

# EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

issued by

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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 80% chance it will last into early spring 2016.**

During June, sea surface temperatures (SST) anomalies exceeded +1.0°C across the central and eastern equatorial Pacific Ocean (Fig. 1). The largest SST anomaly increases occurred in the Niño-3 and Niño-3.4 regions, while the Niño-4 and Niño-1+2 indices remained more constant through the month (Fig. 2). Positive subsurface temperature anomalies weakened (Fig. 3) due to the eastward shift of an upwelling oceanic Kelvin wave, which reduced above-average temperatures at depth in the central and east-central equatorial Pacific (Fig. 4). In many respects, the atmospheric anomalies remained firmly coupled to the oceanic warming. Significant westerly winds were apparent in the western equatorial Pacific and anomalous upper-level easterly winds continued. The traditional and equatorial Southern Oscillation Index (SOI) were both negative, which are 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 an ongoing and strengthening El Niño.

Nearly all models predict El Niño to continue into the Northern Hemisphere winter 2015-16, with many multi-model averages predicting a strong event at its peak strength (3-month values of the Niño-3.4 index of +1.5°C or greater; Fig. 6). At this time, the forecaster consensus is in favor of a significant El Niño in excess of +1.5°C in the Niño-3.4 region. Overall, there is a greater than 90% chance that El Niño will continue through Northern Hemisphere winter 2015-16, and around an 80% 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 Northern Hemisphere summer and increase into the late fall and winter (the [3-month seasonal outlook](#) will be updated on Thursday July 16<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 13 August 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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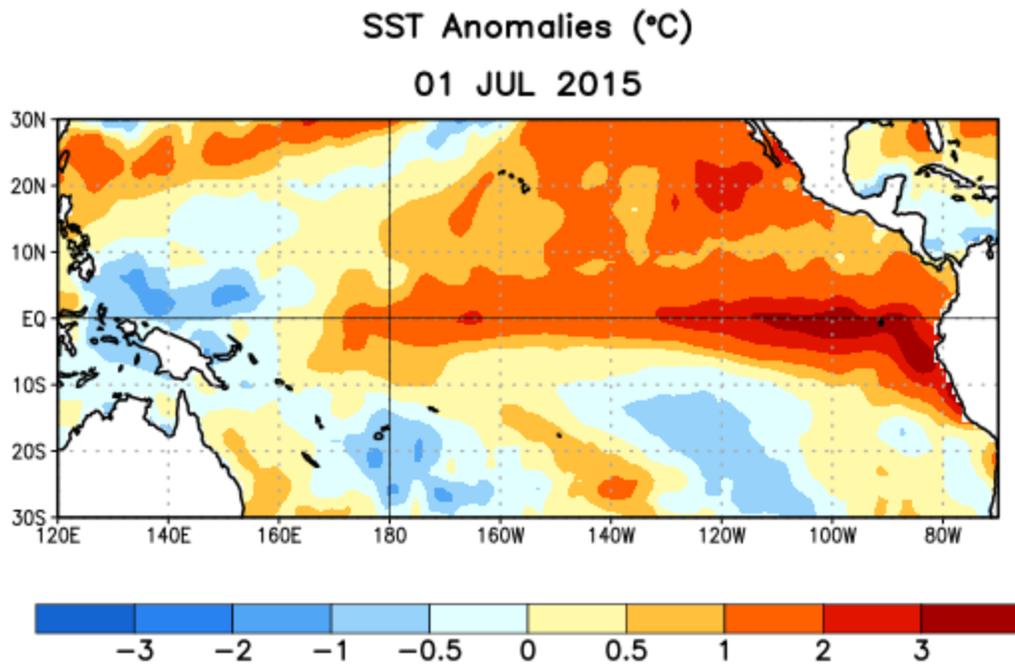


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 1 July 2015. Anomalies are computed with respect to the 1981-2010 base period weekly means.

