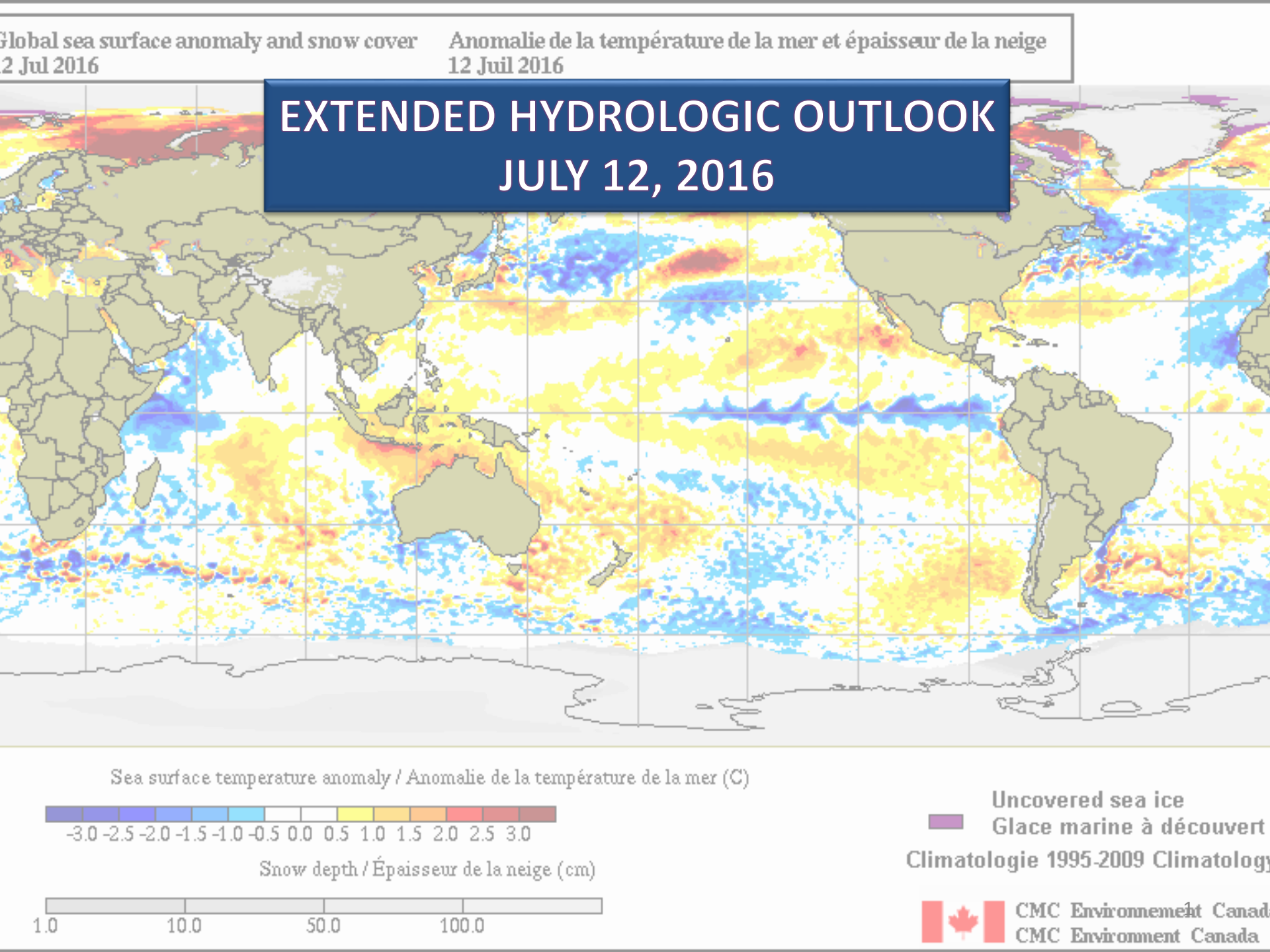

Global sea surface anomaly and snow cover
12 Jul 2016
Anomalie de la température de la mer et épaisseur de la neige
12 Juil 2016
EXTENDED HYDROLOGIC OUTLOOK
JULY 12, 2016
Sea surface temperature anomaly / Anomalie de la température de la mer (C)
-3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0 2.5 3.0
Snow depth / Épaisseur de la neige (cm)
1.0
10.0
50.0
100.0
Uncovered sea ice
Glace marine à découvert
Climatologie 1995-2009 Climatology
CMC Environnement Canada
CMC Environment Canada

Summary

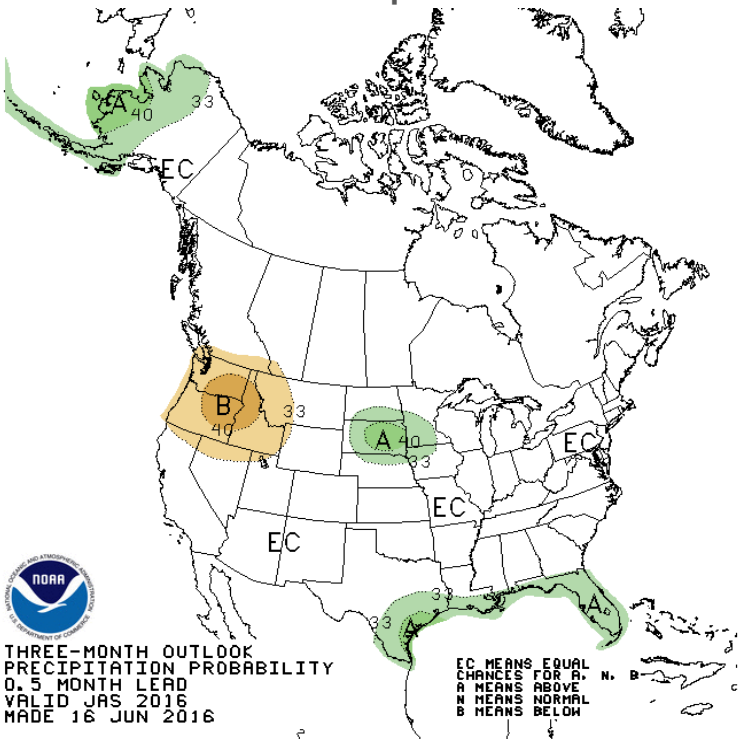
- **The Climate Prediction Center (CPC) is forecasting increased chances (33%-40%) of above-normal rainfall for July through September.**
- **ENSO-neutral conditions are present. La Niña is favored to develop during summer 2016 with about a 75% chance of La Niña during the fall and winter 2016-17.**
- **The strong positive phase of the Pacific Decadal Oscillation increases the potential for a greater number of El Niño events for multi-year periods.**
- **Watching Atlantic Multidecadal Oscillation (AMO) index for switch to negative (cold) phase, this has the potential to contribute to a drier-than-normal 2016 wet season. Good indicator of switch to the cold phase will be an average to below-average hurricane season.**

