

# EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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**ENSO Alert System Status: El Niño Advisory**

**Synopsis: There is an approximately 95% chance that El Niño will continue through Northern Hemisphere winter 2015-16, gradually weakening through spring 2016.**

During September, sea surface temperature (SST) anomalies were well above average across the central and eastern Pacific Ocean (Fig. 1). The Niño indices generally increased, although the far western Niño-4 index was nearly unchanged (Fig. 2). Also, relative to last month, the strength of the positive subsurface temperature anomalies decreased slightly in the central and eastern Pacific (Fig. 3), but the largest departures remained above 6°C (Fig. 4). The atmosphere was well coupled with the ocean, with significant low-level westerly wind anomalies and upper-level easterly wind anomalies persisting from the western to the east-central tropical Pacific. Also, the traditional and equatorial Southern Oscillation Index (SOI) values became more negative (stronger), consistent with enhanced convection over the central and eastern equatorial Pacific and suppressed convection over Indonesia (Fig. 5). Collectively, these atmospheric and oceanic anomalies reflect a strong El Niño.

All models surveyed predict El Niño to continue into the Northern Hemisphere spring 2016, and all multi-model averages predict a peak in late fall/early winter (Fig. 6). The forecaster consensus unanimously favors a strong El Niño, with peak 3-month SST departures in the Niño 3.4 region near or exceeding +2.0°C. Overall, there is an approximately 95% chance that El Niño will continue through Northern Hemisphere winter 2015-16, gradually weakening through spring 2016 (click [CPC/IRI consensus forecast](#) for the chance of each outcome for each 3-month period).

Across the United States, temperature and precipitation impacts from El Niño are likely to be seen during the upcoming months (the [3-month seasonal outlook](#) will be updated on Thursday October 15<sup>th</sup>). Outlooks generally favor below-average temperatures and above-median precipitation across the southern tier of the United States, and above-average temperatures and below-median precipitation over the northern tier of the United States.

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site ([El Niño/La Niña Current Conditions and Expert Discussions](#)). Forecasts are also updated monthly in the [Forecast Forum](#) of CPC's Climate Diagnostics Bulletin. Additional perspectives and analysis are also available in an [ENSO blog](#). The next ENSO Diagnostics Discussion is scheduled for 12 November 2015. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: [ncep.list.enso-update@noaa.gov](mailto:ncep.list.enso-update@noaa.gov).

Climate Prediction Center  
National Centers for Environmental Prediction  
NOAA/National Weather Service  
College Park, MD 20740

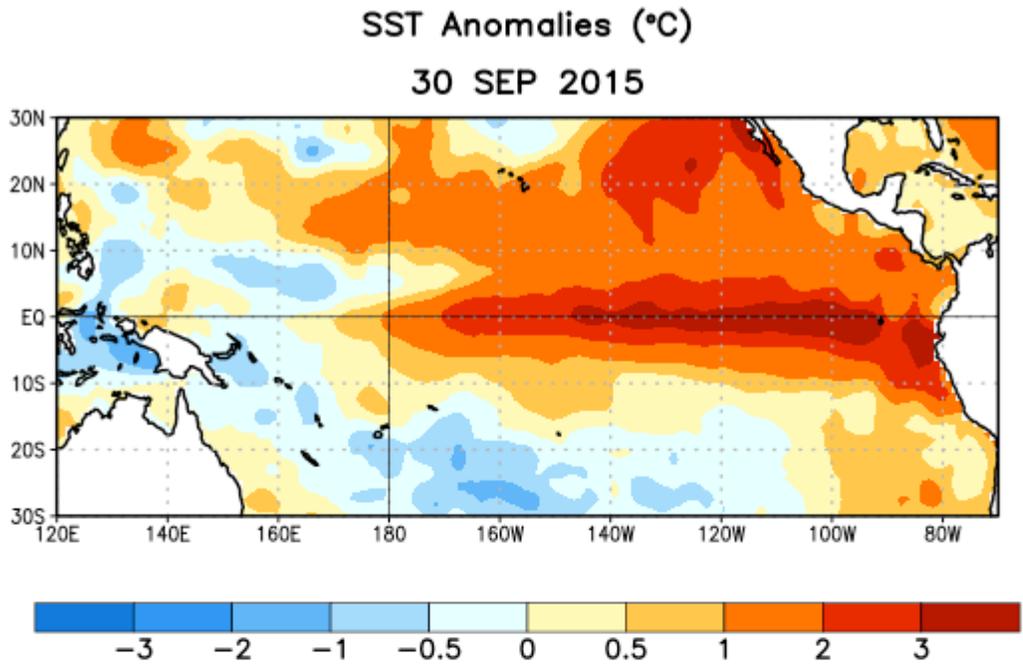


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 30 September 2015. Anomalies are computed with respect to the 1981-2010 base period weekly means.

