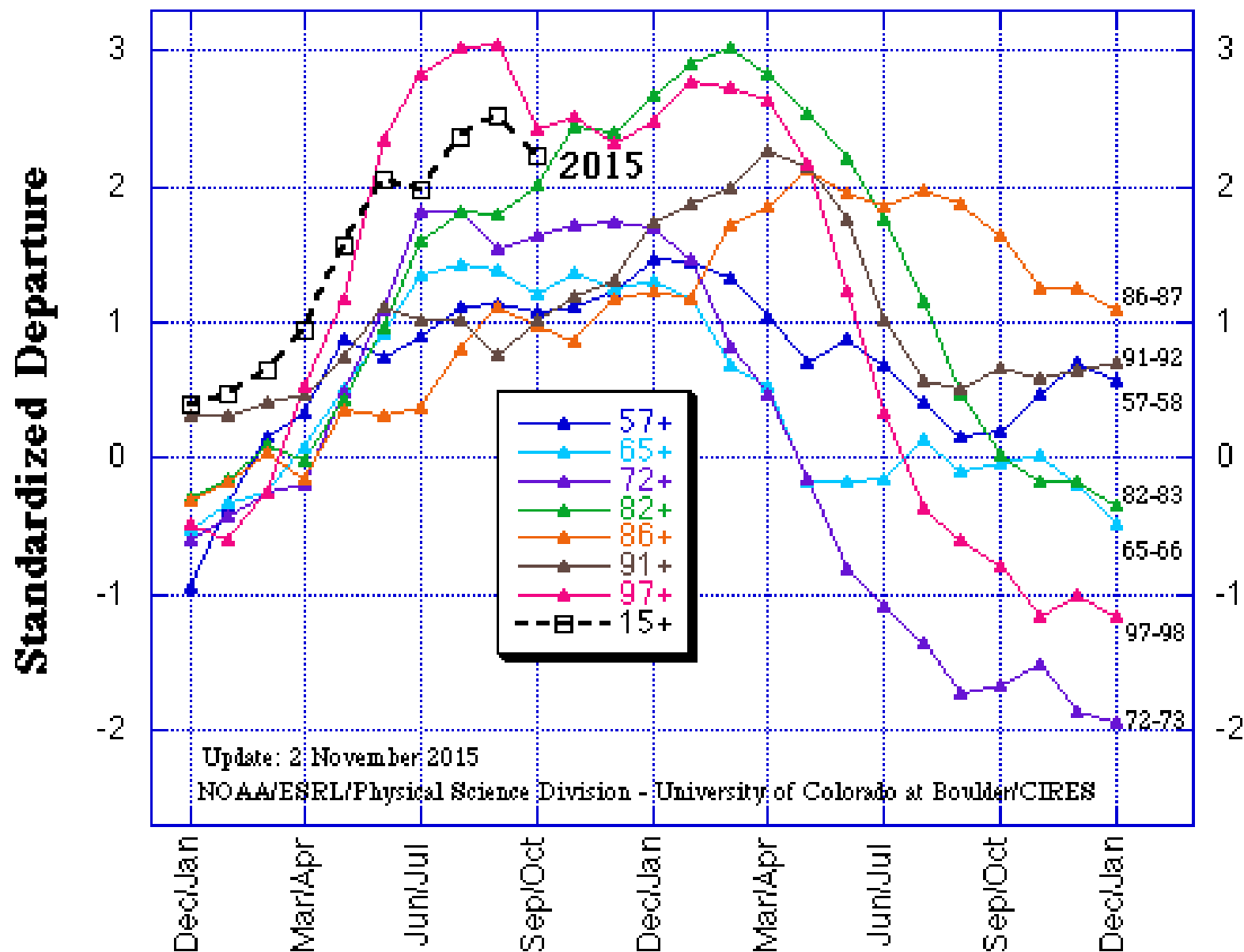


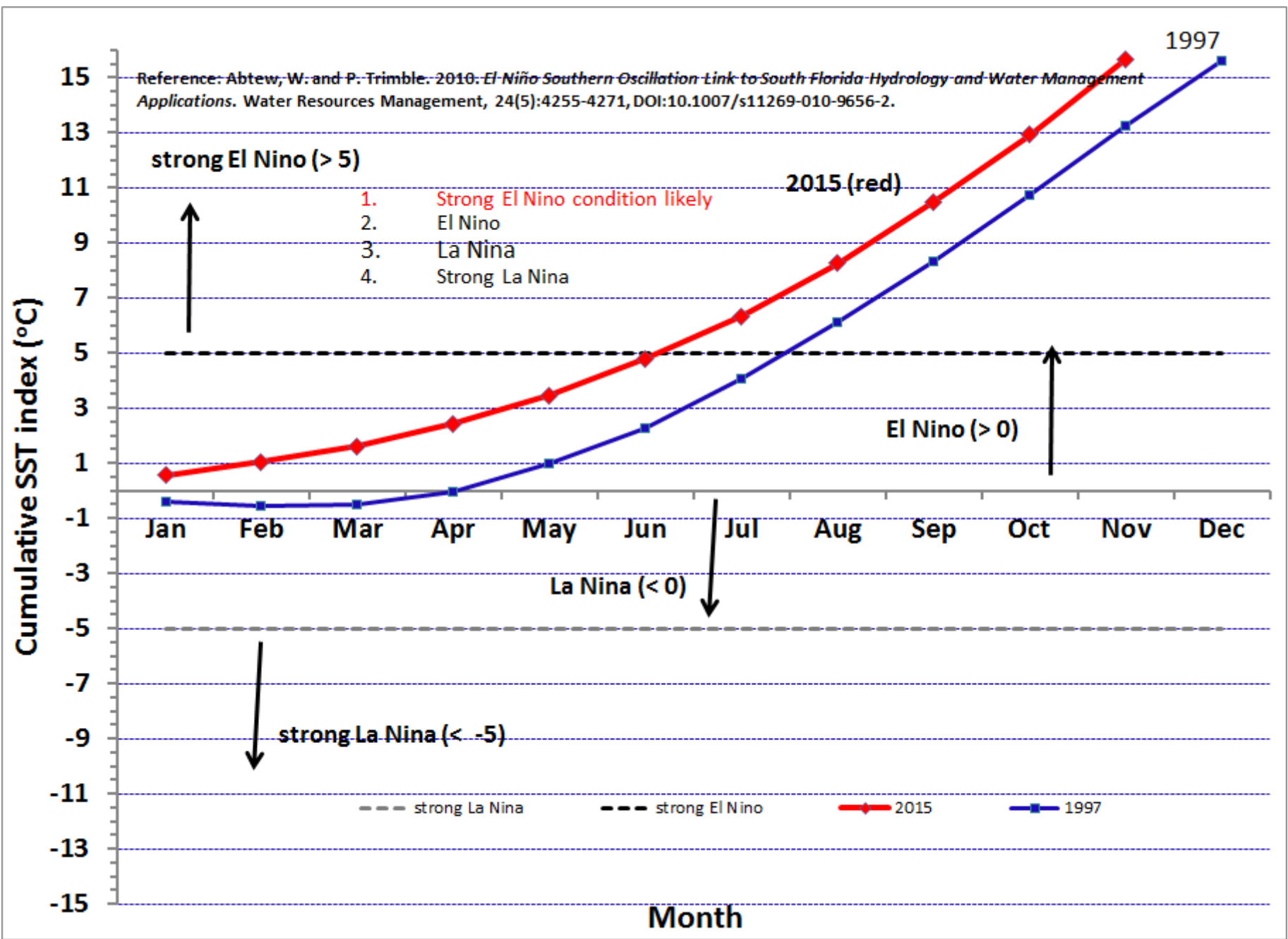




Data updated through September 2015

