



Western Region Technical Attachment  
No. 91-08  
February 19, 1991

**EL NINO/SOUTHERN OSCILLATION (ENSO)  
DIAGNOSTIC ADVISORY 91/2**

Warmer than normal sea surface temperatures (SSTs) were observed in the central equatorial Pacific during January while low-level easterlies returned to near normal intensity. SST anomalies increased slightly in the Niño 3 region, decreased in the Niño 4 region and remained near zero along the South American coast (Fig. 1). During the last year, positive SST anomalies have slowly increased in the equatorial Pacific in the region from 170°E eastward to 120°W (Fig. 2b). Accompanying this trend in the SST anomalies, the warmest water has shifted east from near 160°E one year ago to near 175°E in January 1991 (Fig. 2a). Very little change has been observed in the pattern of SST anomalies in the extreme eastern equatorial Pacific during the last year.

Since December 1989, weakly enhanced convection has been observed in the western equatorial Pacific (between 160°E and the date line, see Fig. 3), which is in the region of the warmest water and positive SST anomalies. During this period, weak westerly 850 mb zonal wind anomalies were generally observed throughout the equatorial Pacific (Fig. 4).

It is evident from the above figures that a weak central Pacific warm episode has been in progress during the last year. However, persistent enhanced convection has failed to develop in the central equatorial Pacific and the atmospheric circulation features typical of warm episodes have not been observed. On the other hand, both the depth of the thermocline and the upper ocean heat content continue to be greater than normal in the equatorial Pacific. Given these features plus the continued presence of positive SST anomalies in the central Pacific, the situation in the tropical Pacific continues to warrant close monitoring. The next Advisory will be issued when significant further developments are observed.

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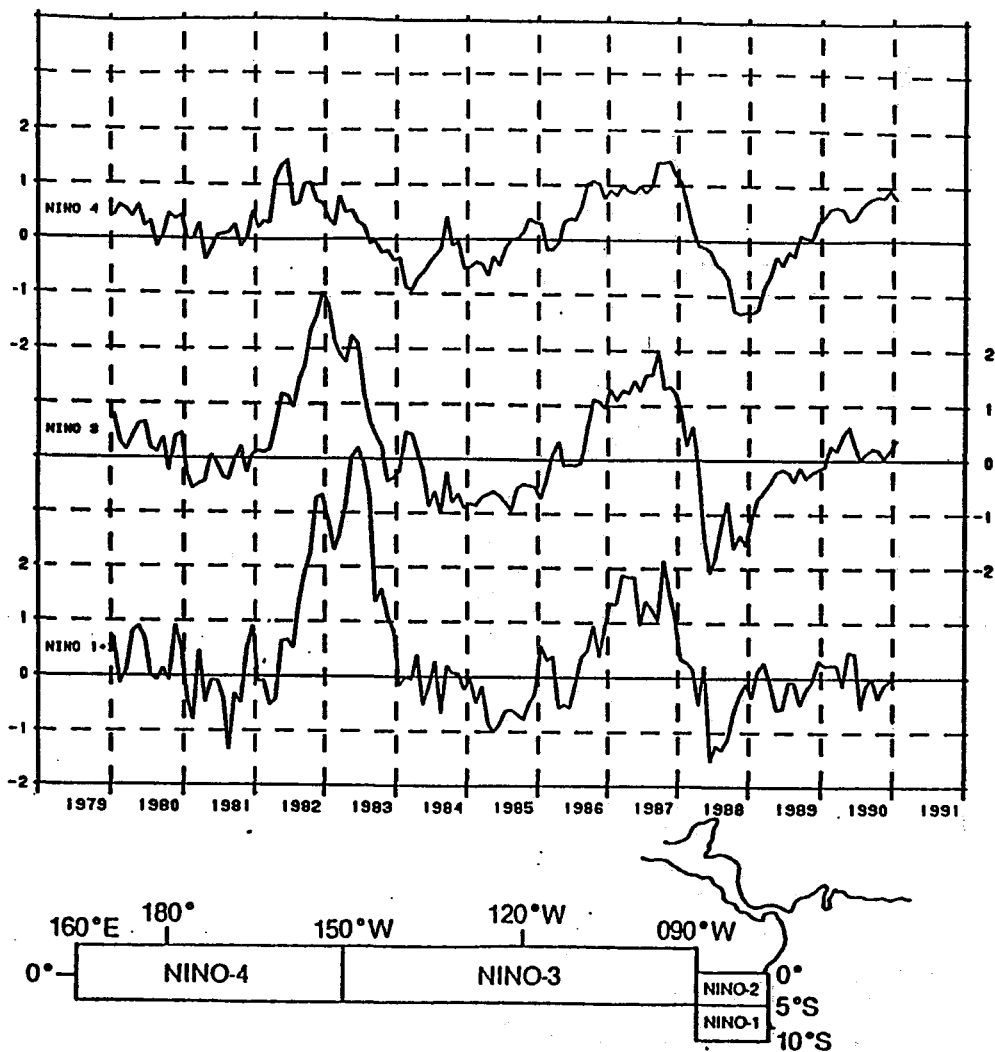


FIGURE 1 Equatorial Pacific sea surface temperature anomaly indices ( $^{\circ}\text{C}$ ) for the areas indicated at the bottom of the figure. Niño 1+2 is the average over the Niño 1 and Niño 2 areas.