U. S. Seasonal Outlooks

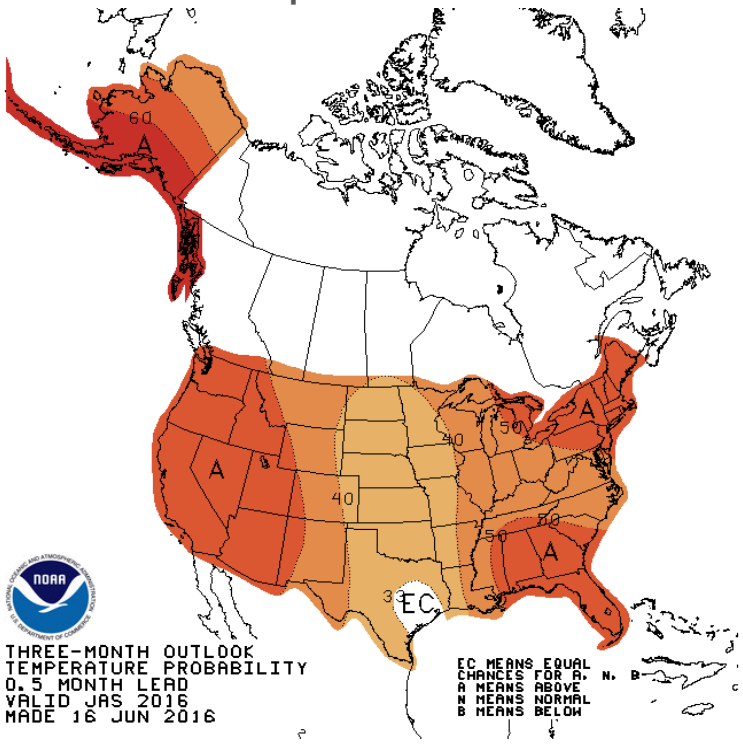
July - September 2016

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

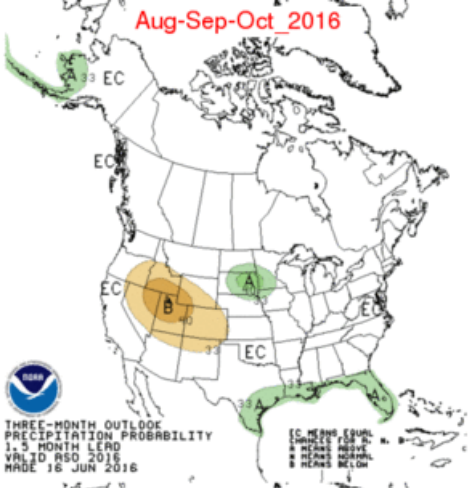
Precipitation

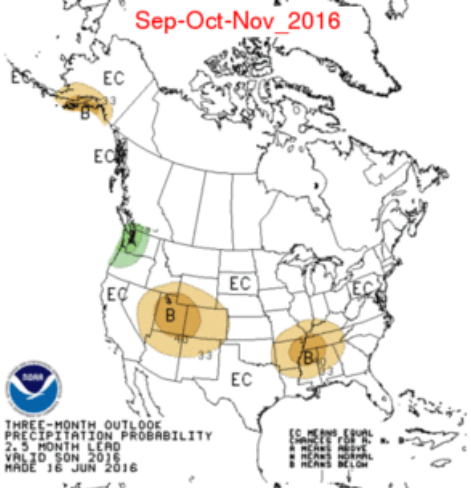


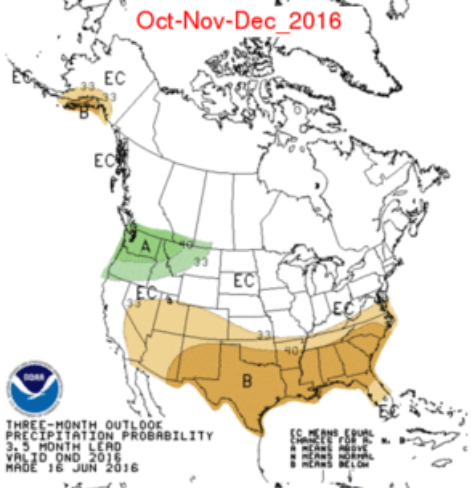
Temperature

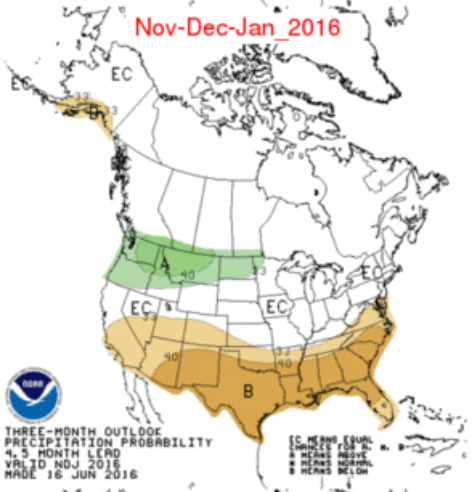


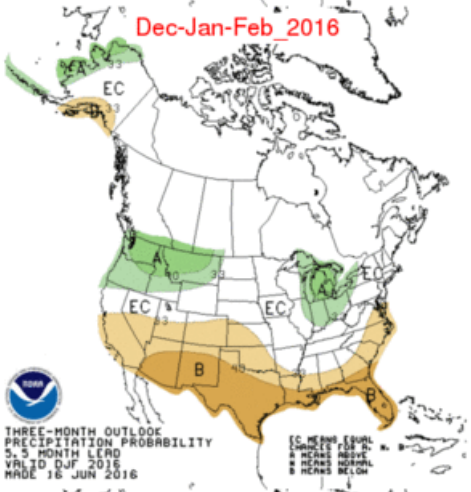
Prepared by: Climate Prediction Center / NCEP

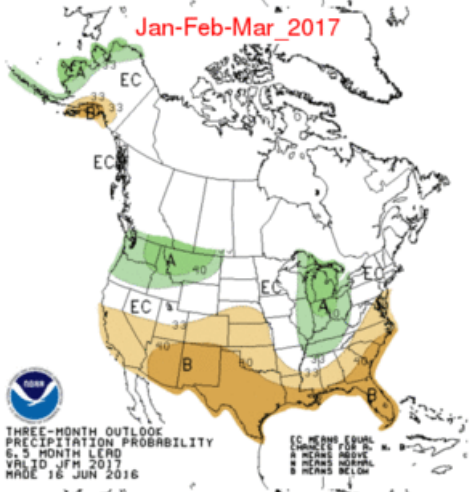


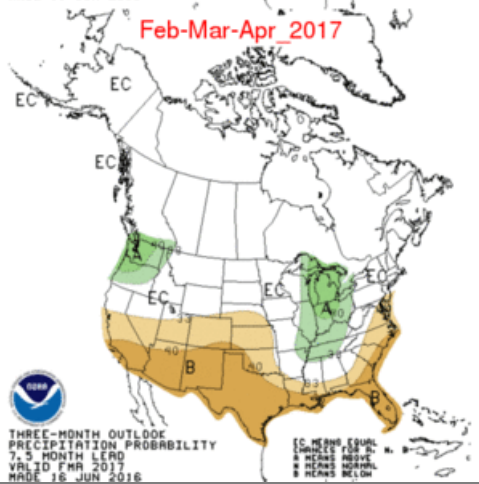


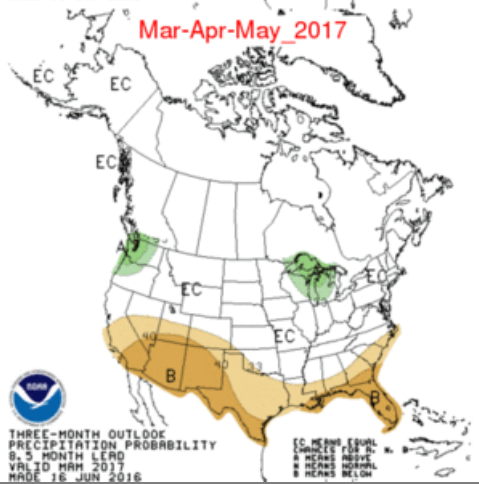


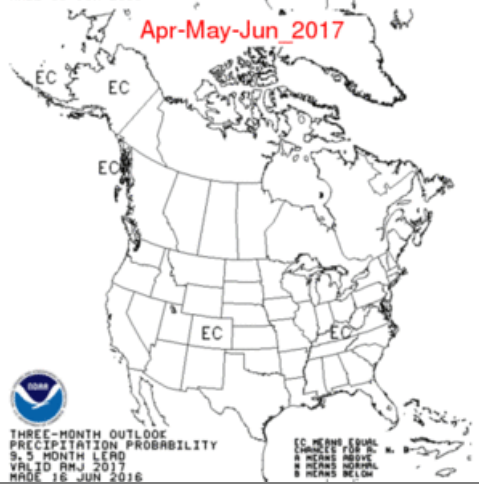






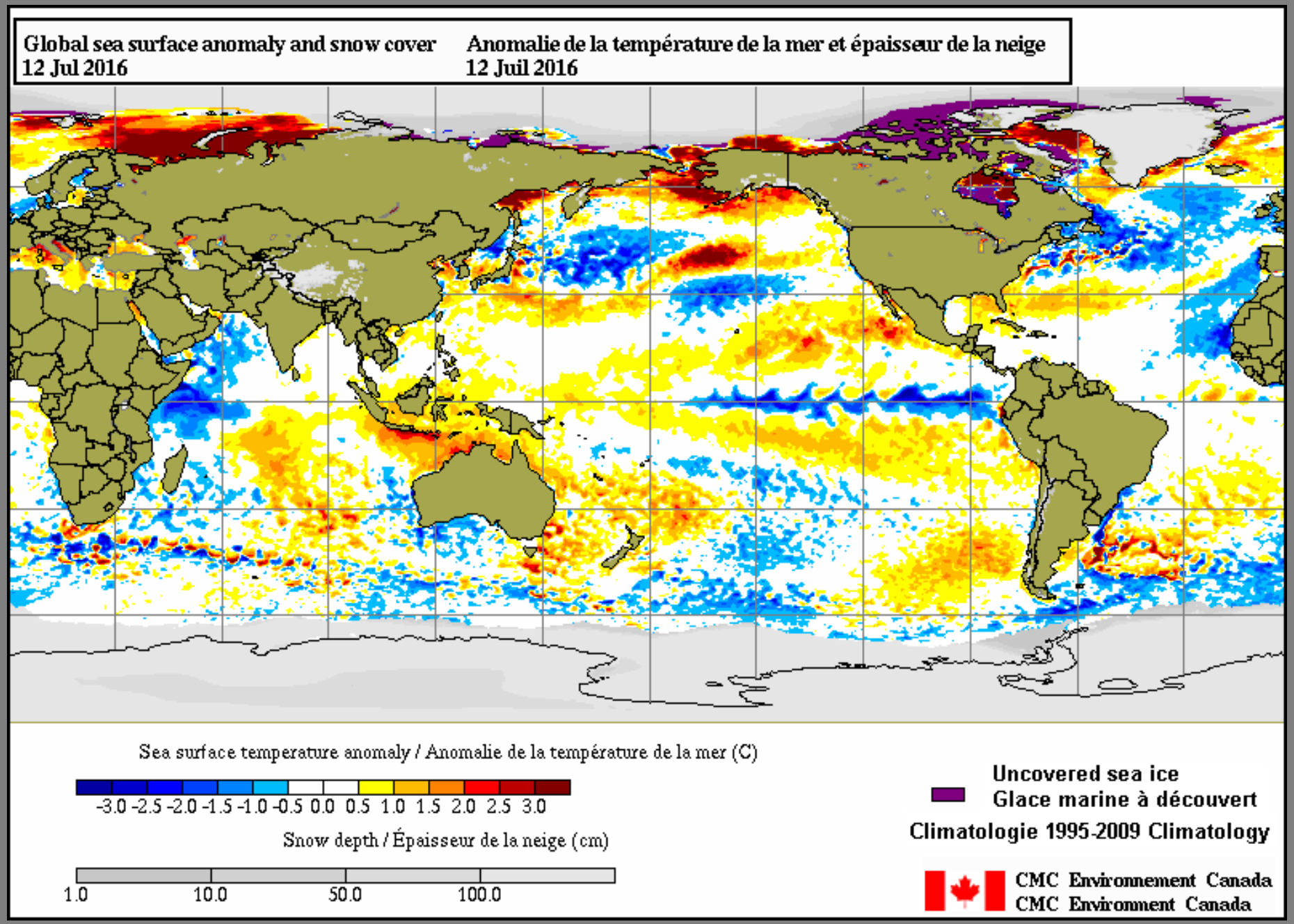






Prepared by: Climate Prediction Center / NCEP

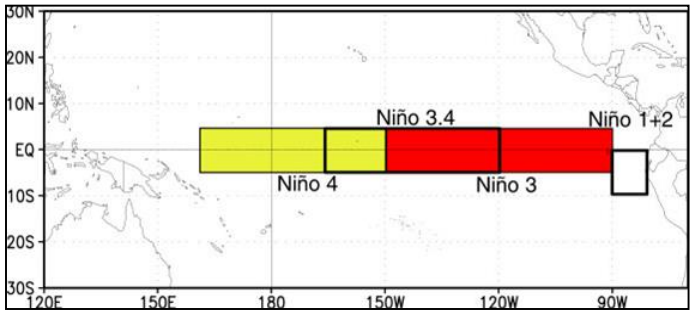
Current Global Sea Surface Temperature Anomalies

