Western Region Technical Attachment
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EL NINO/SOUTHERN OSCILLATION (ENSO)

CLIMATIC ANALYSIS CENTER/NMC

[Editor's Note: The following Technical Attachment is a Diagnostic Advisory on the El Nino/Southern Oscillation (ENSO) situation, issued by the Climatic Analysis Center of NMC. Since this advisory has already been released to the press, offices may be receiving increasing numbers of questions on ENSO.]

Tropical Pacific oceanic and atmospheric indices indicate near normal conditions. Sea surface temperature (SST) anomalies were slightly positive in all three Nino index regions, but in each case the anomalies were less than 0.5°C. During June, a warm pool of water (SSTs greater than 30°C) was found along the equator near 160°E, where SST anomalies exceeded 1°C. The oceanic thermocline deepened in that region during June compared to the relatively shallow levels of the past few months.

Atmospheric convection, as indicated by the outgoing longwave radiation (OLR), and low-level easterlies were near normal in the central equatorial Pacific. However, low-level easterlies were slightly weaker than normal in both the eastern and western regions. After a swing to positive last month, the Southern Oscillation Index (SOI) dropped back to zero in June as both Tahiti and Darwin registered near normal sea level pressure.

During the last few months, atmospheric convection and low-level winds have been near normal in the tropical central Pacific, and the SOI has risen to near zero. Thus, the atmospheric indications of a developing warm episode that were present during early 1990 have faded away. However, sea surface temperatures have continued slightly warmer than normal, especially just north of the equator from 120°W to 140°W and along the equator near 160°E (Figure 1). Most ENSO prediction models presently indicate continued warming for the next two to three seasons for the equatorial Pacific between 120°W and 170°W, but with positive anomalies not significantly different from zero.

The future course of events may well depend on the evolution of the abnormally warm water in the western Pacific, which in June exceeded 30°C for the first time since late 1987 (Figure 2). A particularly critical time period will be the transition season when convection weakens over Southeast Asia and shifts southward towards the equator (September-November). If the warm pool evolves to a position near the dateline, then enhanced convection and weaker than normal easterlies would be favored in that region. The next Advisory will be issued in early September.