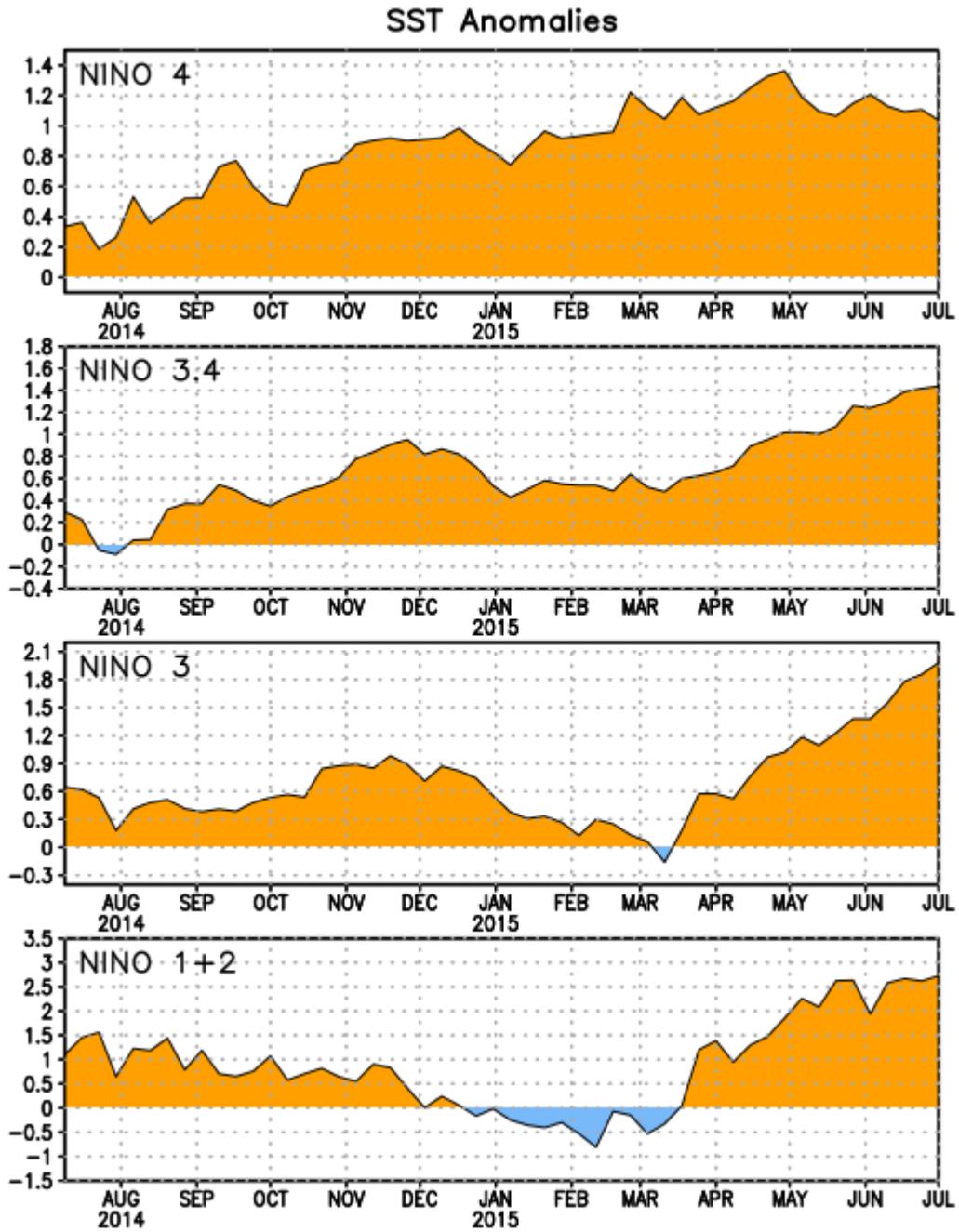


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies ( $^{\circ}\text{C}$ ) in the Niño regions [Niño-1+2 ( $0^{\circ}$ - $10^{\circ}\text{S}$ ,  $90^{\circ}\text{W}$ - $80^{\circ}\text{W}$ ), Niño 3 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $90^{\circ}\text{W}$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

