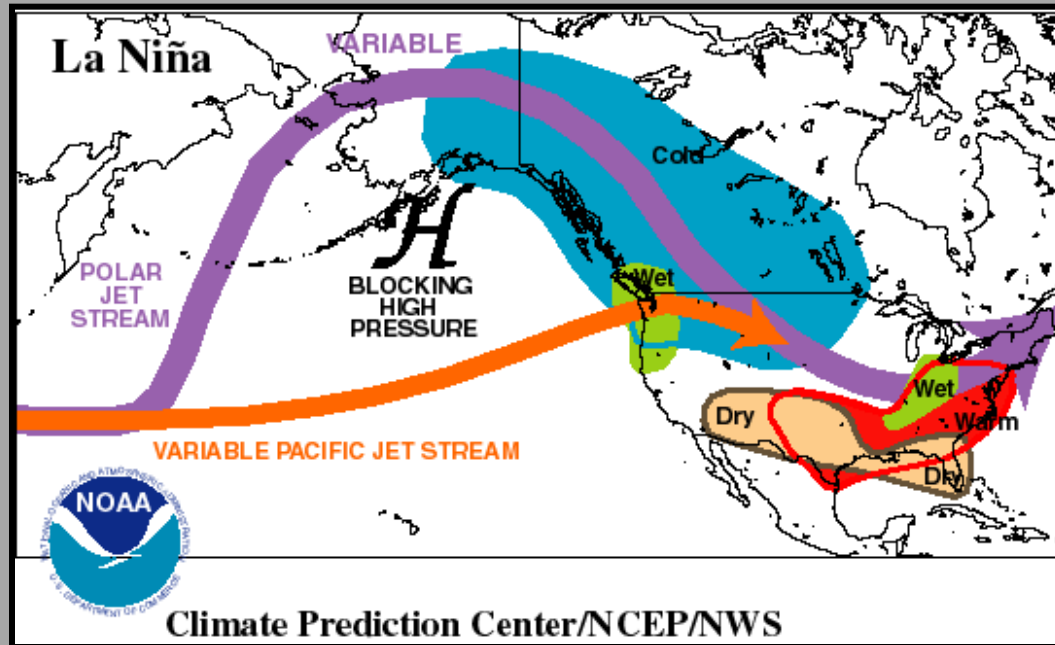


ENSO: Recent Evolution, Current Status and Predictions



Summary

ENSO Alert System Status: La Niña Advisory

La Niña conditions are present.*

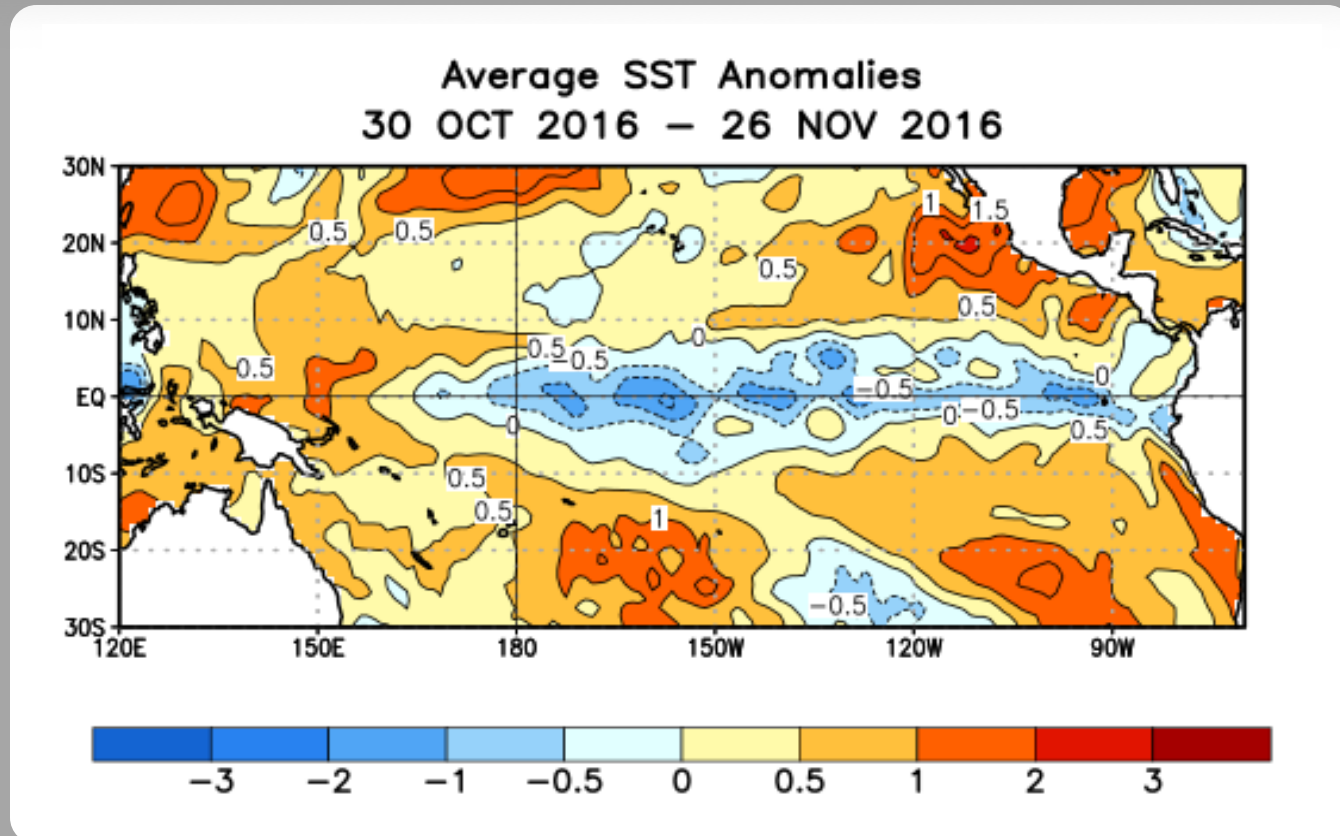
Equatorial sea surface temperatures (SST) are below average in the central and east-central Pacific Ocean.

La Niña is slightly favored to persist (~55% chance) through winter 2016-17.*

* Note: These statements are updated once a month (2nd Thursday of each month) in association with the ENSO Diagnostics Discussion, which can be found by clicking [here](#).

