Western Region Technical Attachment
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EL NINO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 90/10

CLIMATE 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.]

Strong 850 mb westerly wind anomalies were observed in the western equatorial Pacific during November. These westerly anomalies accompanied an eastward shift in enhanced convection from the Indian Ocean to the western equatorial Pacific between late October and mid-November, in association with intraseasonal (30-60 day) activity. November as a whole, however, featured only slightly enhanced convection between New Guinea and the date line, and near normal convection just east of the date line. Sea level pressure was near normal at Darwin (+0.2 mb) and below normal at Tahiti (-0.6 mb), resulting in a Southern Oscillation Index (SOI) of -0.4.

Sea surface temperatures in the central equatorial Pacific were more than 1°C above normal in December. This pattern, which has persisted for the last few months, has been frequently observed during the early stages of past warm episodes. During the last several months, the warmest water has shifted eastward and in the November, SSTs greater than 30°C were observed near the west of the date line in the vicinity of the equator. However, in spite of the anomalously high SSTs in the central equatorial Pacific, convective activity was only slightly greater than normal in the region.

Intraseasonal (30-60 day) oscillations have been fairly active in recent months. Associated with these oscillations both the low-level winds and convection have been highly variable. The eastward shift of enhanced convection from the Indian Ocean into the western Pacific, that was observed between late October and mid-November, was accompanied by a significant change in the low-level winds from easterly to westerly anomalies.

In the past, similar low-level wind changes have been instrumental in initiating oceanic Kelvin waves. Although the importance of these waves in the evolution of warm episodes is still being debated, their short-term effect is to depress the thermocline as they propagate eastward towards the South American coast. Waves initiated in the central equatorial Pacific, near the date line, generally take 45 to 60 days to reach the South American coast. Since the recent low-level wind changes occurred during mid-November, we expect that the remote response due to any Kelvin waves recently initiated should occur along the South American coast in early January.

During the next four weeks, our attention will be focused on changes in thermocline depth and sea surface temperatures in the eastern equatorial Pacific, the convective activity in the central equatorial Pacific, and the evolution of the intraseasonal oscillations in the Indian Ocean and western Pacific.