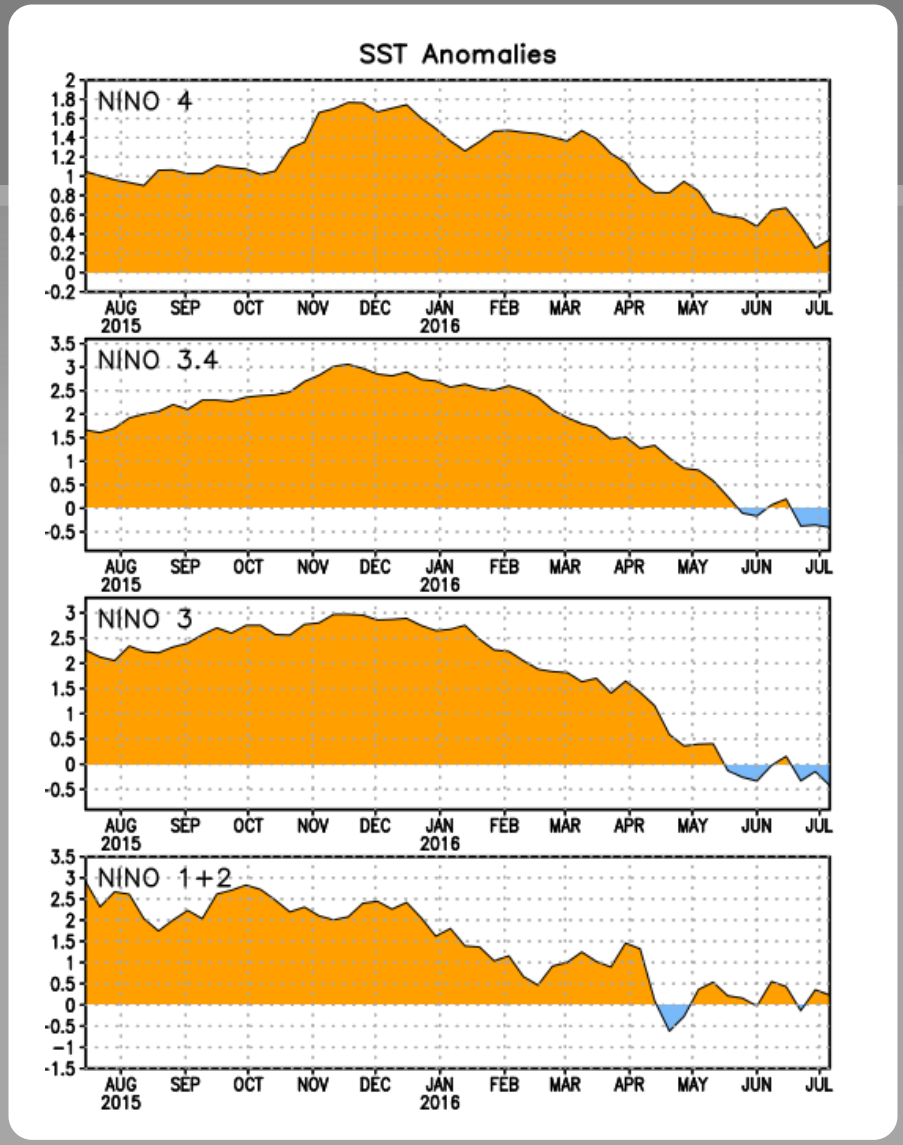


Niño Region SST Departures (ºC) Recent Evolution

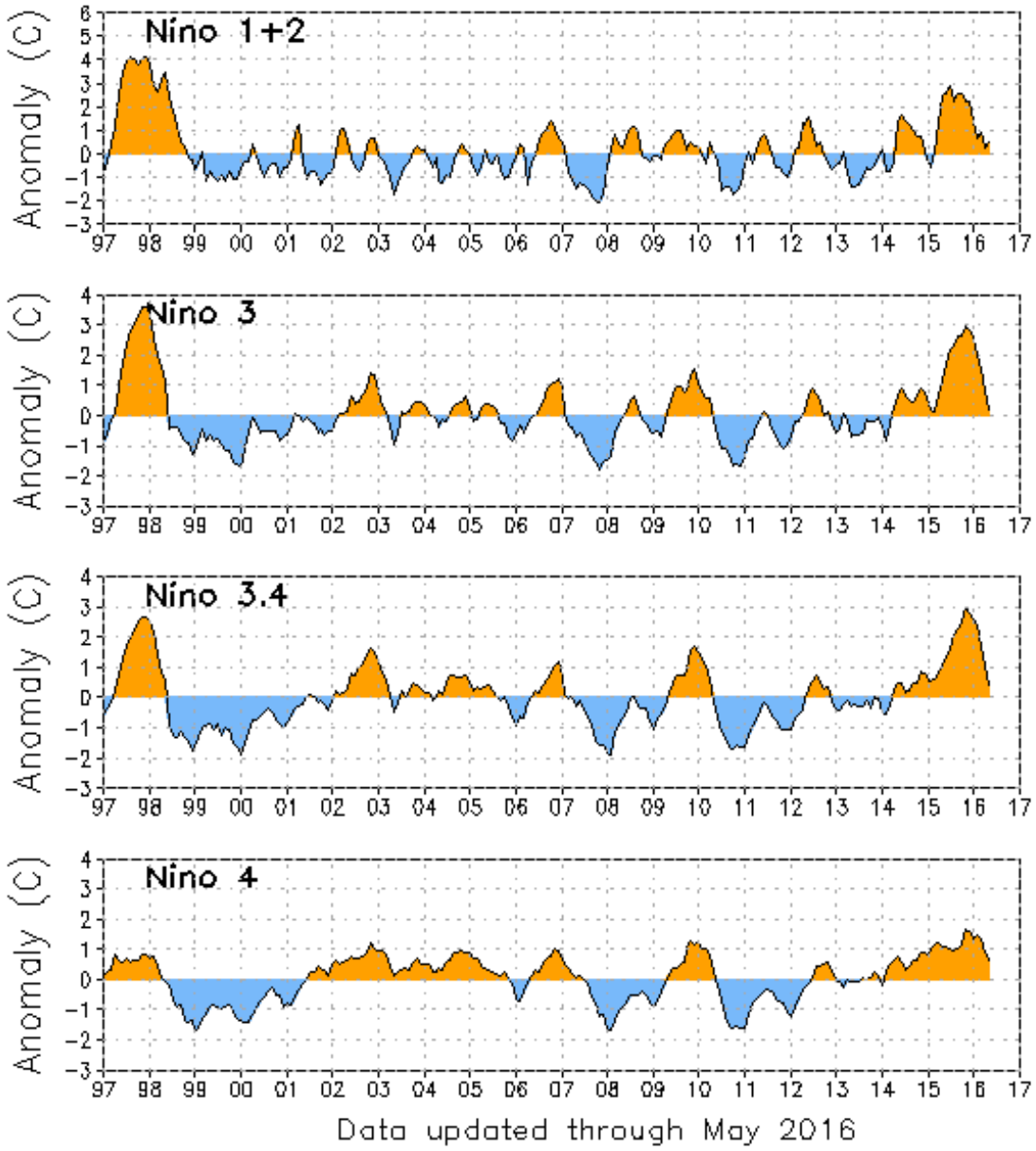
The latest weekly SST departures are:

Niño 4	0.3ºC
Niño 3.4	-0.4ºC
Niño 3	-0.4ºC
Niño 1+2	0.2ºC





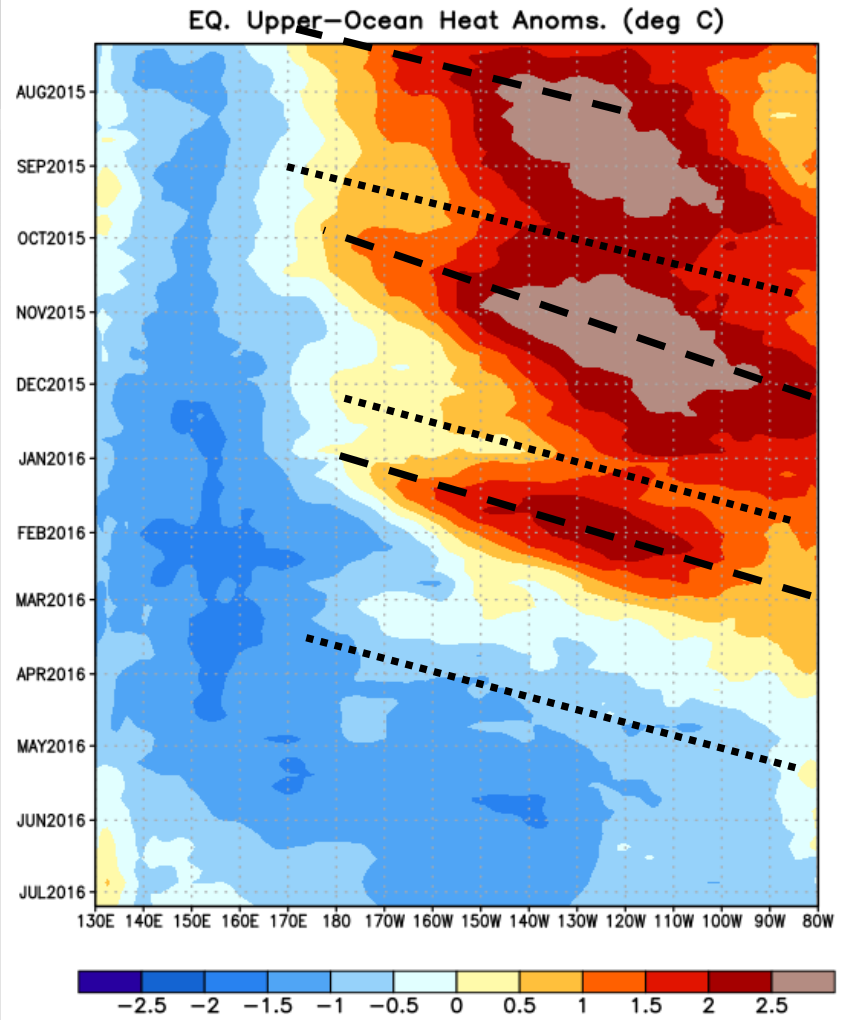
Prepared by: Climate Prediction Center / NCEP


Nino 1+2
Nino 3
Nino 3.4
Nino 4
Anomaly (C)
97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
Data updated through May 2016

Weekly Heat Content Evolution in the Equatorial Pacific

Downwelling phases of equatorial oceanic Kelvin waves were observed in July-August, October to November, and January-February 2016.

