EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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Synopsis: La Niña is expected to continue into Northern Hemisphere spring 2008.

La Niña remained at moderate strength during December 2007, with below-average sea surface temperatures (SSTs) extending from 160ºE to the South American coast (Fig. 1). All of the Niño region indices remained cooler than −1.0°C (Fig. 2), with the Niño-3.4 and Niño-3 indices persisting near −1.5°C. The upper-ocean heat content (average temperatures in the upper 300 m of the ocean) in the central and east-central equatorial Pacific remained below average (Fig. 3), with temperatures ranging from 2°C to 5°C below average at thermocline depth (Fig. 4). Consistent with these oceanic conditions, stronger-than-average low-level easterly winds and upper-level westerly winds continued across the central equatorial Pacific, convection remained suppressed throughout the central equatorial Pacific, and slightly enhanced convection covered the far western Pacific. Collectively, these oceanic and atmospheric conditions reflect a mature La Niña.

The recent SST forecasts (dynamical and statistical models) for the Niño 3.4 region indicate a continuation of La Niña conditions into Northern Hemisphere spring 2008 (Fig. 5). Over half of the models predict a moderate strength La Niña to continue through February-April, followed by weaker La Niña conditions. Current atmospheric and oceanic conditions and recent trends are consistent with a likely continuation of La Niña into the Northern Hemisphere spring 2008.

Expected La Niña impacts during January-March include a continuation of above-average precipitation over Indonesia and below-average precipitation over the central and eastern equatorial Pacific. For the contiguous United States, potential impacts include above-average precipitation in the Northern Rockies, the Pacific Northwest, the Ohio and Tennessee Valleys, and parts of the Great Lakes region. Below-average precipitation is expected across the South, particularly in the southeastern states. Recent Madden-Julian Oscillation (MJO) activity has contributed to short-term fluctuations in low-level winds and convection over the equatorial Pacific, which has acted to modify some of the typical La Niña impacts on a sub-seasonal timescale.

This discussion is a consolidated effort of the National Atmospheric and Oceanic 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 7 February 2008. 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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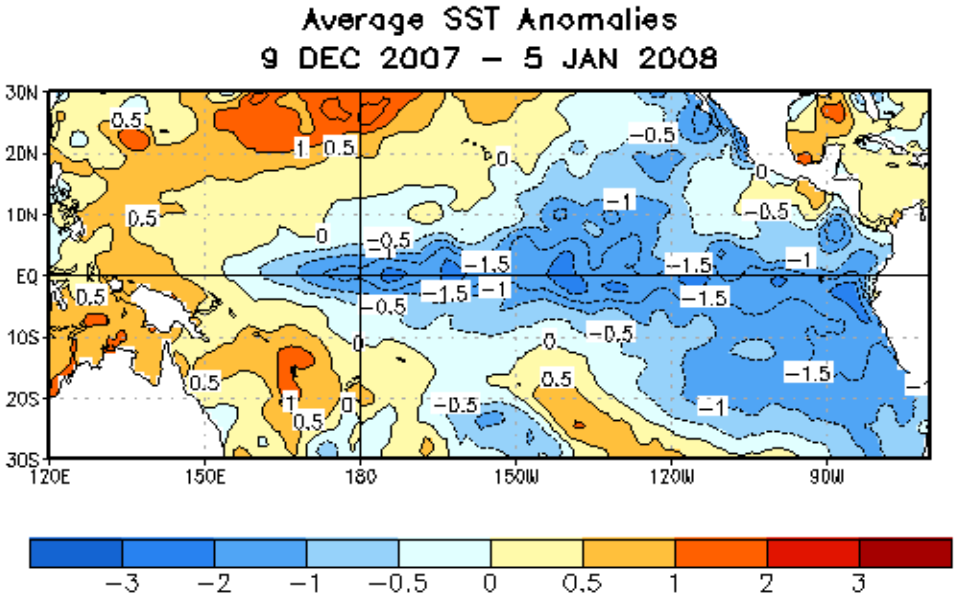

Figure 1. Sea surface temperature (SST) anomalies (°C) during the period 9 December 2007- 5 January 2008. SST anomalies are computed with respect to the 1971-2000 base period weekly means (Xue et al. 2003, *J. Climate*, **16**, 1601-1612).

