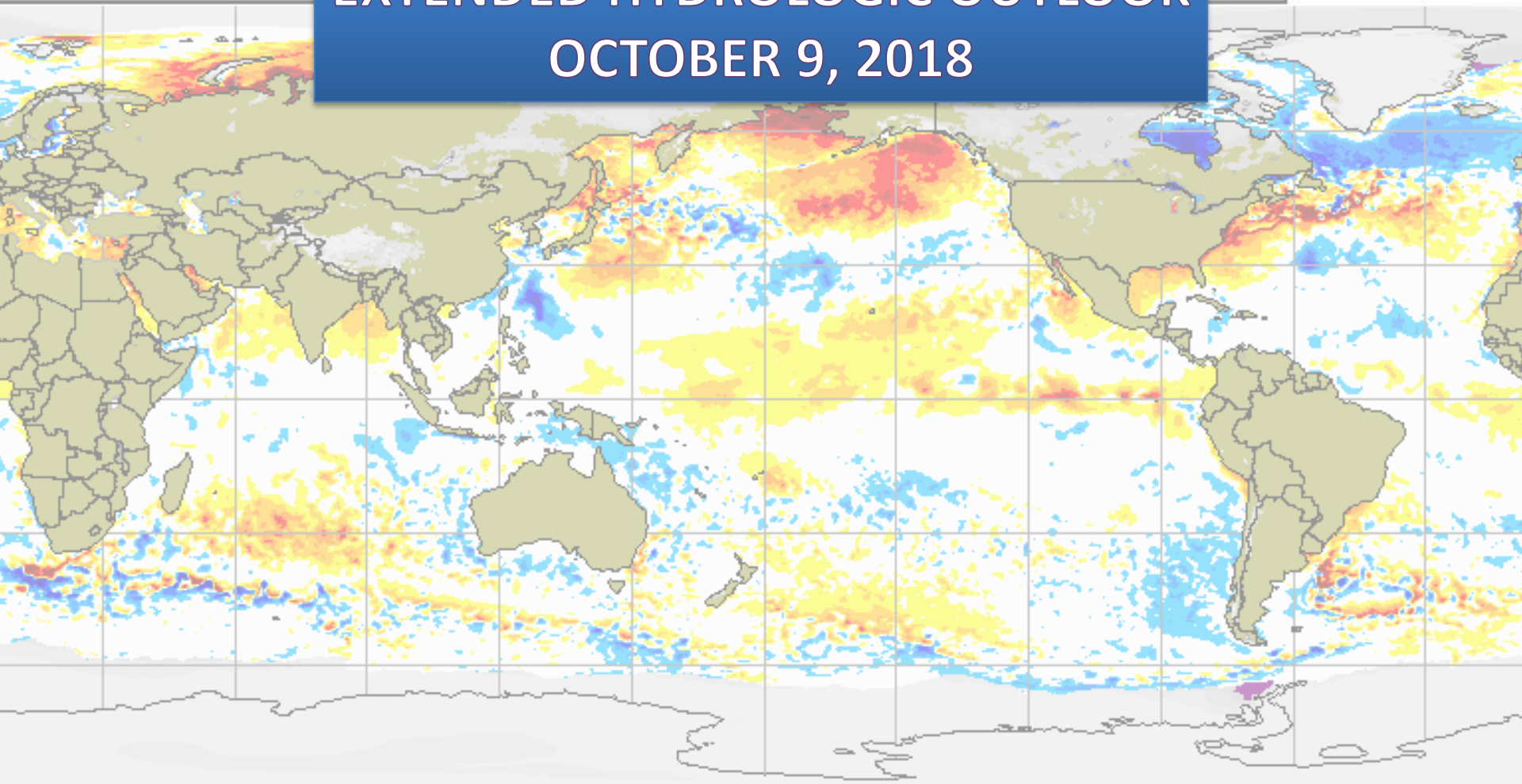
EXTENDED HYDROLOGIC OUTLOOK
OCTOBER 9, 2018



Summary

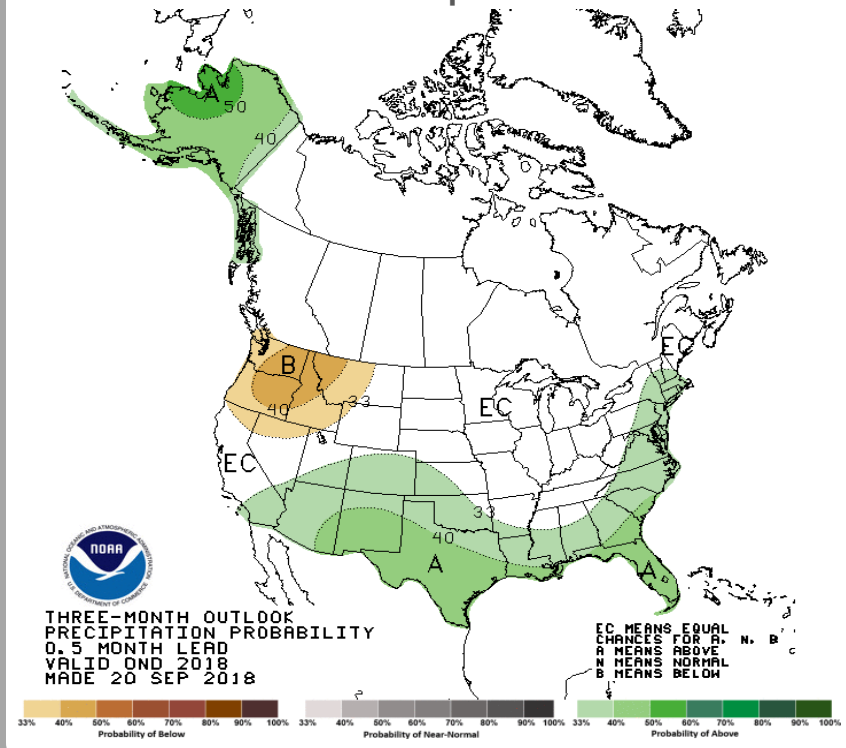
- The Climate Prediction Center (CPC) is forecasting above normal rainfall for October through December.
- ENSO-neutral conditions are present. There is a 50-55% chance of El Niño onset during the fall 2018 (September-November), increasing to 65-70% during winter 2018-19. El Niño increases the chances of a wetter-than-normal dry season.
- Monitoring Atlantic Multidecadal Oscillation (AMO) index for switch to negative (cold) phase, this has the potential to contribute to drier-than-normal wet seasons.