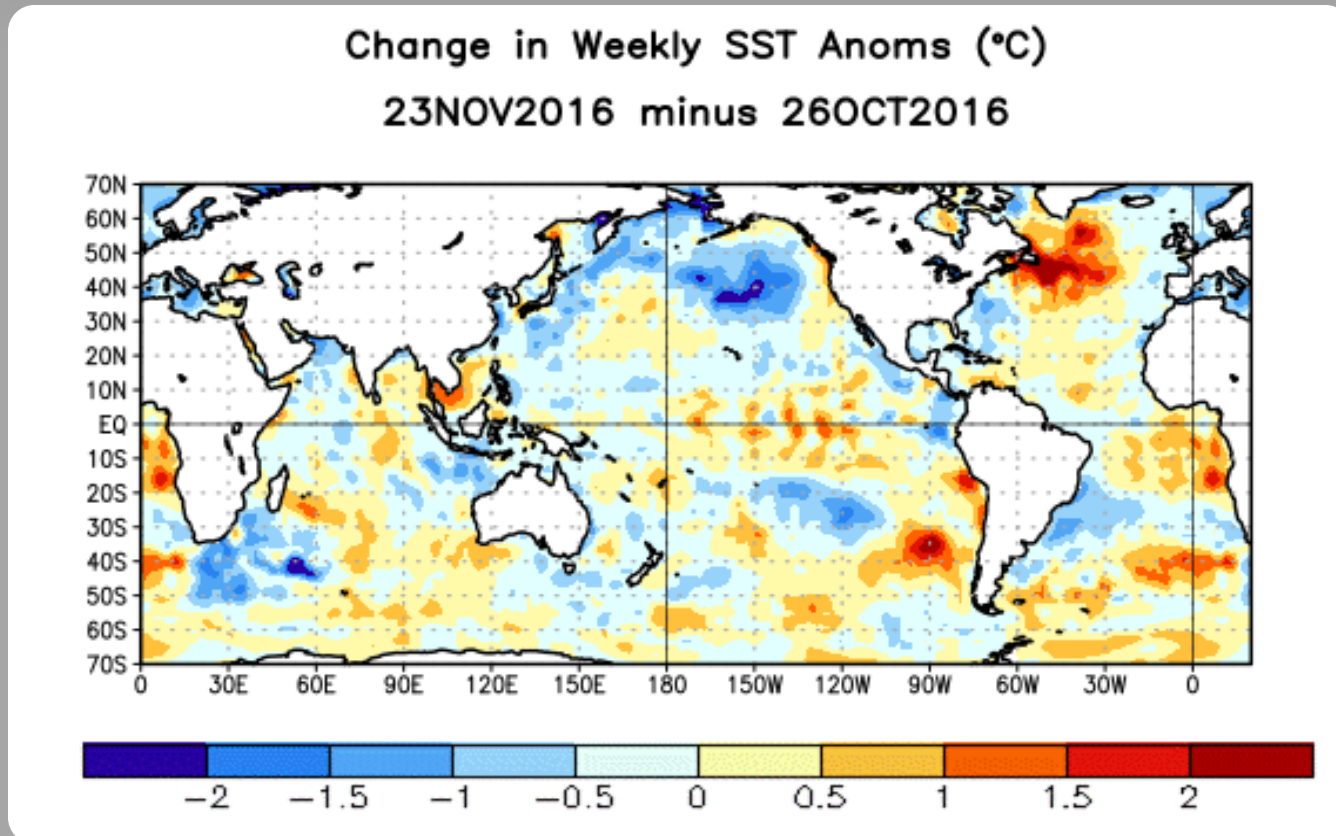
SST Departures ($^{\circ}\text{C}$) in the Tropical Pacific During the Last Four Weeks

During the last four weeks, equatorial SSTs were below average across the central and eastern Pacific Ocean.



Change in Weekly SST Departures over the Last Four Weeks

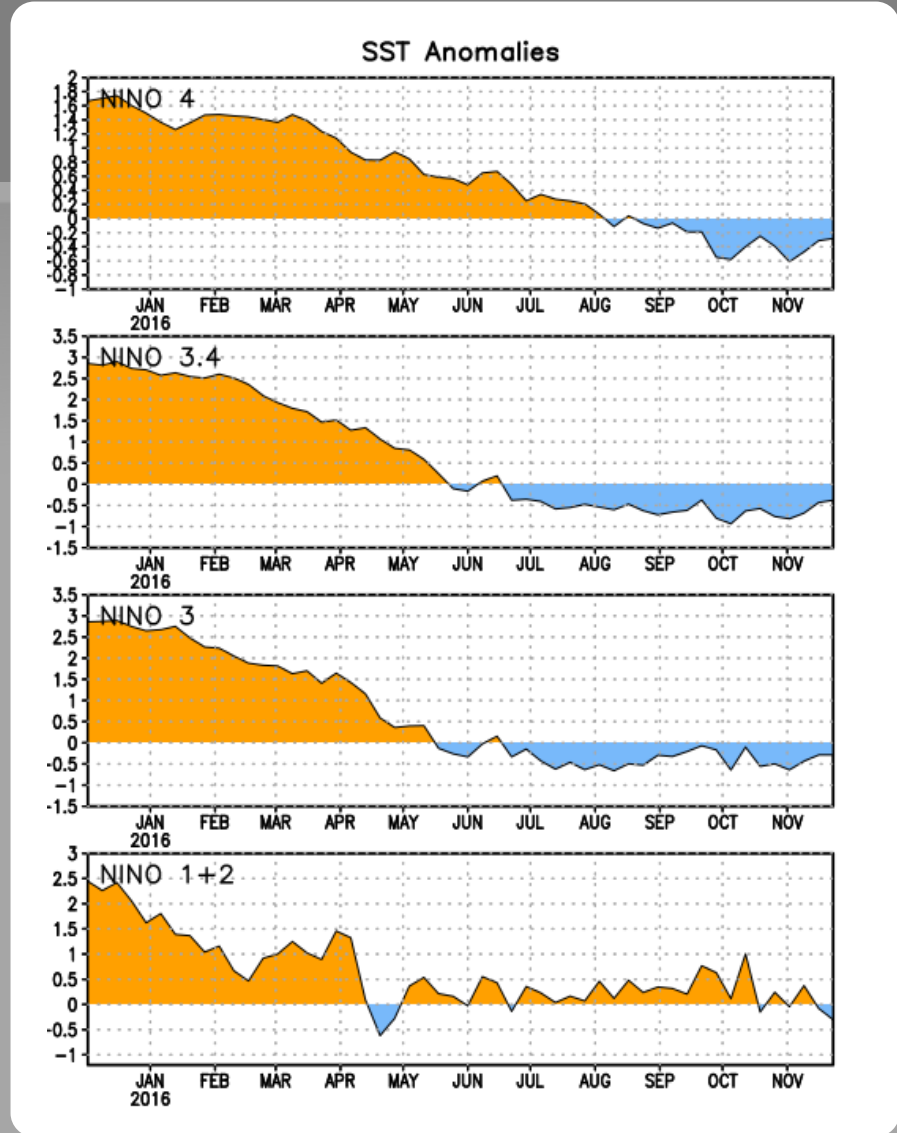
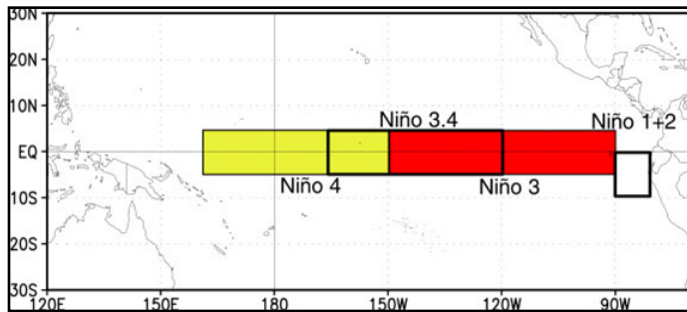
During the last four weeks, small regions of equatorial SST anomalies increased across the central and east-central Pacific, and decreased in the far eastern Pacific.