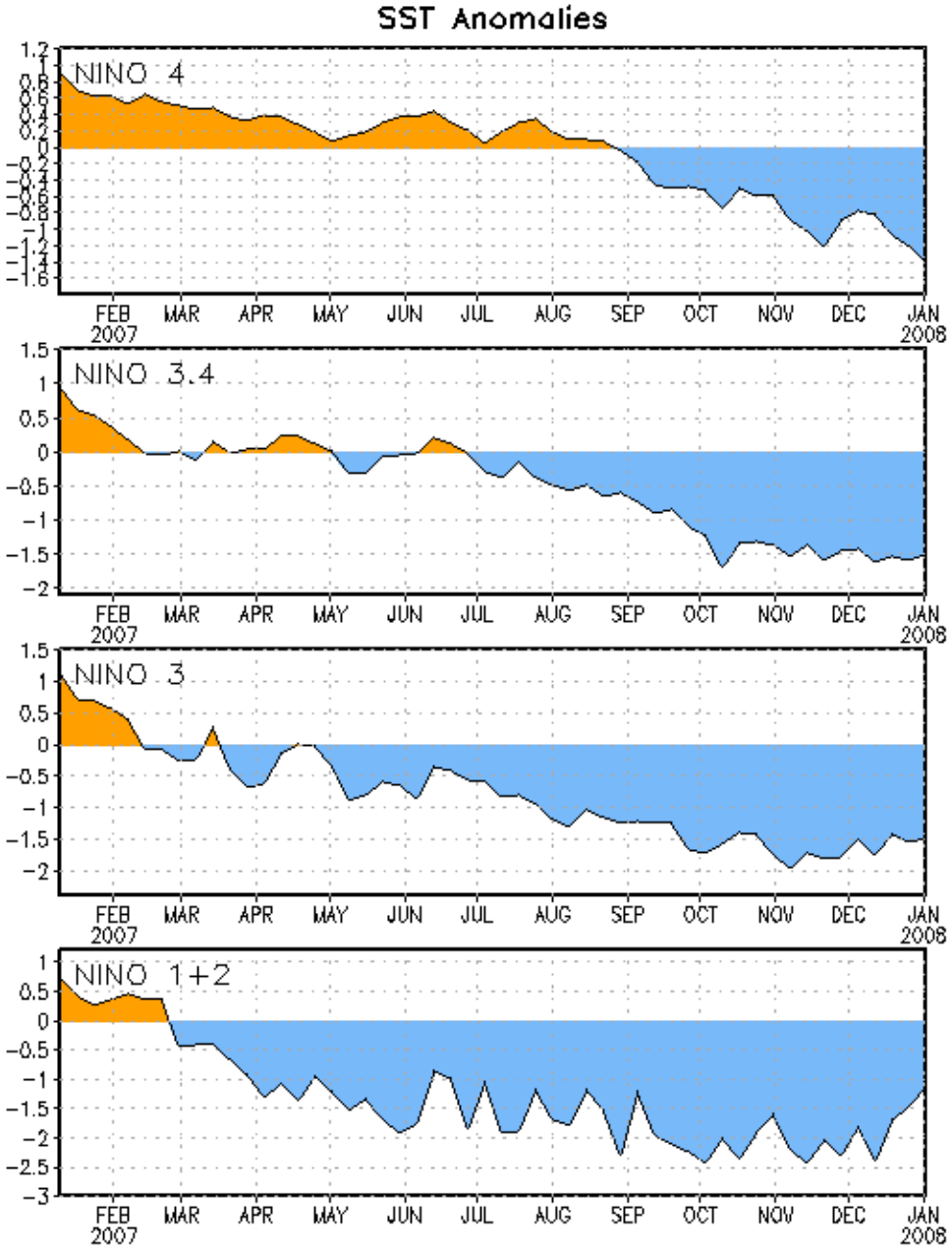

Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies (°C) in the Niño regions [Niño-1+2 (0°-10°S, 90°-80°W), Niño 3 (5°N-5°S, 150°W-90°W), Niño-3.4 (5°N-5°S, 170°W-120°W), Niño-4 (150ºW-160ºE and 5ºN-5ºS)]. SST anomalies are departures are from the 1971-2000 base period weekly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