U. S. Seasonal Outlooks

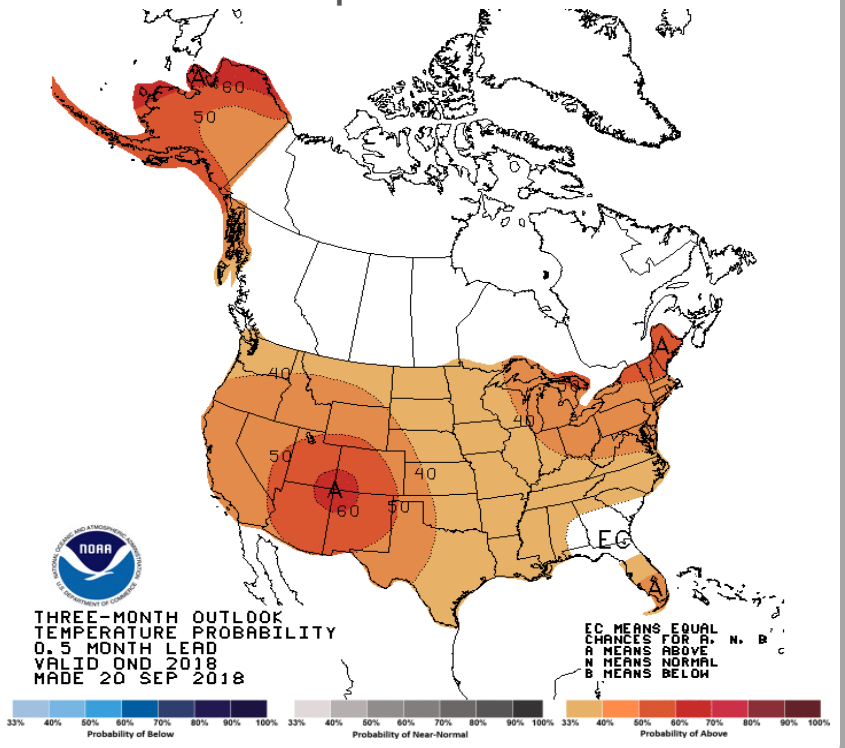
October - December 2018

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

Precipitation



Temperature



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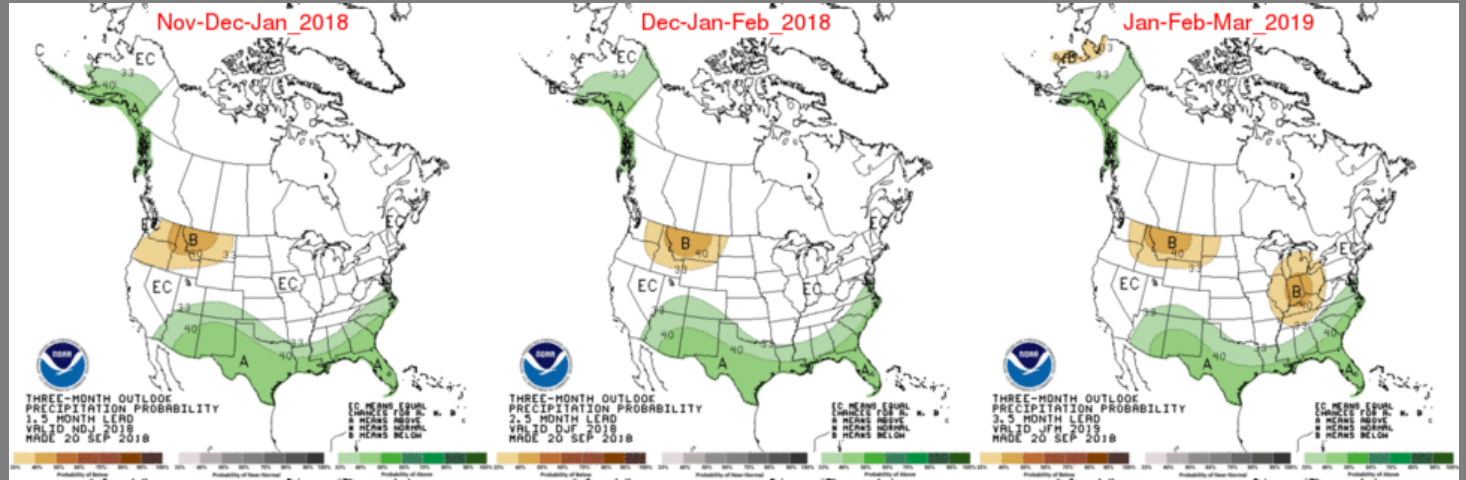

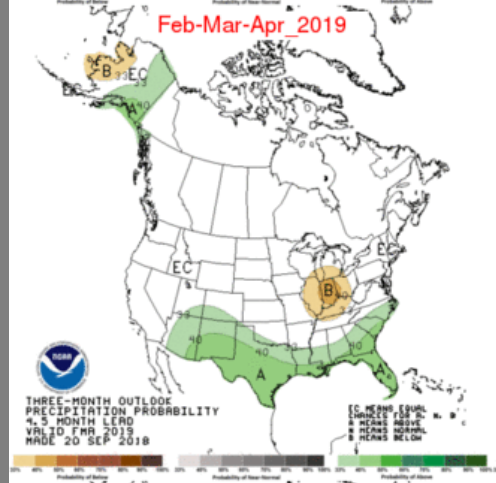

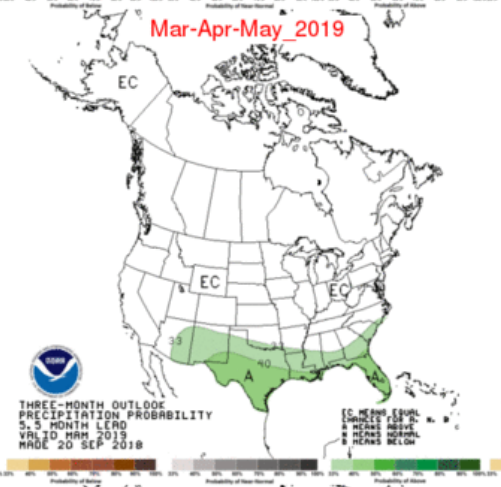

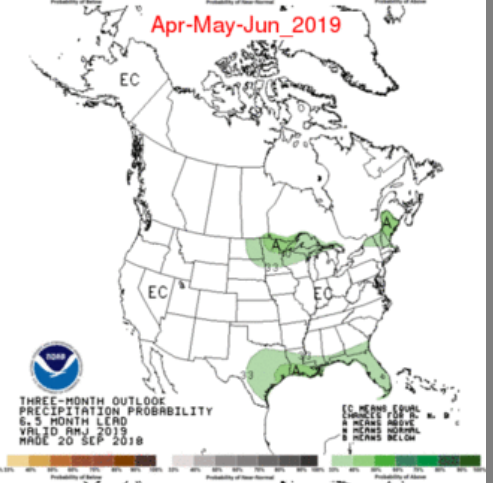

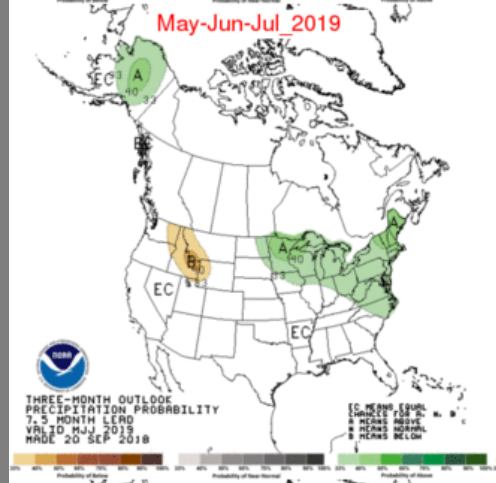

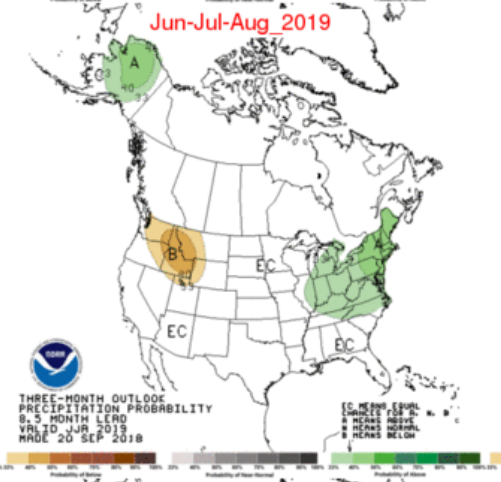

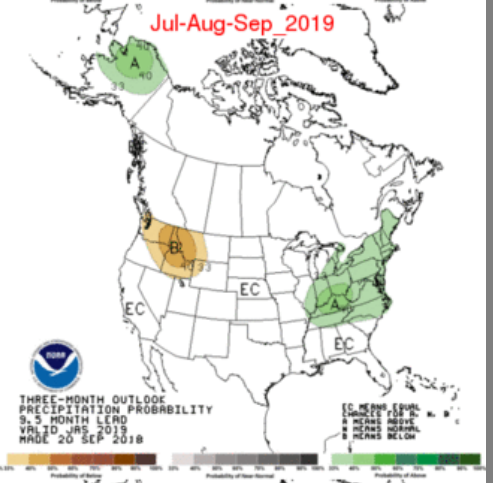

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Teleconnections to South Florida

Climate anomalies being related to each other at large distances:

El Niño Southern Oscillation (ENSO)

- **South Florida dry season (November through May) rainfall is positively correlated with El Niño which has a frequency that ranges between 3 to 7 years while rainfall is negatively correlated with La Niña November through March with a potential increase in tropical rainfall during La Niña**

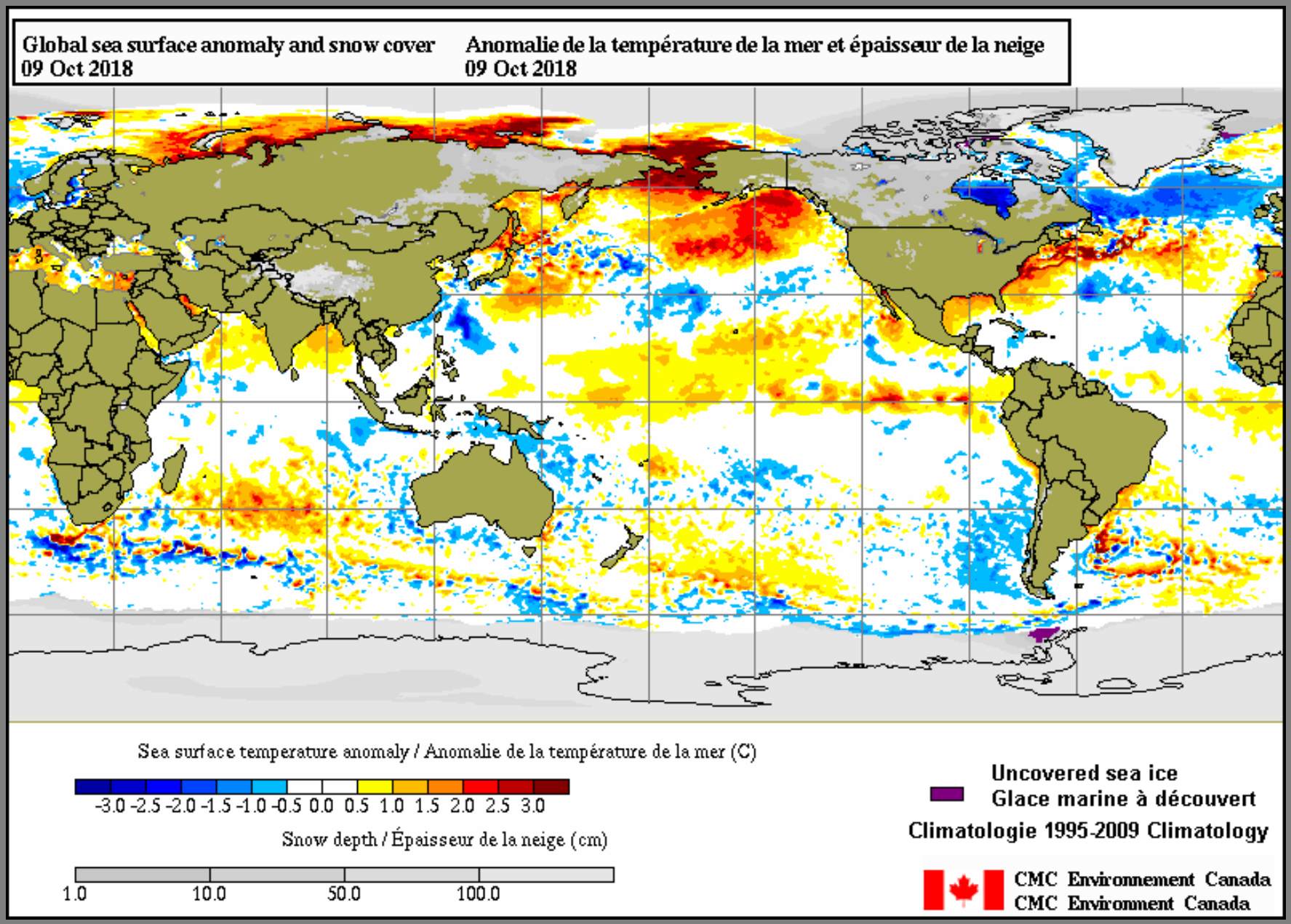
Atlantic Multidecadal Oscillation (AMO)

