



# El Niño Briefing for SE California & SW/SC Arizona



## NOAA/NWS Phoenix, AZ

Issued: September 18, 2009

### Overview

The term El Niño refers to the large-scale ocean-atmosphere climate phenomenon linked to a periodic warming in sea surface temperatures across the central and east-central equatorial Pacific Ocean. El Niño represents the warm phase of the El Niño/Southern Oscillation, or ENSO, cycle.

Recent data show that El Niño is present and continues to intensify across the equatorial Pacific Ocean. Based on observational and model data, El Niño is expected to strengthen and persist through Winter 2009-2010 with this being an episode of at least moderate strength. There will be an increased chance for above normal rainfall this winter.

### Past and Current Conditions

Sea surface temperatures (SSTs) along the equator in the Pacific Ocean have transitioned from below normal earlier in 2009 to above normal currently. The current Niño 3.4 value (blue box, Fig. 1) is +0.9 °C, well above the 0.5 °C threshold that defines El Niño conditions (Fig. 2).

The most recent Oceanic Niño Index (ONI), a three-month average of SST anomalies in the Niño 3.4 region, computed for the period June 2009 through August 2009 was +0.7 °C. A warm (El Niño) episode is said to have occurred when the ONI is at-or-above 0.5 °C for five consecutive three-month periods; thus far, the ONI has been at-or-above 0.5 °C for two consecutive three-month periods.

When comparing how the Jun-Jul-Aug (JJA) ONI correlates to precipitation during the following winter (Jan-Apr) in Arizona, a strong correlation can be found (Fig. 3). When the JJA ONI is into the El Niño category, 10 of the past 12 occurrences resulted in above average winter precipitation across Arizona.

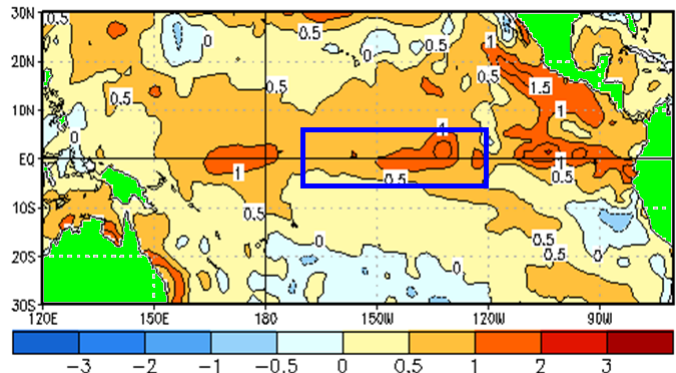


Figure 1 – Average SST anomalies in the Pacific Ocean, from 16 August 2009 through 12 September 2009. The blue box represents the Niño 3.4 region where the most recent weekly temperature anomaly was +0.9 °C.

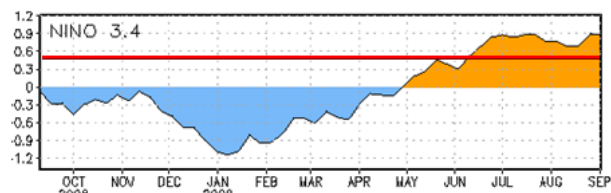


Figure 2 – SST anomalies in the Niño 3.4 region since Fall 2008. SST anomalies above 0.5 °C (red line) indicate El Niño conditions. Values climbed above the El Niño threshold this past summer and are expected to remain elevated through Winter 2009-2010.