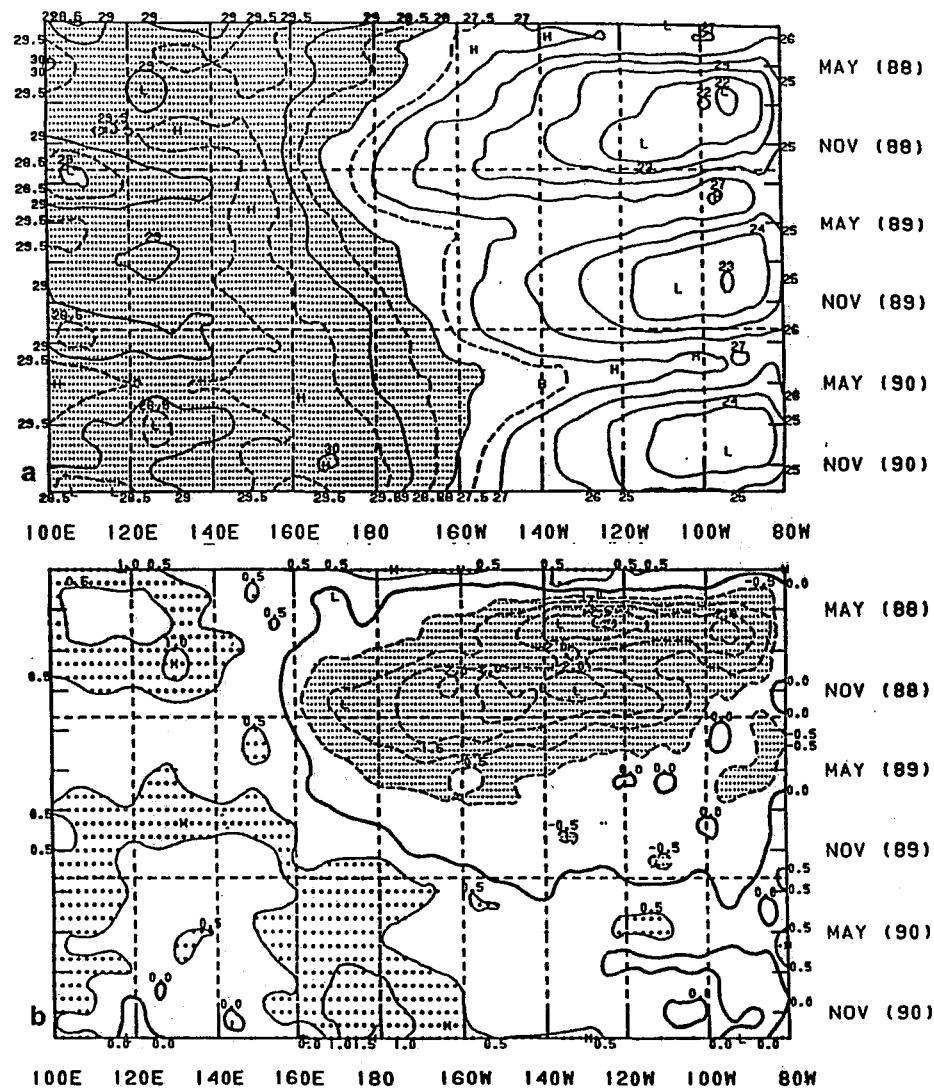
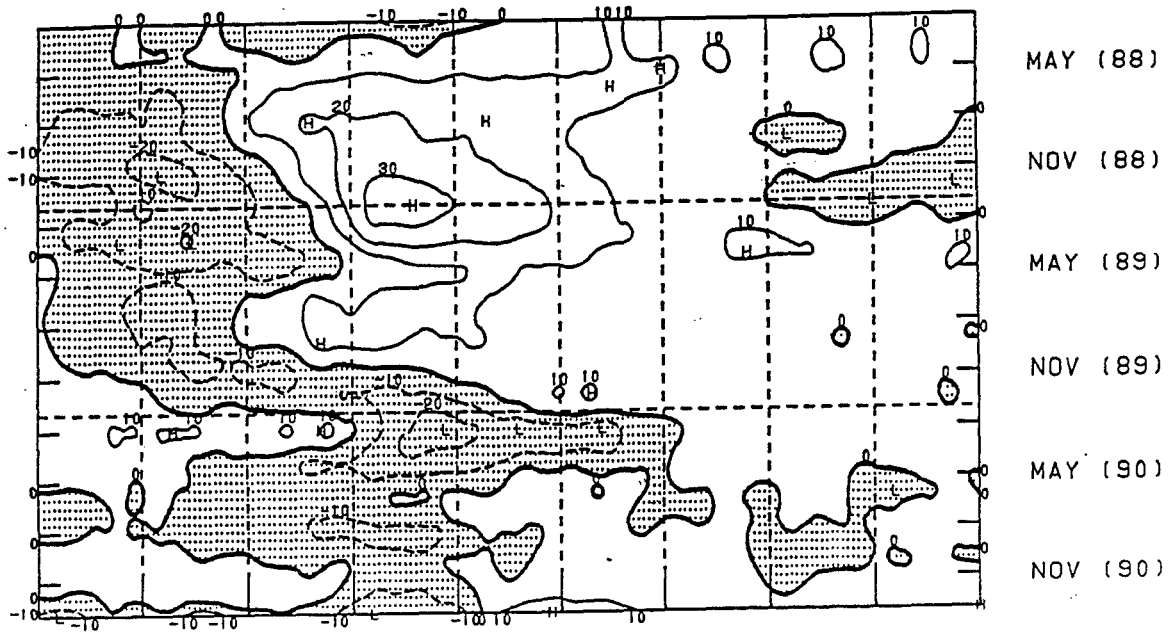
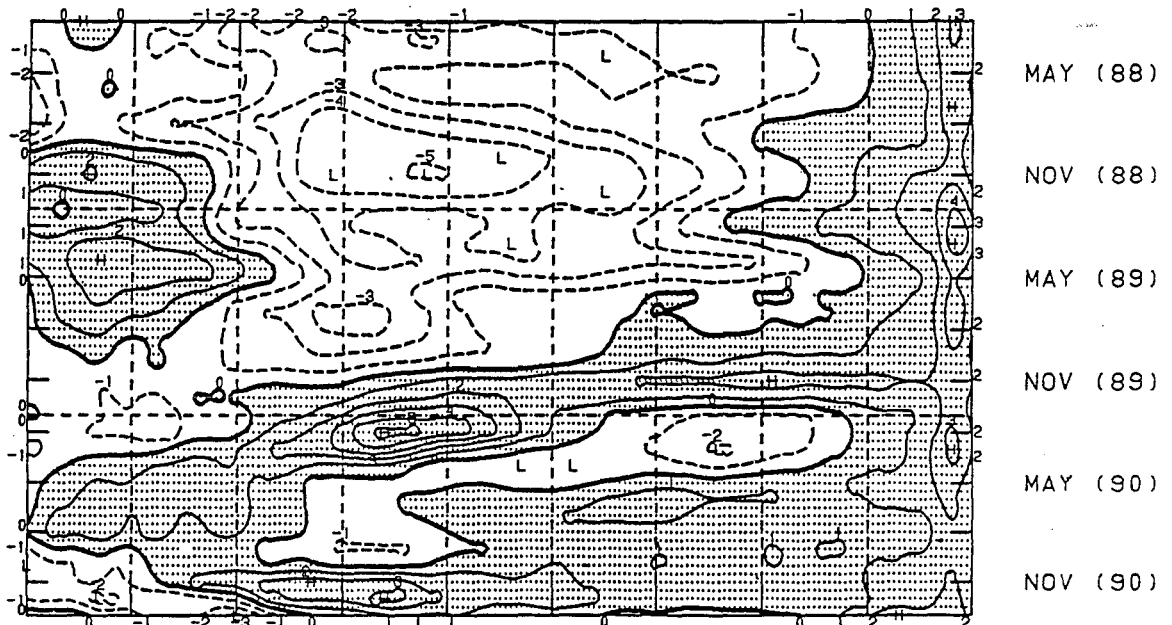