- **Average annual inflow to Lake Okeechobee is nearly 50% greater during the warm phase compared to the cold phase of the AMO, easterly flow toward south Florida affected by phase**

Pacific Decadal Oscillation (PDO)

- **Increases variations of south Florida dry season rainfall**

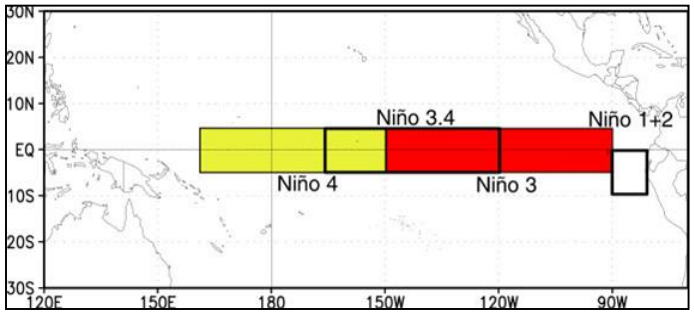
Current Global Sea Surface Temperature Anomalies

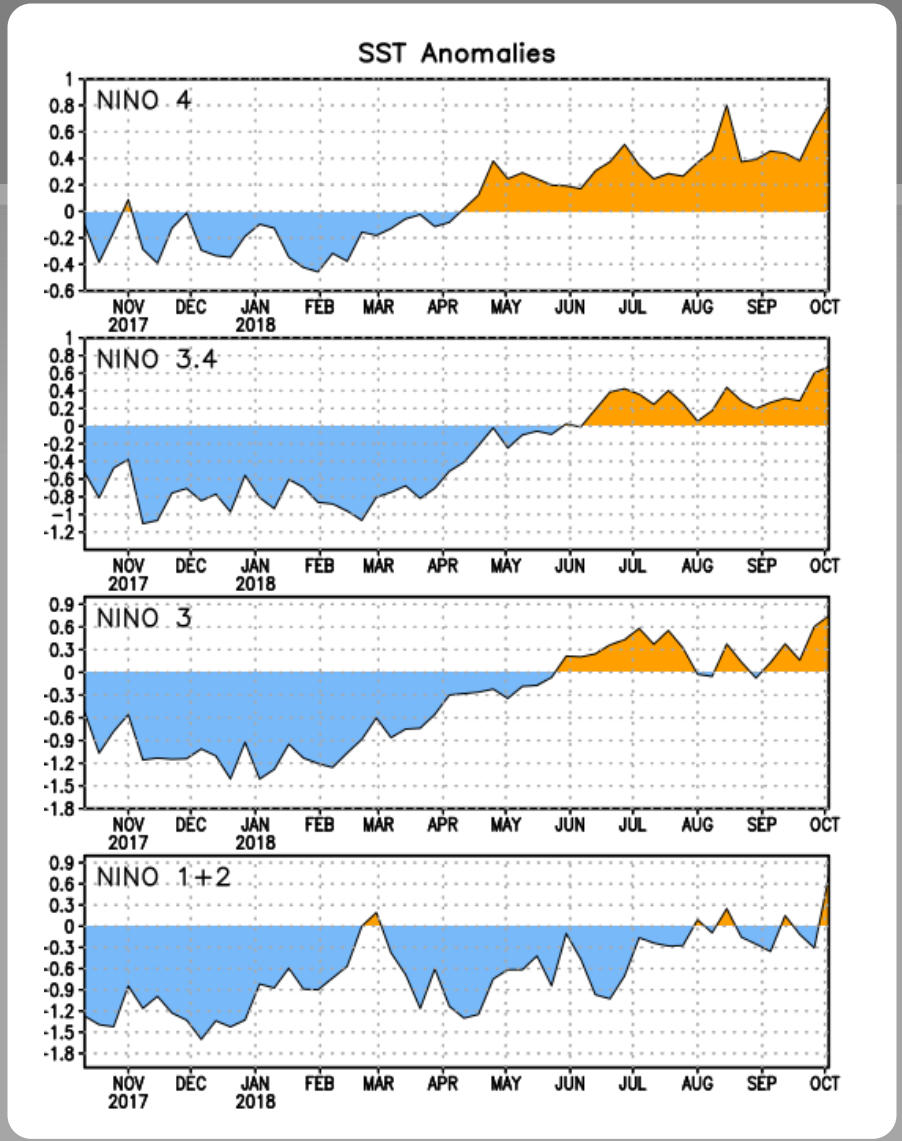


Niño Region SST Departures (ºC) Recent Evolution

The latest weekly SST departures are:

Niño 4	0.8ºC
Niño 3.4	0.7ºC
Niño 3	0.7ºC
Niño 1+2	0.7ºC





Prepared by: Climate Prediction Center / NCEP

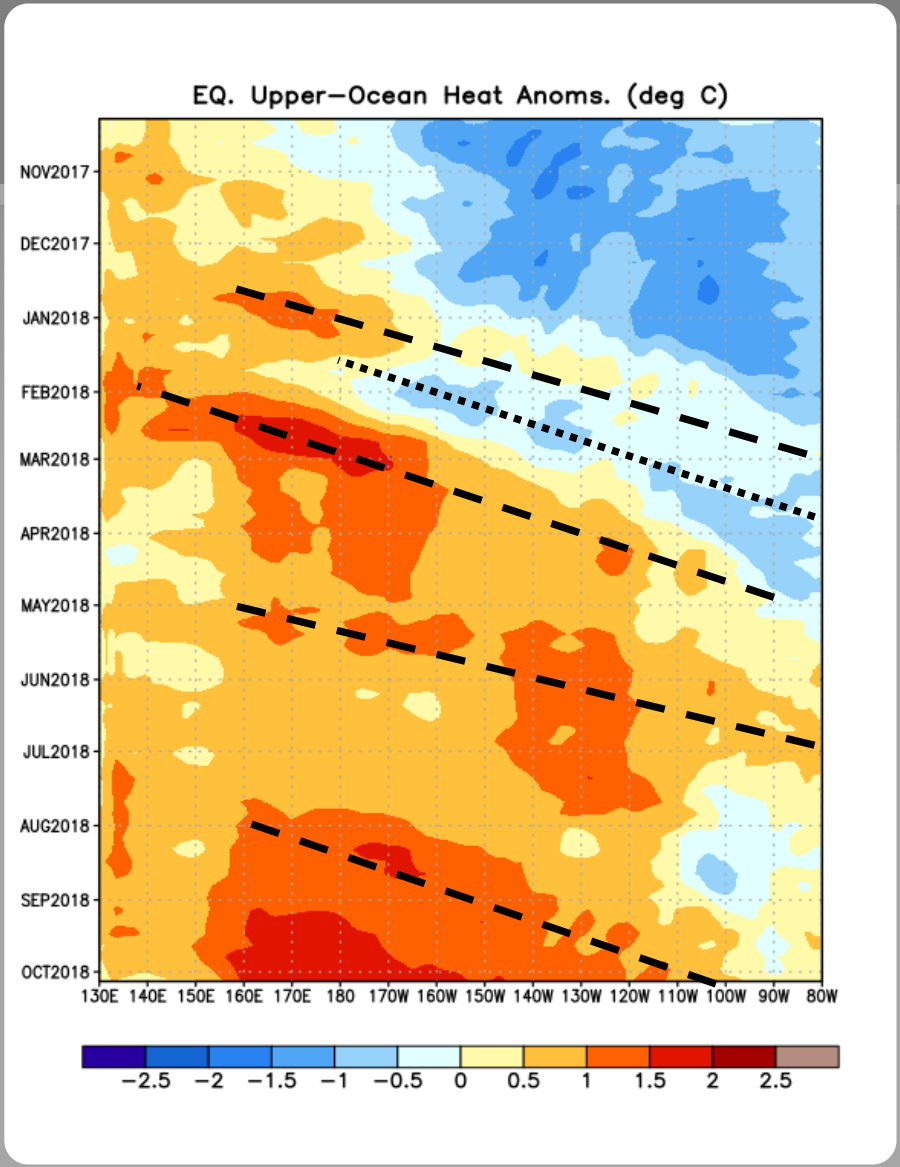
Weekly Heat Content Evolution in the Equatorial Pacific

From December 2017- May 2018, successive Kelvin waves contributed to the eastward shift of positive and negative subsurface temperature anomalies.