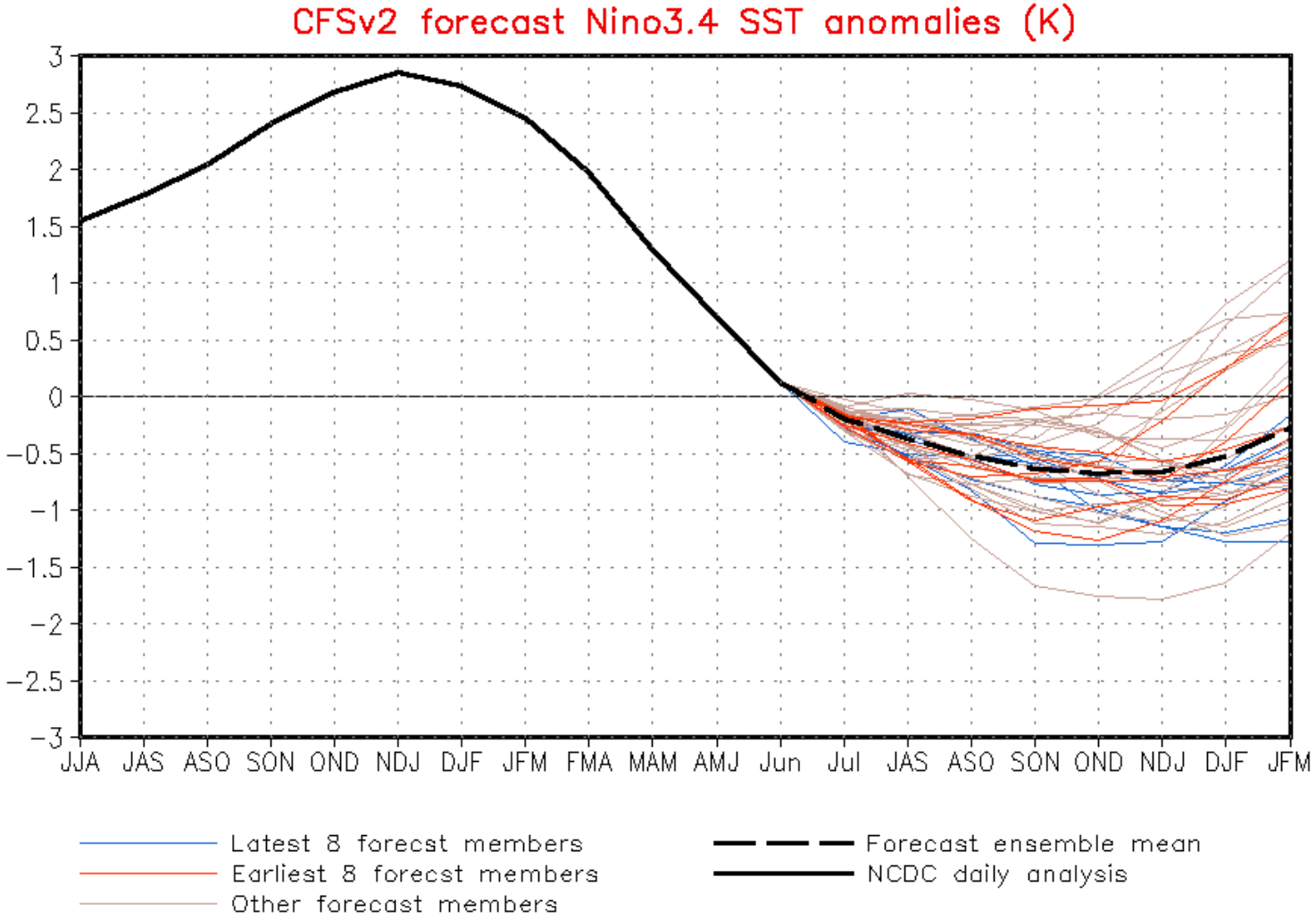
Since the passage of an upwelling equatorial oceanic Kelvin wave in March 2016, below-average subsurface temperatures have persisted across much of the equatorial Pacific.



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: Tue Jul 12 2016
Initial conditions: 1Jul2016–10Jul2016



IRI/CPC Pacific Niño 3.4 SST Model Outlook

The dynamical model average indicates La Niña by June-July-August (JJA) while the statistical models predict a transition around September-October-November (SON) 2016.

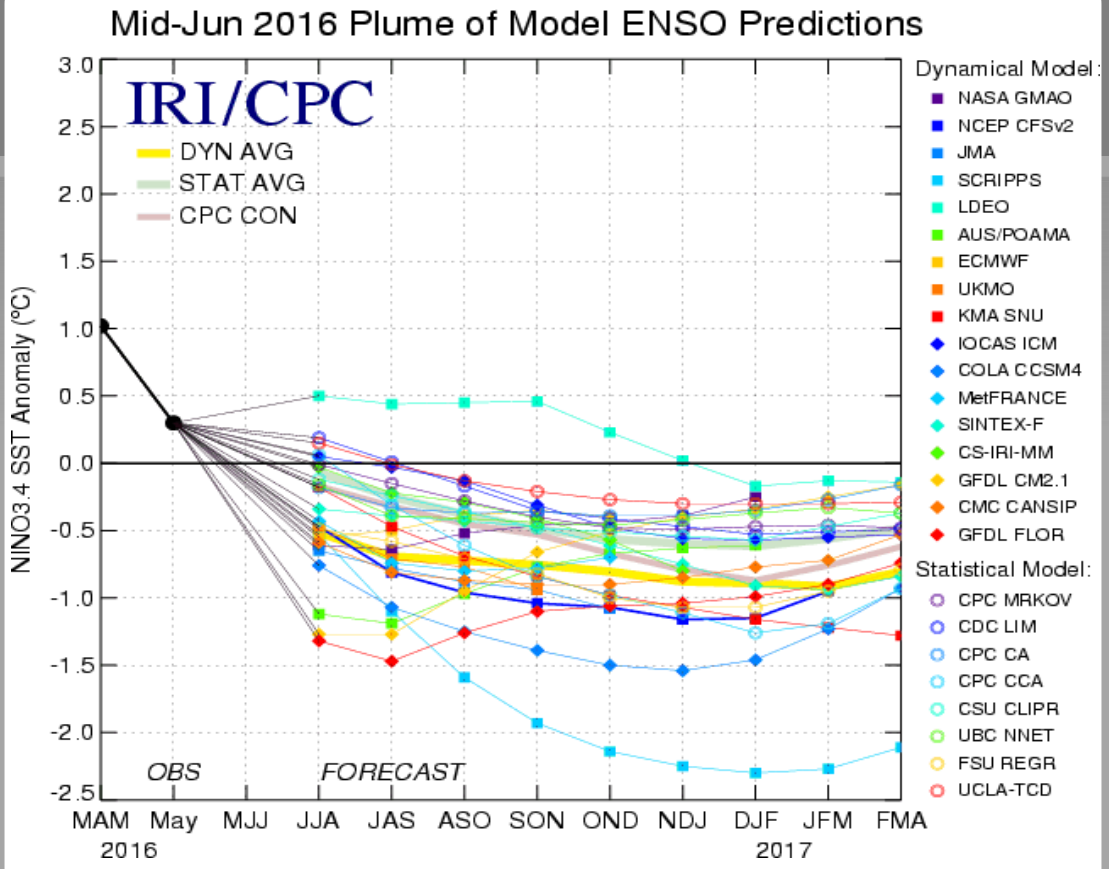


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 16 June 2016).

Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v4

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.v4 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
2004	0.3	0.2	0.1	0.1	0.2	0.3	0.5	0.7	0.7	0.7	0.7	0.7
2005	0.6	0.6	0.5	0.5	0.4	0.2	0.1	0.0	0.0	-0.1	-0.4	-0.7
2006	-0.7	-0.6	-0.4	-0.2	0.0	0.1	0.2	0.3	0.5	0.8	0.9	1.0
2007	0.7	0.3	0.0	-0.1	-0.2	-0.2	-0.3	-0.6	-0.8	-1.1	-1.2	-1.3
2008	-1.4	-1.3	-1.1	-0.9	-0.7	-0.5	-0.3	-0.2	-0.2	-0.3	-0.5	-0.7
2009	-0.8	-0.7	-0.4	-0.1	0.2	0.4	0.5	0.6	0.7	1.0	1.2	1.3
2010	1.3	1.1	0.8	0.5	0.0	-0.4	-0.8	-1.1	-1.3	-1.4	-1.3	-1.4
2011	-1.3	-1.1	-0.8	-0.6	-0.3	-0.2	-0.3	-0.5	-0.7	-0.9	-0.9	-0.8
2012	-0.7	-0.6	-0.5	-0.4	-0.3	-0.1	0.1	0.3	0.4	0.4	0.2	-0.2
2013	-0.4	-0.5	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.3
2014	-0.5	-0.6	-0.4	-0.2	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.6
2015	0.5	0.4	0.5	0.7	0.9	1.0	1.2	1.5	1.8	2.1	2.2	2.3
2016	2.2	1.9	1.5	1.1	0.7							

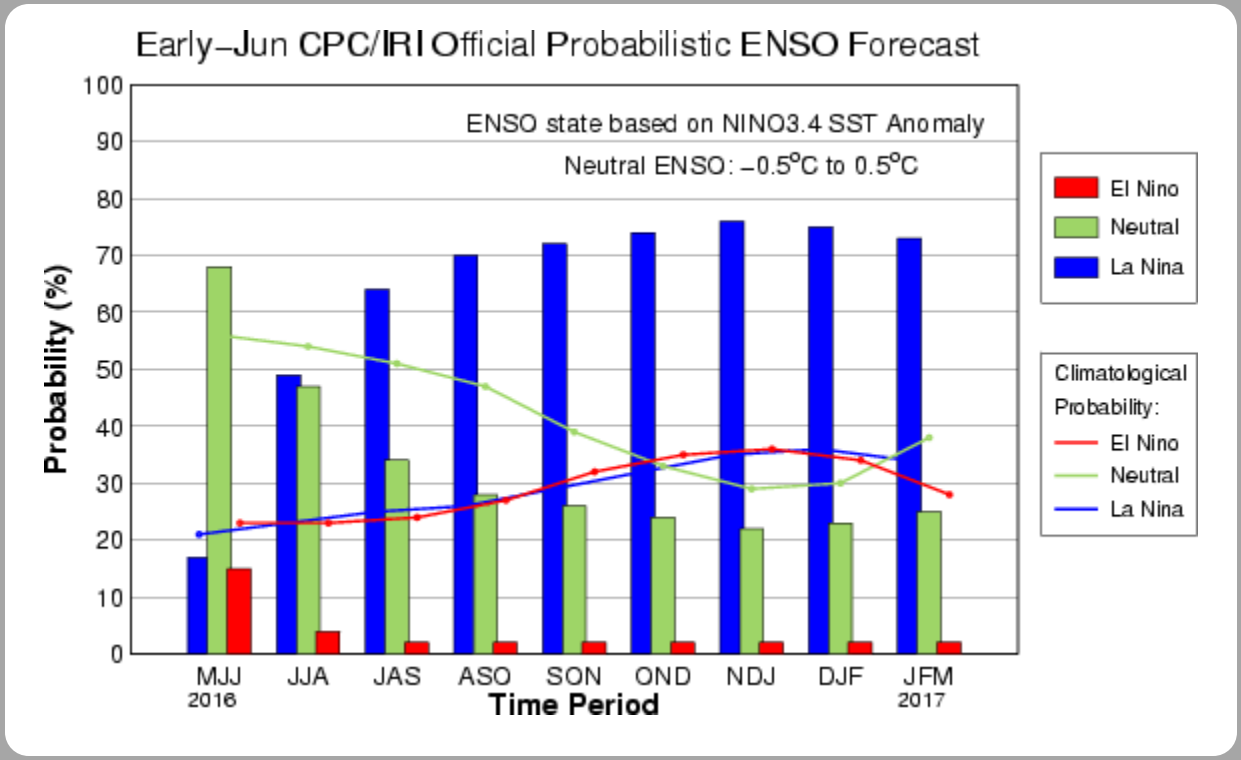
*CPC considers El Niño or La Niña conditions to occur when the monthly Niño3.4 OISST departures meet or exceed +/- 0.5°C along with consistent atmospheric features. These anomalies must also be forecasted to persist for 3 consecutive months.