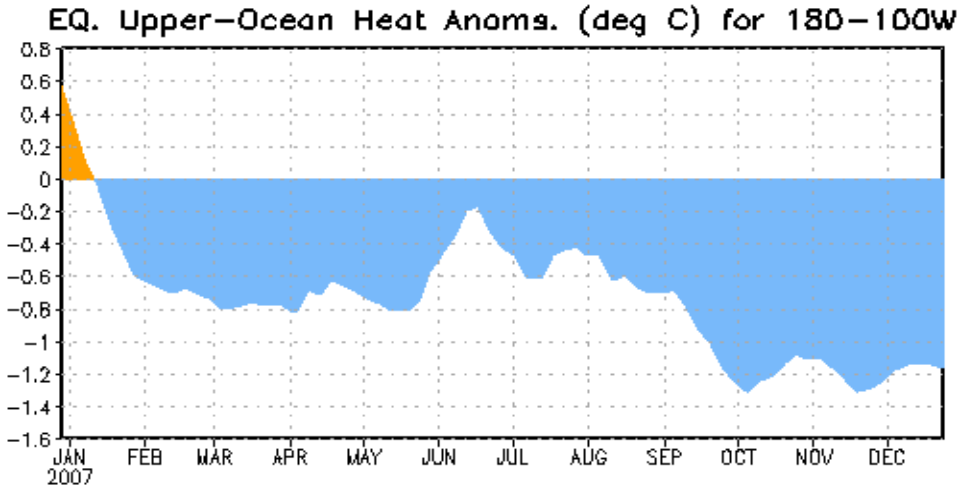

Figure 3. Area-averaged upper-ocean heat content anomalies (°C) in the equatorial Pacific (5°N-5°S, 180º-100ºW). Heat content anomalies are computed as departures from the 1982-2004 base period weekly means.

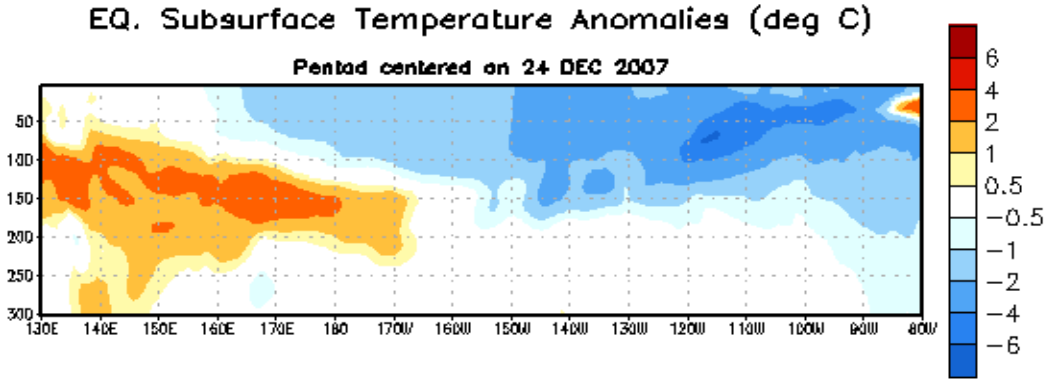

Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies (°C) centered on the week of 24 December. The anomalies are averaged between 5°N-5°S. Anomalies are departures from the 1982-2004 base period weekly means.

