

# EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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

**Synopsis: A transition to ENSO-neutral conditions is expected by June 2010, which will continue into the Northern Hemisphere summer 2010.**

El Niño weakened during April 2010 as positive surface temperature (SST) anomalies decreased across the equatorial Pacific Ocean. However, SST anomalies still exceeded +0.5°C across most of the Pacific at the end of the month (Figs. 1 and 2). Since the end of February, subsurface heat content anomalies (average temperatures in the upper 300m of the ocean, Fig. 3) have decreased steadily in association with the expansion and strengthening of below-average temperatures at depth (25-200m; Fig. 4). Also, enhanced convection developed over Indonesia, while suppressed convection strengthened and expanded over the tropical Pacific, south of the equator (Fig. 5). The low-level equatorial trade winds remained near-average, and anomalous upper-level westerly winds prevailed over the central Pacific during much of April. Collectively, these oceanic and atmospheric anomalies reflect a weakening El Niño.

Nearly all models predict decreasing SST anomalies in the Niño-3.4 region through the Northern Hemisphere summer 2010 (Fig. 6). Most models predict a transition to ENSO-neutral conditions during April-June 2010, followed by ENSO-neutral conditions through the end of the year. However, by July-September 2010, the envelope of model solutions includes a significant number (nearly a third) indicating the onset of La Niña conditions. Even though ENSO-neutral conditions are most likely during the second half of the year, the general tendency of the models in recent months has been toward increasingly negative SST anomalies in the Niño-3.4 region. These forecasts, in addition to various oceanic and atmospheric indicators, indicate a growing possibility of La Niña developing during the second half of 2010.

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 for the evolution of El Niño/La Niña are updated monthly in the [Forecast Forum](#) section of CPC's Climate Diagnostics Bulletin. The next ENSO Diagnostics Discussion is scheduled for 10 June 2010. 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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SST Anomalies (°C)  
28 APR 2010

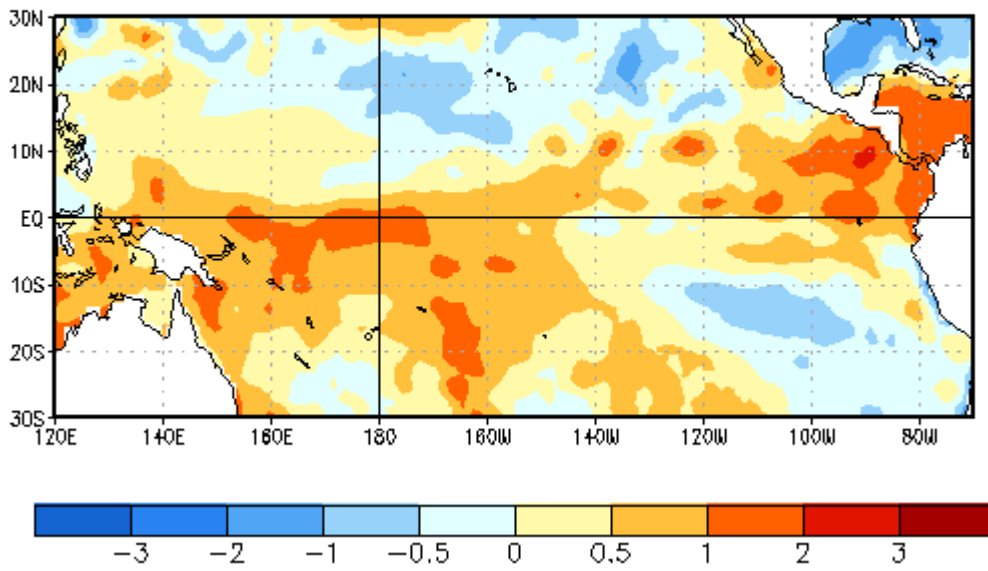


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 28 April 2010. Anomalies are computed with respect to the 1971-2000 base period weekly means (Xue et al. 2003, *J. Climate*, **16**, 1601-1612).