Niño Region SST Departures (°C) Recent Evolution

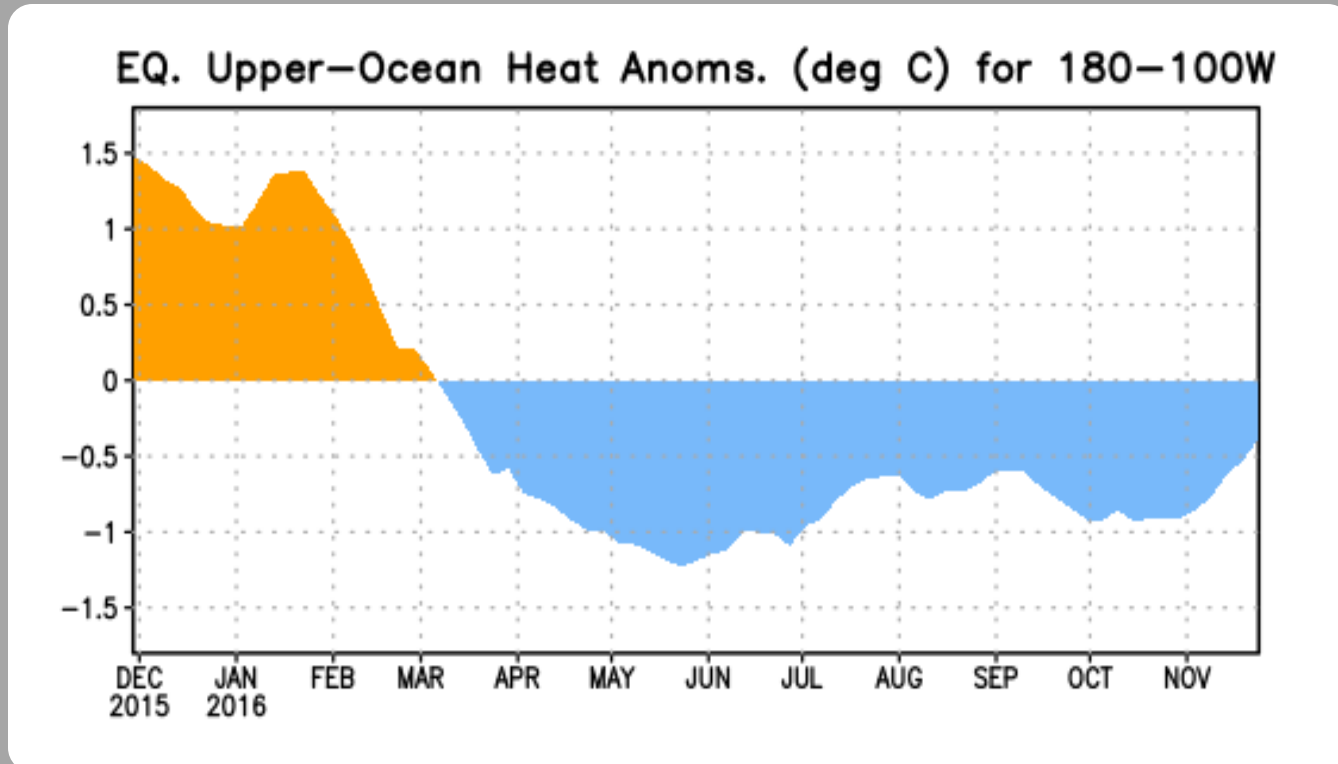
The latest weekly SST departures are:

Niño 4	-0.3°C
Niño 3.4	-0.4°C
Niño 3	-0.3°C
Niño 1+2	-0.3°C



Central and Eastern Pacific Upper-Ocean (0-300 m) Weekly Average Temperature Anomalies

Overall, positive subsurface temperature anomalies decreased following November 2015, and became negative during March 2016. Negative anomalies strengthened during March-May 2016, weakened in June and July 2016, and have mostly persisted through October. Since early November, negative anomalies have weakened.