# Multivariate ENSO Index (MEI) for the seven strongest El Niño events since 1950 vs. 2015

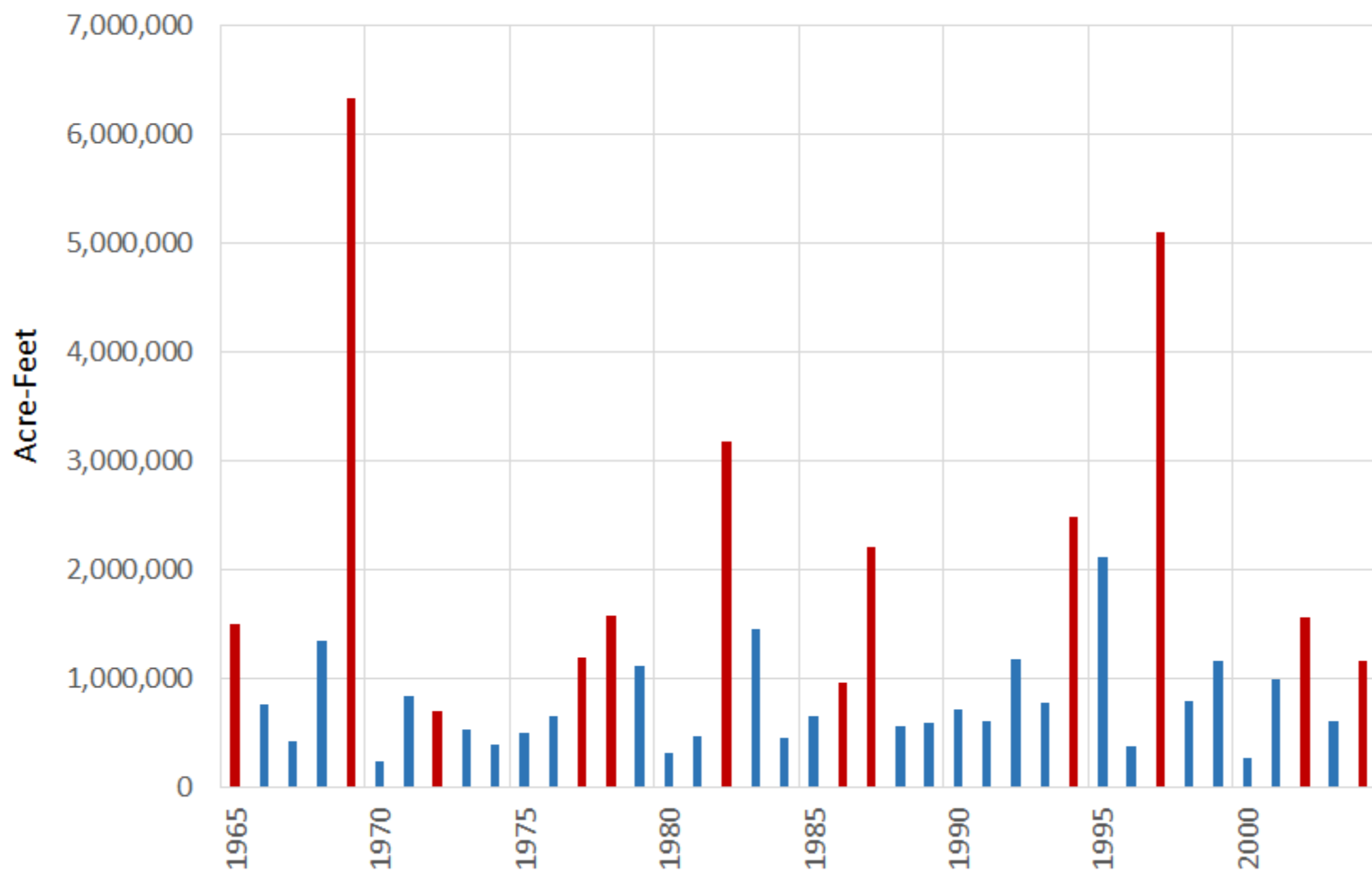






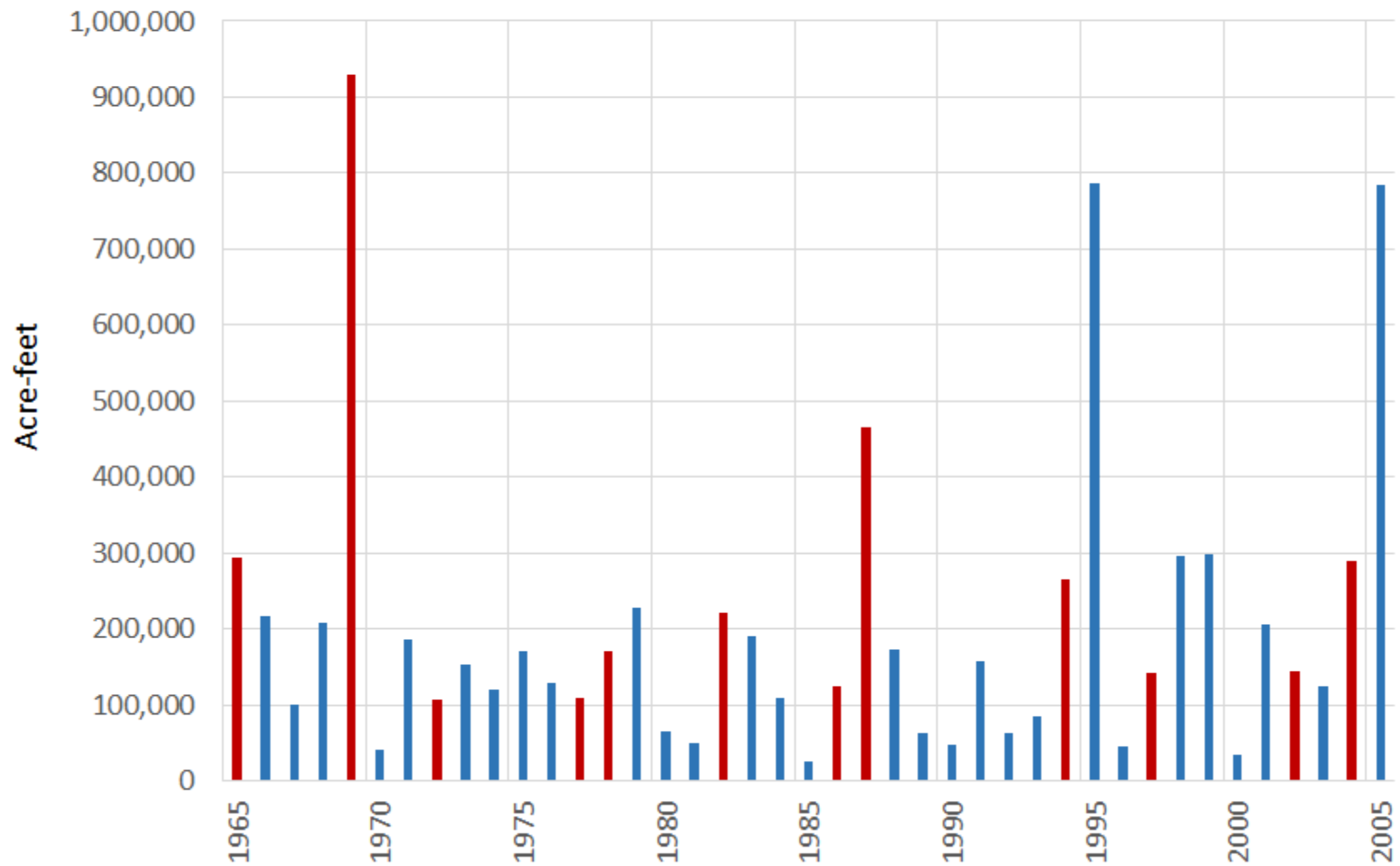
# November through April Regulatory