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**The *El Nino* - Southern Oscillation Event 1986-87**

by

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1. During 1986-87, a warm episode in the *El Nino*-Southern Oscillation (ENSO) phenomenon was recorded. Its main characteristics were as follows:
2. **September 1985 - April 1986:** Four years after the particularly intense event recorded in 1982-83, the development of positive temperature anomalies in the equatorial zone and a weakening of the tradewinds could be discerned as the beginnings of a fresh "typical" ENSO event; ORSTOM's SURTROPAC 05 oceanographic expedition (January 1986), however, indicated that the situation in the western Pacific was normal. Development of this phenomenon appeared to abort after April, although temperature anomalies persisted in the western sector.
3. **May - September 1986:** The situation was, relatively speaking, normal, despite the fact that the tradewinds showed a marked loss of strength and that temperatures continued to rise throughout the Pacific; the SURTROPAC 06 cruise (July) reported that the hydrological structure and the pattern of equatorial currents were close to seasonal norms.
4. **October - December 1986:** The indices monitored as a matter of routine by the Climate Analysis Centre again revealed a trend towards a moderately warm episode of the ENSO phenomenon: the temperature anomaly extended eastwards ( $>1^{\circ}\text{C}$ , beyond the dateline), weakened tradewinds persisted throughout the Pacific, the thermocline rose (to the west) and fell (to the east) and a zone of strong convections (indicating abundant precipitation) moved towards the central Pacific from the western sector; observations from moored and drifting buoys at the equator showed current reversals (eastwards), relatively strong for the first 100 metres.

5. **January - October 87:** After a lull in the first quarter, the event gathered strength and reached its mature phase: powerful high convection continued in the central Pacific, bringing in its wake heavy precipitation in the north-central Pacific and drought in the western and south-central ocean, (Philippines, Indonesia, Papua New Guinea, Solomon Islands, New Caledonia, Fiji); the tradewinds continued to blow from the wrong direction, while temperature anomalies became ever more marked and widespread; there was a reversal in the pattern of currents at the equator; the thermocline moved deeper to the east and shallower to the west, while mean sea level deviated by +22cm in the eastern Pacific and -24cm in the western .

6. The oceanographic surveys SURTROPAC 07 (January 1987), 08 (July 1987) and PROPPAC 01 (September 87) along meridian 165° E from 20°S to 10°N showed this situation clearly: westerly and south-westerly winds, a shallow thermocline (60-80m - more than 40m higher than usual), major easterly transport (from 6°S to 5°N, spanning a thickness of over 240m and at speeds of over 1m sec<sup>-1</sup> at the surface).

7. Starting in November 1987, the main indices gradually returned to normal: the Southern Oscillation Index restabilised, the tradewinds started blowing again all over the Pacific, the convection zone repositioned itself over Indonesia and surface temperatures were restored to normal, as were the thermocline and the equatorial currents. This return to normality was clearly observed during the SURTROPAC 09 (January 1988) and PROPAC 02 (March - April 1988) cruises: the situation, still perturbed in January (disoriented tradewinds, very high surface temperatures, highly variable surface currents, weak equatorial undercurrent, thermoclines not very marked at the equator) became practically normal again in March-April (reappearance of a marked equatorial upwelling, thermocline at 120m, relatively normal pattern of equatorial currents).