Abstract View

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An Experimental Study of Rain Effects on Fine Structures of Wind Waves

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ABSTRACT

Previous experiments suggested that rain had dual effects on wind waves: damping in the gravity range and enhancement in the capillary–gravity/capillary range. These results in the frequency domain obtained from fixed-point measurements, however, might be contaminated by the Doppler effect. In the present study, wave slopes were spatially mapped with a scanning laser slope gauge under wind velocities of 3, 5, and 7 m s^{-1} and rain intensities of 42, 68, and 115 mm h^{-1}. Synthesized spectral densities, which are not affected by the Doppler effect, were obtained by processing the data in both “fixed point” and “spatial scan” modes. The existence of dual effects is clarified with the present results.