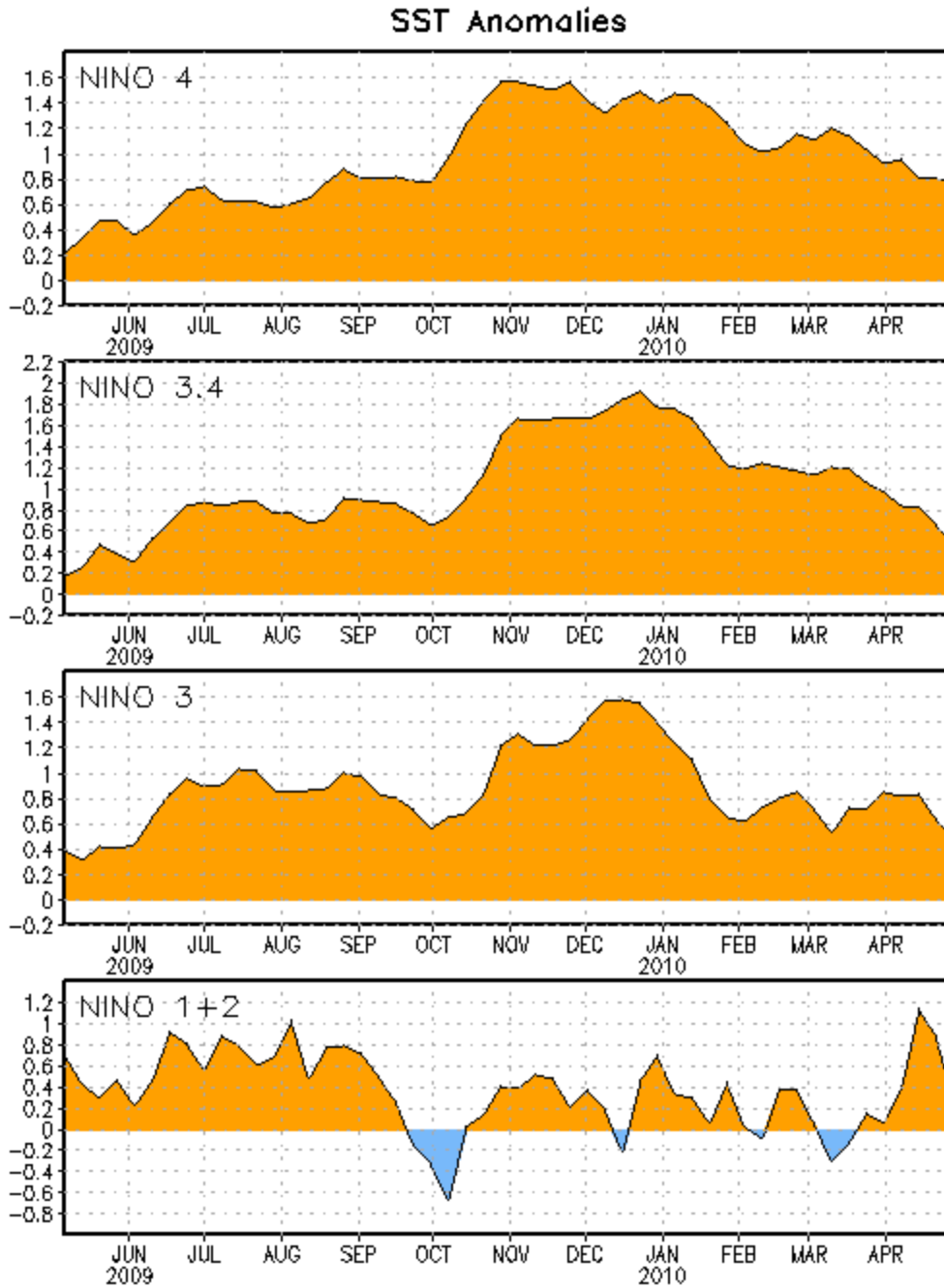


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies ( $^{\circ}\text{C}$ ) in the Niño regions [Niño-1+2 ( $0^{\circ}$ - $10^{\circ}\text{S}$ ,  $90^{\circ}\text{W}$ - $80^{\circ}\text{W}$ ), Niño 3 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $90^{\circ}\text{W}$ ), Niño-3.4 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $170^{\circ}\text{W}$ - $120^{\circ}\text{W}$ ), Niño-4 ( $150^{\circ}\text{W}$ - $160^{\circ}\text{E}$  and  $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ )]. SST anomalies are departures from the 1971-2000 base period weekly means (Xue et al. 2003, *J. Climate*, **16**, 1601-1612).

