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Parameterization of the Moisture and Heat Transfer Process over the Ocean under Whitecap Sea States

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ABSTRACT

The mechanics of evaporation from the ocean under whitecap sea states was analysed by taking into account the water droplets produced by sea sprays and popping of entrained air bubbles. The theory proves that the droplets are a major source of moisture for the humidity field, and at the same time the latent heat of evaporation from the droplets is a dominant heat sink for the temperature field. Many known atmospheric conditions over the ocean can be correctly simulated by the present theory. From these results, an analytical expression for the rate of vertical flux of water vapor was obtained.

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