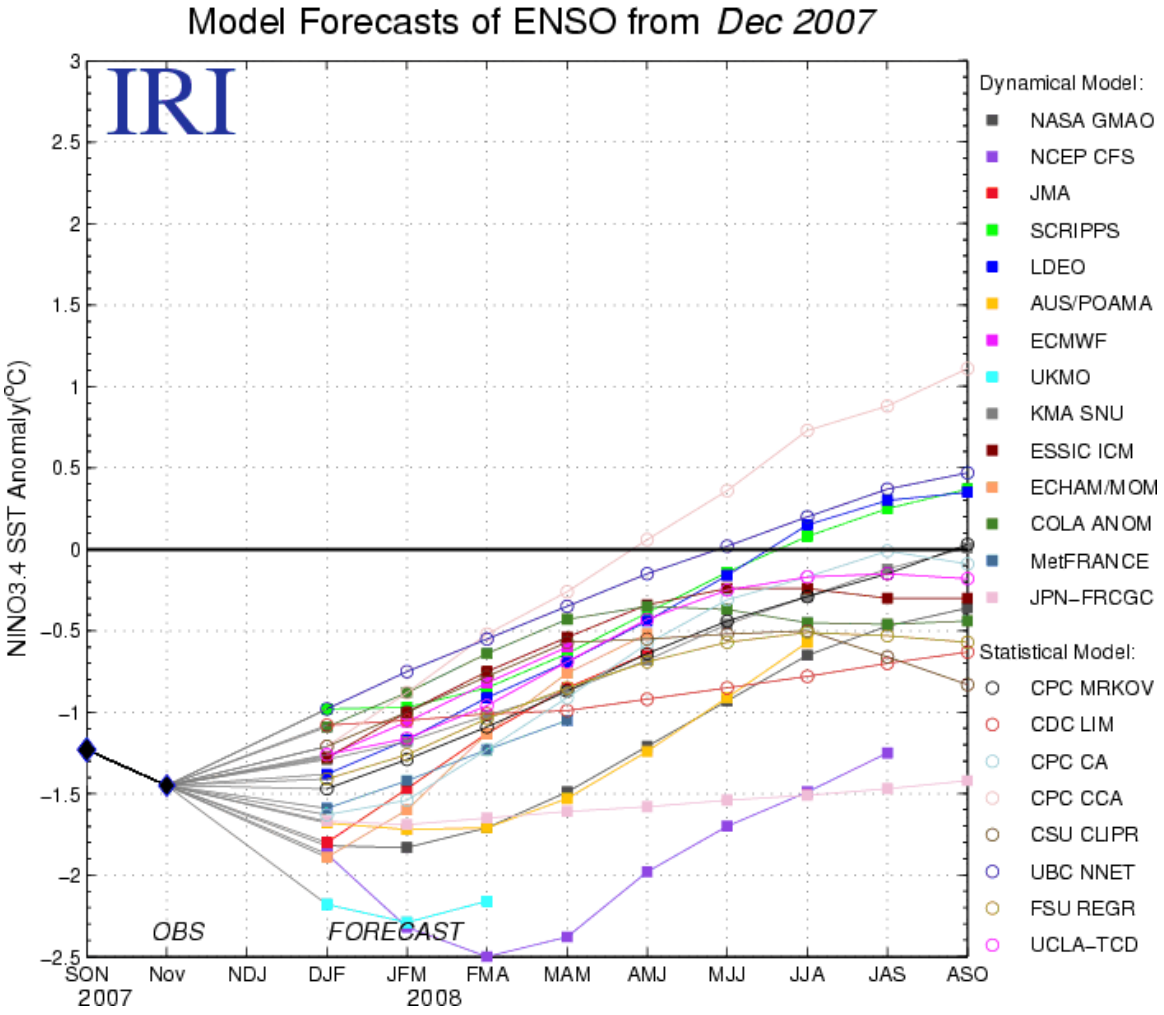

Figure 5. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure courtesy of the International Research Institute (IRI) for Climate and Society. Figure updated 20 December 2007.