EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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ENSO Alert System Status: La Niña Advisory

Synopsis: La Niña is expected to gradually weaken with increasing chances (greater than 50%) for ENSO-neutral conditions during the Northern Hemisphere Spring.

Atmospheric and oceanic conditions during February 2009 continued to reflect La Niña. Equatorial sea surface temperatures (SST) across the central and east-central Pacific Ocean remained below-average (Fig. 1), but weakened throughout the month. The Niño-4 and Niño-3.4 SST indices also gradually increased, but remained −0.5°C or cooler (Fig. 2). Negative subsurface oceanic heat content anomalies (average temperatures in the upper 300m of the ocean, Fig. 3) and temperature anomalies at thermocline depth also weakened across the eastern half of the Pacific (Fig. 4). However, convection remained suppressed near the Date Line, and enhanced across Indonesia. Also, low-level easterly winds and upper-level westerly winds continued across the equatorial Pacific Ocean. Collectively, these oceanic and atmospheric anomalies are consistent with a weakening La Niña.

While nearly all the model forecasts for the Niño-3.4 region show that La Niña will have dissipated by May – July 2009, the exact timing of the transition to ENSO-neutral conditions is uncertain (Fig. 5). The timing of the expected transition will depend on the strength of the low-level easterly wind anomalies and on how quickly the reservoir of below-average subsurface temperatures dwindles. Therefore, based on current observations, recent trends, and model forecasts, La Niña is expected to gradually weaken with increasing chances (greater than 50%) for ENSO-neutral conditions during the Northern Hemisphere Spring.

Expected La Niña impacts during March-May 2009 include above-average precipitation over Indonesia, and below-average precipitation over the central equatorial Pacific. Compared to the Northern Hemisphere winter, La Niña impacts over the United States are typically less pronounced. For the contiguous United States, potential impacts include below-average precipitation across the southern states. Other potential impacts include below-average temperatures in the Pacific Northwest and above-average temperatures across much of the southwestern and south-central 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 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 9 April 2009. 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.

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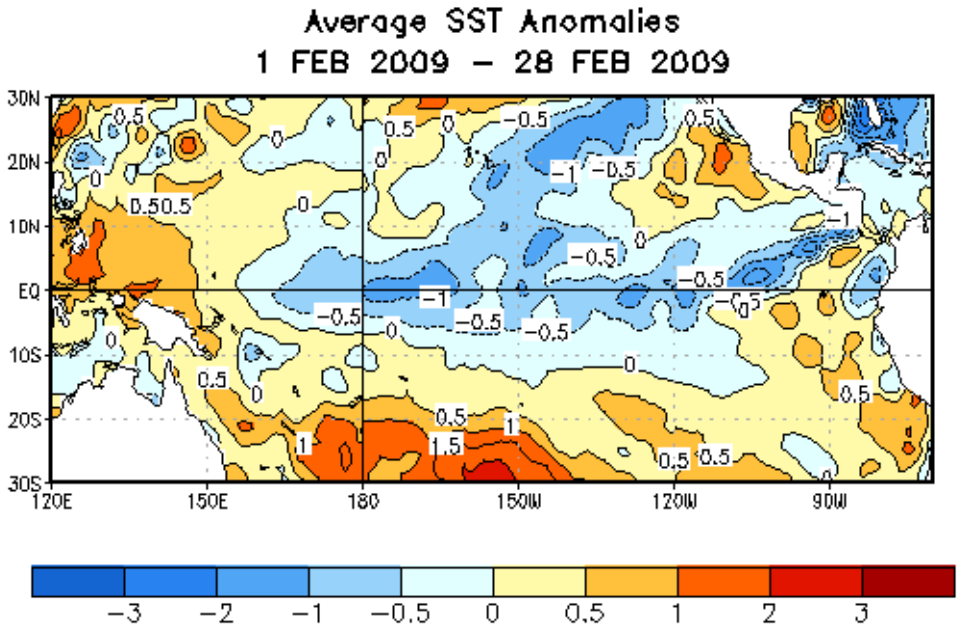

Figure 1. Average sea surface temperature (SST) anomalies (°C) for the four-week period 1 February - 28 February 2009. Anomalies are computed with respect to the 1971-2000 base period weekly means (Xue et al. 2003, *J. Climate*, **16**, 1601-1612).

