WESTERN REGION TECHNICAL ATTACHMENT
NO. 86-33
November 25, 1986

EL NINO SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 86/5

The attached El Nino Southern Oscillation (ENSO) advisory indicates that most conditions are favorable for an ENSO episode. However, a classical El Nino is yet far from certain. Furthermore, even if an event occurs, it could be much different from the 1982-83 episode. Thus the resultant impact on mid latitude weather could also be much different.

EL NIÑO SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 86/5
issued by
THE CLIMATE ANALYSIS CENTER/NMC
November 10, 1986

Pacific oceanic and atmospheric indices show that the large-scale equatorial Pacific warming of sea surface temperatures (of the past few months) has expanded in area and increased in intensity. Sea surface temperatures are now greater than 1°C above normal throughout much of the equatorial Pacific. The current warming of sea surface temperatures in the equatorial Pacific, which resembles the warmings associated with El Niño/Southern Oscillation (ENSO) episodes, has resulted in the eastward shift of the warmest equatorial water (30°C) to the date line (Fig. A7), from its normal position 3000 km to the west. This marks the first time since 1982 that the warmest equatorial water has shifted to the date line.

The current situation has evolved from conditions reported in a series of CAC advisories earlier this year. During the months following the weak early-year warming in the eastern equatorial Pacific, sea surface temperatures gradually increased in the central equatorial Pacific. During the same period, the prevailing equatorial easterly winds weakened throughout the central Pacific and are now weaker than normal (Fig. A8). Oceanographic data, provided by Klaus Wyrtki, Department of Oceanography, University of Hawaii at Manoa, and Stan Hayes, NOAA Pacific Marine Environmental Laboratory, Seattle, and the results from an ocean general circulation model, developed by the NOAA Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey, now being run at CAC/NMC, show a deepening of the thermocline (the boundary between the warm homogeneous upper ocean and the colder stratified water below) in the central and eastern Pacific. The deepening of the thermocline in the eastern equatorial Pacific in September, which corresponds to an eastward transport of warm water from the western and central Pacific, was followed by an increase in the sea surface temperatures along the immediate coast of Peru and Ecuador in October.

The weakening of the equatorial easterlies and increase in the sea surface temperatures have resulted in oceanic and atmospheric anomaly patterns in the tropics similar in many respects to those found during earlier ENSO episodes. However, these are, thus far, weaker than those observed during major events, and far weaker than those observed during the unusually intense ENSO episode of 1982-83. Furthermore, some of the larger scale atmospheric conditions generally associated with ENSO events, such as the large scale east-west pressure changes across the South Pacific, are not yet evident.

While the ENSO warming is extensive and has continued to expand eastward during the past several months, the degree to which this will result in classical El Niño conditions along the coasts of Ecuador and Peru during the next few months is presently unclear. CAC will continue to monitor conditions in the equatorial Pacific and to provide early dissemination of diagnostic information concerning the current warming.