Releases from Lake Okeechobee

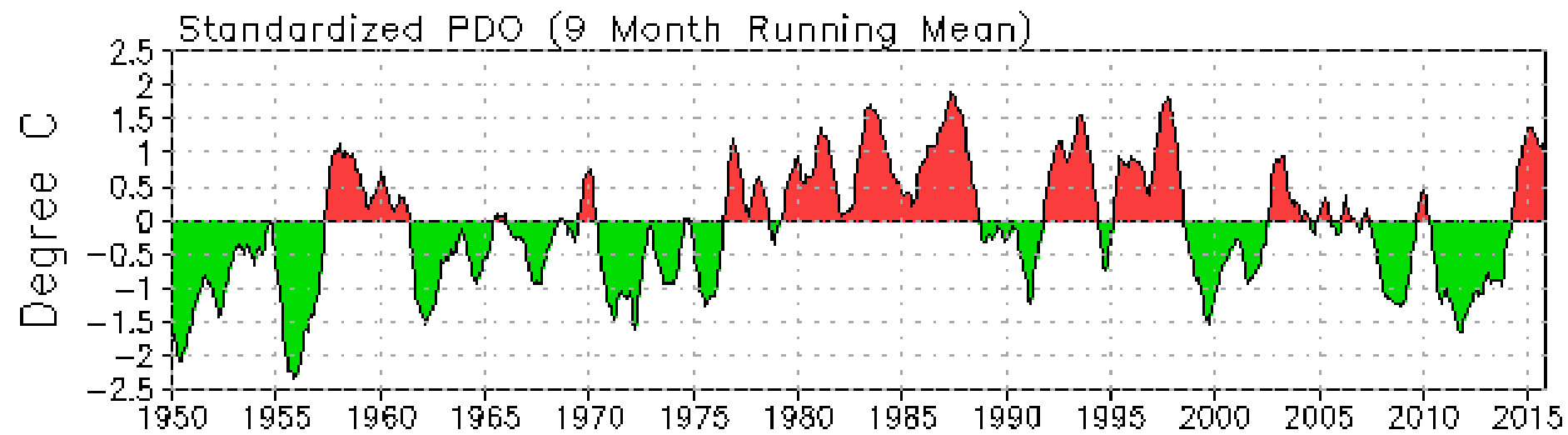
## November 2015 Dynamic Position Analysis