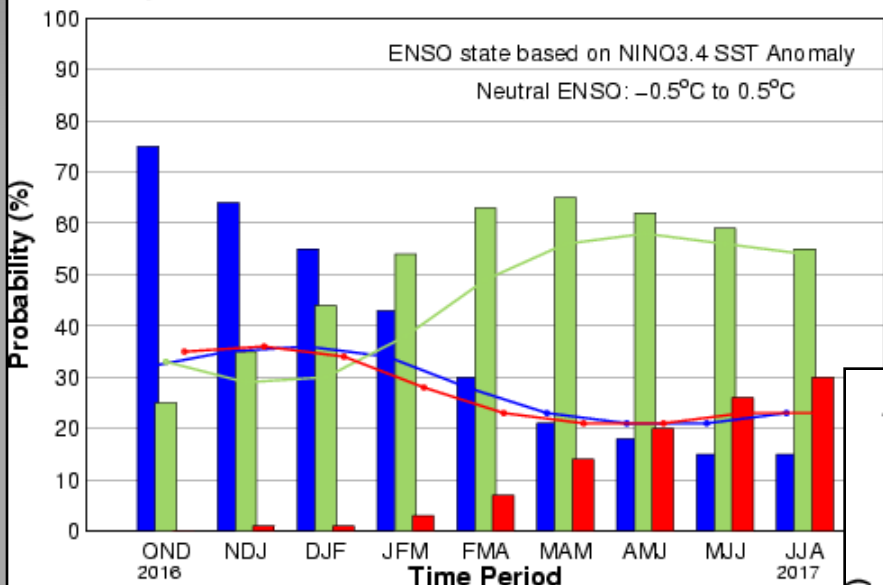
CPC/IRI Probabilistic ENSO Outlook

Updated: November 2016

La Niña is slightly favored to persist (~55% chance) through the winter 2016-17.

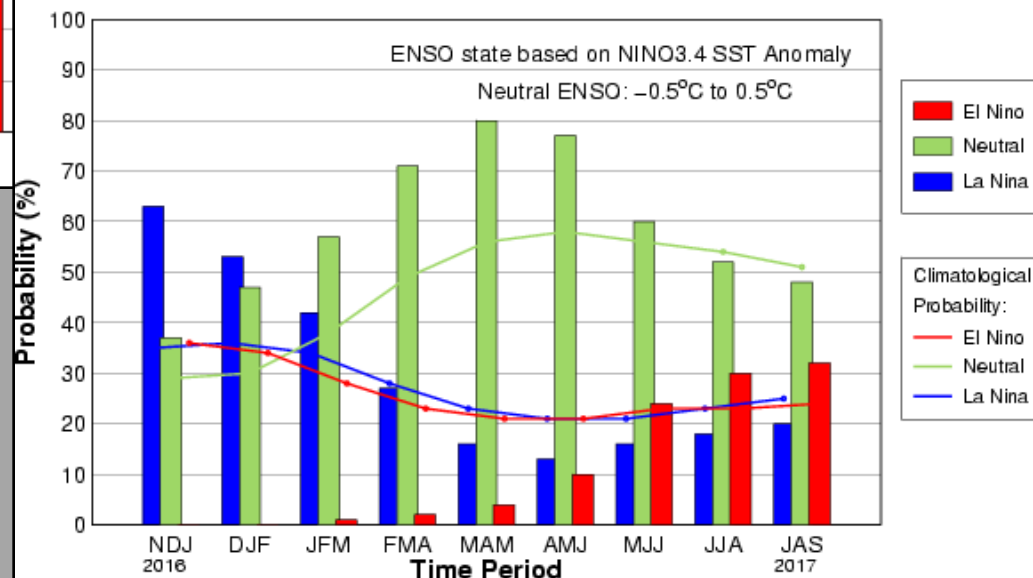
Early-Nov CPC/IRI Official Probabilistic ENSO Forecast

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5°C to 0.5°C



Mid-Nov IRI/CPC Model-Based Probabilistic ENSO Forecast

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5°C to 0.5°C



IRI/CPC Pacific Niño

3.4 SST Model Outlook

Most multi-model averages indicate weak La Niña conditions through the Northern Hemisphere early winter 2016-17.

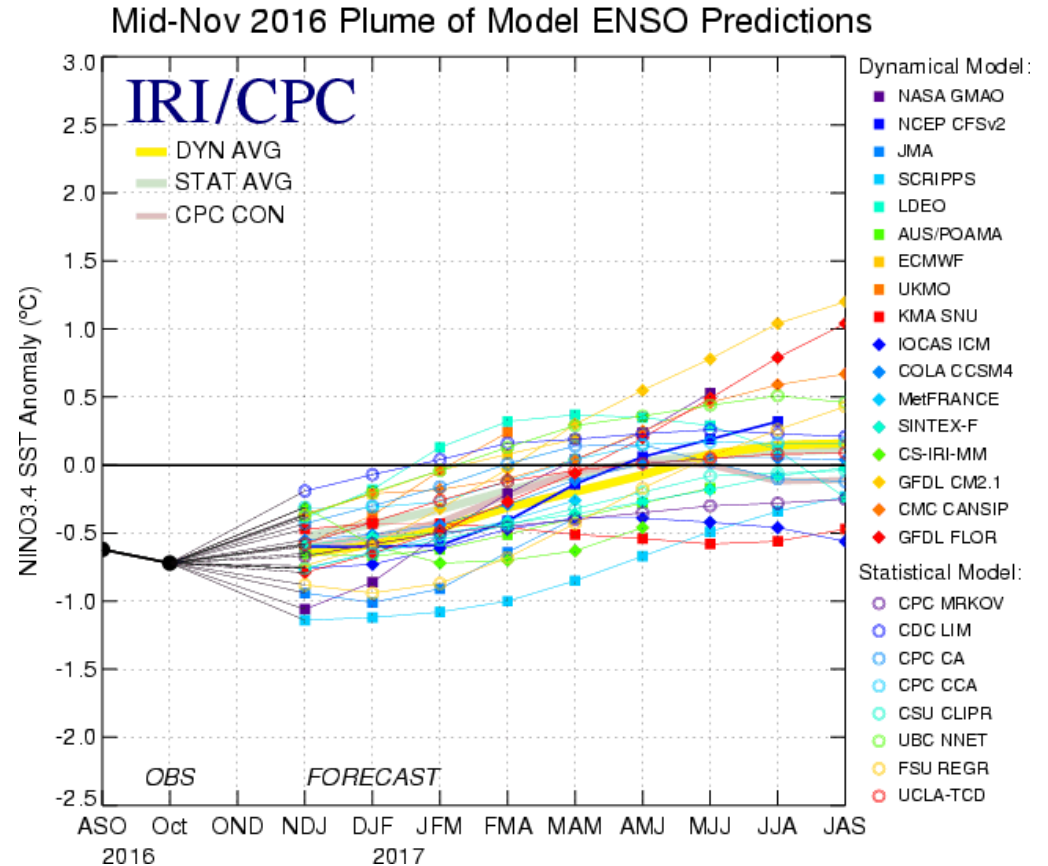


Figure provided by the International Research Institute (IRI) for Climate and Society (updated November 2016).