From early April 2018 to early July, positive subsurface temperature anomalies persisted across most of the equatorial Pacific.

During July-August 2018, positive subsurface temperature anomalies weakened in the eastern Pacific.

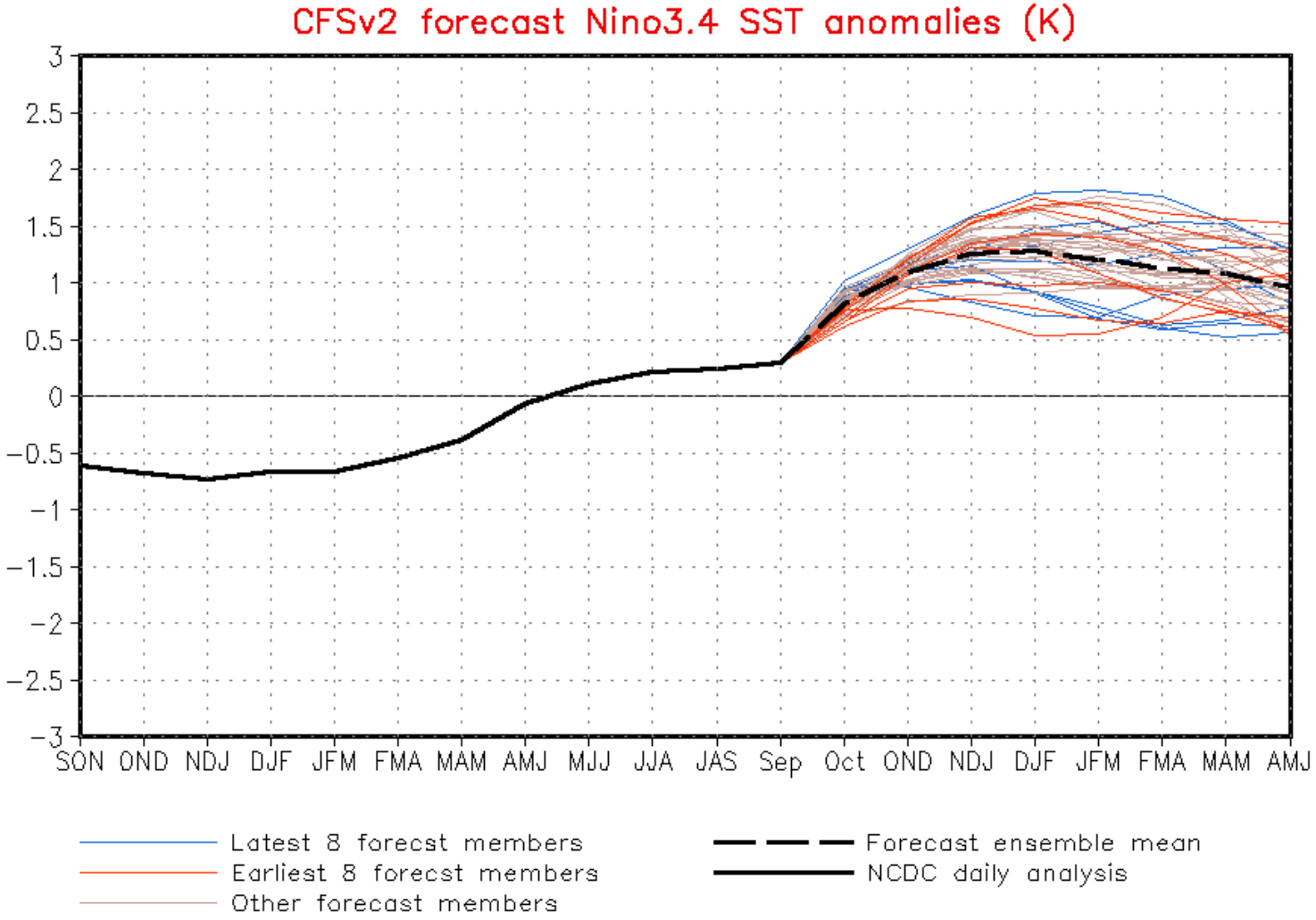
Since early August 2018, positive subsurface anomalies have increased due to a downwelling Kelvin wave.



Equatorial 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.

NWS/NCEP/CPC

Last update: Mon Oct 8 2018
Initial conditions: 28Sep2018–7Oct2018



IRI/CPC Pacific Niño 3.4 SST Model Outlook

The majority of models predict El Niño to develop during September-November 2018.

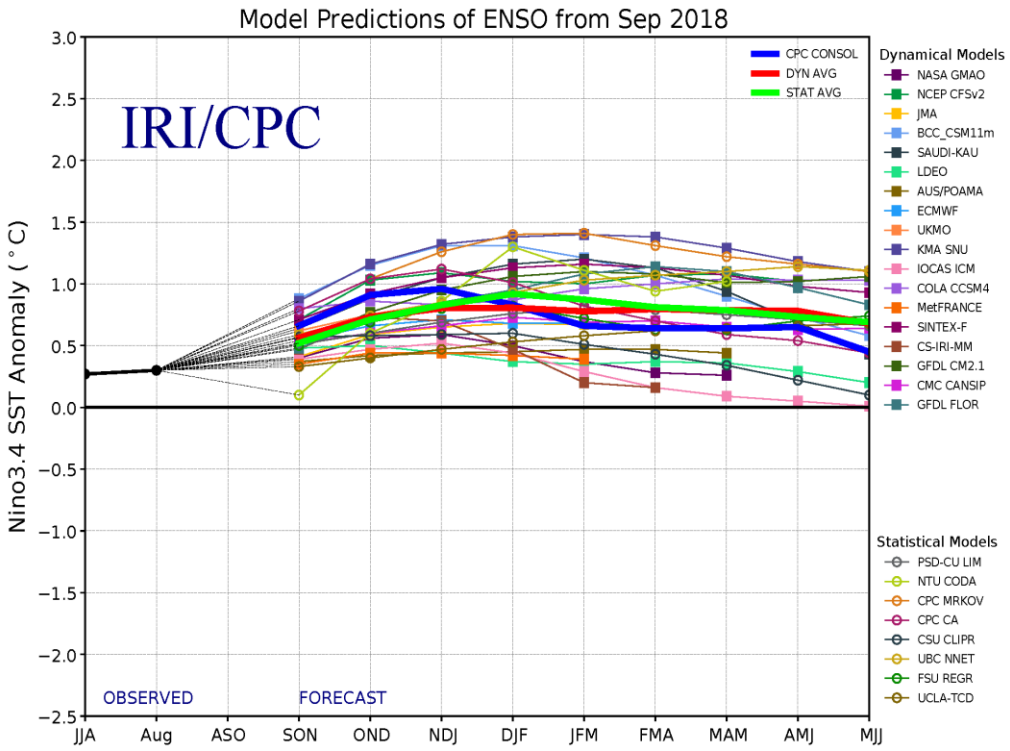


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 September 2018).

Prepared by: Climate Prediction Center / NCEP

Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v5

Recent Pacific warm (red) and cold (blue) periods based on a threshold of +/- 0.5 °C for the Oceanic Nino Index (ONI) [3 month running mean of ERSST.v5 SST anomalies in the Nino 3.4 region (5N-5S, 120-170W)]. For historical purposes, periods of below and above normal SSTs are colored in blue and red when the threshold is met for a minimum of 5 consecutive over-lapping seasons.