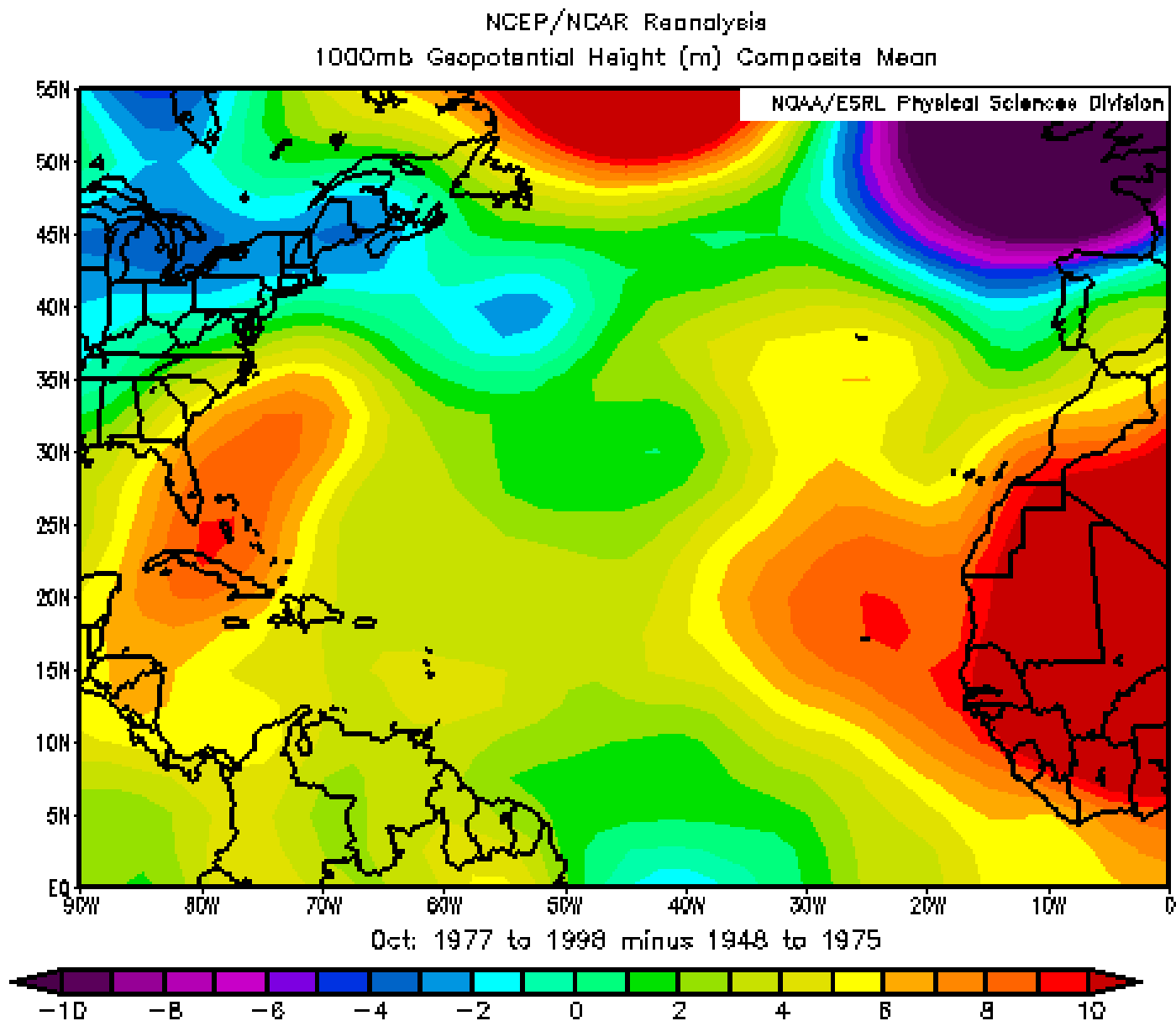
# November Regulatory Releases from Lake Okeechobee

