Abstract View

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Diffusion Sublayer Thickness over Wind-Disturbed Water Surfaces

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ABSTRACT

On the basis of wind-stress data, information has been calculated and published by Wu giving the mean viscous-sublayer thickness at sea as a function of wind velocity normalized to an anemometer height of 10 m. The present paper shows that evaporation measurements made in a laboratory wind-flume and with wind speeds also normalized to 10 m results in a mean-molecular diffusion-sublayer thickness function of similar shape and comparable magnitude, over a range of wind speeds from 4–15 m sec^{-1}. A plot of the functions is given showing the sublayer thickness to be about 0.11 cm at 4 m sec^{-1}, and about 0.022 cm at 15 m sec^{-1},. It is postulated that water vapor diffusion at sea, within this range of wind speed, is principally from wavelets in the capillary-gravity transition region.