

EQUATORIAL WAVES IN THE SATELLITE-OBSERVED
CLOUD VELOCITY FIELD OVER THE PACIFIC

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE
IN OCEANOGRAPHY
MAY 1980

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Abstract

A space-time spectral analysis is applied to the 900 mb meridional wind component over the Equatorial Pacific Ocean. Cloud drift vectors, in the form of movie loops derived manually from cloud tracking satellites, constitute the data base for this investigation.

The major conclusions are as follows:

1) The maximum energy density levels of the wind occur at low wavenumbers over a broad range of frequencies. These disturbances appear to manifest themselves as fluctuations occurring simultaneously over a large span of longitude.

2) Investigation of the high frequency-high wavenumber structure is difficult due to the general shortage of reliable data and the uneven satellite sampling intervals. Selection of spectral parameters becomes a compromise between the problems of high aliasing and low reliability. A high frequency-low wavenumber (time lag of 5 hours and space separation of 2.1° longitude) study was selected.

3) There was no indication of a distinct 4-day signal in our spectra.

4) There appears to be less high-frequency energy in the equatorial band (1.05°S - 1.05°N) than in the other two more southerly bands (5.25°S - 3.15°S and 3.15°S - 1.05°S).