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 Niño Index (ONI) [3 month running mean of ERSST.v4 SST anomalies in the Niño 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.

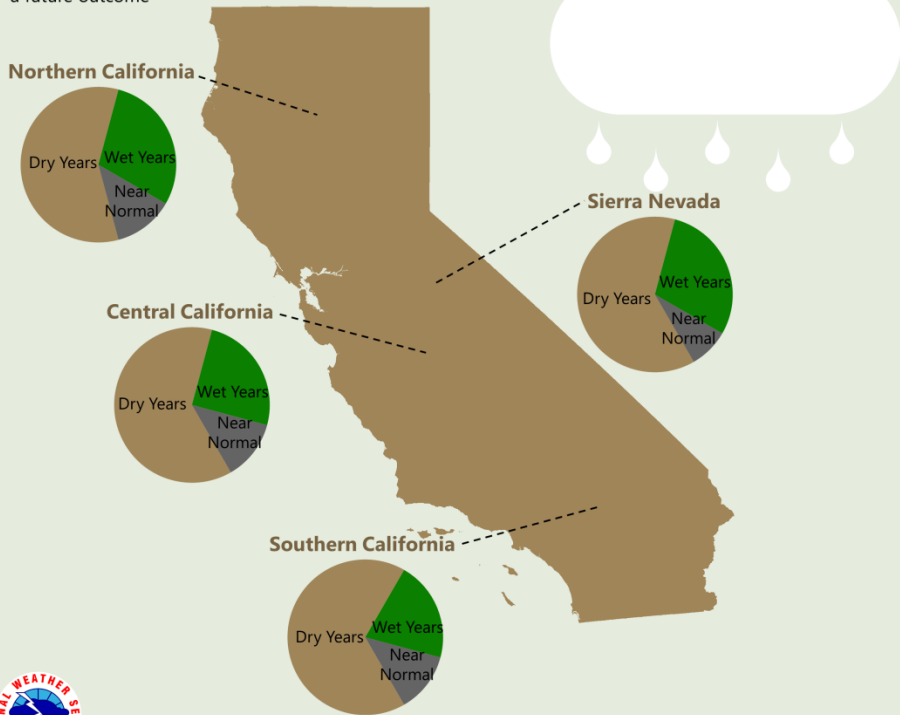
The ONI is one measure of the El Niño-Southern Oscillation, and other indices can confirm whether features consistent with a coupled ocean-atmosphere phenomenon accompanied these periods. The complete table going back to DJF 1950 can be found [here](#).

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2004	0.3	0.3	0.2	0.1	0.2	0.3	0.5	0.6	0.7	0.7	0.6	0.7
2005	0.7	0.6	0.5	0.5	0.3	0.2	0.0	-0.1	0.0	-0.2	-0.5	-0.7
2006	-0.7	-0.6	-0.4	-0.2	0.0	0.0	0.1	0.3	0.5	0.7	0.9	0.9
2007	0.7	0.4	0.1	-0.1	-0.2	-0.3	-0.4	-0.6	-0.9	-1.1	-1.3	-1.3
2008	-1.4	-1.3	-1.1	-0.9	-0.7	-0.5	-0.4	-0.3	-0.3	-0.4	-0.6	-0.7
2009	-0.7	-0.6	-0.4	-0.1	0.2	0.4	0.5	0.5	0.6	0.9	1.1	1.3
2010	1.3	1.2	0.9	0.5	0.0	-0.4	-0.9	-1.2	-1.4	-1.5	-1.4	-1.4
2011	-1.3	-1.0	-0.7	-0.5	-0.4	-0.3	-0.3	-0.6	-0.8	-0.9	-1.0	-0.9
2012	-0.7	-0.5	-0.4	-0.4	-0.3	-0.1	0.1	0.3	0.3	0.3	0.1	-0.2
2013	-0.4	-0.4	-0.3	-0.2	-0.2	-0.2	-0.3	-0.3	-0.2	-0.3	-0.3	-0.3
2014	-0.5	-0.5	-0.4	-0.2	-0.1	0.0	-0.1	0.0	0.1	0.4	0.5	0.6
2015	0.6	0.5	0.6	0.7	0.8	1.0	1.2	1.4	1.7	2.0	2.2	2.3
2016	2.2	2.0	1.6	1.1	0.6	0.1	-0.3	-0.6	-0.7			

A Look Back at Past Neutral and La Nina Conditions

ENSO Neutral Conditions

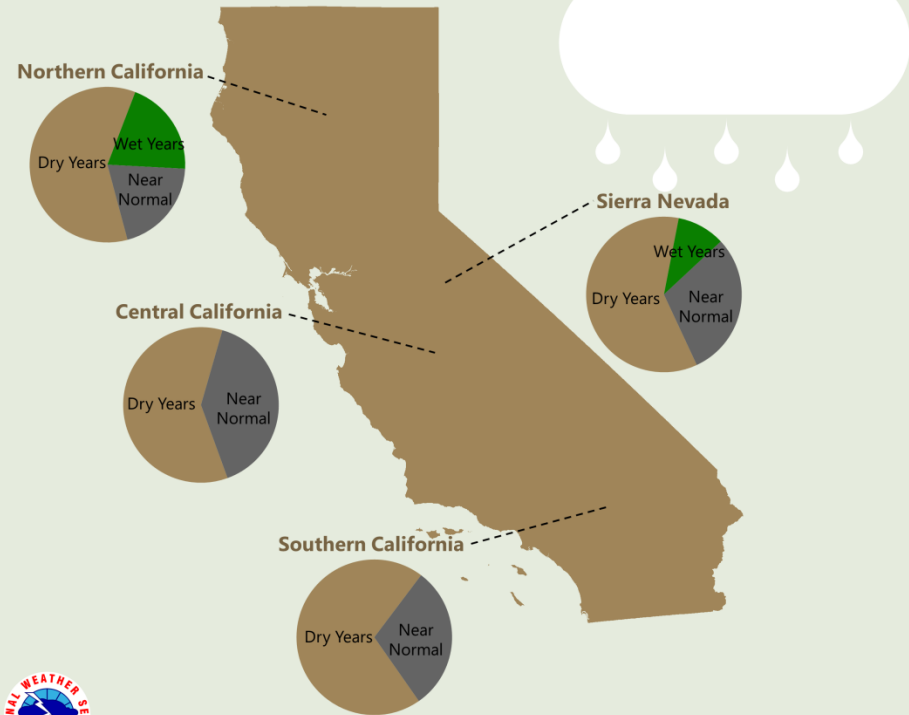
When neither El Niño nor La Niña conditions are in place, everything is on the table for California. Past neutral years have yielded more dry winter seasons than normal or wet ones, but past conditions do not guarantee a future outcome



