Western Region Technical Attachment
No. 91-47
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EL NINO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 91/07

CLIMATE ANALYSIS CENTER/NMC

[Editor's Note: This following Technical Attachment is a Diagnostic Advisory on the El Nino/Southern Oscillation (ENSO) situation, issued by the Climatic Analysis Center of NMC.)

During October, both surface and subsurface oceanic anomaly patterns showed a strong evolution toward a warm (ENSO) episode. SST anomalies increased and the oceanic thermocline deepened throughout the eastern equatorial Pacific in association with an eastward propagating Kelvin wave (Figs. 1b and 2). At the same time the oceanic thermocline shoaled (became shallower) in the western equatorial Pacific. Similar features were observed in late 1986 as the 1986-1987 warm episode developed.

In recent months the warmest water (SST greater than 30°C) has shifted to the region along the equator at the date line (Fig. 1a). At the same time, low-level equatorial easterlies have weakened, SST anomalies have increased throughout the equatorial Pacific east of the date line (Fig. 1b), and the Southern Oscillation Index (SOI) has been negative. These features are consistent in indicating a warm (ENSO) episode.

Certain precipitation and circulation anomalies, generally associated with warm episodes, have been observed in recent months. Drier than normal conditions have been observed over Indonesia and sections of northern and eastern Australia. Anomalous subtropical upper-tropospheric anticyclonic circulation has been observed in the South Pacific flanked by an enhanced subtropical jetstream in the western and central South Pacific.

If warm episode conditions continue for the next several months, we can expect that ENSO-related temperature, precipitation and circulation anomaly patterns will develop which are consistent with those observed during past warm episodes. The precipitation and temperature anomaly patterns, generally found in warm (ENSO) episodes during the Northern Hemisphere cold season (November - March), are depicted in Fig. 3.

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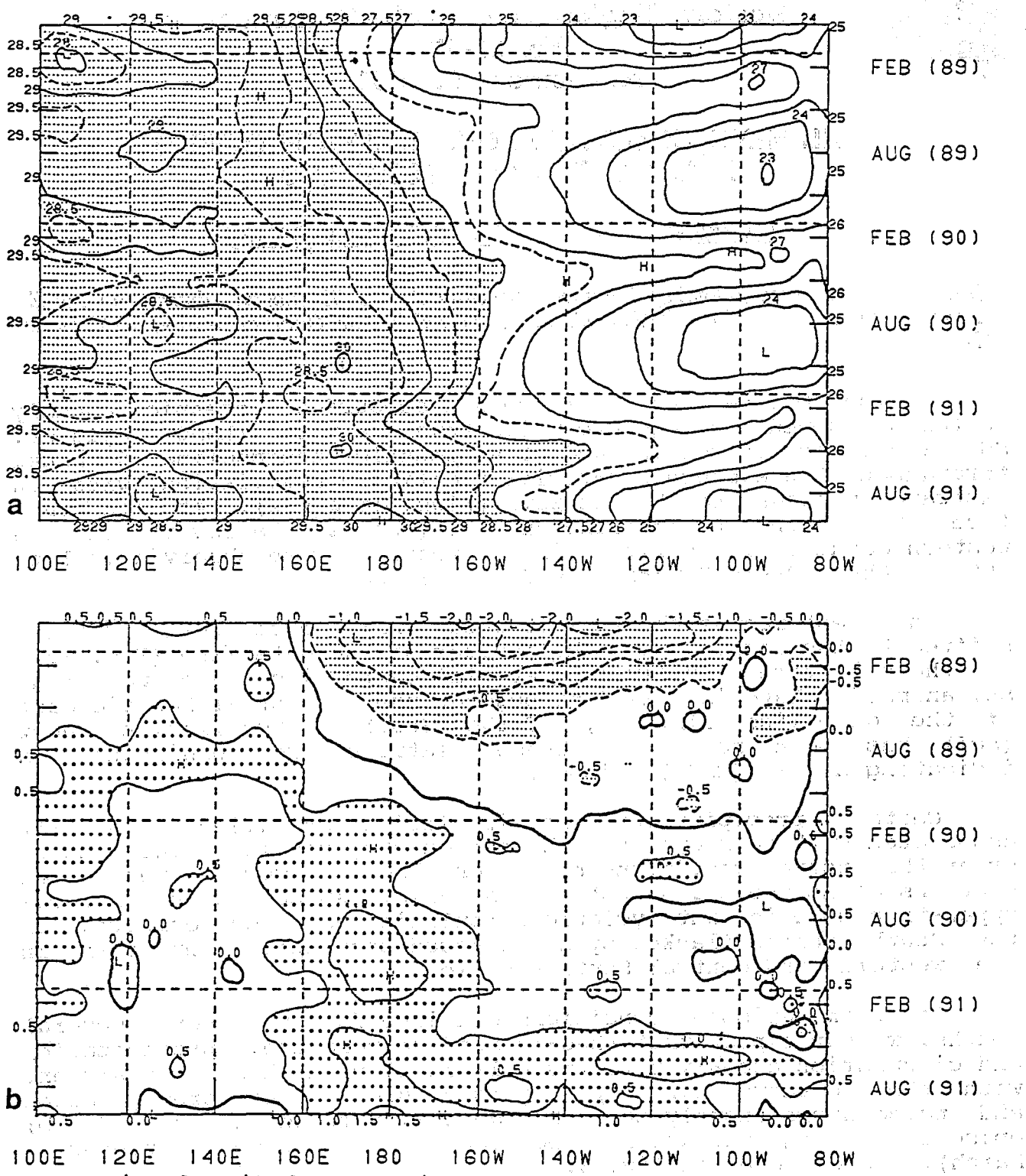