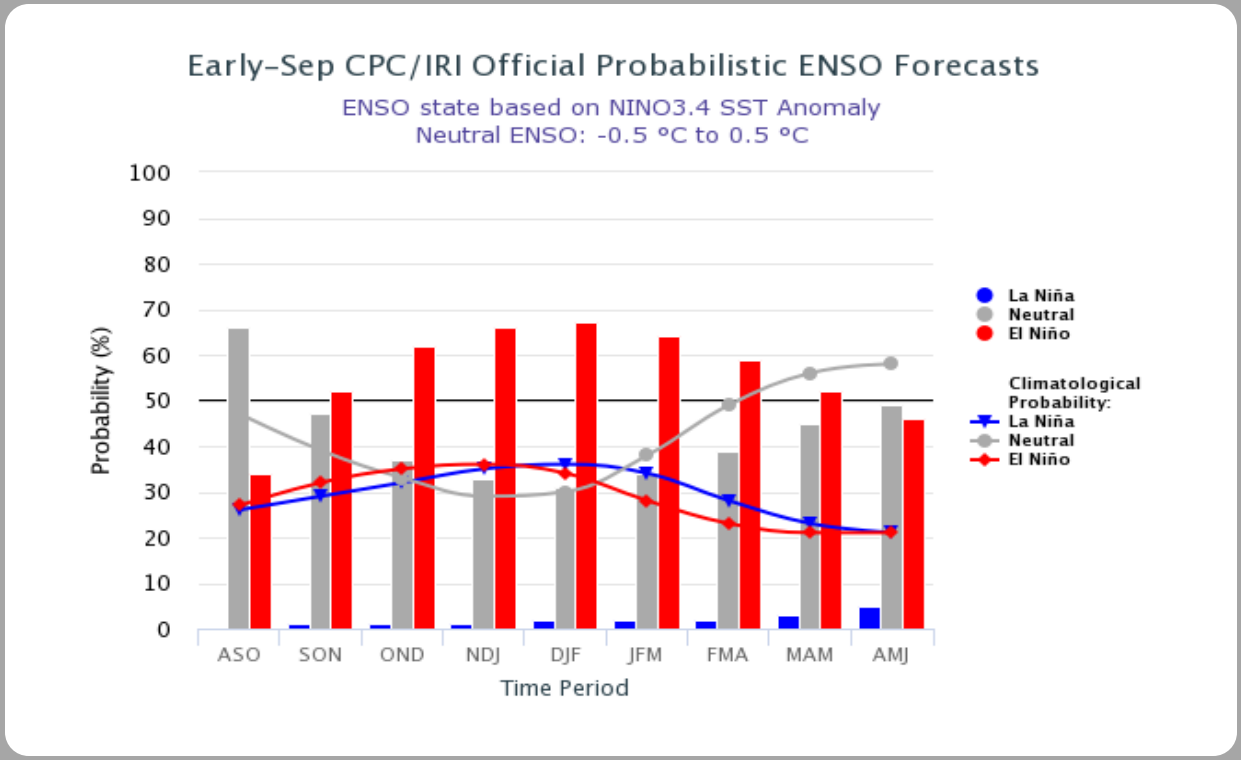
The ONI is one measure of the El Niño-Southern Oscillation, and other indices can confirm whether features consistent with a coupled ocean-atmosphere phenomenon accompanied these periods. The complete table going back to DJF 1950 can be found here.

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2006	-0.8	-0.7	-0.5	-0.3	0.0	0.0	0.1	0.3	0.5	0.7	0.9	0.9
2007	0.7	0.3	0.0	-0.2	-0.3	-0.4	-0.5	-0.8	-1.1	-1.4	-1.5	-1.6
2008	-1.6	-1.4	-1.2	-0.9	-0.8	-0.5	-0.4	-0.3	-0.3	-0.4	-0.6	-0.7
2009	-0.8	-0.7	-0.5	-0.2	0.1	0.4	0.5	0.5	0.7	1.0	1.3	1.6
2010	1.5	1.3	0.9	0.4	-0.1	-0.6	-1.0	-1.4	-1.6	-1.7	-1.7	-1.6
2011	-1.4	-1.1	-0.8	-0.6	-0.5	-0.4	-0.5	-0.7	-0.9	-1.1	-1.1	-1.0
2012	-0.8	-0.6	-0.5	-0.4	-0.2	0.1	0.3	0.3	0.3	0.2	0.0	-0.2
2013	-0.4	-0.3	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.3	-0.2	-0.2	-0.3
2014	-0.4	-0.4	-0.2	0.1	0.3	0.2	0.1	0.0	0.2	0.4	0.6	0.7
2015	0.6	0.6	0.6	0.8	1.0	1.2	1.5	1.8	2.1	2.4	2.5	2.6
2016	2.5	2.2	1.7	1.0	0.5	0.0	-0.3	-0.6	-0.7	-0.7	-0.7	-0.6
2017	-0.3	-0.1	0.1	0.3	0.4	0.4	0.2	-0.1	-0.4	-0.7	-0.9	-1.0
2018	-0.9	-0.8	-0.6	-0.4	-0.1	0.1	0.1	0.1				

