

# EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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**and the International Research Institute for Climate and Society**  
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**ENSO Alert System Status: El Niño Advisory**

**Synopsis:** There is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016.

During July, sea surface temperatures (SST) anomalies were near +1.0°C in the central equatorial Pacific Ocean, and in excess of +2.0°C across the eastern Pacific (Fig. 1). SST anomalies increased in the Niño-3 and Niño-3.4 regions, while the Niño-4 and Niño-1+2 indices decreased slightly during the month (Fig. 2). Positive subsurface temperature anomalies strengthened in the central and east-central equatorial Pacific during the month (Fig. 3), in association with the eastward movement of a downwelling oceanic Kelvin wave (Fig. 4). The atmosphere remained coupled to the oceanic warming, with significant low-level westerly wind anomalies continuing from the western to east-central equatorial Pacific, along with anomalous upper-level easterly winds. Also, the traditional and equatorial Southern Oscillation Index (SOI) were both negative, consistent with enhanced convection over the central and eastern equatorial Pacific and suppressed convection over Indonesia (Fig. 5). Collectively, these atmospheric and oceanic features reflect a significant and strengthening El Niño.

All models surveyed predict El Niño to continue into the Northern Hemisphere spring 2016, and all multi-model averages predict a strong event at its peak in late fall/early winter (3-month values of the Niño-3.4 index of +1.5°C or greater; Fig. 6). At this time, the forecaster consensus unanimously favors a strong El Niño, with peak 3-month SST departures in the Niño 3.4 region potentially near or exceeding +2.0°C. Overall, there is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 85% chance it will last into early spring 2016 (click [CPC/IRI consensus forecast](#) for the chance of each outcome for each 3-month period).

Across the contiguous United States, temperature and precipitation impacts associated with El Niño are expected to remain minimal during the remainder of the Northern Hemisphere summer and increase into the late fall and winter (the [3-month seasonal outlook](#) will be updated on Thursday August 20<sup>th</sup>). El Niño will likely contribute to a below normal Atlantic hurricane season, and to above-normal hurricane seasons in both the central and eastern Pacific hurricane basins (click [Hurricane season outlook](#) for more).

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 10 September 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).

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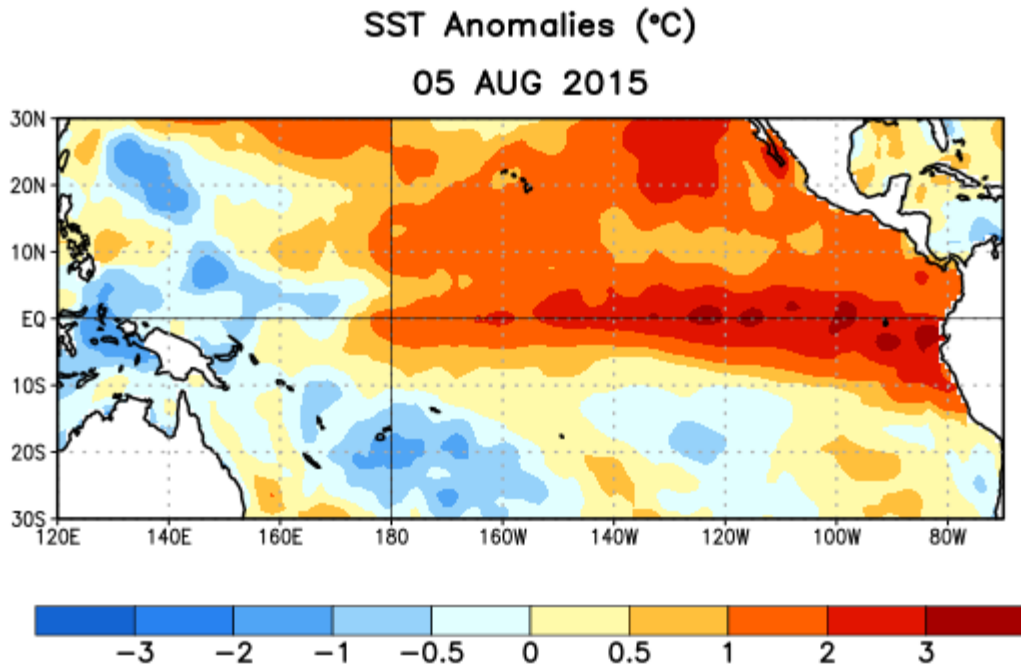


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 5 August 2015. Anomalies are computed with respect to the 1981-2010 base period weekly means.

