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Upper Layer Modification at Ocean Station *Papa*: Observations and Simulation

K.L. Denman and M. Miyake

Institute of Oceanography, University of British columbia, Vancouver 8, Canada

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ABSTRACT

Time-series observations of the upper mixed layer of the ocean are presented for a six-week period at Ocean Station *Papa* in the northeast Pacific Ocean. These observations indicate the rate and extent of the wind-induced deepening of the mixed layer during the passage of several weather disturbances. The formation of the shallow layer of warm water that occurs under conditions of low winds and intense solar heating is also evident. A numerical model, developed by Denman, accurately predicts the behavior of the upper ocean during a 12-day period for which observed values of wind speed, solar radiation, and back radiation are used as input. To obtain realistic results, a value of 0.0012 for the ratio of the potential energy increase of the water column to the downward transfer rate of turbulent energy by the wind stress is used. This value is in agreement with that obtained from previous laboratory experiments (0.0015) indicating that the results obtained from such experiments are transferable to open ocean conditions.

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Headquarters: 45 Beacon Street Boston, MA 02108-3693
DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826
amsinfo@ametsoc.org Phone: 617-227-2425 Fax: 617-742-8718
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