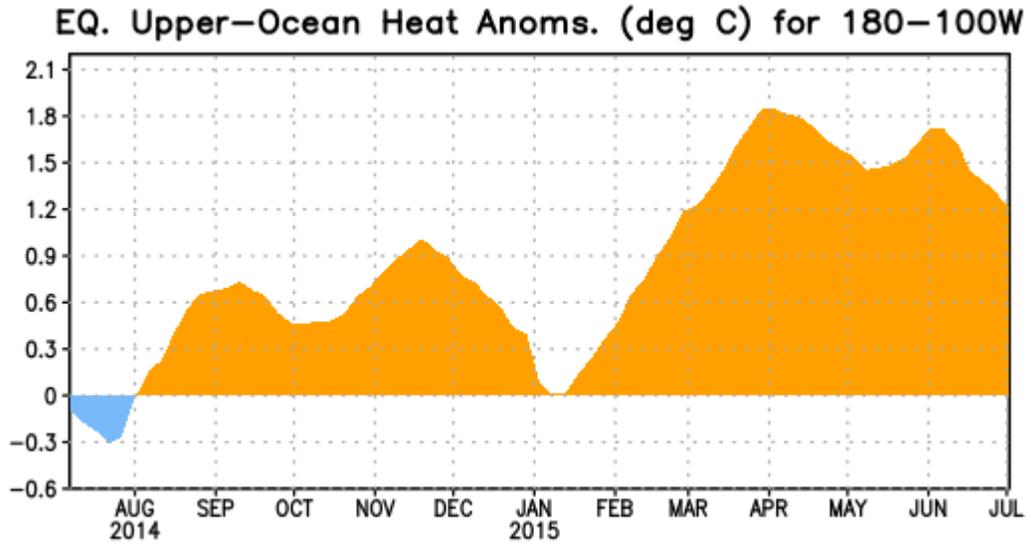


Figure 3. Area-averaged upper-ocean heat content anomaly ( $^{\circ}\text{C}$ ) in the equatorial Pacific ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $180^{\circ}$ - $100^{\circ}\text{W}$ ). The heat content anomaly is computed as the departure from the 1981-2010 base period pentad means.

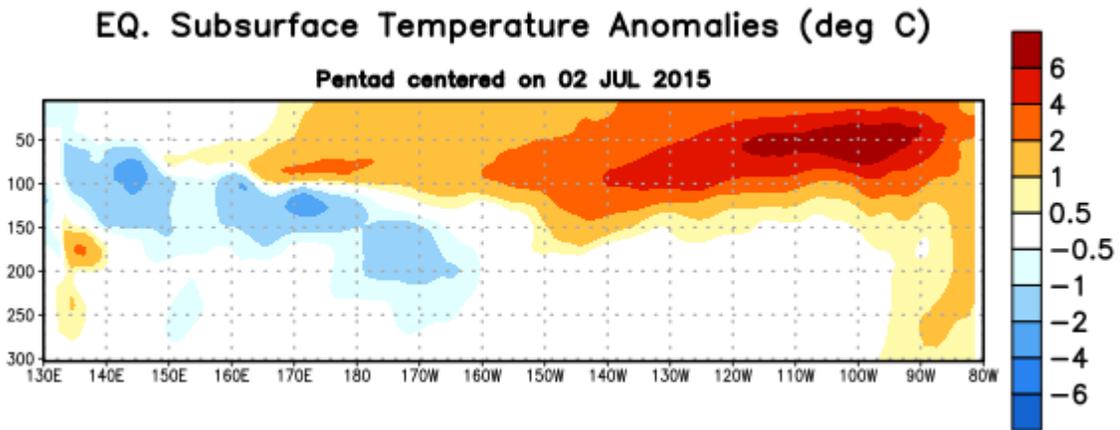


Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies ( $^{\circ}\text{C}$ ) centered on the pentad of 2 July 2015. The anomalies are averaged between  $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ . Anomalies are departures from the 1981-2010 base period pentad means.

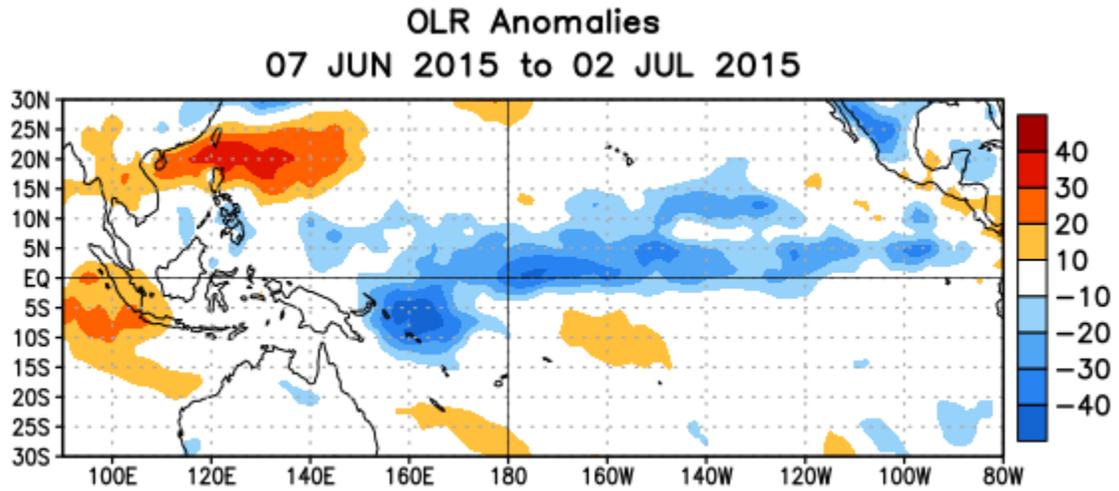


Figure 5. Average outgoing longwave radiation (OLR) anomalies ( $W/m^2$ ) for the period 7 June – 2 July 2015. OLR anomalies are computed as departures from the 1979-1995 base period pentad means.