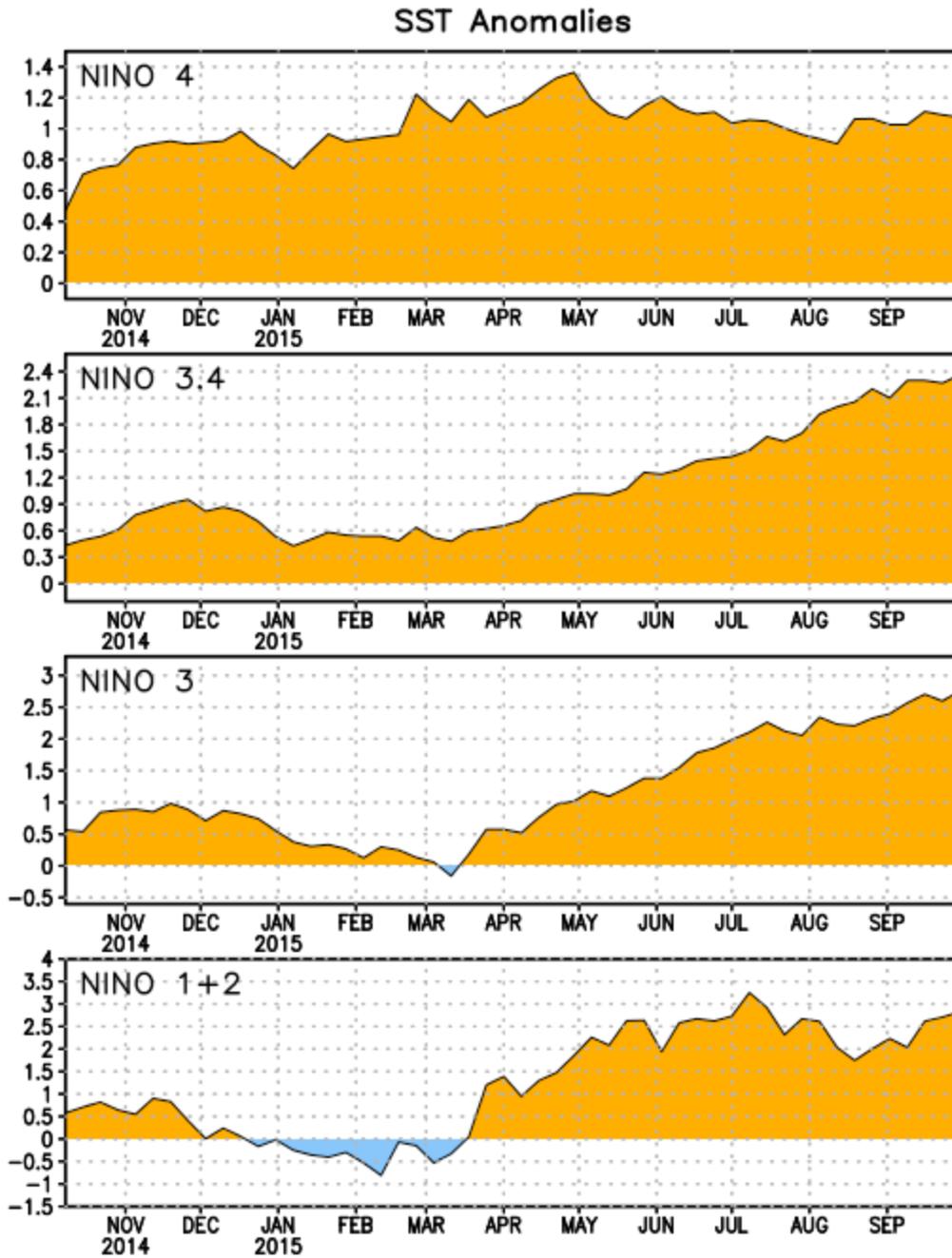


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies ( $^{\circ}\text{C}$ ) in the Niño regions [Niño-1+2 ( $0^{\circ}$ - $10^{\circ}\text{S}$ ,  $90^{\circ}\text{W}$ - $80^{\circ}\text{W}$ ), Niño 3 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $90^{\circ}\text{W}$ ), Niño-3.4 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $170^{\circ}\text{W}$ - $120^{\circ}\text{W}$ ), Niño-4 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $160^{\circ}\text{E}$ )]. SST anomalies are departures from the 1981-2010 base period weekly means.