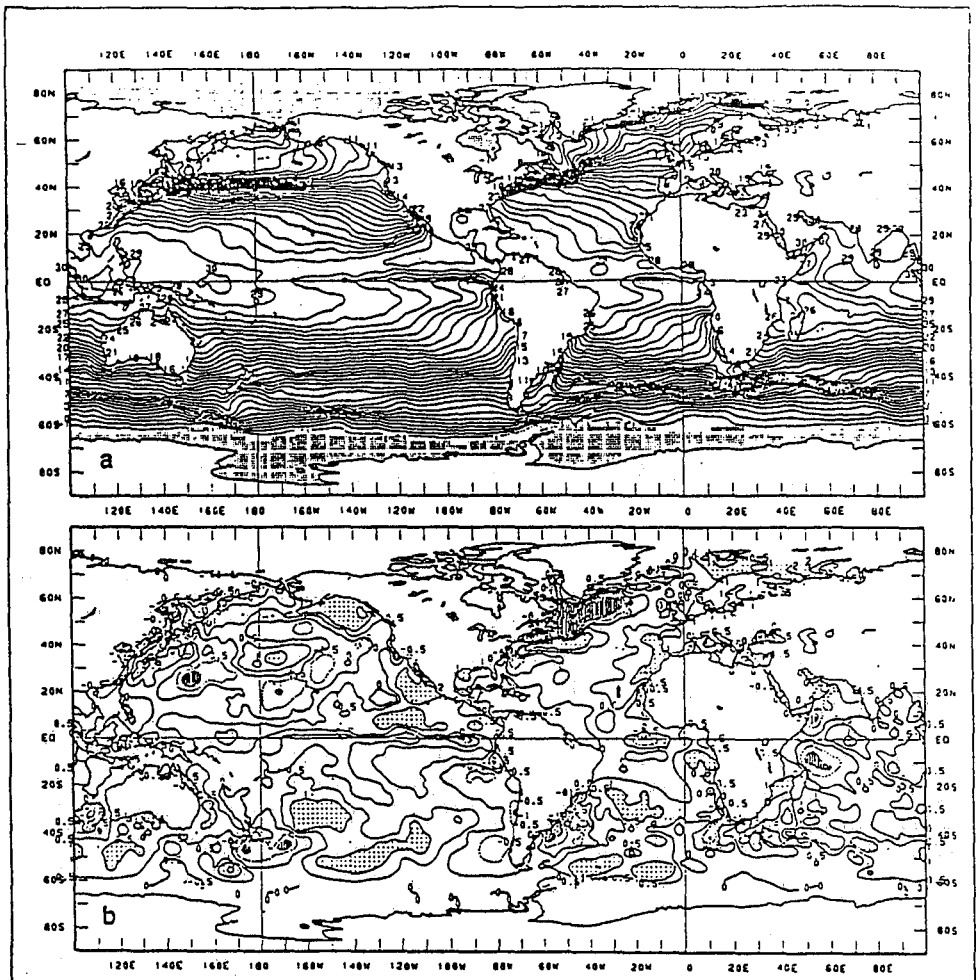

Figure 1. Blended sea surface temperature a) mean and b) anomalies for June 1990. The contour interval is 1°C and negative contours are dotted. Heavy contours are at 0°C and multiples of 5°C. The stippling in a) indicates sea ice cover. In b), anomalies less than -1°C are hatched and greater than 1°C are dotted. Additional anomaly contours of +0.5°C are shown. Anomalies in b) are computed as departures from the COADS/ICE climatology (Reynolds, 1988, J. Climate 1, 75-86).

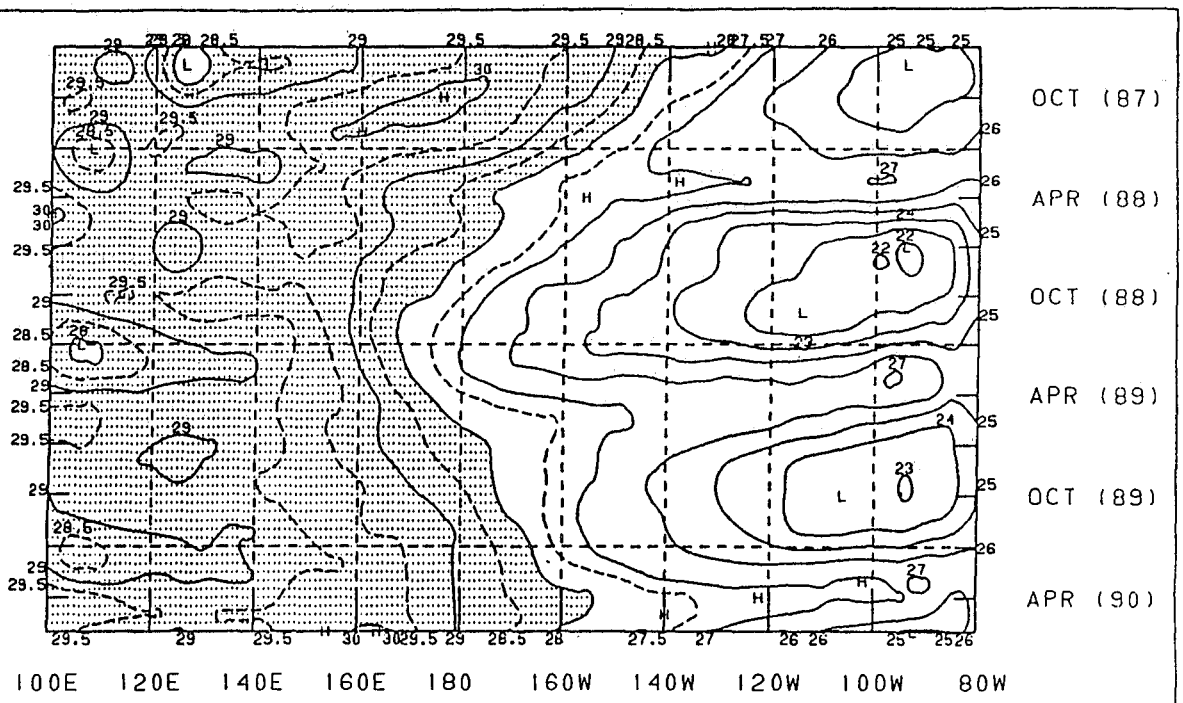

Figure 2. Time-longitude section of monthly mean sea surface temperature (SST) for 5°N-5°S. Contour interval is 1°C with intermediate contours drawn for SST values greater than 27°C. Values greater than 28°C are shaded.