Prepared by: Climate Prediction Center / IRI

CPC/IRI Probabilistic ENSO Outlook

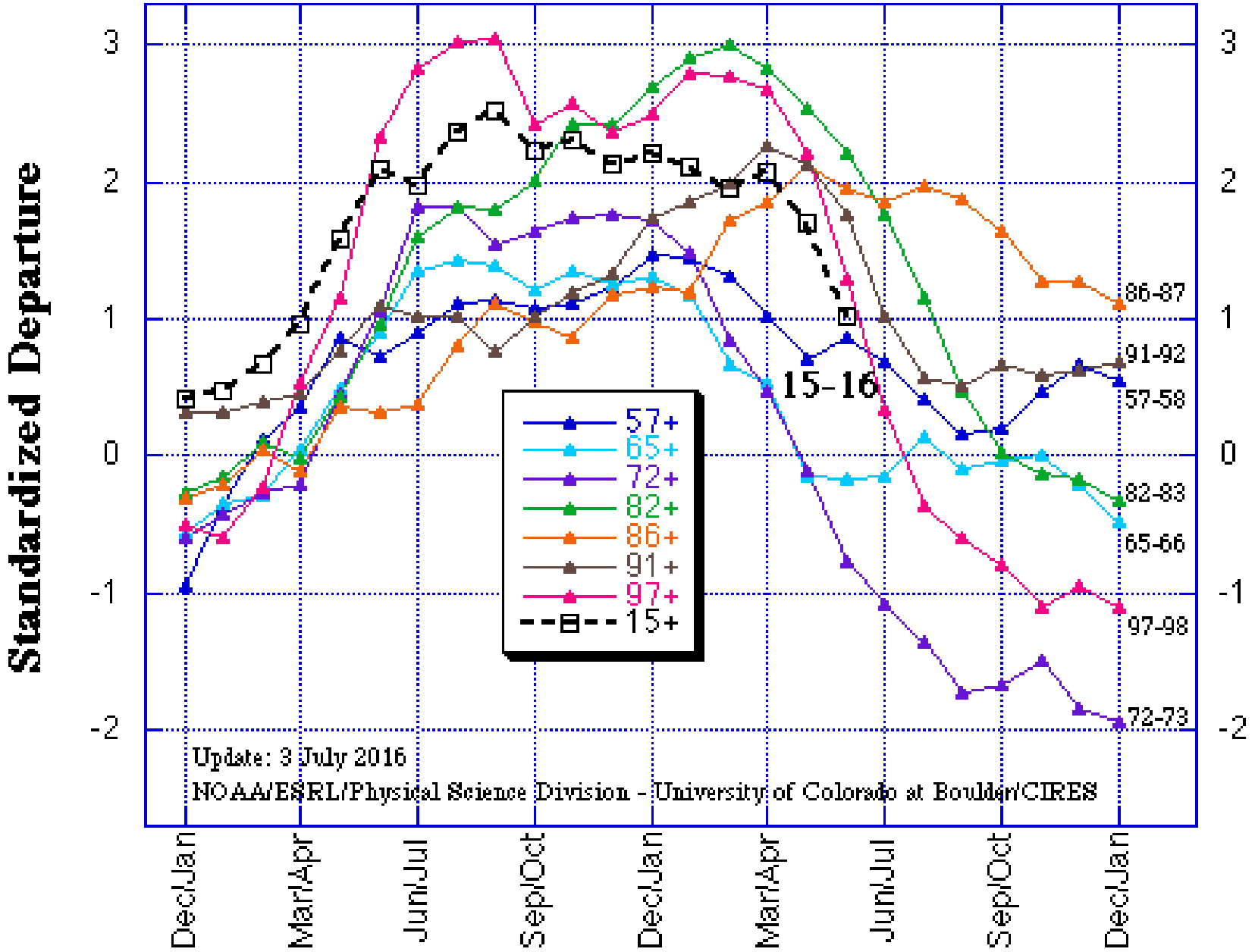
Updated: 9 June 2016

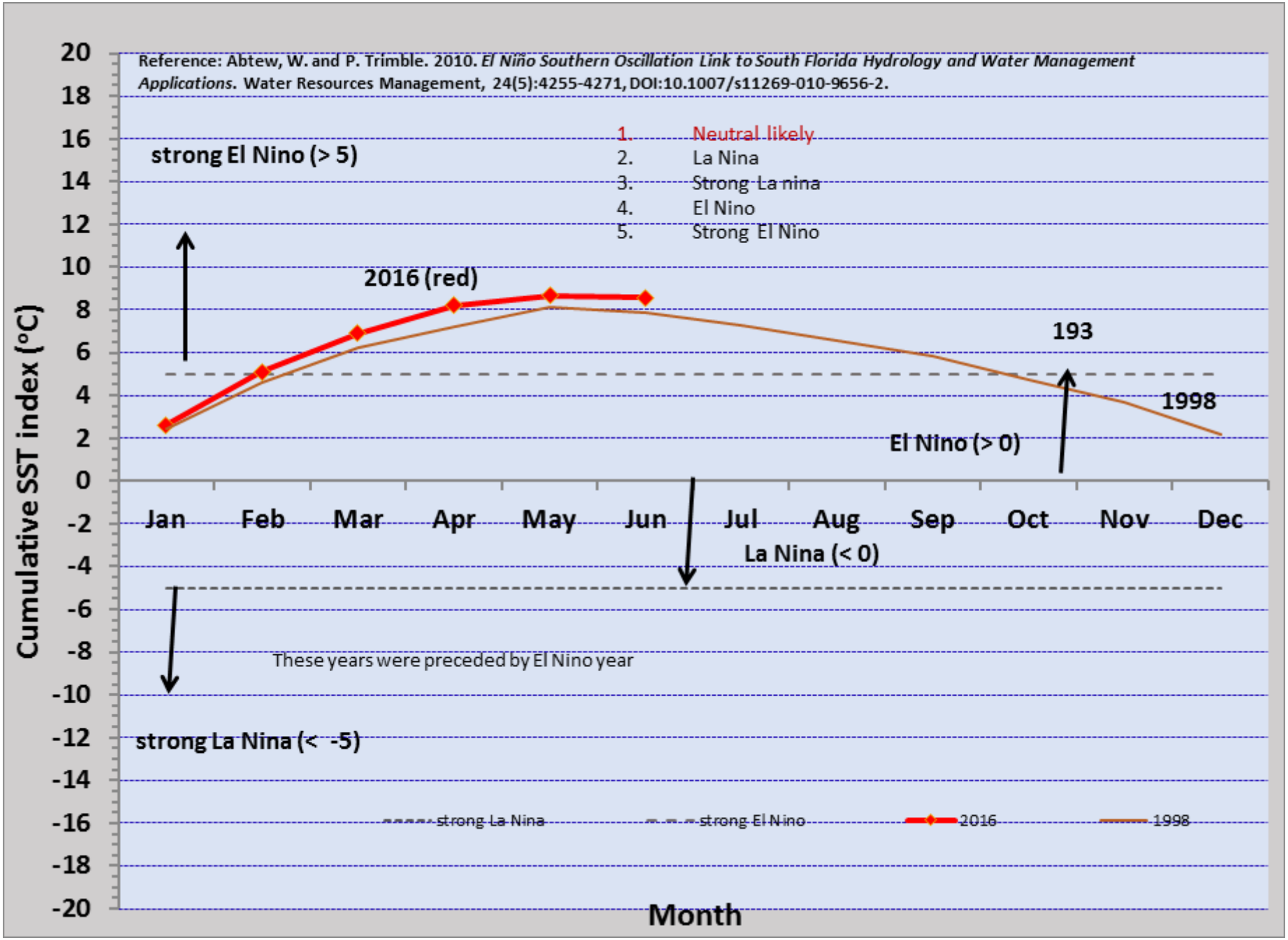
La Niña is slightly favored by June-July-August (JJA) 2016. The chance of La Niña is roughly 75% during the Northern Hemisphere fall and winter 2016-17.



Prepared by: Climate Prediction Center / IRI

Multivariate ENSO Index (MEI) for the seven strongest El Niño events since 1950 vs. 2015-16

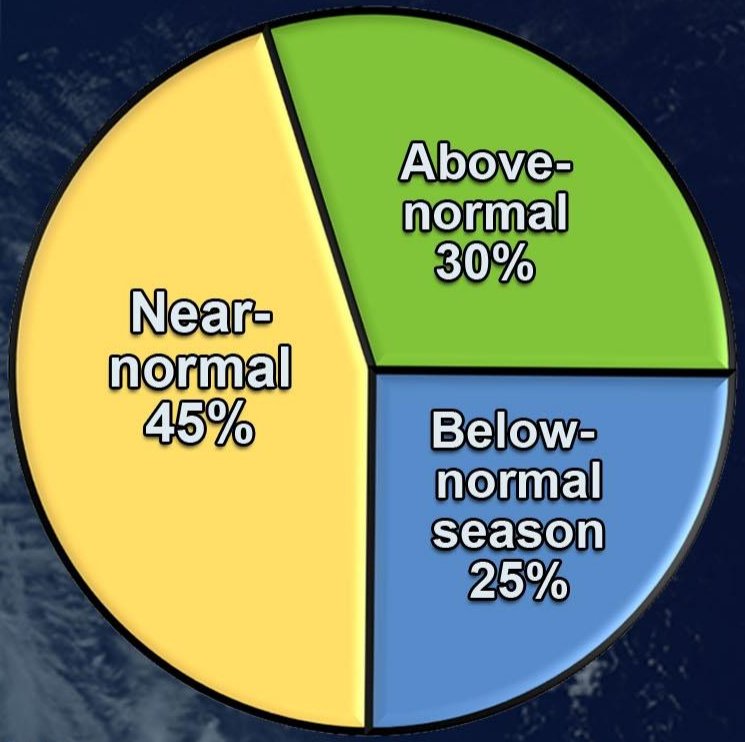




Source: Wossenu Abtew (SFWMD)