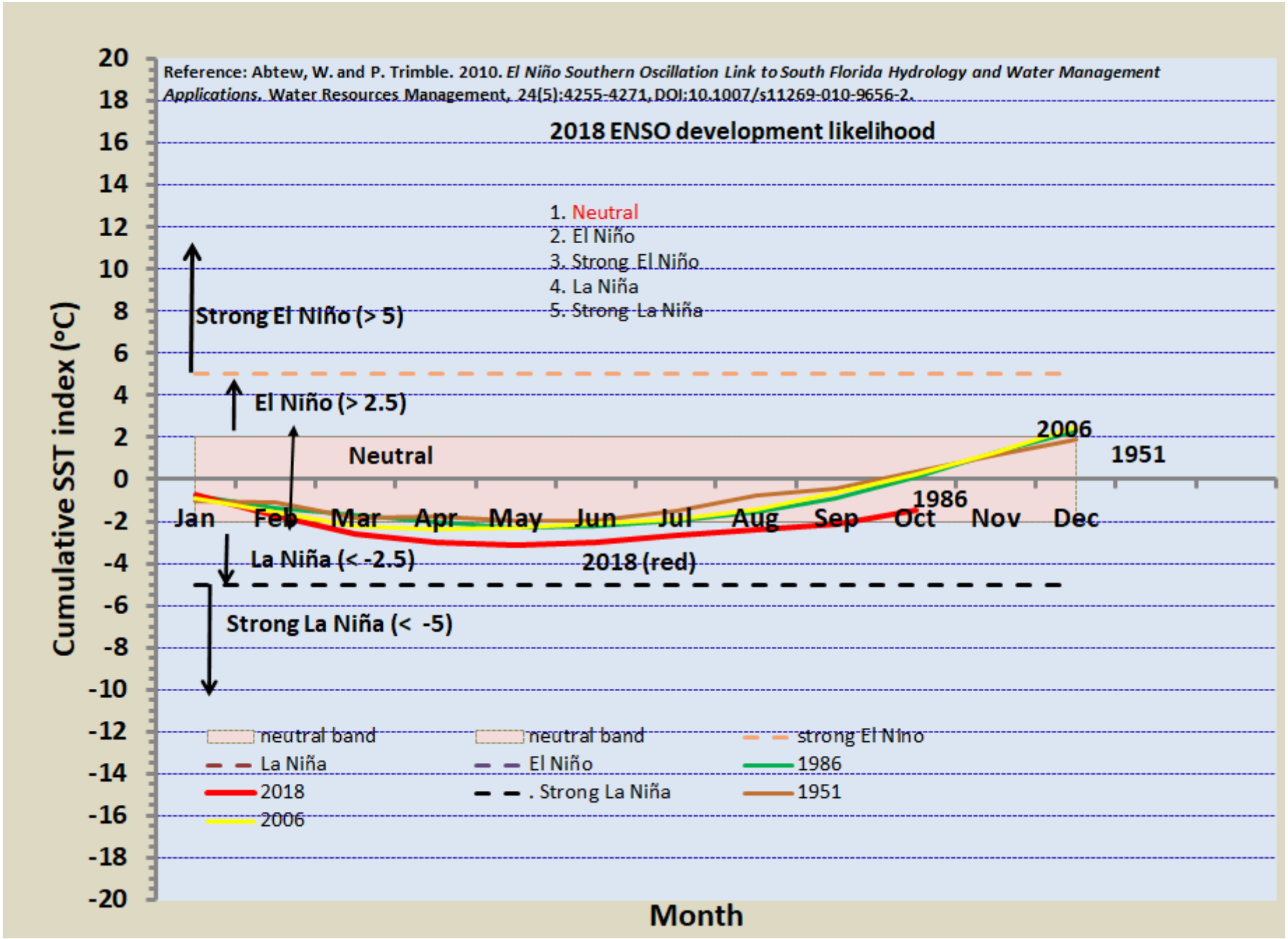
CPC/IRI Probabilistic ENSO Outlook

Updated: 13 September 2018

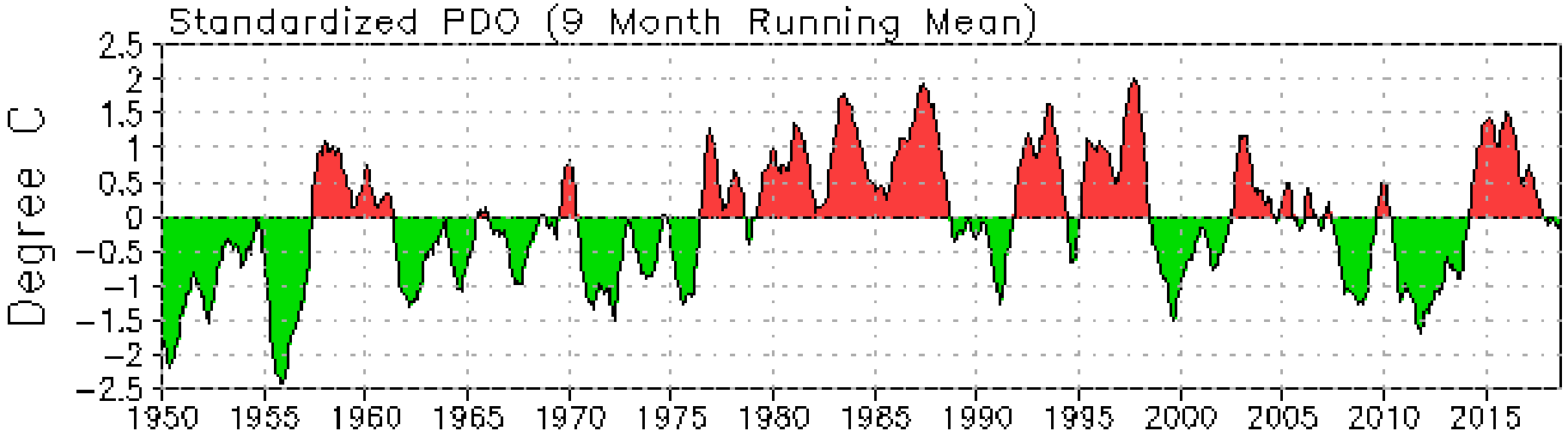
ENSO-neutral is favored through August-October 2018, with El Niño favored thereafter. Chances for El Niño are 65-70% during Northern Hemisphere winter 2018-19.

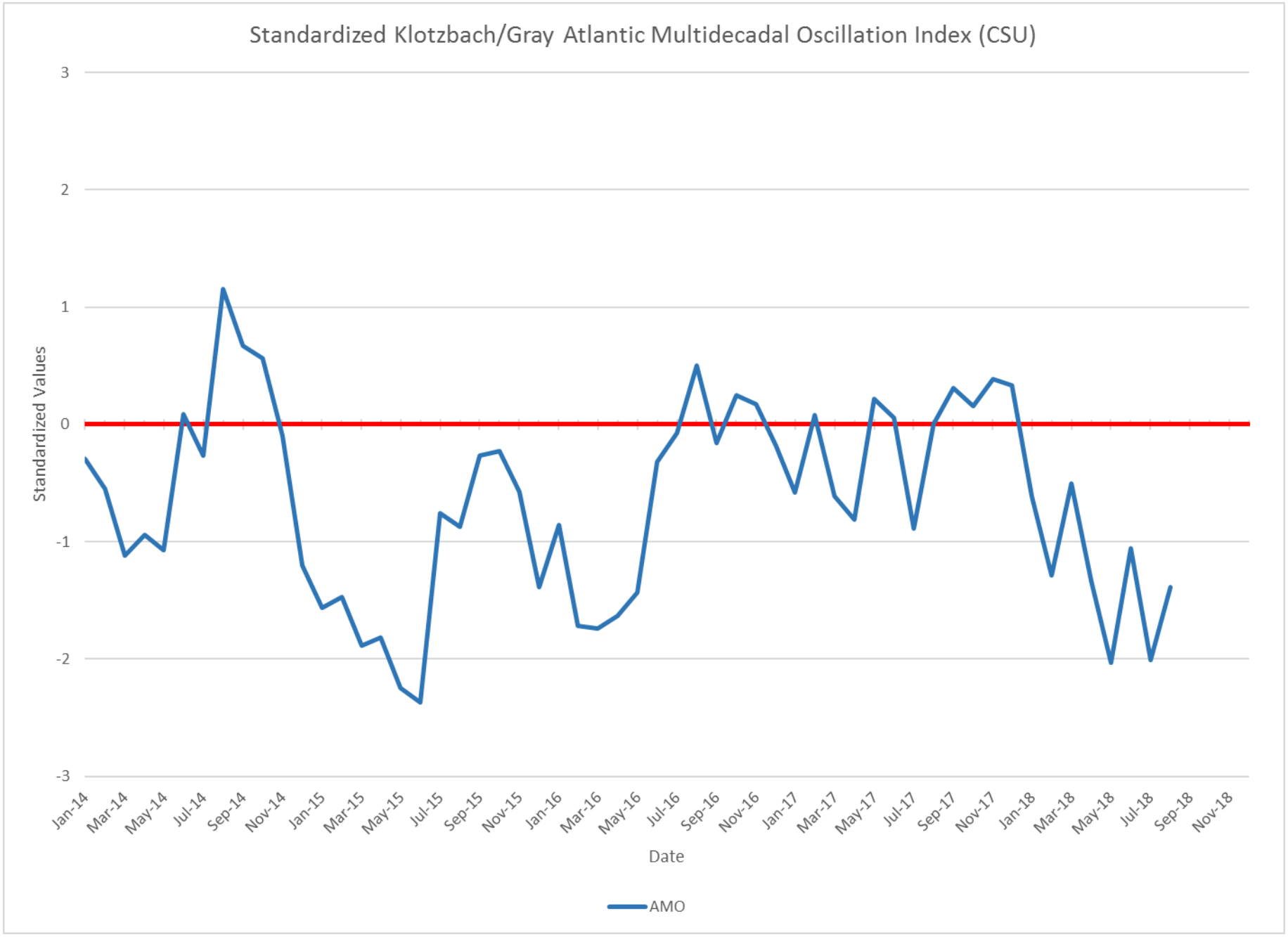


Prepared by: Climate Prediction Center / IRI



Source: Wossenu Abtew (SFWMD)

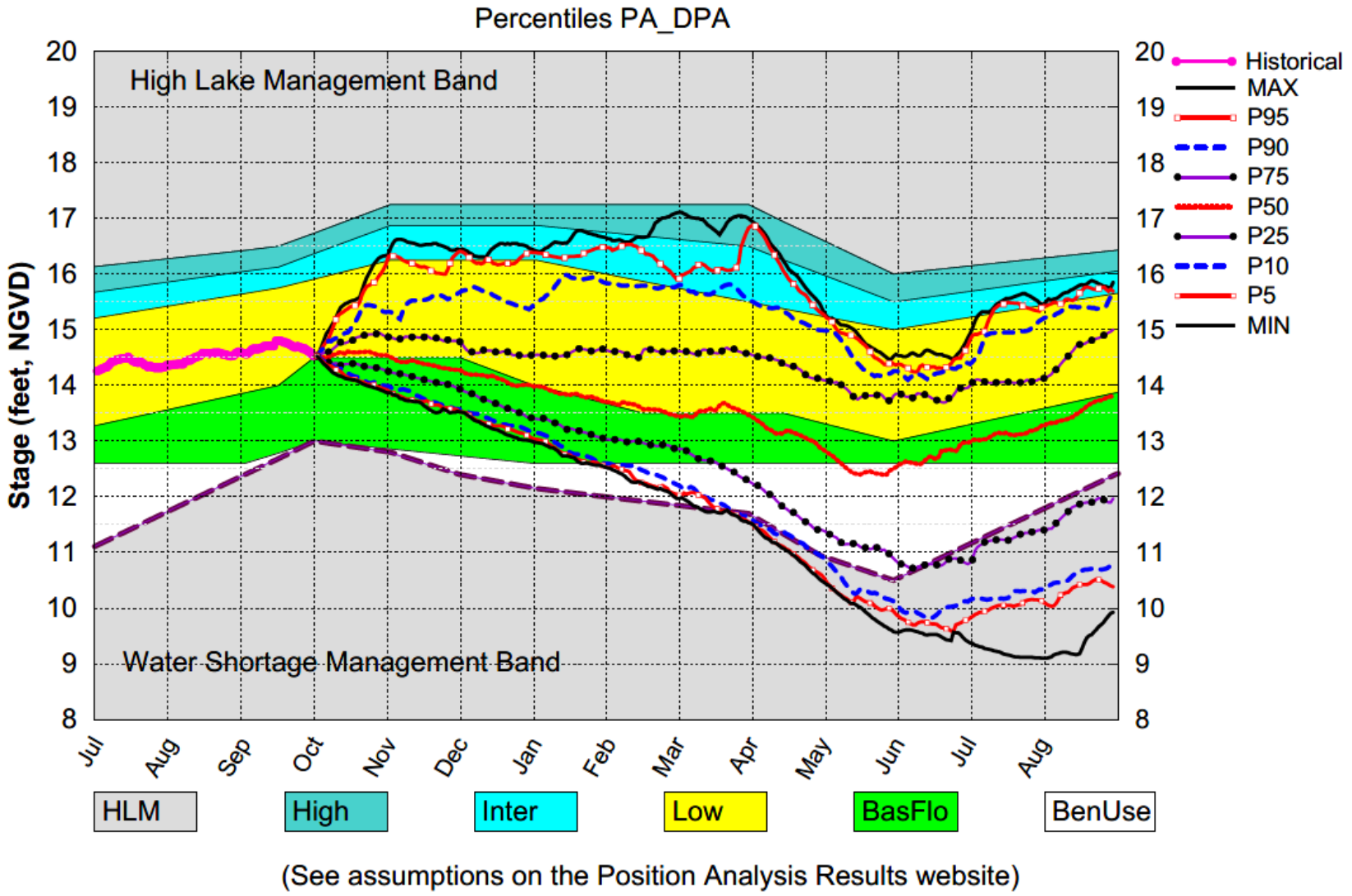

Standardized PDO (9 Month Running Mean)
Degree C
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015