FIGURE 2 Time-longitude section of monthly sea surface temperature, a) mean and b) anomalous, for  $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ . Contour interval is  $1^{\circ}\text{C}$  and  $0.5^{\circ}\text{C}$ , respectively. SST values greater than  $28^{\circ}\text{C}$  and anomalies less than  $-0.5^{\circ}\text{C}$  are shaded. Stippled areas indicate anomaly values greater than  $0.5^{\circ}\text{C}$ . A 1-2-1 filter in time is used on all points prior to the current month.



100E 120E 140E 160E 180 160W 140W 120W 100W 80W  
 FIGURE 3 Time-longitude section of monthly outgoing longwave radiation anomalies. Contour interval is  $10 \text{ Wm}^{-2}$ . Shading indicates negative anomalies. Anomalies are departures from the 1979-1988 base period mean. A 1-2-1 filter in time is used on all points prior to the current month.



100E 120E 140E 160E 180 160W 140W 120W 100W 80W  
 FIGURE 4 Time-longitude section of monthly 850 mb zonal wind anomalies, for  $5^{\circ}\text{N}-5^{\circ}\text{S}$ . Contour intervals are  $1 \text{ ms}^{-1}$ . Dashed contours indicate easterly anomalies. Westerly anomalies are shaded. A 1-2-1 filter in time is used on all points prior to the current month. Anomalies are departures from the 1979-1988 base period monthly means

