



## Abstract View

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# El Niño and Tropical Pacific Ocean Surface Temperatures

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### ABSTRACT

The spatial and temporal character of El Niño is explored with analyses of tropical Pacific Ocean surface temperatures for the period 1957–76. The data are derived from approximately  $5 \times 10^6$  marine weather reports. Maps are illustrated which portray the initiation, maturation and decay of an “average” El Niño event. Empirical orthogonal functions of nonseasonal departures are displayed. The time coefficients of the dominant empirical functions are derived together with average departures for 18 regions which are usually  $10^\circ$  of latitude and  $40\text{--}50^\circ$  of longitude in size. Lag correlation and coherence-spectral analysis are carried out on all of the time series. The pattern of El Niño which is portrayed is that of a basinwide phenomenon with a time evolution lasting more than 24 months. During this evolution sea temperatures in the western Pacific tend to have departures of opposite sign to those in the east. Variations in the eastern equatorial region are shown to precede those in the central equatorial and northeastern tropical Pacific by 1–4 months. On the other hand, changes in the central and eastern Pacific near  $25^\circ\text{S}$  tend to precede those in the equatorial region by a few months.

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