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A Simulation of the Effects of Air-Sea Transfer Variability on the Structure of Marine Upper Layers

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ABSTRACT

A rather simple one-dimensional unsteady model similar to Mellor and Durbin (1975) is used to study the effects of the time variability of meteorological inputs on the evolution of the thermal stratification of marine upper layers. The physical implications of such a model are discussed, particularly with respect to the results obtained in a number of typical situations. The thermal structure of the marine upper layers in the Gulf of Lion during the COFRASOY II expedition was also simulated. Although the model is not able to reproduce all details of the marine environment, the mixed-layer deepening and sea surface temperature are predicted rather well from the known meteorological parameters. It appears in conclusion that the most important time-variability effects have been described but that the physics of the model could be improved.

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