Based on 24 historical ENSO Neutral Seasons
Data: PRISM, Oregon State University

Weak La Niña Conditions

Past La Niña events have historically favored near normal or dry winter months, but past conditions do not guarantee a future outcome



Based on 10 historical Weak La Niña Seasons
Data: PRISM, Oregon State University

Dec-Jan-Feb Snow Anomalies (in) and Frequency of Occurrence (%)

Average snow departures during La Nina for DJF

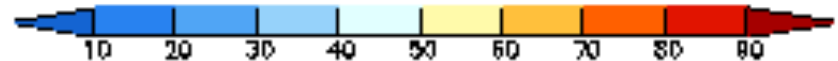
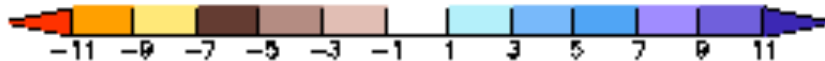
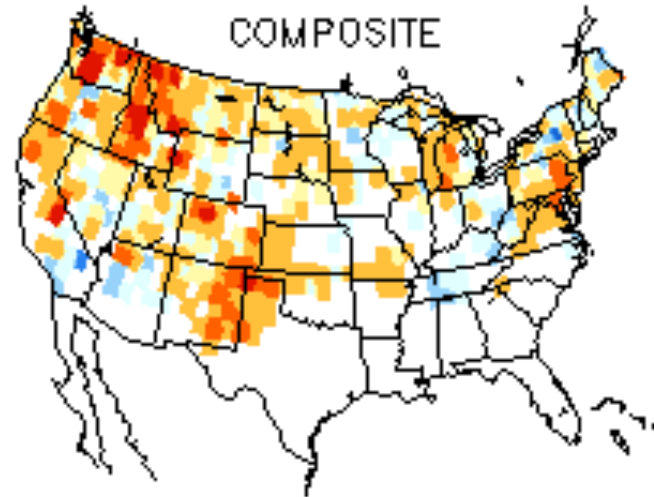
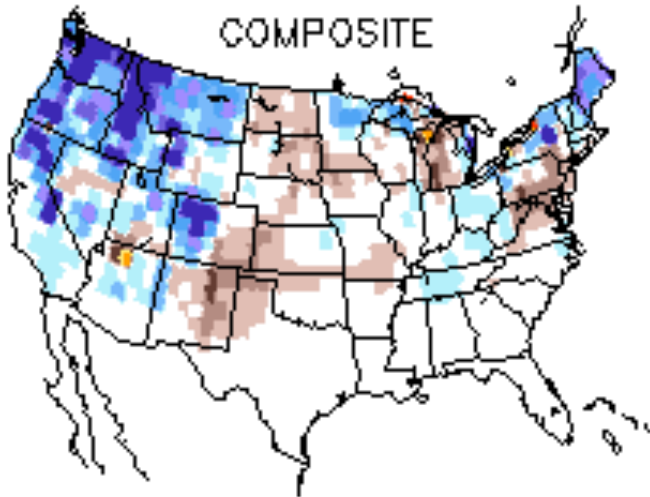
Frequency of occurrence