## Mid-Jun 2015 Plume of Model ENSO Predictions

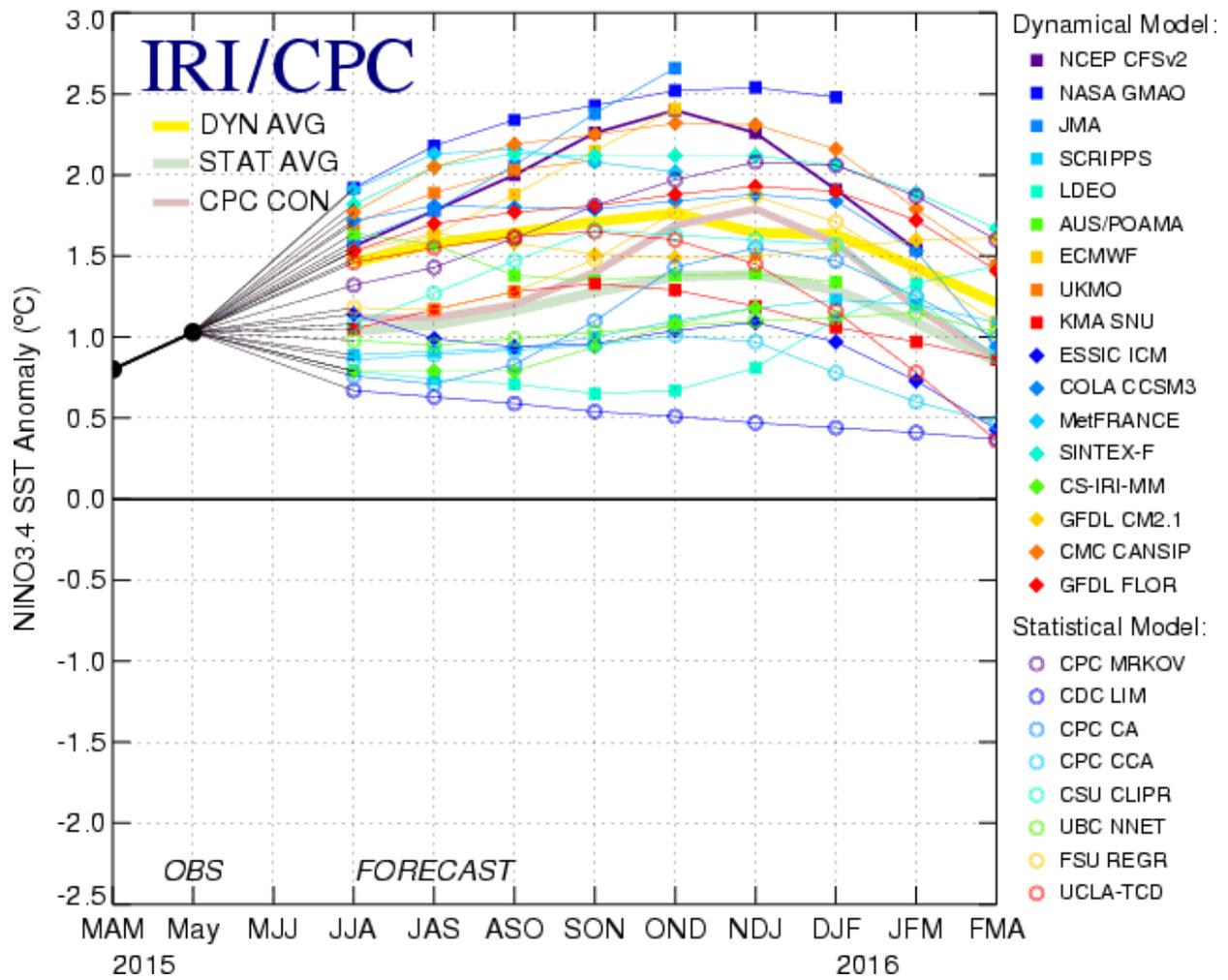


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 16 June 2015.