## November 2015 Dynamic Position Analysis



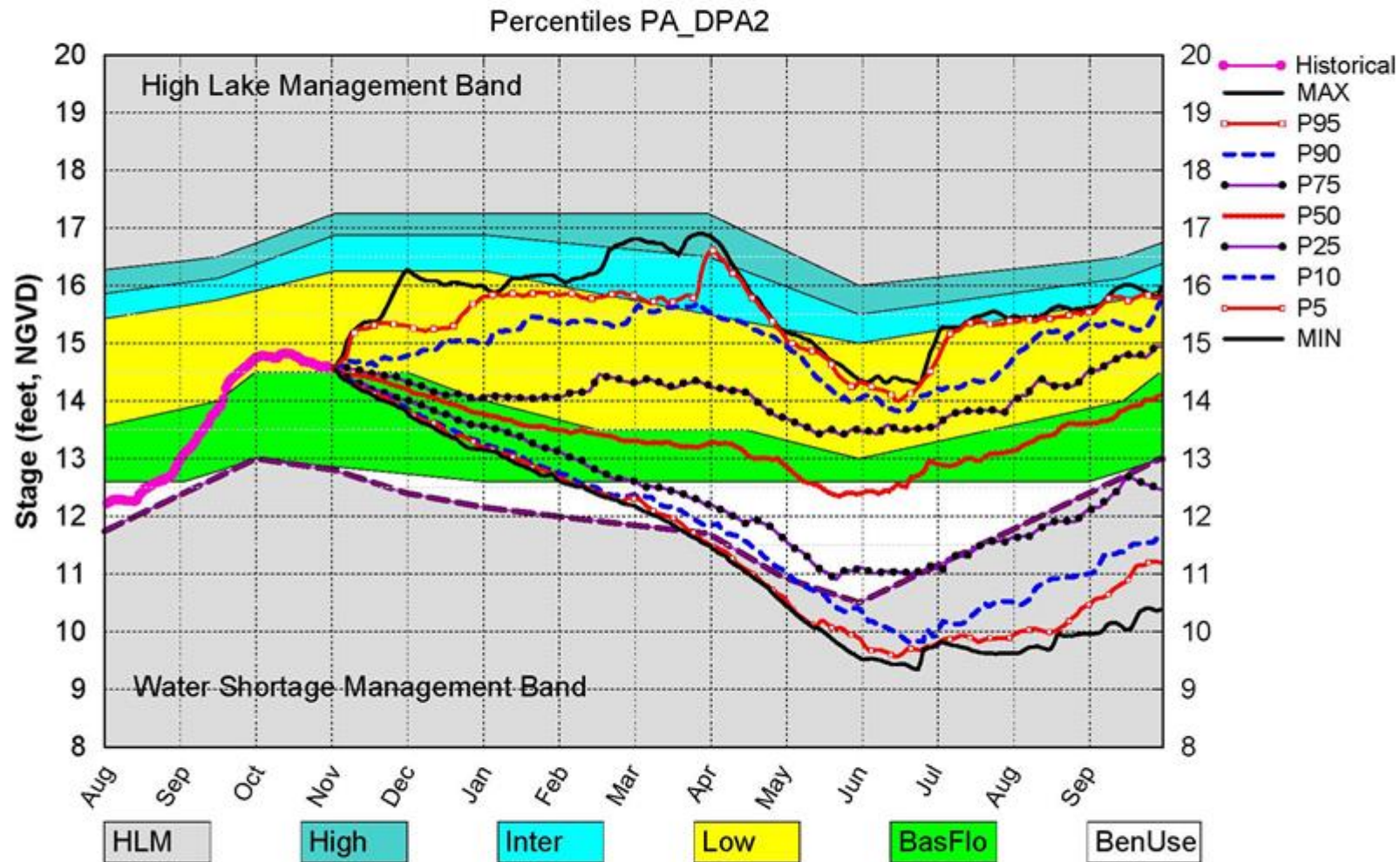






PDO Positive typically results in higher pressure over the Caribbean and Tropical Atlantic