Standardized Klotzbach/Gray Atlantic Multidecadal Oscillation Index (CSU)
3
2
1
0
-1
-2
-3
Standardized Values
Jan-14
Mar-14
May-14
Jul-14
Sep-14
Nov-14
Jan-15
Mar-15
May-15
Jul-15
Sep-15
Nov-15
Jan-16
Mar-16
May-16
Jul-16
Sep-16
Nov-16
Jan-17
Mar-17
May-17
Jul-17
Sep-17
Nov-17
Jan-18
Mar-18
May-18
Jul-18
Sep-18
Nov-18
Date
AMO

Dynamic Position Analysis

- Based on historical climatic conditions spanning the period 1965-2005
- Each year the model resets the initial stages for Lake Okeechobee (LOK) and the Water Conservation Areas (WCAs) to value on the 1st of the previous month and conditions the simulation using real time data during the previous month to achieve real time stage on the 1st of the current month for both Lake Okeechobee and the Water Conservation Areas
- Dynamic Position Analysis
  - Each 1-year simulation starts with current hydrologic conditions (e.g., 1-Oct-2018)
  - 41 1-year simulations of system response to historical rainfall conditions
  - Statistical summaries used to display projections

Lake Okeechobee SFWMM Oct 2018 Position Analysis

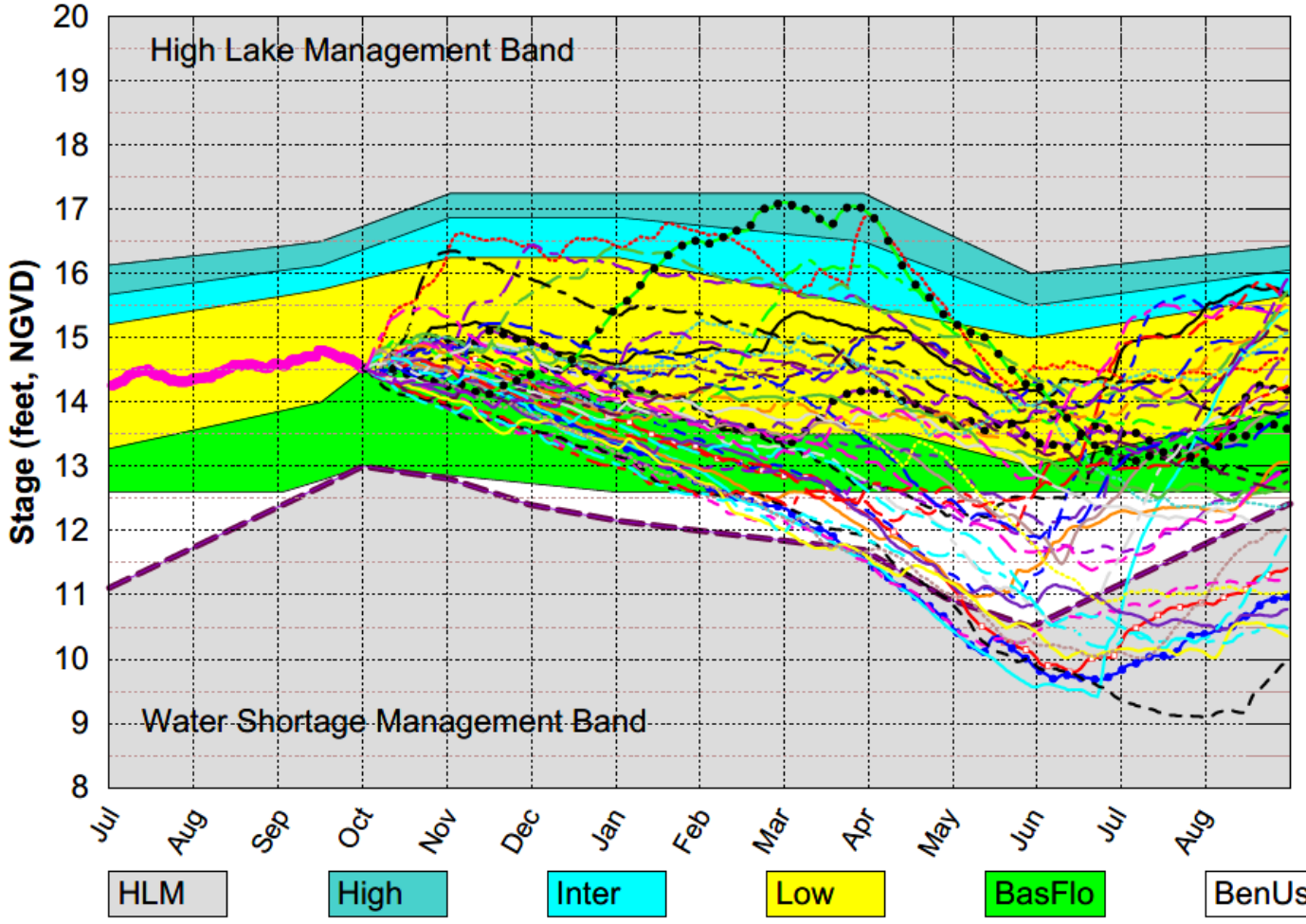


(See assumptions on the Position Analysis Results website)

Fri Oct 5 12:10:39 2018

Lake Okeechobee SFWMM Oct 2018 Position Analysis

All Simulated Years Plot PA_DPA



Historical
1965-66
1966-67
1967-68
1968-69
1969-70
1970-71
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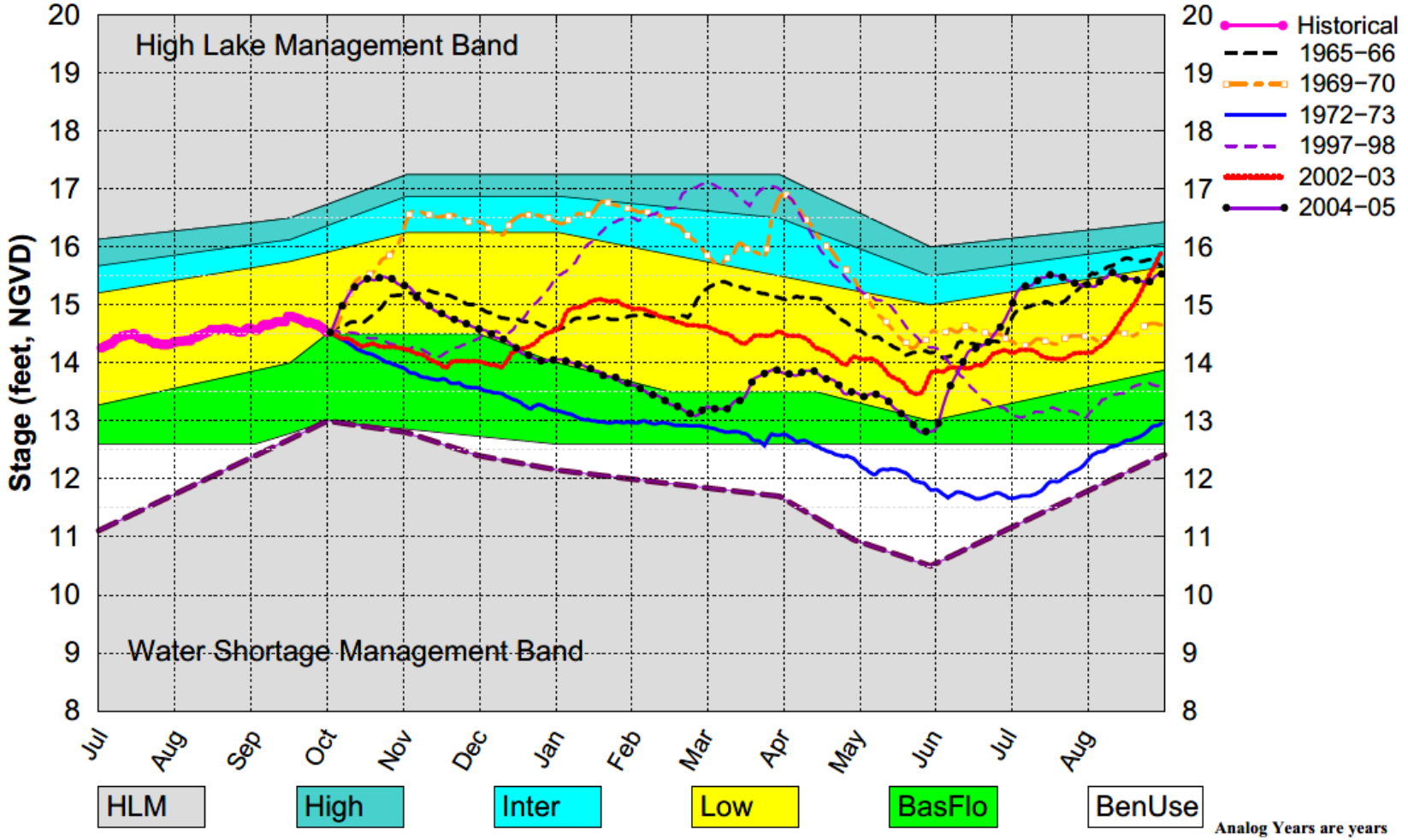
1998-99
1999-00
2000-01
2001-02
2002-03
2003-04
2004-05