2016 Atlantic Hurricane Season Outlook

Named storms:	10 - 16
Hurricanes:	4 - 8
Major hurricanes:	1 - 4



Outlook probability

Be prepared: Visit hurricanes.gov
and follow @NWS and @NHC_Atlantic on Twitter

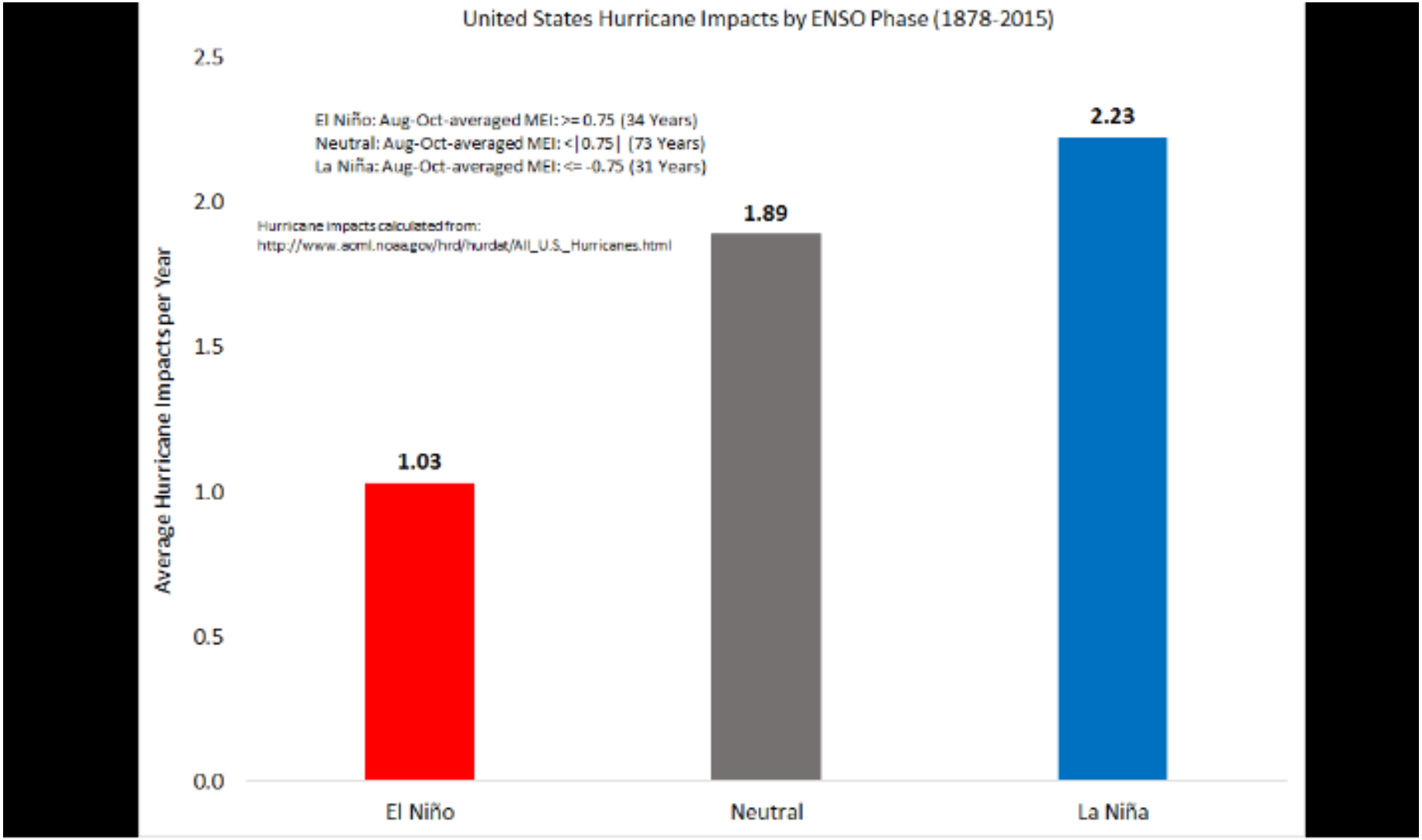
NOAA

Source: NOAA's National Hurricane Center

ATLANTIC BASIN SEASONAL HURRICANE FORECAST FOR 2016*

Forecast Parameter and 1981-2010 Median (in parentheses)	Issue Date 14 April 2016	Issue Date 1 June 2016	Issue Date 1 July 2016	Observed Activity Through June 2016	1 July Forecast for Remainder of 2016
Named Storms (NS) (12.0)	13	14	15	4	11
Named Storm Days (NSD) (60.1)	52	53	55	6.50	48.50
Hurricanes (H) (6.5)	6	6	6	1	5
Hurricane Days (HD) (21.3)	21	21	21	1	20
Major Hurricanes (MH) (2.0)	2	2	2	0	2
Major Hurricane Days (MHD) (3.9)	4	4	4	0	4
Accumulated Cyclone Energy (ACE) (92)	93	94	95	6	89
Net Tropical Cyclone Activity (NTC) (103%)	101	103	105	13	92

Source: Department of Atmospheric Science (CSU)

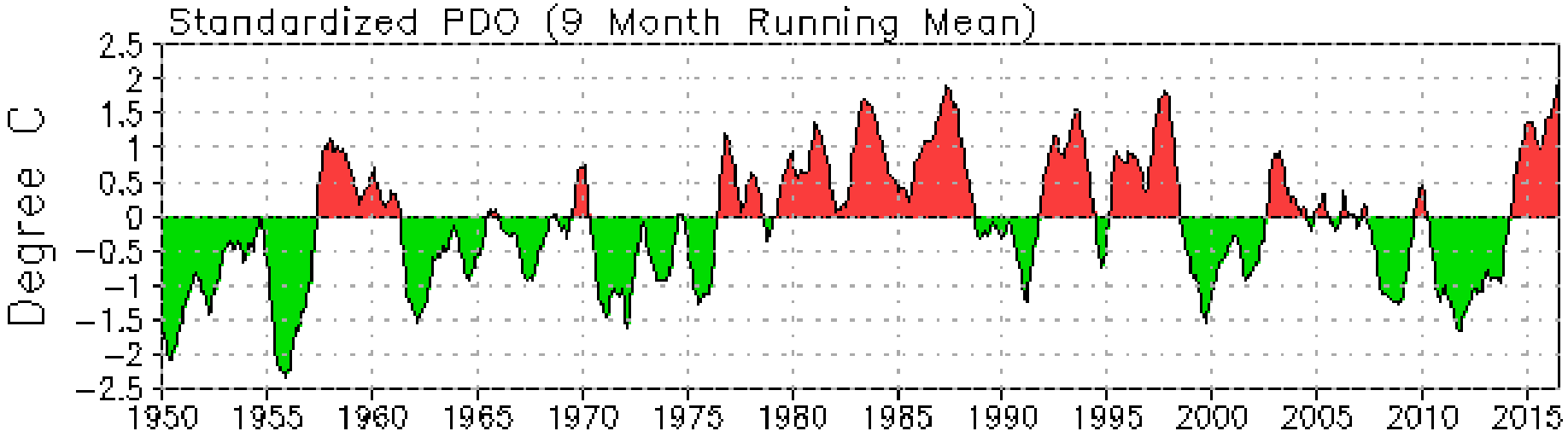


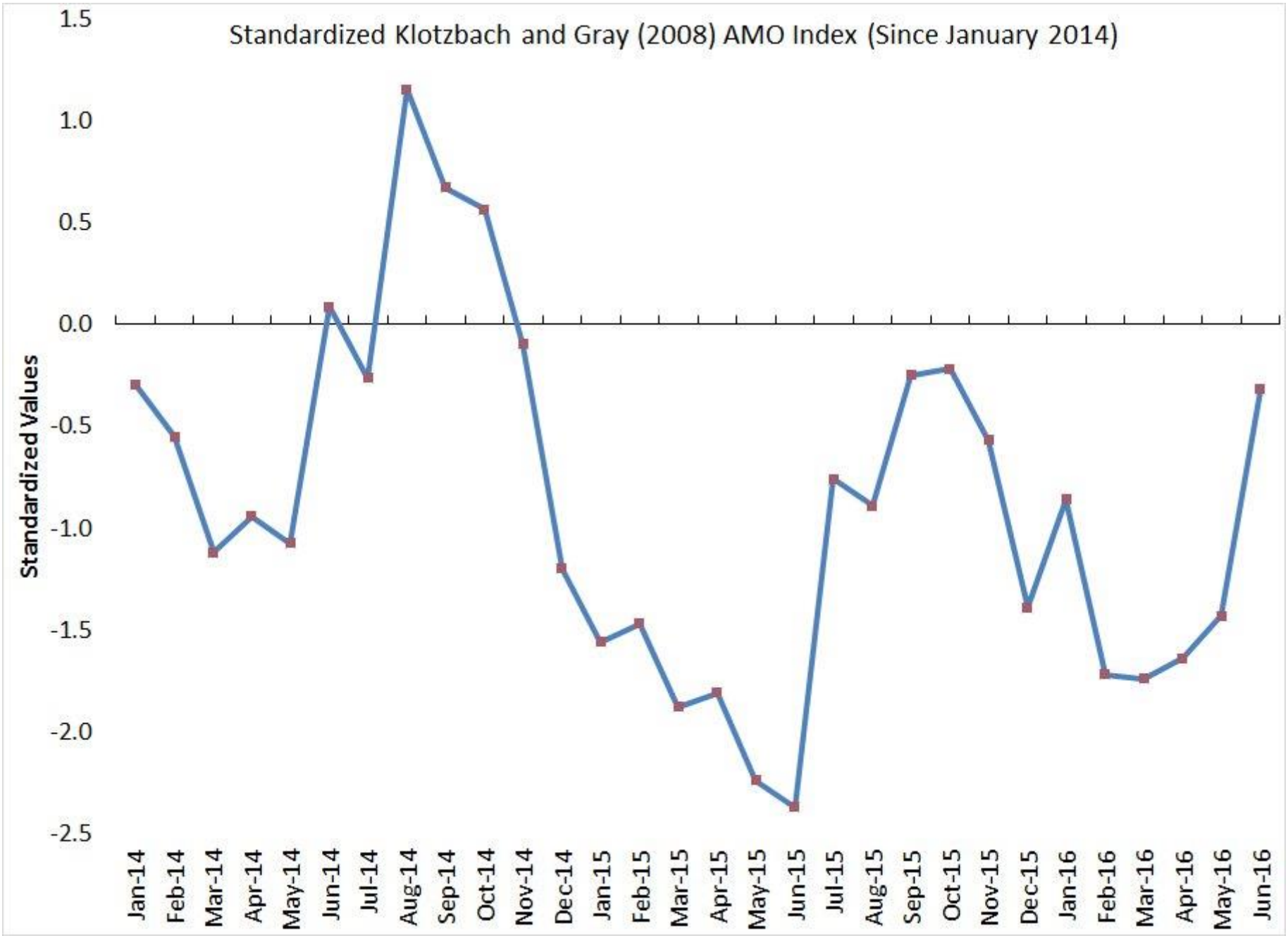
Philip Klotzbach @philklotzbach · 18 Dec 2015