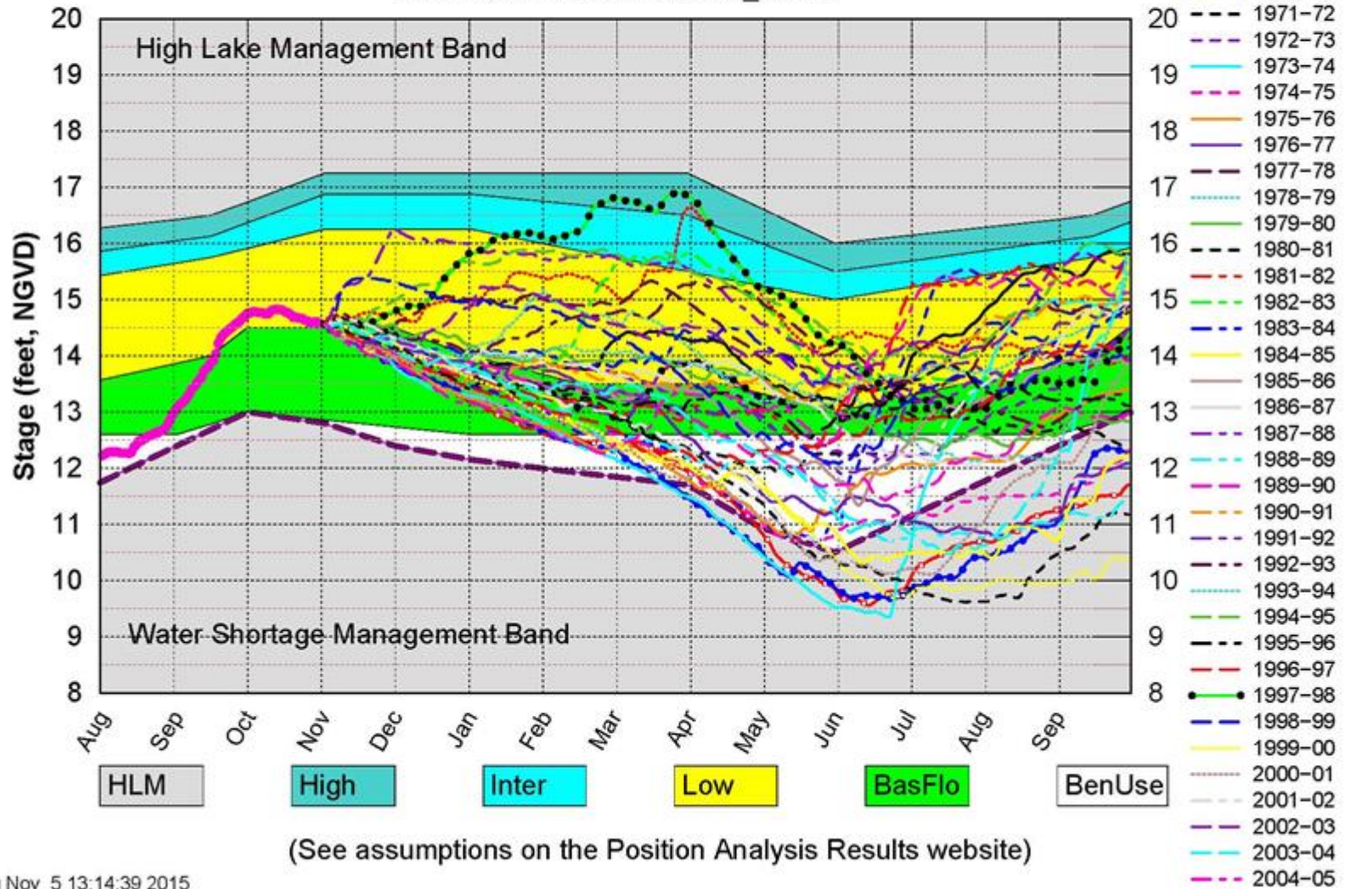
# Lake Okeechobee SFWMM Nov 2015 Dynamic Position Analysis



(See assumptions on the Position Analysis Results website)