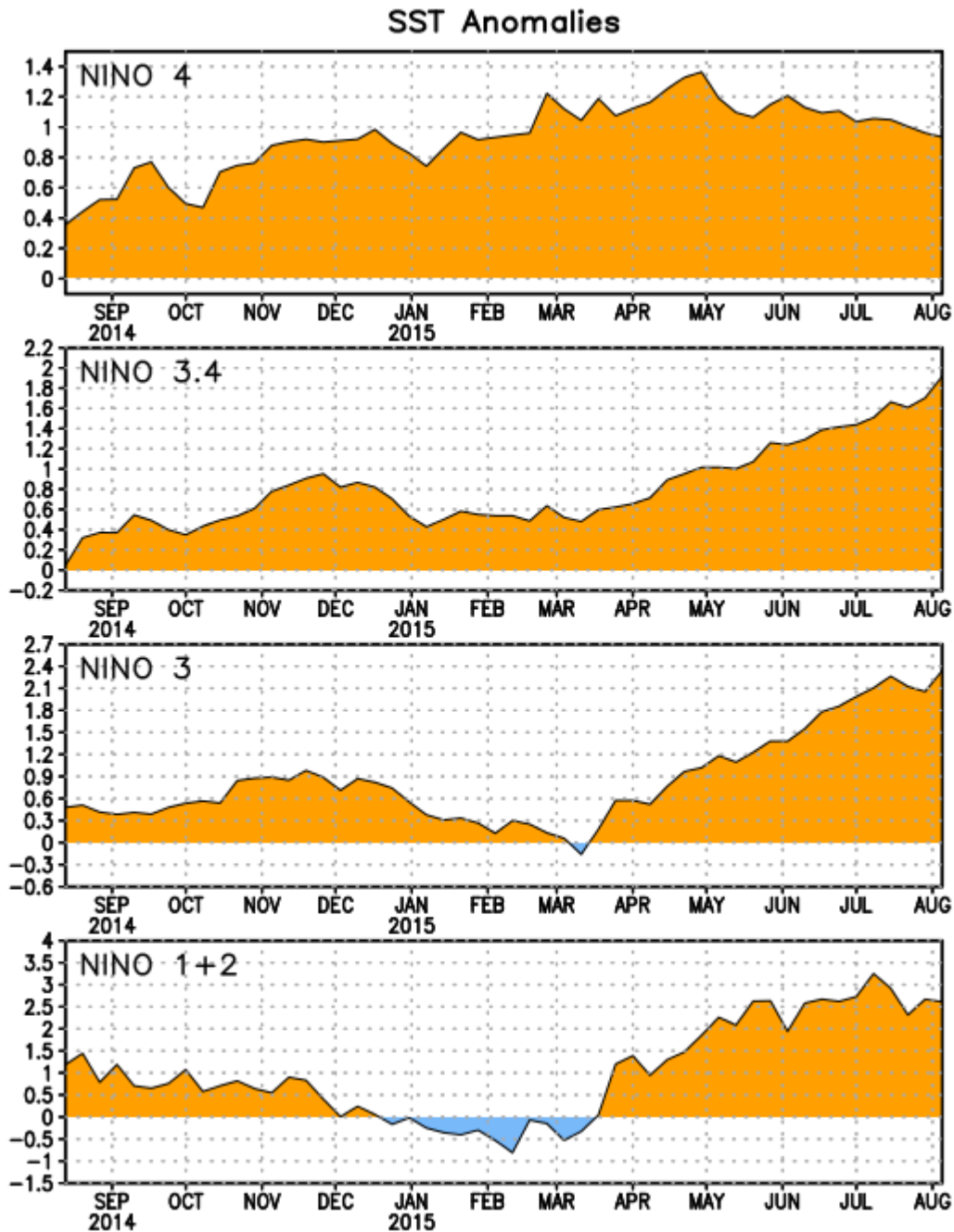


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies ( $^{\circ}\text{C}$ ) in the Niño regions [Niño-1+2 ( $0^{\circ}$ - $10^{\circ}\text{S}$ ,  $90^{\circ}\text{W}$ - $80^{\circ}\text{W}$ ), Niño 3 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $90^{\circ}\text{W}$ ), 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.