FIGURE 1 Time-longitude section of monthly sea surface temperature, a) mean and b) anomalous, for $5^{o}N$-$5^{o}S$. Contour interval is $1^{o}C$ and $0.5^{o}C$, respectively. SST values greater than $28^{o}C$ and anomalies less than $-0.5^{o}C$ are shaded. Stippled areas indicate anomaly values greater than $0.5^{o}C$. Anomalies are computed based on the COADS/ICE climatology.

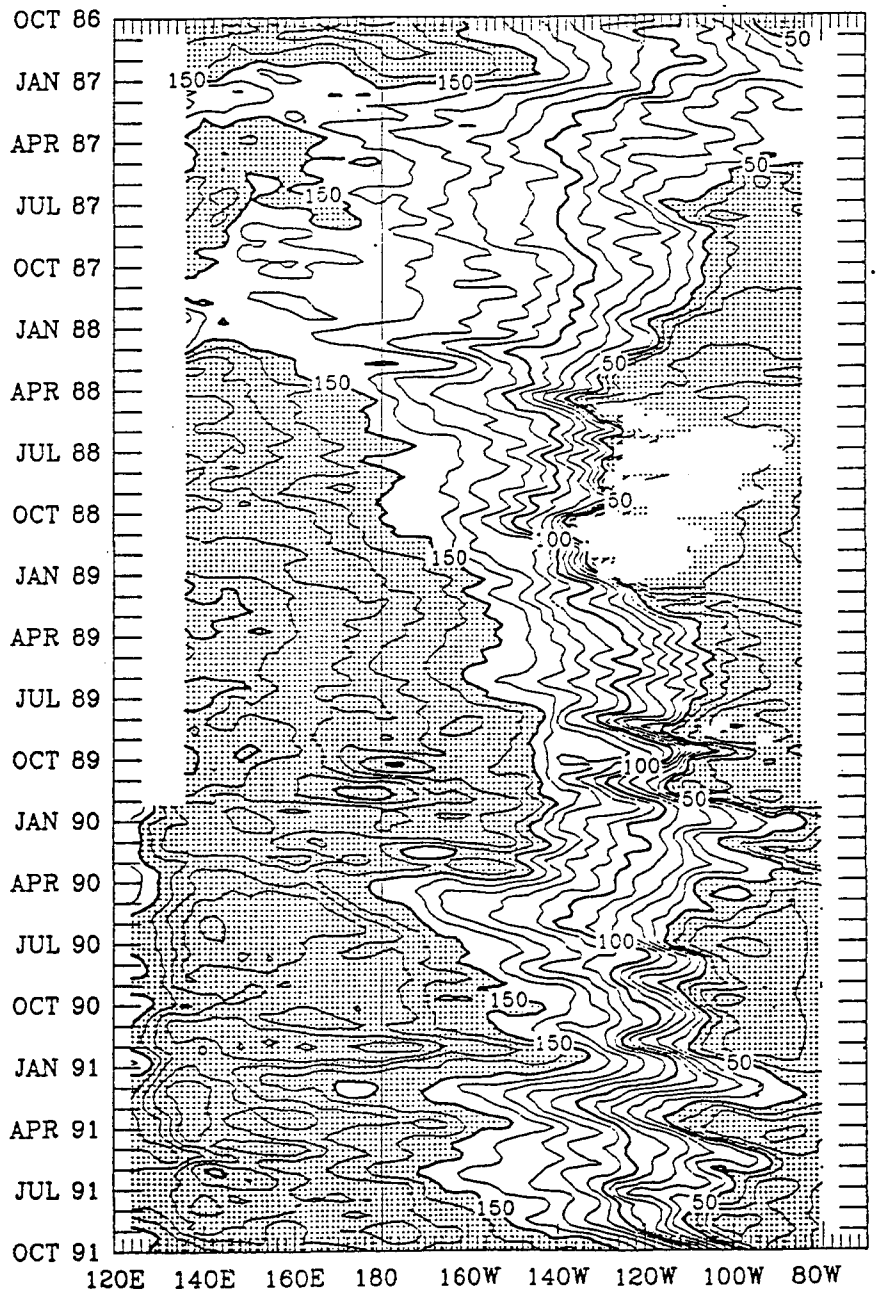

FIGURE 2 Depth of the 20°C isotherm along the equator in the Pacific Ocean. The contour interval is 10 m with shading for values less than 50 m and also for values greater than 150 m.