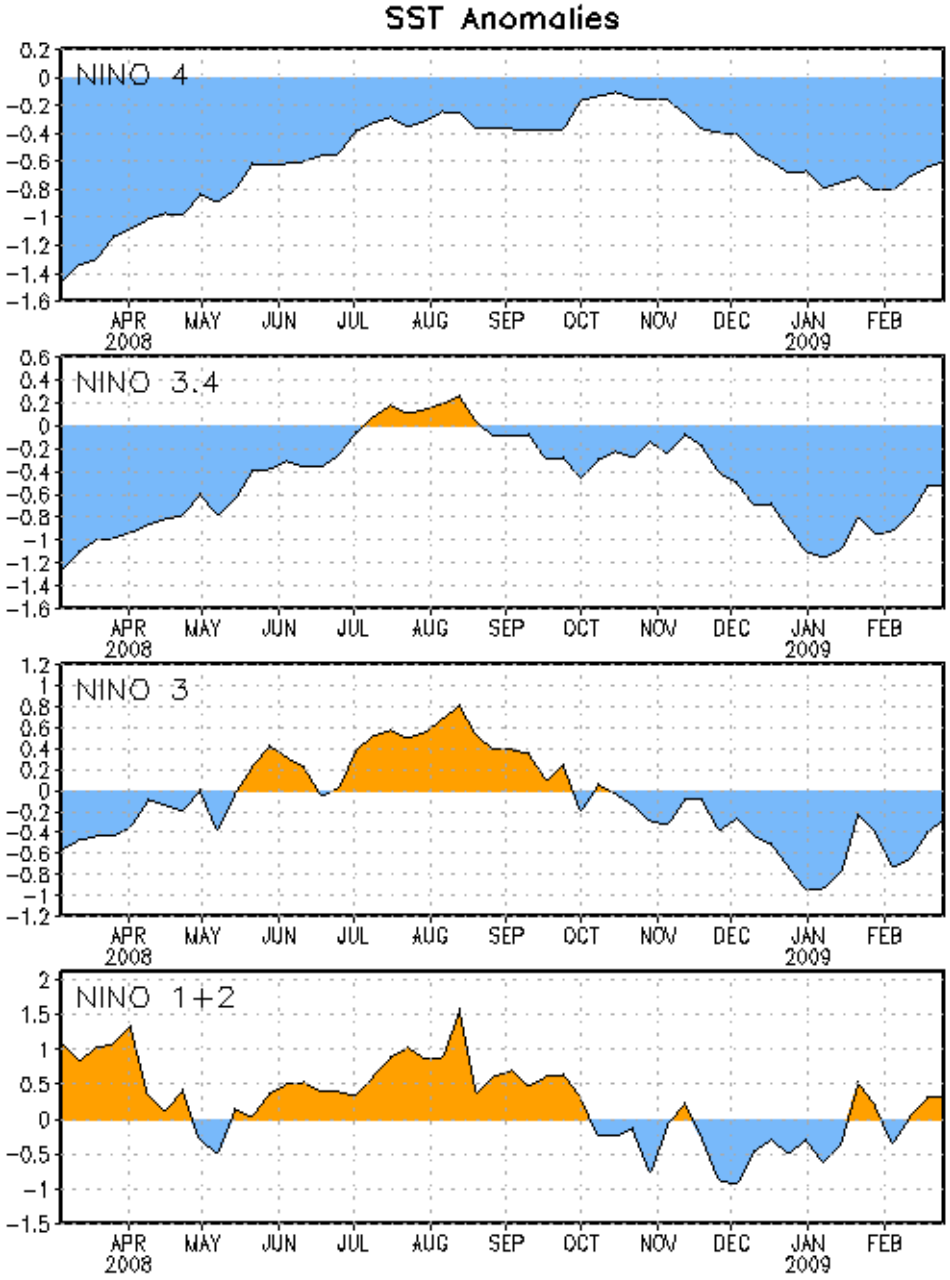

Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies (°C) in the Niño regions [Niño-1+2 (0°-10°S, 90°W-80°W), Niño 3 (5°N-5°S, 150°W-90°W), Niño-3.4 (5°N-5°S, 170°W-120°W), Niño-4 (150ºW-160ºE and 5ºN-5ºS)]. SST anomalies are departures from the 1971-2000 base period weekly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