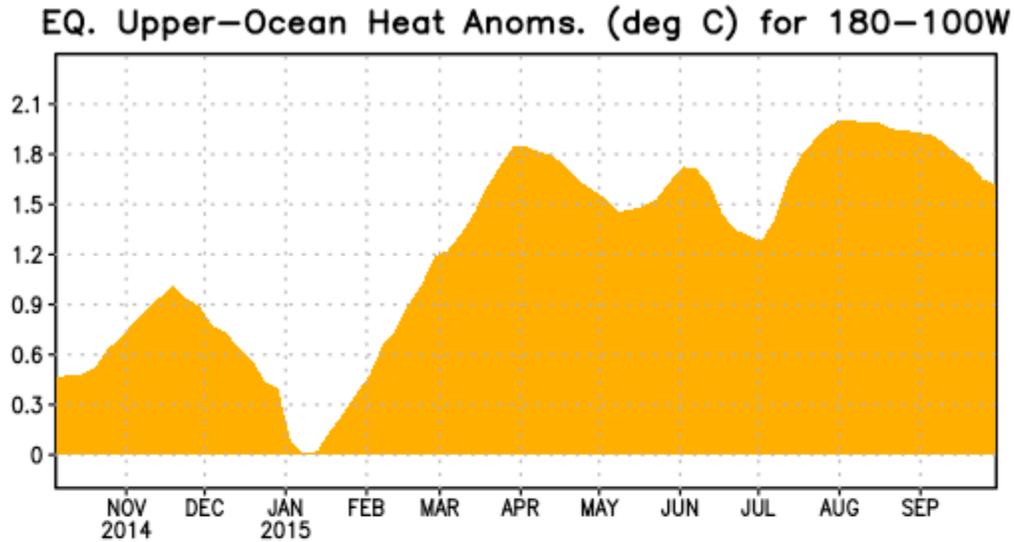


Figure 3. Area-averaged upper-ocean heat content anomaly ( $^{\circ}\text{C}$ ) in the equatorial Pacific ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $180^{\circ}$ - $100^{\circ}\text{W}$ ). The heat content anomaly is computed as the departure from the 1981-2010 base period pentad means.

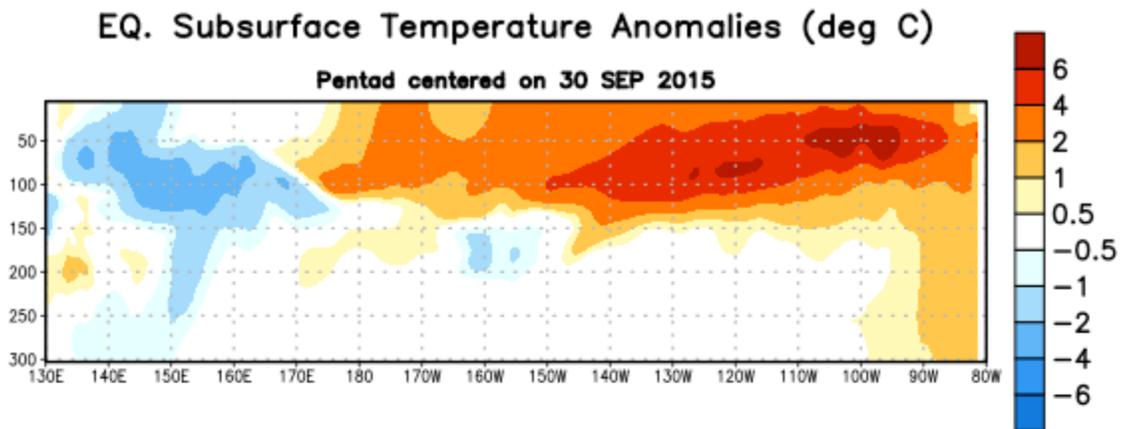


Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies ( $^{\circ}\text{C}$ ) centered on the pentad of 30 September 2015. The anomalies are averaged between  $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ . Anomalies are departures from the 1981-2010 base period pentad means.