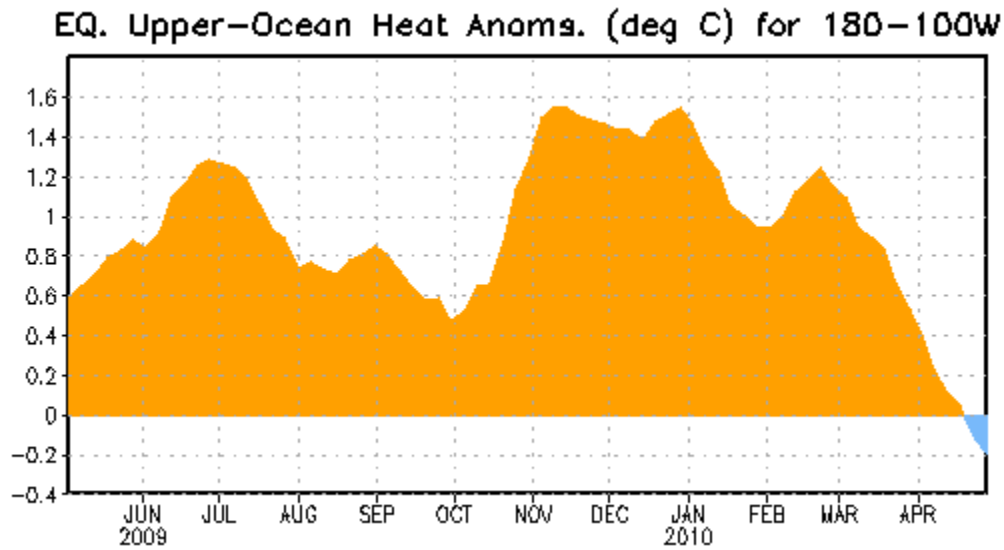


Figure 3. Area-averaged upper-ocean heat content anomalies ( $^{\circ}\text{C}$ ) in the equatorial Pacific ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $180^{\circ}$ - $100^{\circ}\text{W}$ ). Heat content anomalies are computed as departures from the 1982-2004 base period pentad means.

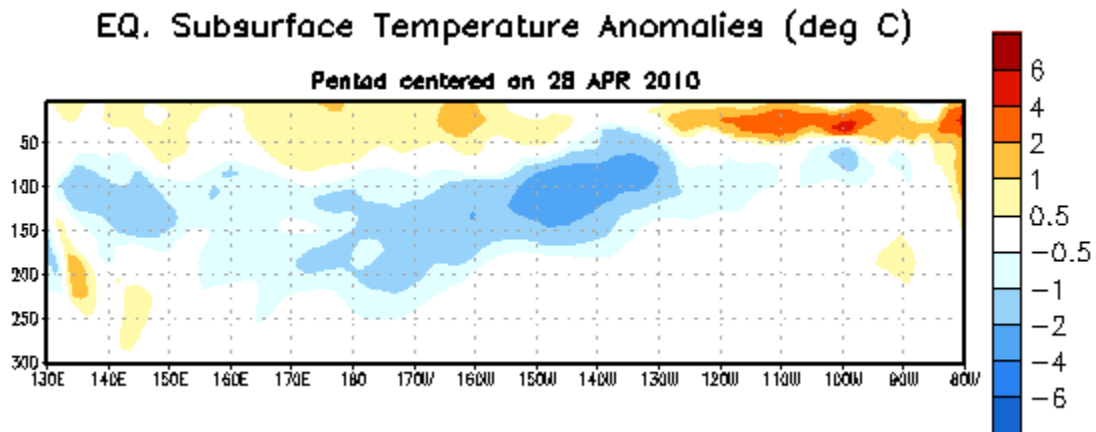


Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies ( $^{\circ}\text{C}$ ) centered on the week of 28 April 2010. The anomalies are averaged between  $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ . Anomalies are departures from the 1982-2004 base period pentad means.

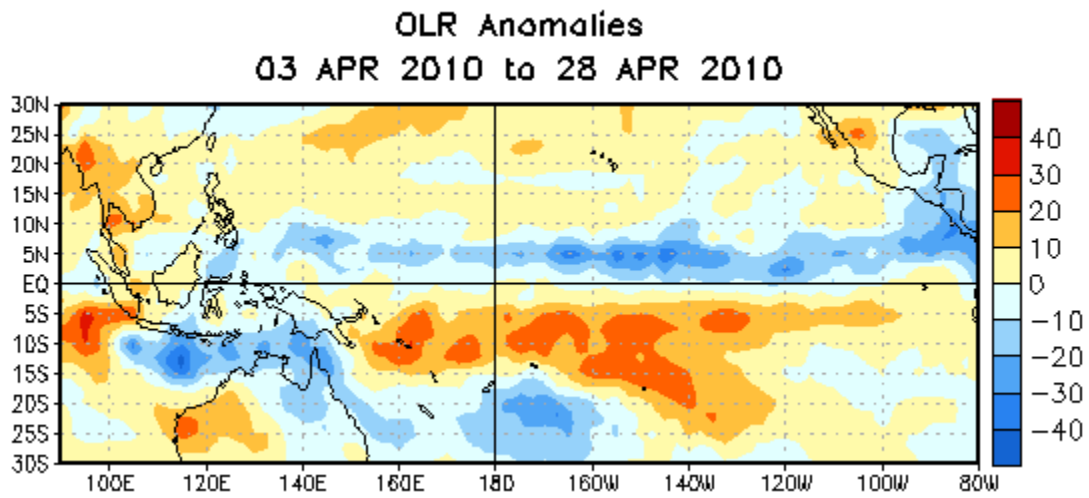


Figure 5. Average outgoing longwave radiation (OLR) anomalies ( $W/m^2$ ) for the four-week period 3 April – 28 April 2010. OLR anomalies are computed as departures from the 1979-1995 base period pentad means.