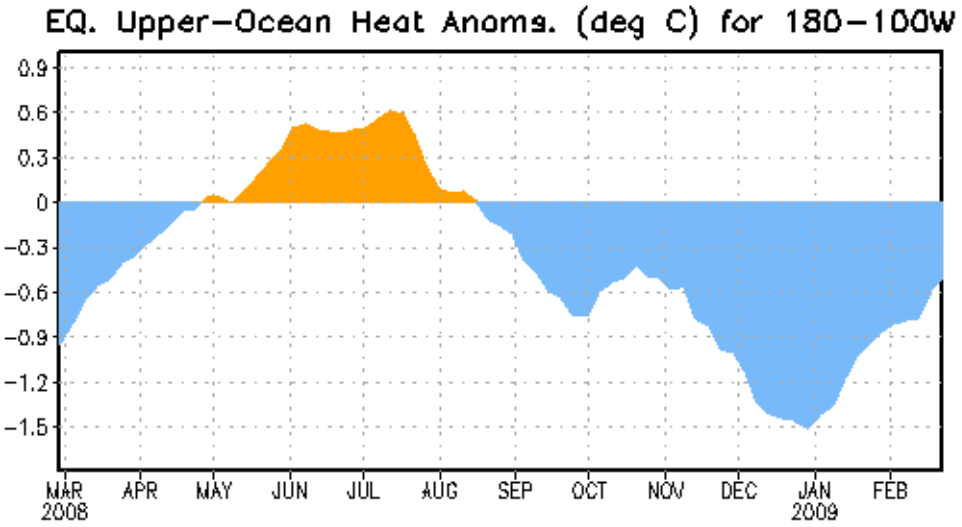

Figure 3. Area-averaged upper-ocean heat content anomalies (°C) in the equatorial Pacific (5°N-5°S, 180º-100ºW). Heat content anomalies are computed as departures from the 1982-2004 base period pentad means.

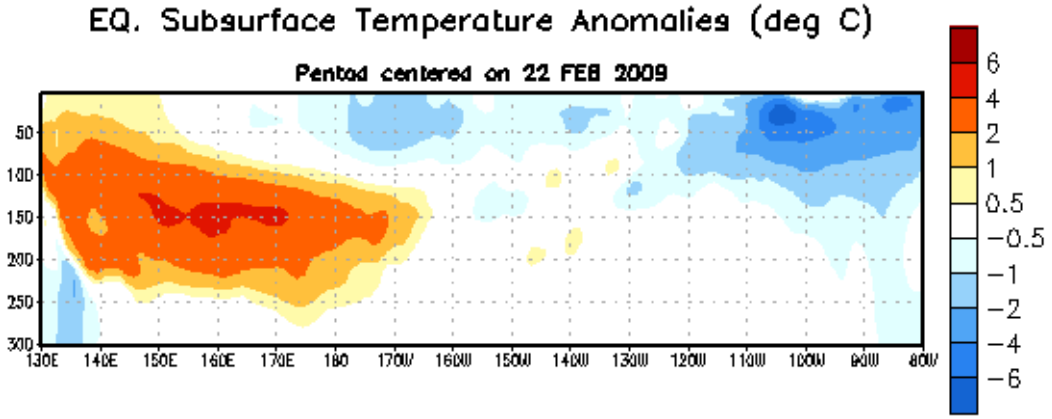

Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies (°C) centered on the week of 22 February 2009. The anomalies are averaged between 5°N-5°S. Anomalies are departures from the 1982-2004 base period pentad means.