ANOMALIES

FREQUENCY

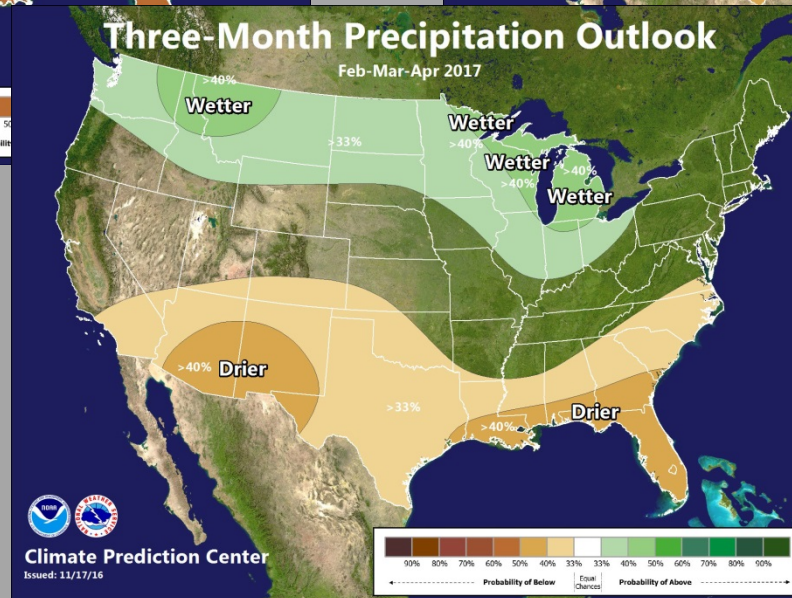
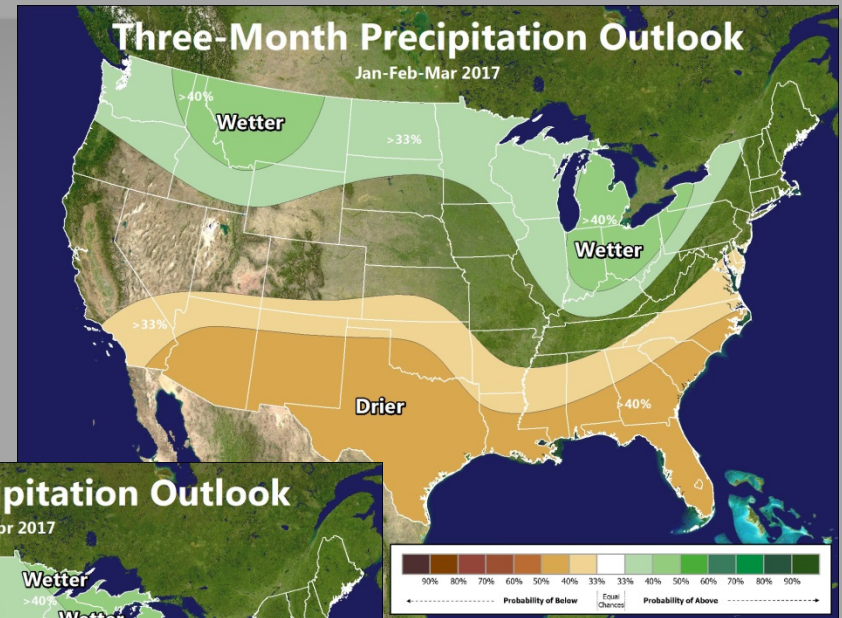
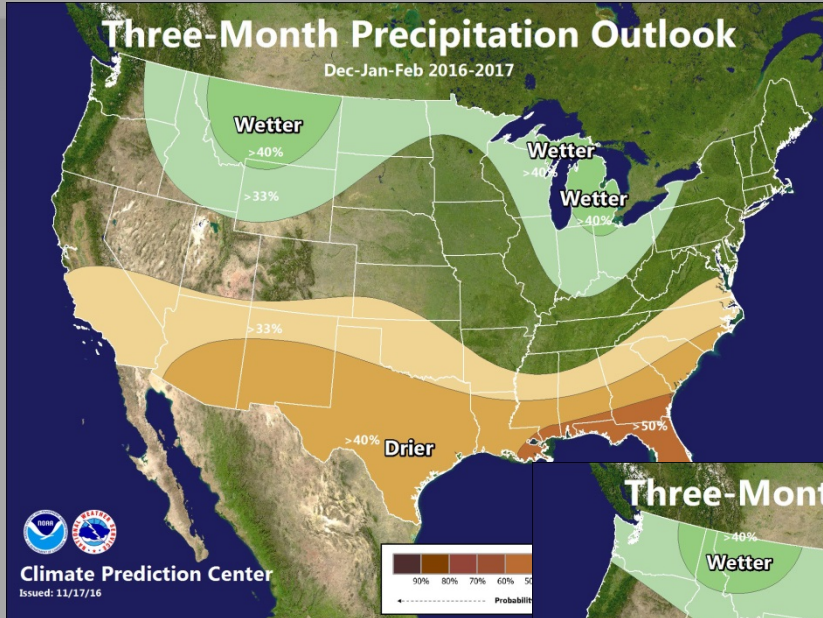
COMPOSITE

COMPOSITE



U. S. Seasonal Outlooks

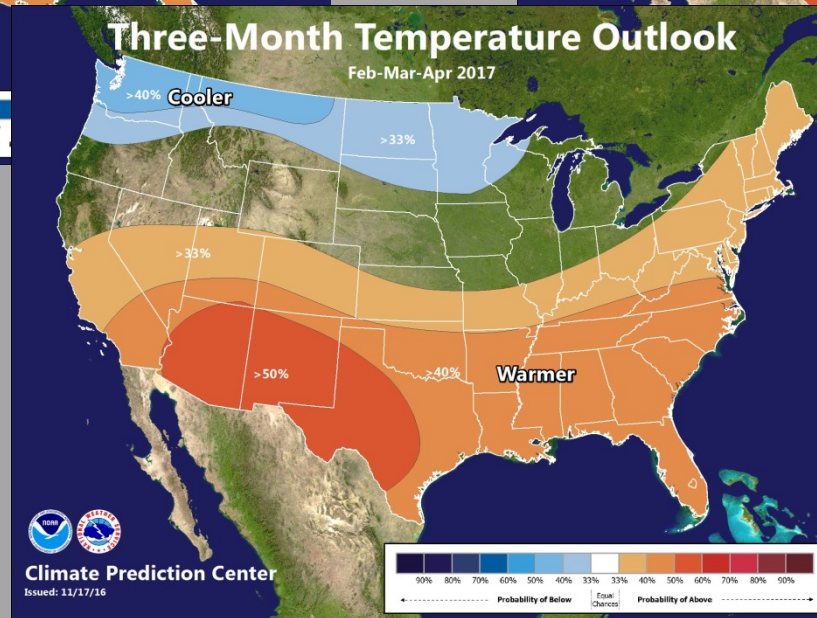
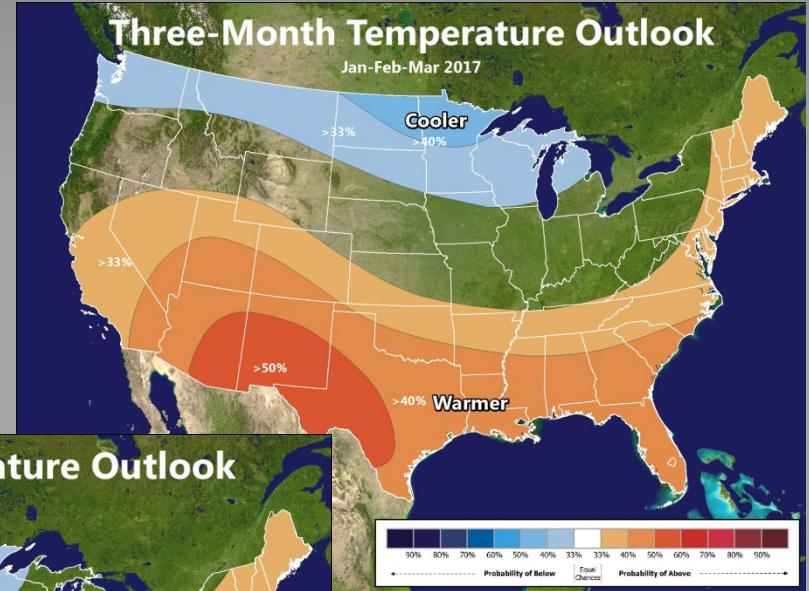
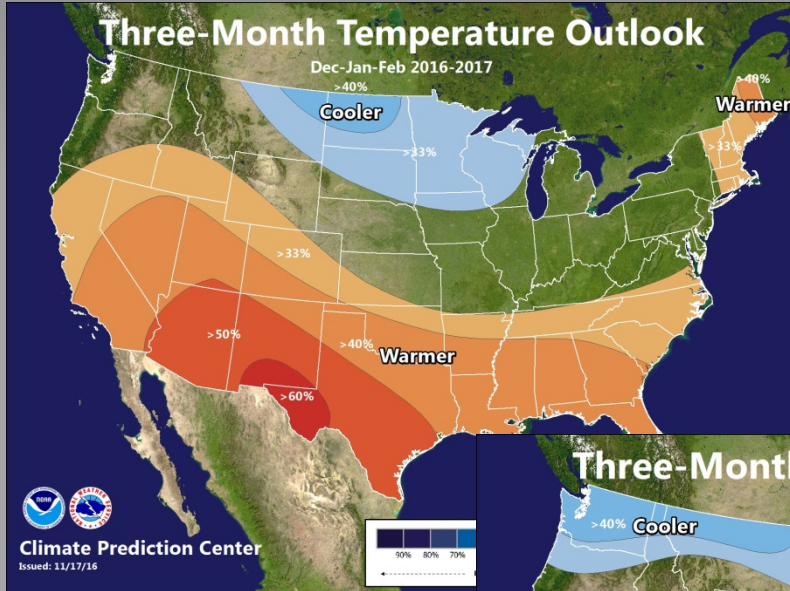
Precipitation