# Lake Okeechobee SFWMM Nov 2015 Dynamic Position Analysis

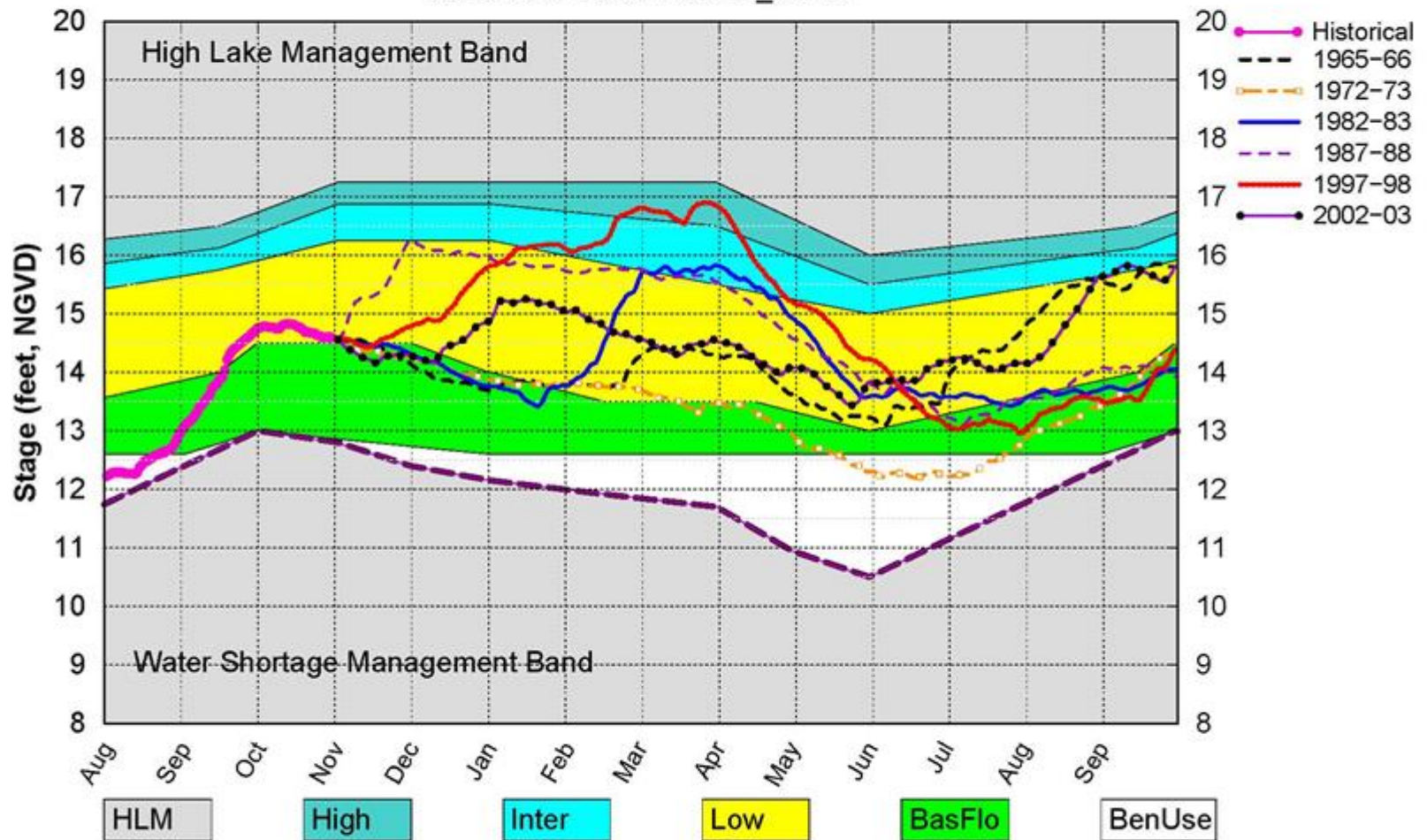
All Simulated Years Plot PA\_DPA2





# Lake Okeechobee SFWMM Nov 2015 Dynamic Position Analysis

All El Nino Years Plot PA\_DPA2



(See assumptions on the Position Analysis Results website)

# Lake Okeechobee SFWMM Nov 2015 Dynamic Position Analysis

AMO Warm / El Nino Analog Years Plot PA\_DPA2