Over twice as many hurricanes impact the United States in La Nina years vs. El Nino years. #ElNino

28 16

Source: Phil Klotzbach (CSU)


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 and Gray (2008) AMO Index (Since January 2014)
Standardized Values
1.5
1.0
0.5
0.0
-0.5
-1.0
-1.5
-2.0
-2.5
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
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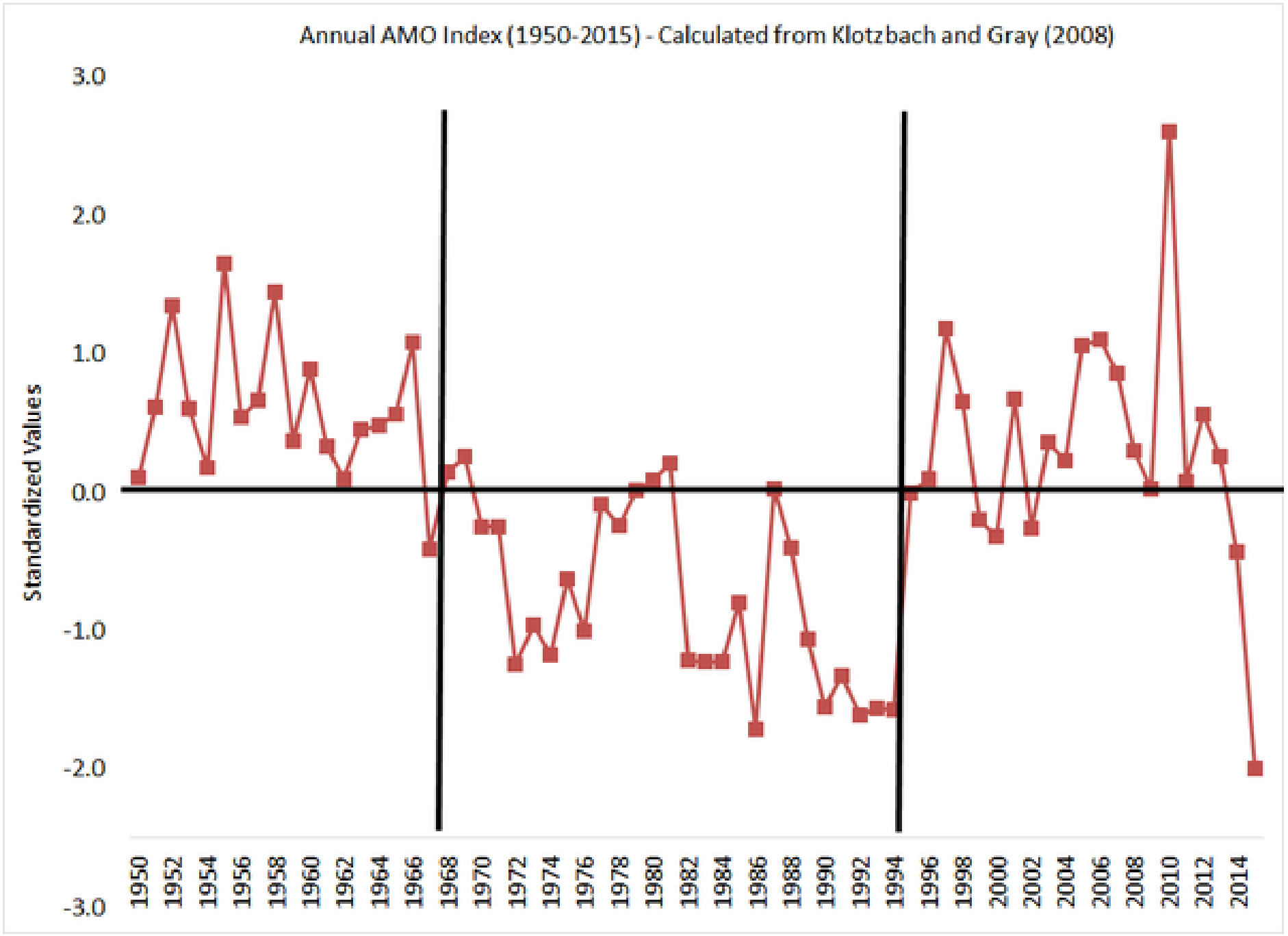
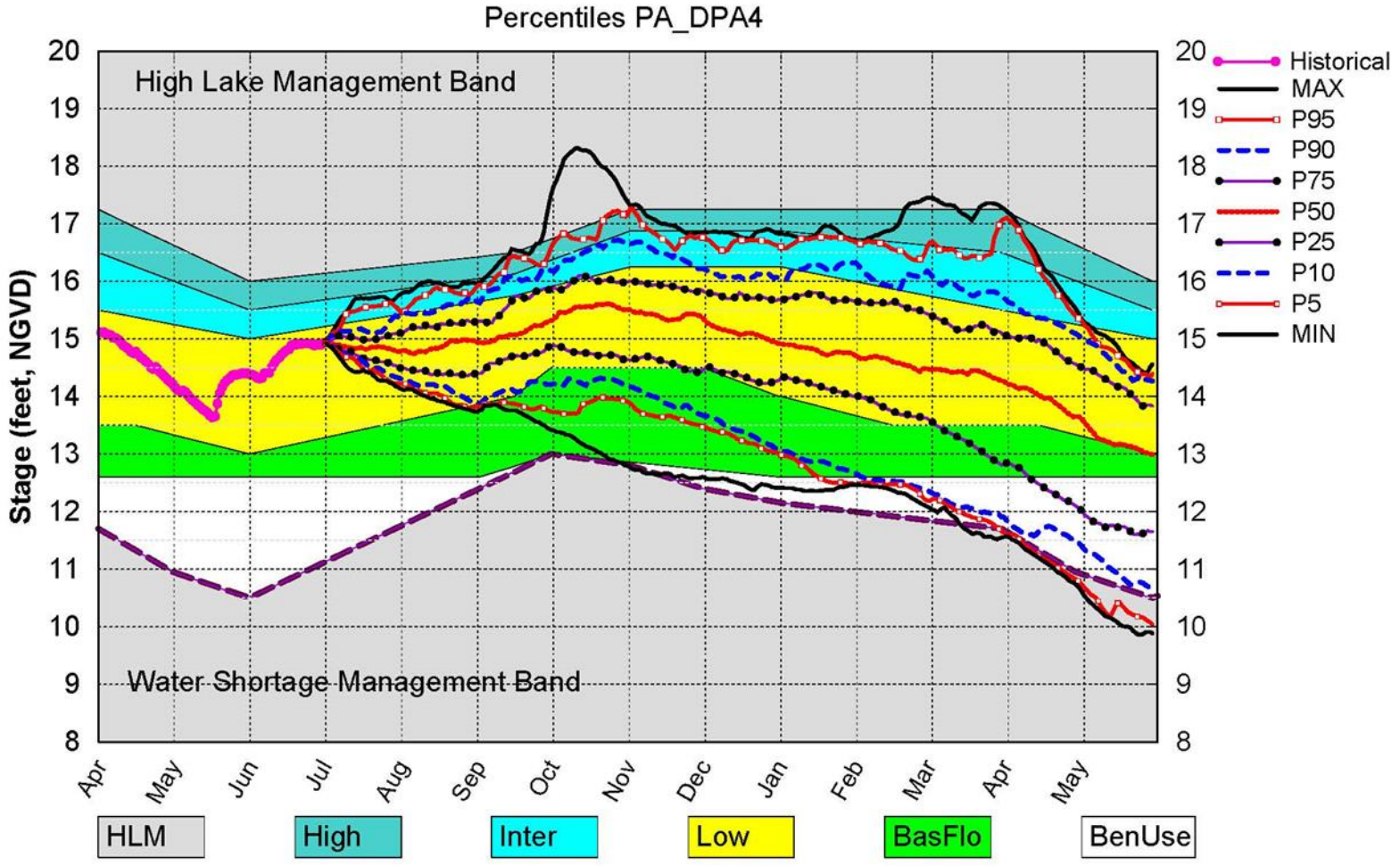
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16


Annual AMO Index (1950-2015) - Calculated from Klotzbach and Gray (2008)
Standardized Values
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014