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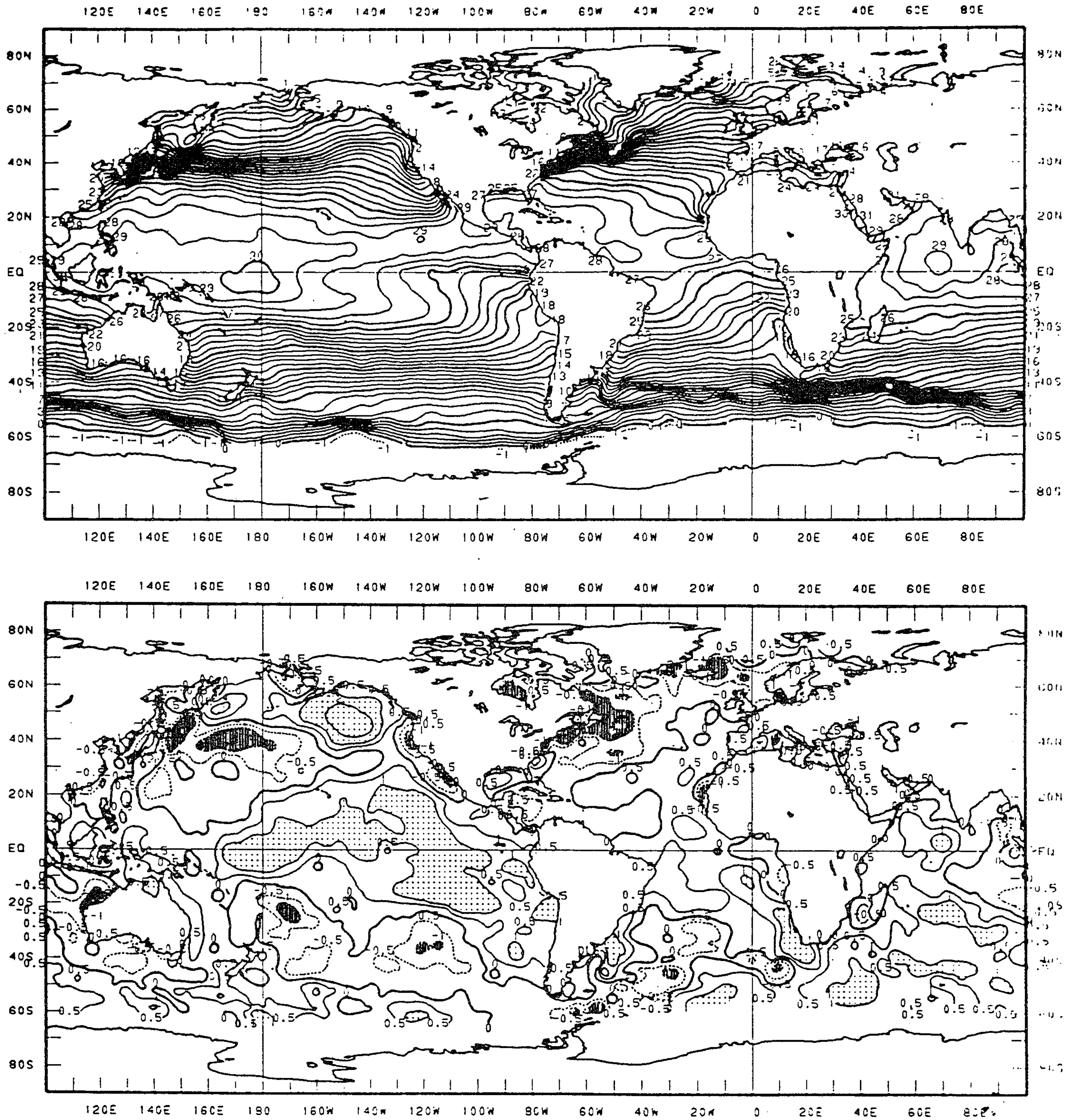
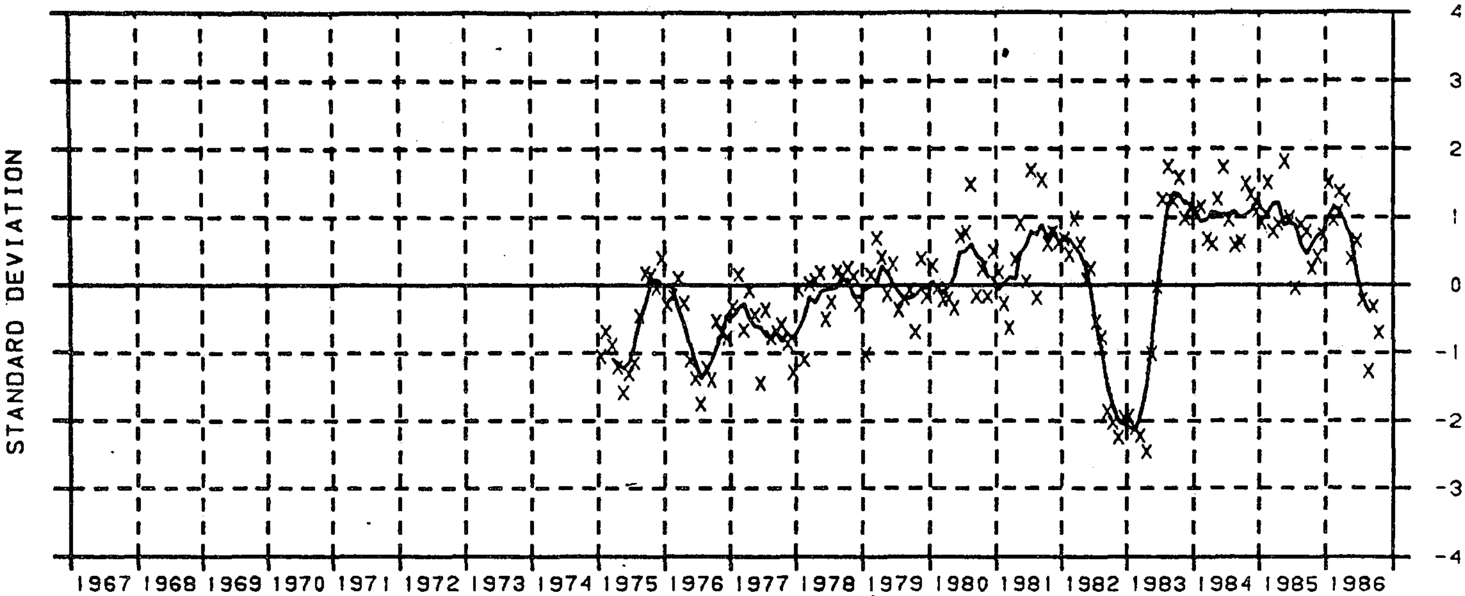