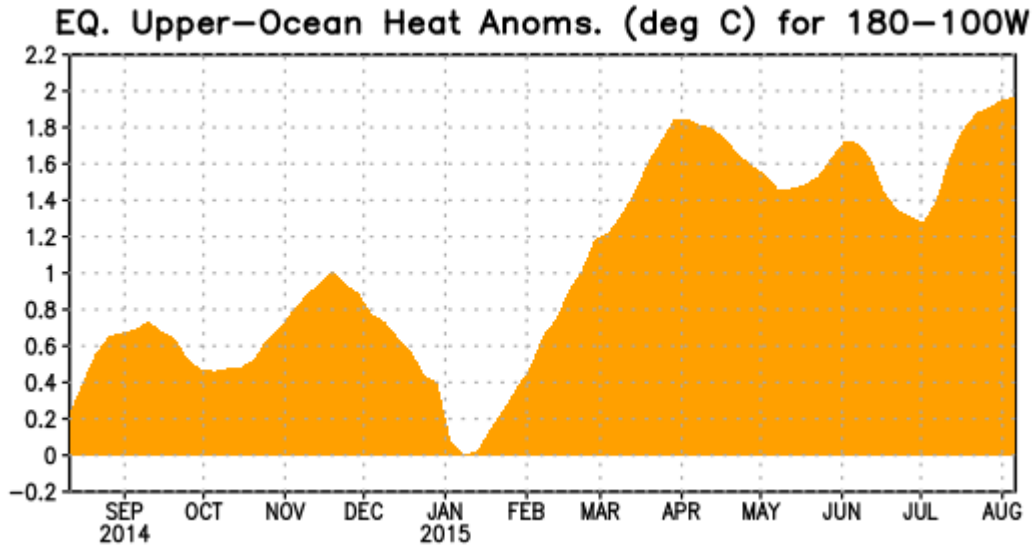


Figure 3. Area-averaged upper-ocean heat content anomaly ( $^{\circ}\text{C}$ ) in the equatorial Pacific ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $180^{\circ}$ - $100^{\circ}\text{W}$ ). The heat content anomaly is computed as the departure from the 1981-2010 base period pentad means.

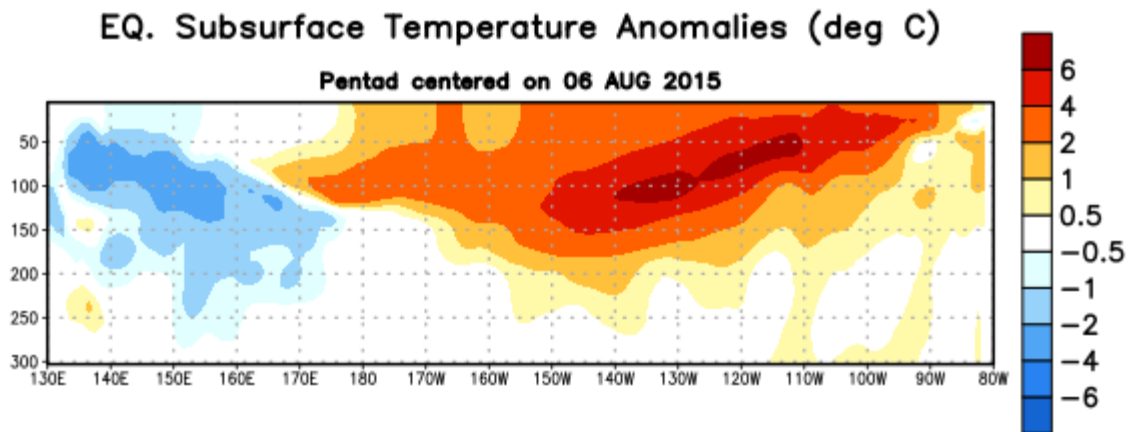


Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies ( $^{\circ}\text{C}$ ) centered on the pentad of 6 August 2015. The anomalies are averaged between  $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ . Anomalies are departures from the 1981-2010 base period pentad means.

