EMPIRICAL   ORTHOGONAL   FUNCTION   ANALYSIS   OF

SEA   LEVEL   FLUCTUATIONS

IN   THE   TROPICAL   PACIFIC   OCEAN

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

DECEMBER 1984

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ABSTRACT

Large-scale, long-term sea level variations in the tropical Pacific Ocean between $30°$ N and $30°$ S are described in terms of empirical orthogonal functions. The data are monthly averages at 31 sea level stations. The principal seasonal and non-seasonal modes during the years 1975-1981 are identified. Comparison with numerical models and empirical studies of related atmospheric and oceanic parameters leads to following conclusions : 1) The strongest annual and interannual SL changes are caused by zonal wind fluctuations in the western equatorial Pacific. 2) The second and third most important seasonal SL modes are associated with annual fluctuations of sea surface temperature, of atmospheric pressure and of large-scale wind fields. 3) The second most important non-seasonal mode indicates a long-term oscillation between the subtropical gyres in the North and South Pacific.