NORTHERN HEMISPHERE WINTER

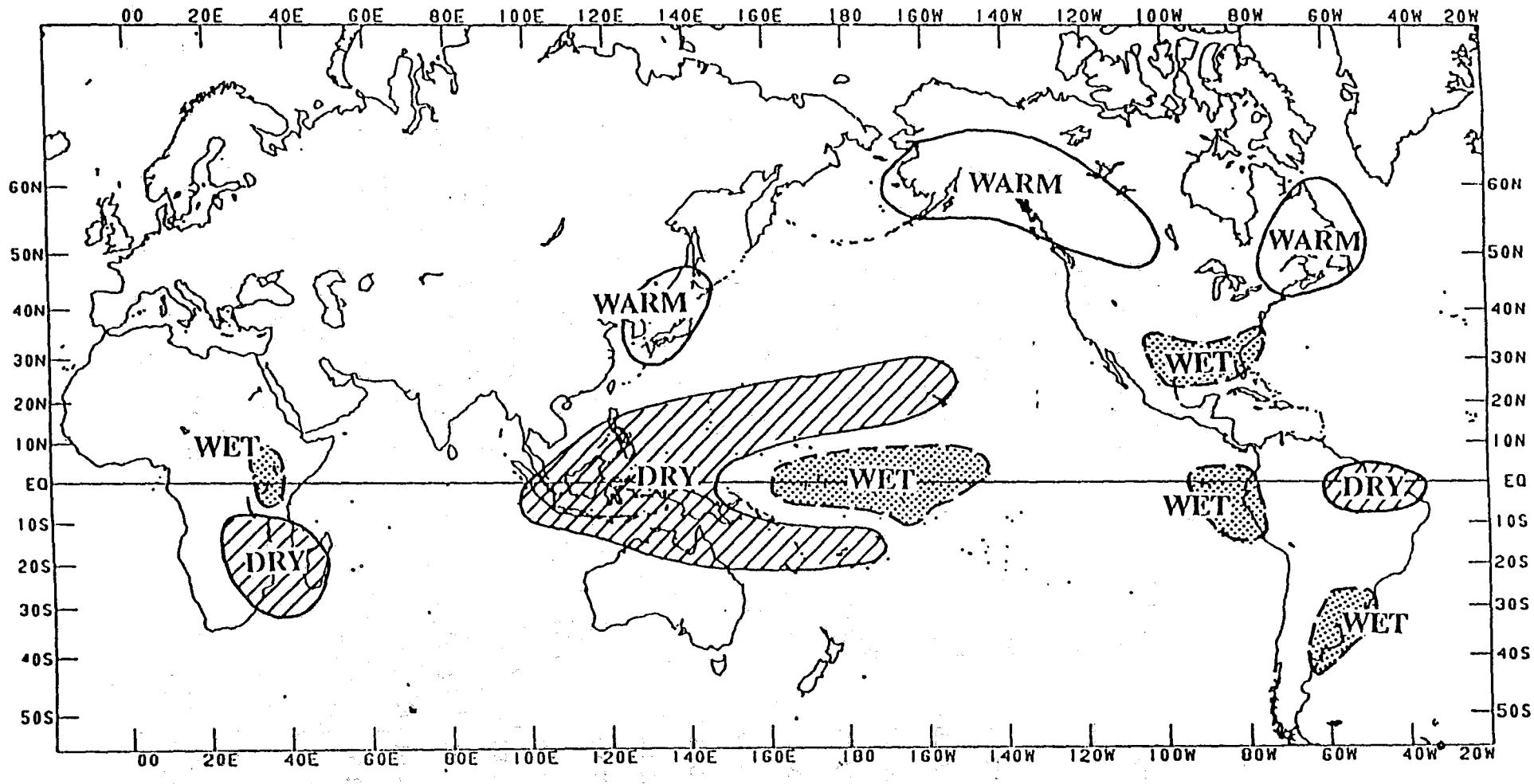

FIGURE 3 Temperature and precipitation anomaly patterns generally found during November - March in warm (ENSO) episodes.