Abstract View

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Stochastic Dynamic Analysis of Polar Sea Ice Variability

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ABSTRACT

The analysis of Arctic (1966–76) and Antarctic (1973–79) sea ice data is presented, and a dynamical model based on white noise atmospheric forcing, local stabilizing relaxation and lateral diffusion and advection is constructed to explain the observations. Longitudinal dependent forcing. feedback, lateral diffusion and advection parameters are derived by fitting the model to the observed cross-spectral matrix of the sea ice anomaly fields. It is inferred that diffusion and advection of sea ice anomalies play an important role in sea ice dynamics. The model advection patterns agree reasonably well with the observed ocean surface circulation in the Arctic Ocean and around Antarctica.