Abstract View

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Coastal Upwelling Viewed as a Stochastic Phenomenon

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ABSTRACT

Four years of winds from the northeastern Pacific are used to drive a reduced-gravity ocean model which includes a high-resolution eastern coastal zone that span 17° longitude and 30° latitude. Spectra of the alongshore velocity and interface height, measured in the coastal zone, are red to 100-day periods. At periods less than 50 days, 1) the circulation is strongly trapped within a radius of deformation of the coast and 2) the alongshore current is well correlated with the alongshore wind stress. At periods longer than 50 days, wind-stress curl becomes important. The alongshore pressure gradient becomes well correlated with the alongshore wind stress. Much of the ocean variability is at periods longer than 10 days. At periods longer than 100 days the alongshore currents begin to weaken and disperse away from the eastern boundary in a series of jets alternating northward and southward.