Lake Okeechobee SFWMM July 2016 Dynamic Position Analysis

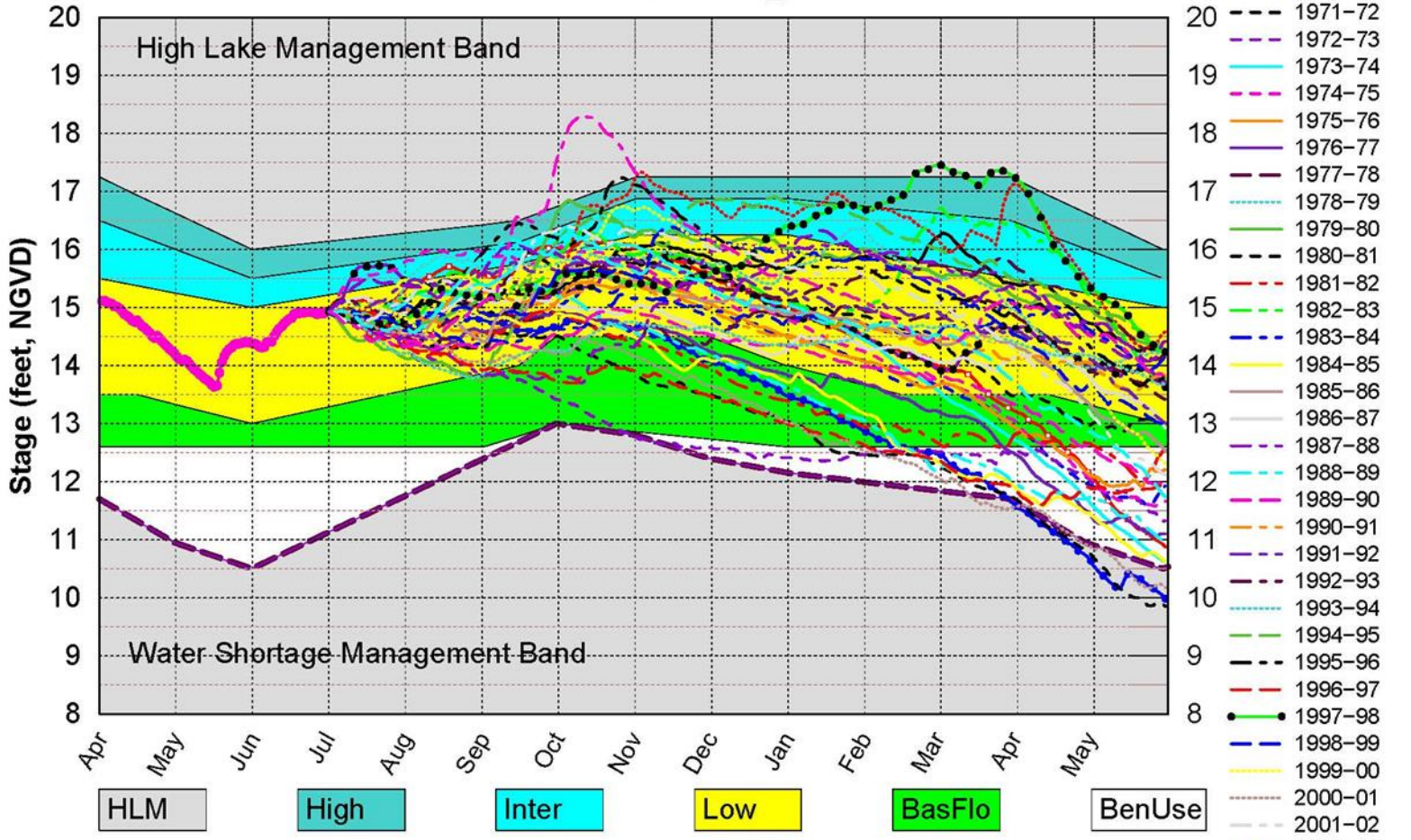


(See assumptions on the Position Analysis Results website)

Wed Jul 6 20:48:47 2016

Lake Okeechobee SFWMM July 2016 Dynamic Position Analysis

All Simulated Years Plot PA_DPA4

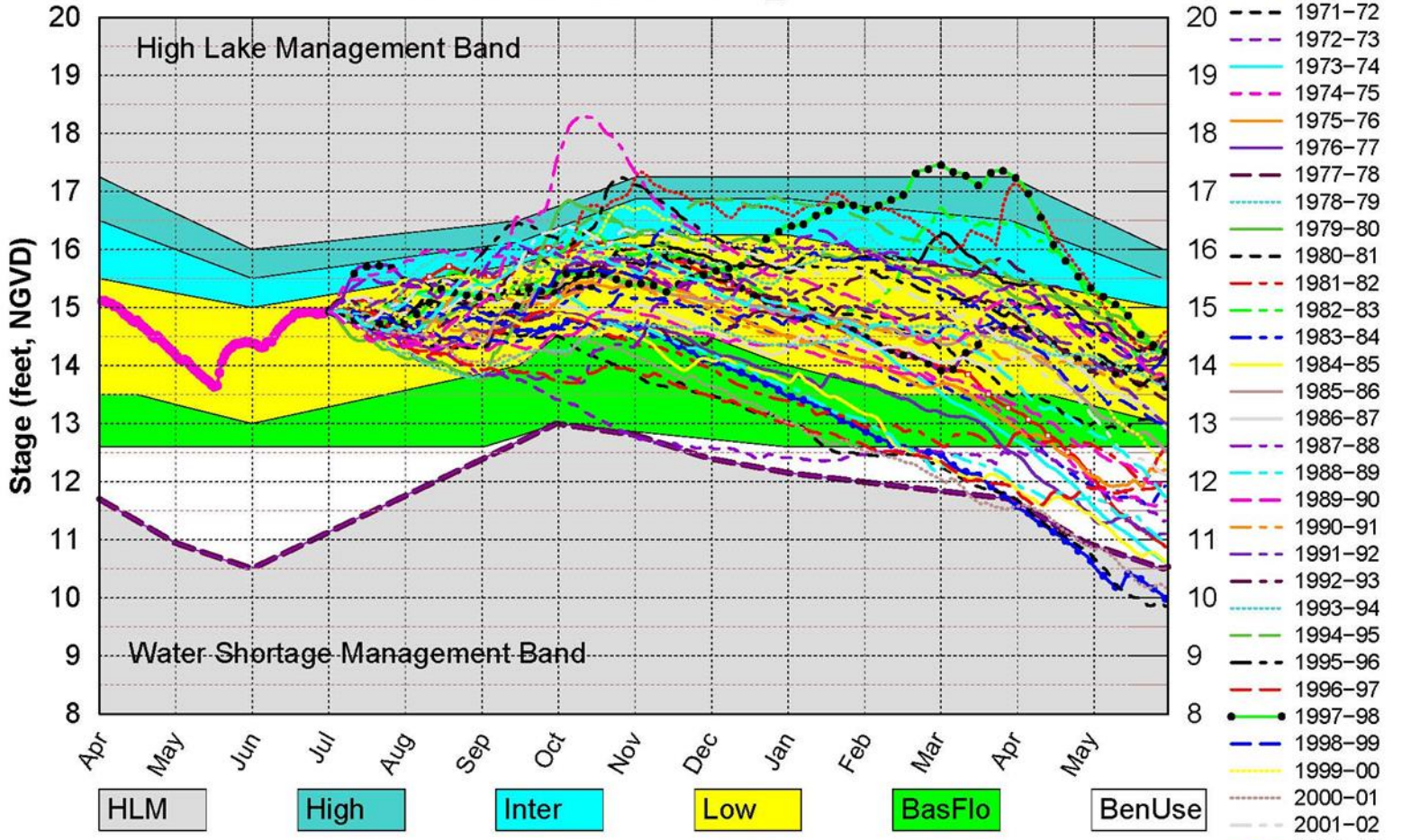


(See assumptions on the Position Analysis Results website)

Wed Jul 6 20:51:00 2016

Lake Okeechobee SFWMM July 2016 Dynamic Position Analysis

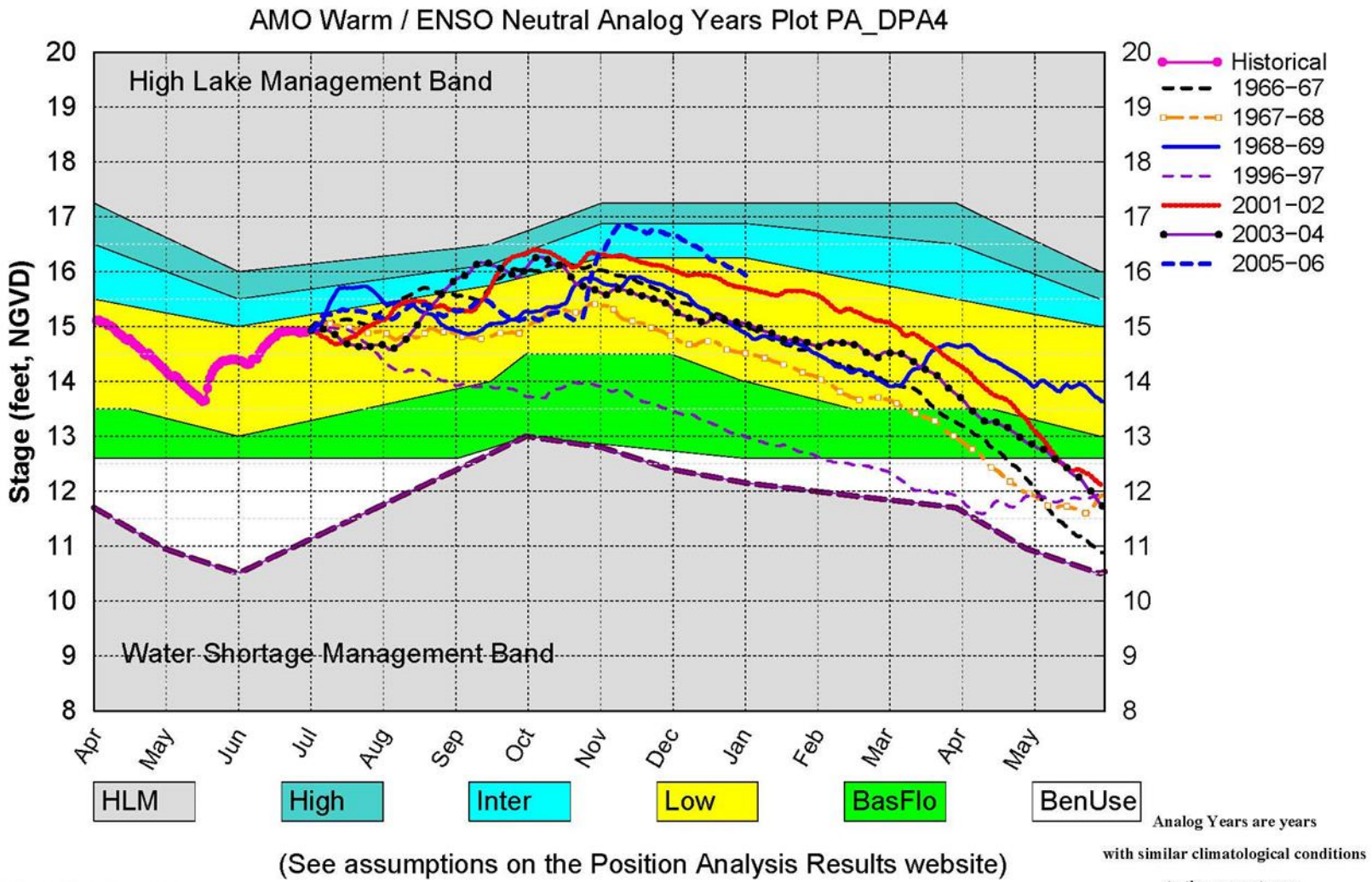
All Simulated Years Plot PA_DPA4



(See assumptions on the Position Analysis Results website)

Wed Jul 6 20:51:00 2016

Lake Okeechobee SFWMM July 2016 Dynamic Position Analysis



(See assumptions on the Position Analysis Results website)

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

Wed Jul 6 20:49:16 2016