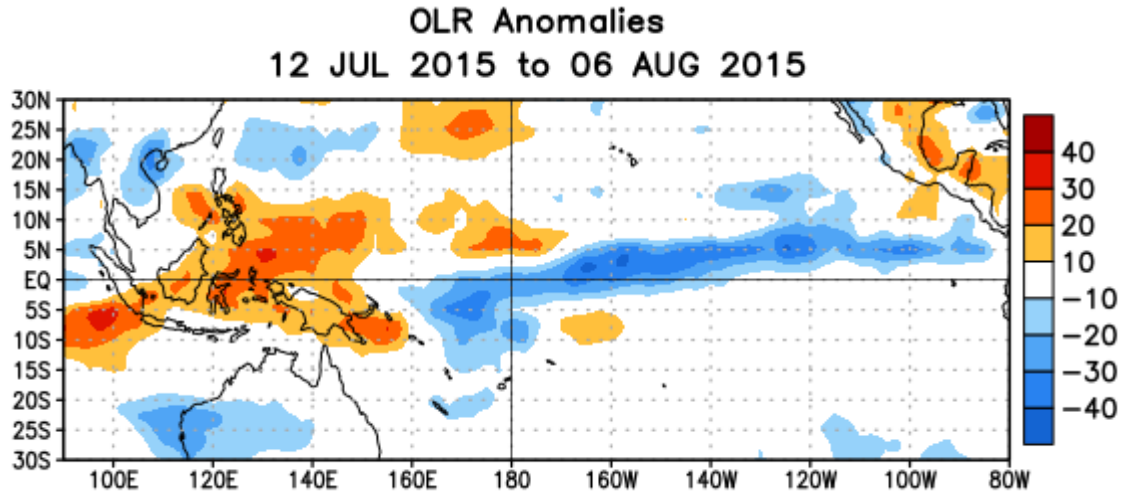


Figure 5. Average outgoing longwave radiation (OLR) anomalies ( $\text{W/m}^2$ ) for the period 12 July – 6 August 2015. OLR anomalies are computed as departures from the 1979-1995 base period pentad means.

## Mid-Jul 2015 Plume of Model ENSO Predictions

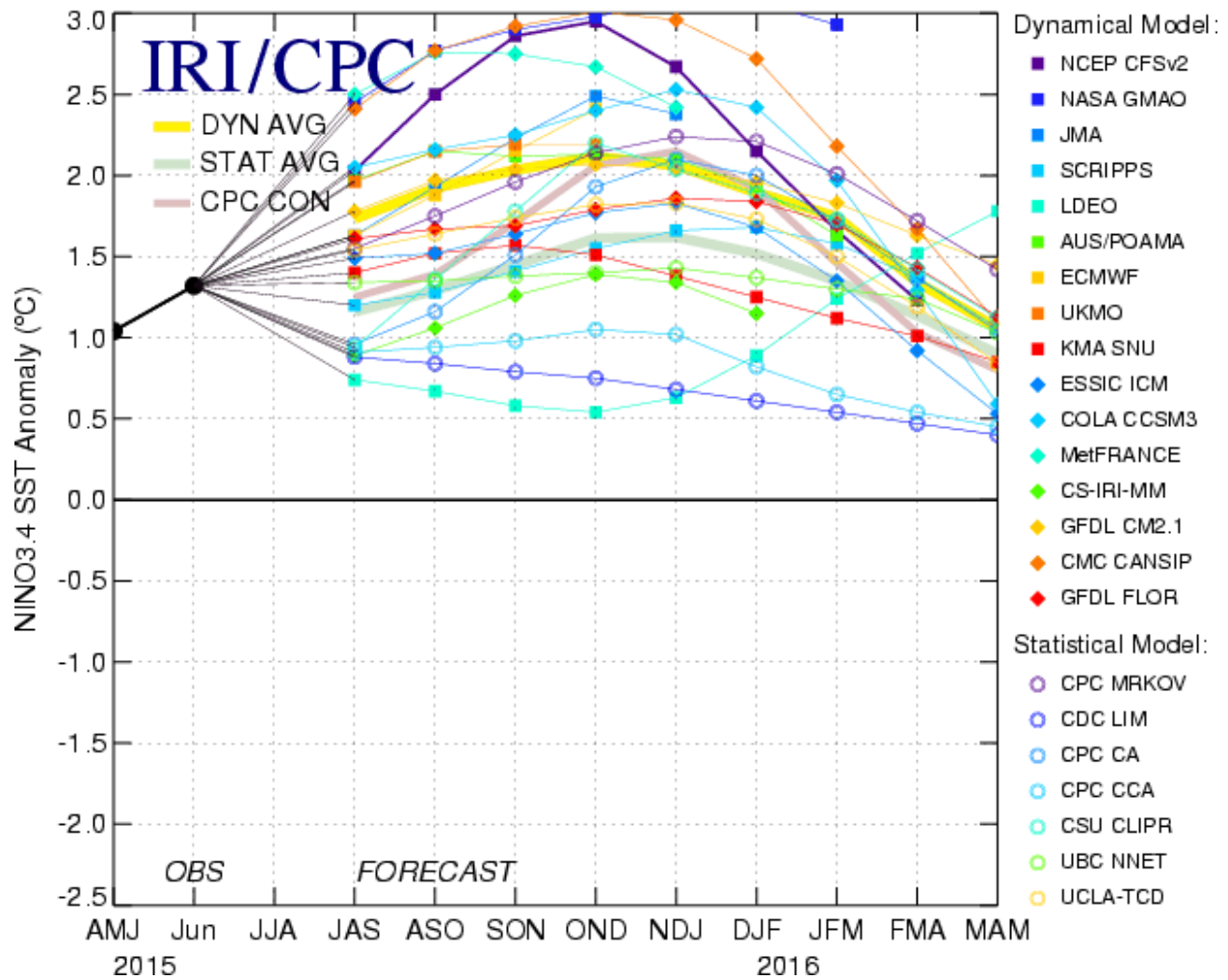


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 14 July 2015.