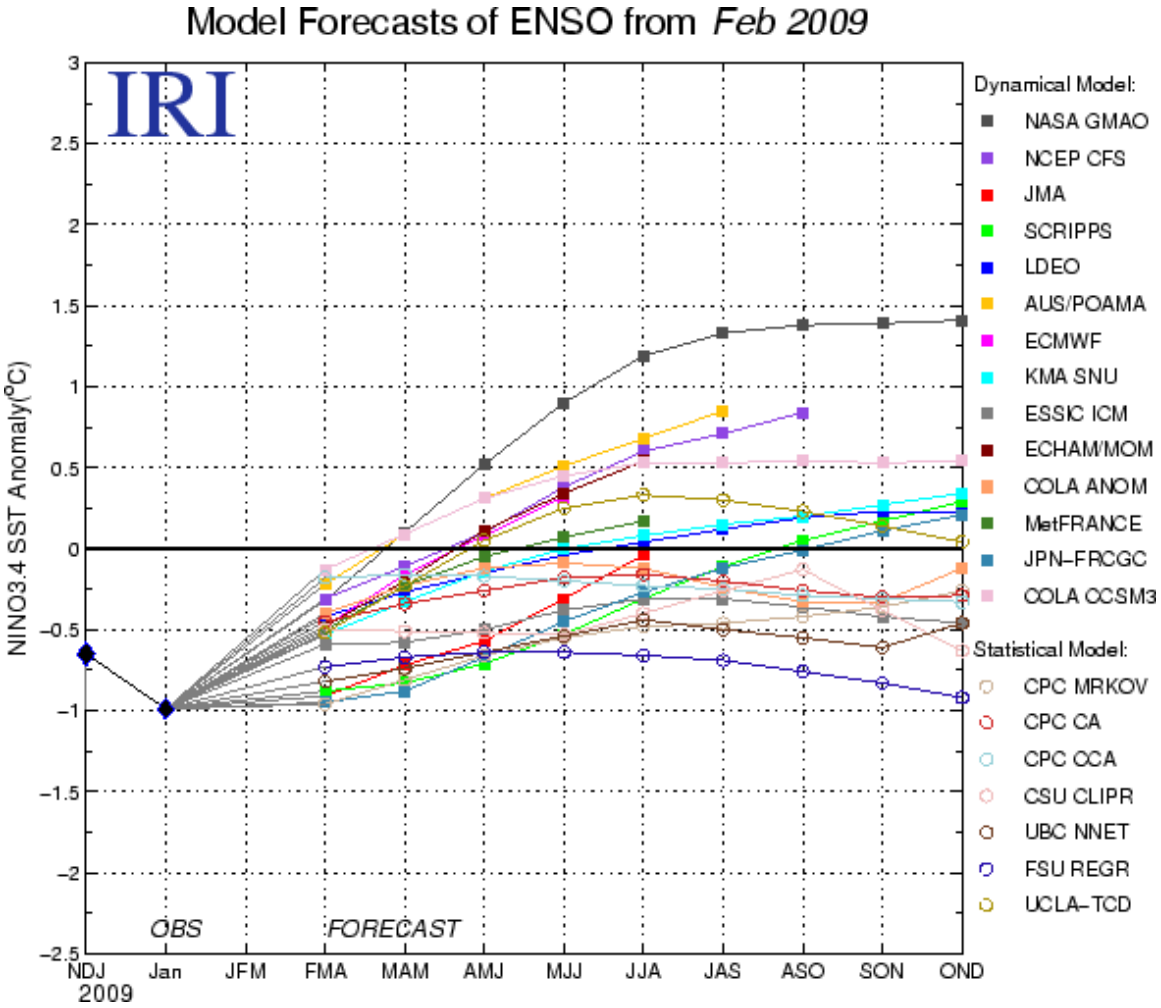

Figure 5. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure courtesy of the International Research Institute (IRI) for Climate and Society. Figure updated 19 February 2009.