(See assumptions on the Position Analysis Results website)

Fri Oct 5 12:10:17 2018

Lake Okeechobee SFWMM Oct 2018 Position Analysis

AMO Warm / El Nino Analog Years Plot PA_DPA

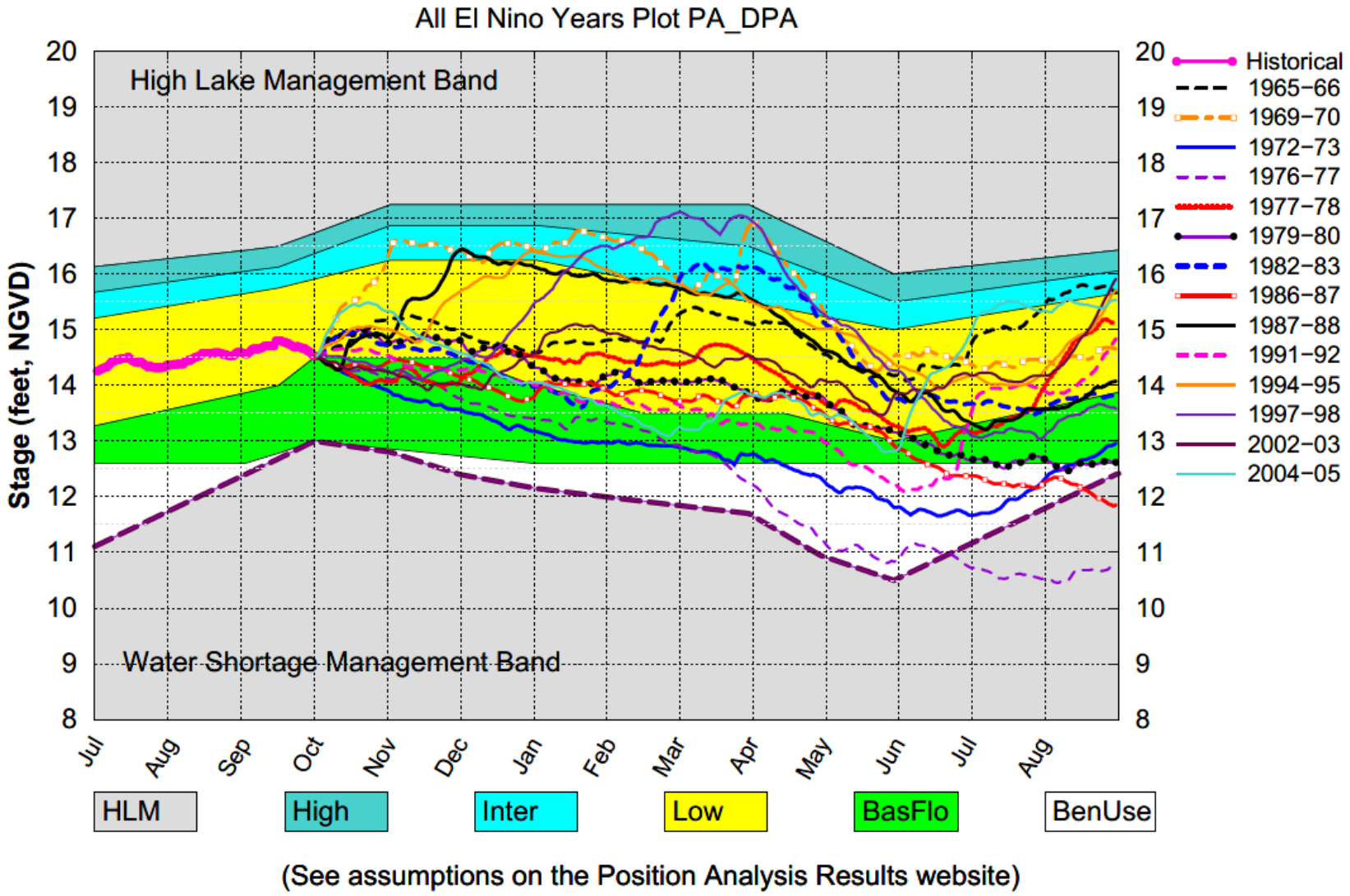


(See assumptions on the Position Analysis Results website)

Analog Years are years with similar climatological conditions to the current year.

Fri Oct 5 12:02:14 2018

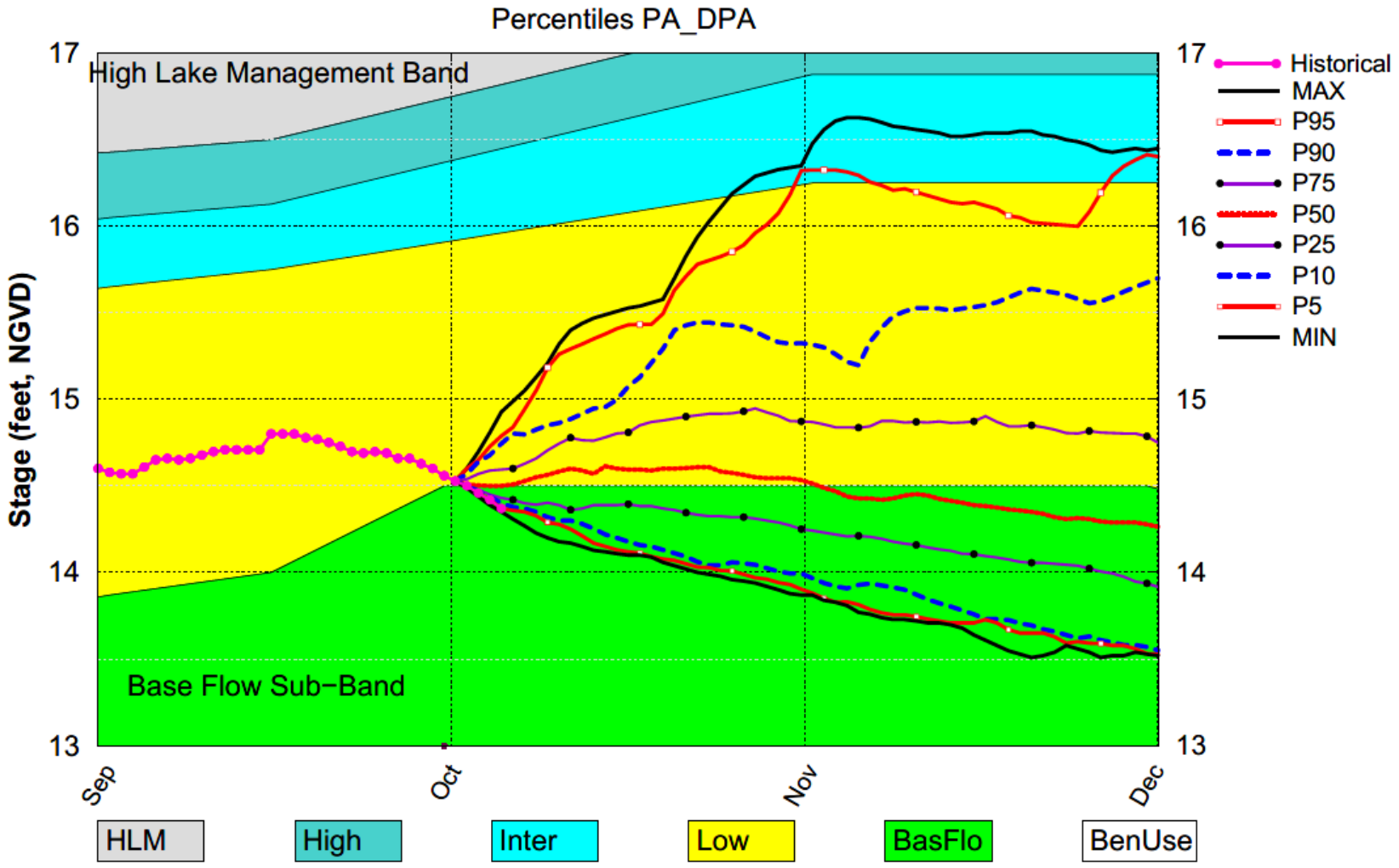
Lake Okeechobee SFWMM Oct 2018 Position Analysis



(See assumptions on the Position Analysis Results website)

Fri Oct 5 12:09:16 2018

Lake Okeechobee SFWMM Oct 2018 Position Analysis



(See assumptions on the Position Analysis Results website)

Fri Oct 5 09:36:20 2018