



## Abstract View

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## Scales of Thermal Variability in the Tropical Pacific

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### ABSTRACT

Long-range P-3 aircraft have been used to occupy two 4000 km long sections from 20°N to 17°S along 150 and 158°W in the central equatorial Pacific. The temperature field along these sections was measured at approximately weekly intervals for three months (November 1977–January 1978). The principal meridional scales of variability derived from this data set suggest highly coherent fluctuations in the upper ocean thermal structure within  $\pm 10^\circ$  of the equator. The region of coherent variability extends across the equator, across boundaries of major current systems and through the ITCZ. The time scale of these fluctuations is of order 2–3 months. Variability in the zonal direction is also coherent, although of smaller amplitude, with space scales of at least 2000 km and time scales of several months. These latter modes of variability are suggestive of propagating disturbances, although that hypothesis could not be proved with the current data set. The observed oceanic variability at 150°W was not closely related with changes in the local wind stress or curl of the wind stress field in the central tropical Pacific, suggesting that a large part of the observed oceanic fluctuations may not have been “locally” forced.

The relation between transports in the North Equatorial Countercurrent derived from the AXBT data and  $T/S$  relations agreed well with similar transport estimates obtained from hydrographic observations and current meter arrays. This suggests that the scales of variability we have observed in the temperature field may also apply, in part, to the zonal velocity and transport fields.

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