FIGURE A7- Blended sea surface temperatures (top) and sea surface temperature anomalies (bottom) for October 1986. Contour interval for sea surface temperature and sea surface temperature anomalies is 1°C, except that additional contours at ±0.5 have been added for the analysis of anomalies.



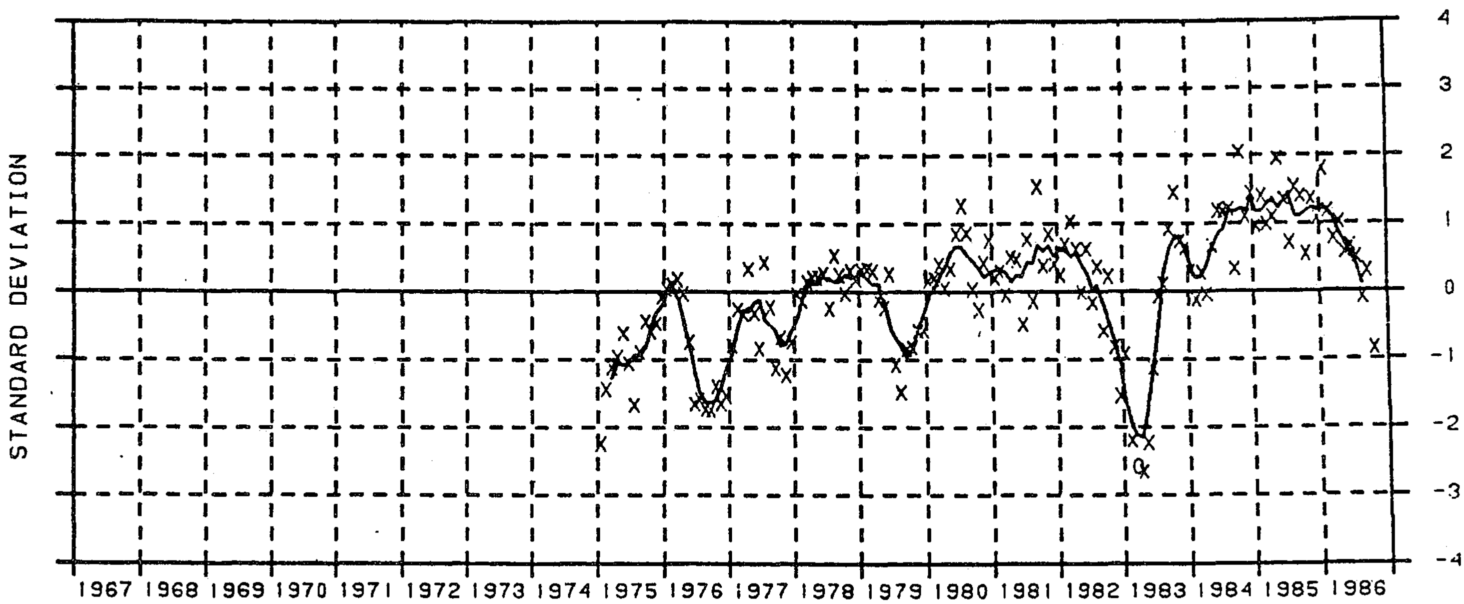


FIGURE A8- Standardized 850 mb zonal wind indices ($5^{o}N-5^{o}S$) for $175^{o}W-140^{o}W$ (top) and $135^{o}W-120^{o}W$ (bottom).