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

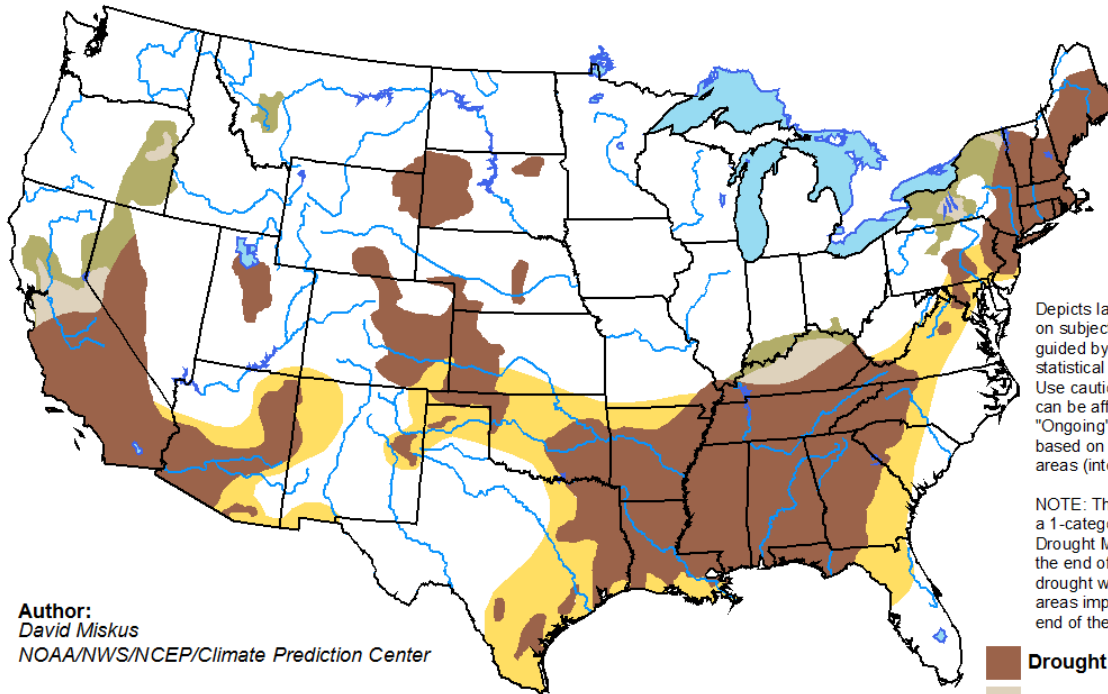
U. S. Seasonal Outlooks

Temperature



U. S. Seasonal Drought Outlook





U.S. Seasonal Drought Outlook *Valid for November 17 - February 28, 2017* **Drought Tendency During the Valid Period** *Released November 17, 2016*

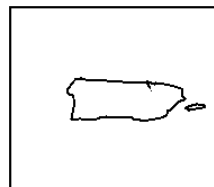
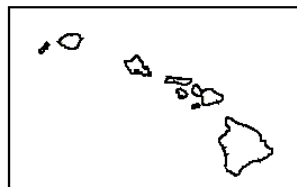
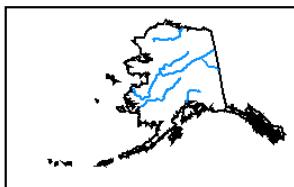


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to 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).

Author:
David Miskus
NOAA/NWS/NCEP/Climate Prediction Center

-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZ73>

Summary

ENSO Alert System Status: La Niña Advisory

La Niña conditions are present.*

Equatorial sea surface temperatures (SST) are below average in the central and east-central Pacific Ocean.

La Niña is slightly favored to persist (~55% chance) through winter 2016-17.*

* Note: These statements are updated once a month (2nd Thursday of each month) in association with the ENSO Diagnostics Discussion, which can be found by clicking [here](#).

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.pdf

NOAA Operational Definitions for El Niño and La Niña

El Niño: characterized by a positive ONI greater than or equal to $+0.5^{\circ}\text{C}$.

La Niña: characterized by a negative ONI less than or equal to -0.5°C .

By historical standards, to be classified as a full-fledged El Niño or La Niña episode, these thresholds must be exceeded for a period of at least 5 consecutive overlapping 3-month seasons.

CPC considers El Niño or La Niña conditions to occur when the monthly Niño3.4 OISST departures meet or exceed $\pm 0.5^{\circ}\text{C}$ along with consistent atmospheric features. These anomalies must also be forecasted to persist for 3 consecutive months.