Abstract View

Volume 4, Issue 3 (July 1974)

Journal of Physical Oceanography
Article: pp. 372–380 | Abstract | PDF (653K)

Equatorial Currents in the Pacific 1950 to 1970 and Their Relations to the Trade Winds

Klaus Wyrtki

Dept. of Oceanography, University of Hawaii, Honolulu 96822

(Manuscript received November 29, 1973, in final form February 14, 1974)

DOI: 10.1175/1520-0485(1974)004<0372:ECITPT>2.0.CO;2

ABSTRACT

The mean meridional profile of dynamic topography across the zonal currents of the equatorial Pacific Ocean is disturbed by the observed deviation of monthly sea level at island stations from the long-term mean. From these monthly profiles the sea level difference across the major zonal currents for the period 1950–70 can be derived. A strong seasonal signal is apparent in the intensity of the currents, as well as large short- and long-term anomalies. Most of the energy of the currents is in the low frequencies. The North Equatorial Current and the Countercurrent fluctuate synchronously and in opposition to the South Equatorial Current. The fluctuations of the currents are related to the trade winds and are more strongly influenced by the position of the trade winds than by their strength. When the northeast trades are strong and in a southerly position during the first half of the year, both the North Equatorial Current and the Counter-current are weak; when the trades are weaker and in a more northerly position during the second half of the year, both currents are strong.