## Model Forecasts of ENSO from Apr 2010

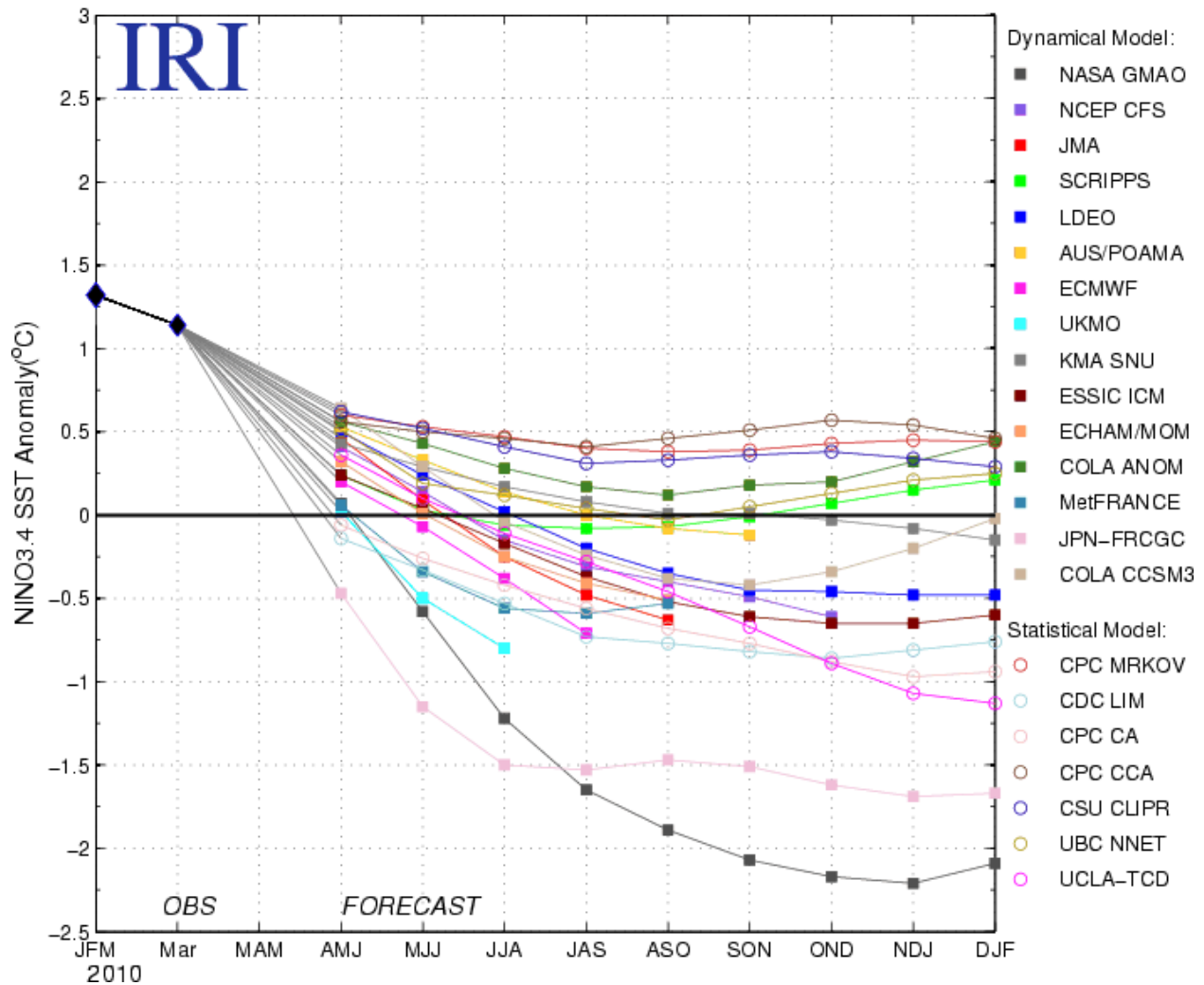


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure courtesy of the International Research Institute (IRI) for Climate and Society. Figure updated 15 April 2010.