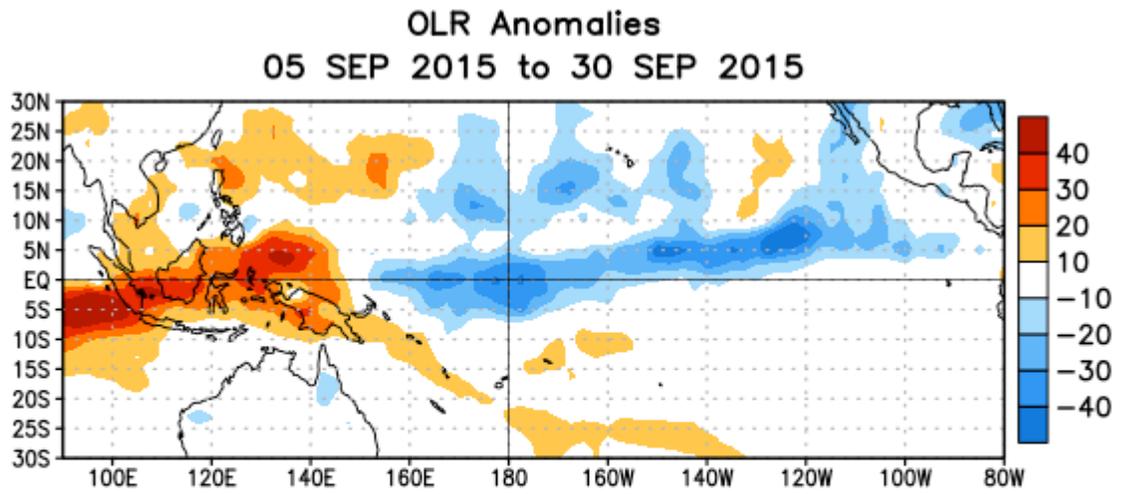


Figure 5. Average outgoing longwave radiation (OLR) anomalies ( $W/m^2$ ) for the period 5 – 30 September 2015. OLR anomalies are computed as departures from the 1979-1995 base period pentad means.

## Mid-Sep 2015 Plume of Model ENSO Predictions

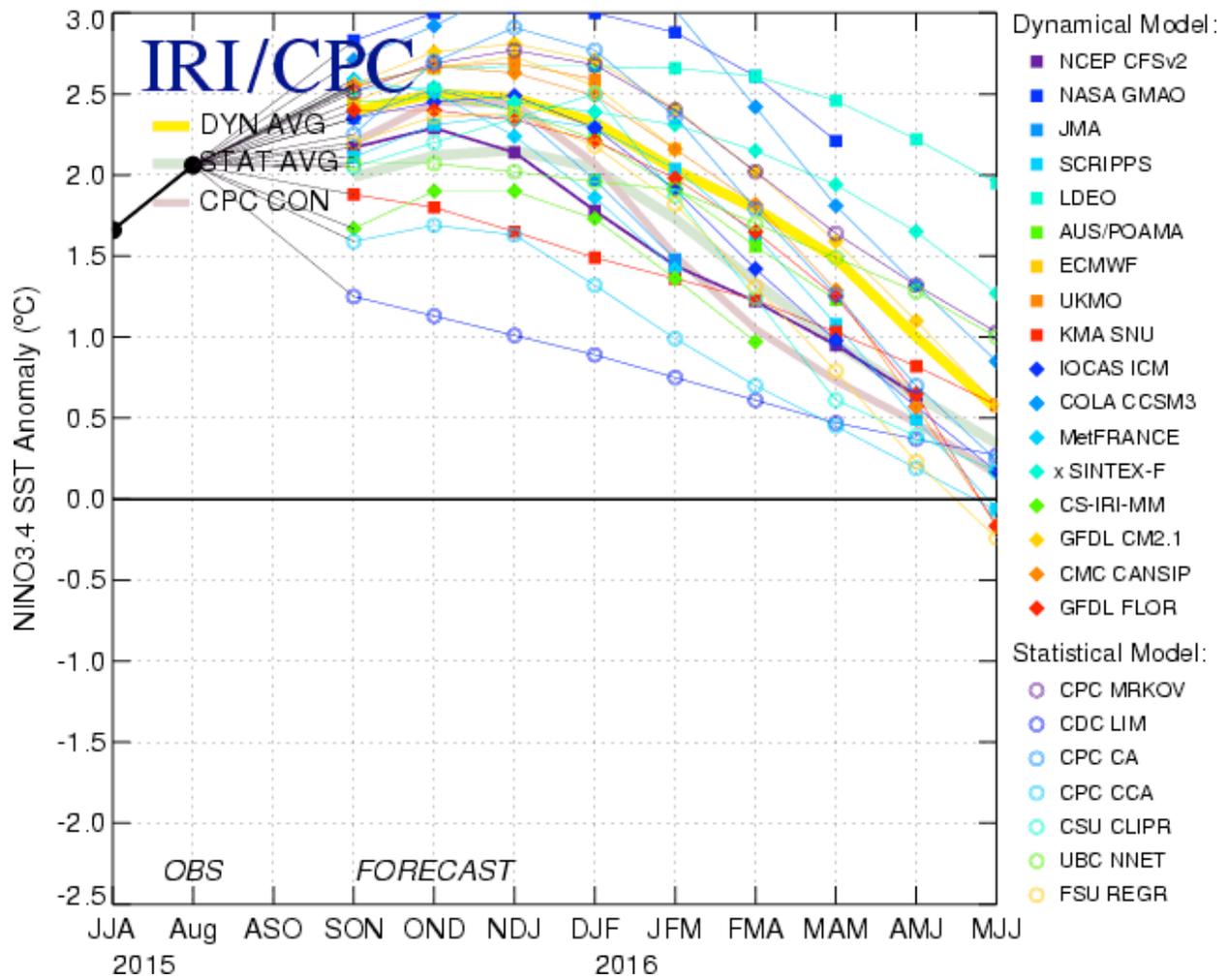


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 15 September 2015.