Abstract View

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A Statistical Study of Large-Scale, Long-Period Variability in North Pacific Sea Surface Temperature Anomalies

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ABSTRACT

Frequency domain principal components analysis, a technique which involves extracting the eigenvalues and eigenvectors of the cross spectrum of a multivariate time series, is used to analyze the development and movement of sea surface temperature (SST) anomalies in the North Pacific. A prominent feature of the low-frequency SST field is an oscillatory pattern with a return period of about four to seven years. It involves the slow migration of an anomaly northward into the western North Pacific where the anomaly undergoes rapid expansion and intensification and then begins to deteriorate as it moves eastward. It is suggested that the rapid expansion in midlatitudes is caused by a positive feedback between the SST anomalies, the atmospheric long waves, and cyclonic short waves.