DETERMINISTIC ANALYSIS OF LOW-FREQUENCY DENSITY FLUCTUATIONS IN THE EASTERN NORTH 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 1986

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ABSTRACT

Time series of potential density with 21 years duration from 13 stations on line P in the eastern North Pacific are analysed for Rossby wave motions. The data are fit by the least squares method with cosine functions of given frequency for several periods between 1 and 12 years. The resulting phase values are investigated for westward propagating features. Assuming the observed fluctuations are Rossby waves, their wave number vector and direction of group velocity are calculated from the dispersion relation. Evidence for first mode baroclinic Rossby waves is found in particular for periods from 7 to 10 years. A preliminary analyses of the wind field over the eastern North Pacific indicates that the waves are not forced by wind stress curl fluctuations.