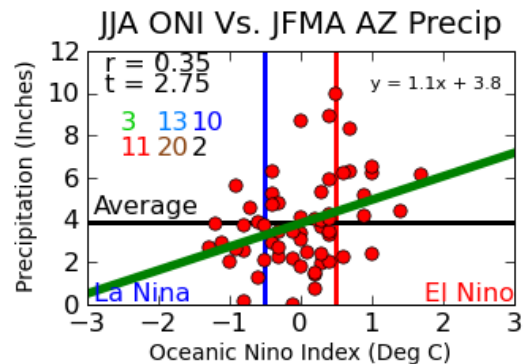


Figure 3 – Scatter plot of the Jun-Jul-Aug ONI versus winter (Jan-Apr) precipitation in Arizona from 1951-2008. Dots to the right (left) of the red (blue) line indicate El Niño (La Niña) conditions. Dots above (below) the black line represent above (below) average precipitation. The colored numbers to the top-left represent the categorical breakdown of occurrences – of twelve instances when El Niño conditions were present during JJA, ten resulted in above average precipitation the following winter while two were below average. The left column is for La Niña, the middle ENSO neutral.

## Outlook

Atmospheric circulation features typically related to El Niño episodes are beginning to develop over the Northern Hemisphere. The large-scale weather pattern is therefore becoming more directly influenced by the El Niño conditions in the Pacific Ocean – that is the ocean and atmospheric circulation are in the process of coupling.

Based on recent trends and a majority of the statistical and coupled model forecasts, SST anomalies across the Niño 3.4 region will continue to warm through the next several months. El Niño conditions will very likely persist through Winter 2009-2010 (Fig. 4).

The official November-December-January Outlook from the Climate Prediction Center (CPC) calls for increased chances for the average three month temperature to be above normal across southwest/south-central Arizona and southeast California (Fig. 5). There will be equal chances for the three month total precipitation to be above, near, or below normal (Fig. 6).

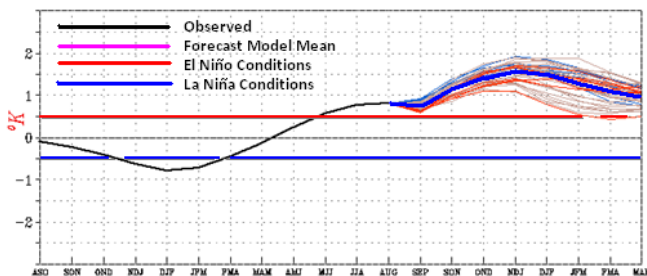


Figure 4 – Forecasted SST anomalies from the NOAA CPC CFS model. The heavy black line is observed SST anomalies, the heavy blue line the average of all the model runs, and the light blue lines the most recent model runs. The red (blue) line indicates the +0.5 °C (-0.5 °C) threshold for El Niño (La Niña) conditions.

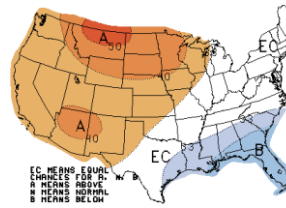


Figure 5 – Nov-Dec-Jan Temperature Outlook.

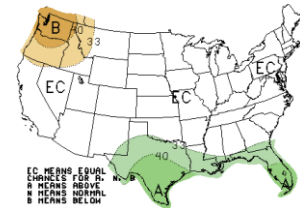


Figure 6 – Nov-Dec-Jan Precipitation Outlook.

The official January-February-March Outlook from CPC calls for equal chances for the average three month temperature to be above, near, or below normal (Fig. 7). There will be an increased chance for the three month total precipitation to be above normal (Fig. 8).

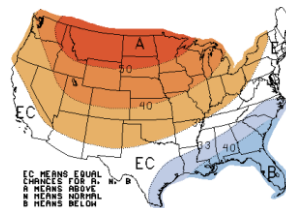


Figure 7 – Jan-Feb-Mar Temperature Outlook.

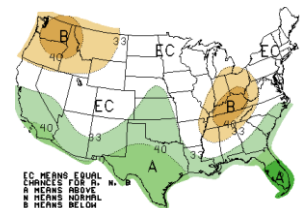


Figure 8 – Jan-Feb-Mar Precipitation Outlook.

## Additional Information

NOAA CPC ENSO Page:

<http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml>

NOAA El Niño Page:

<http://www.elnino.noaa.gov>

NOAA CPC Outlooks:

<http://www.cpc.ncep.noaa.gov/products/predictions/30day/>

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**Next Update: October 16, 2009**