Abstract Submitted
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An Experimental Study of Droplets Produced by Plunging Breakers[1] D. WANG, University of Maryland, D. DAI, First Institute of Oceanography, China, X. LIU, J.H. DUNCAN, University of Maryland — The production of droplets by breaking water waves greatly affects the heat, mass and momentum transfer between the atmosphere and the sea surface. In this study, the production of droplets by mechanically generated breaking water waves was explored in a wave tank. The breakers were generated from dispersively focused wave packets (average frequency 1.15 Hz) using a programmable wave maker. Two overall wave maker amplitudes were used to create a strong spilling and a strong plunging breaker. The profile histories of the breaking wave crests along the center plane of the tank were measured with a cinematic laser-induced fluorescence technique, while the droplet diameter distributions and motions were measured at different locations along a horizontal line, which is 1 *cm* above the maximum height of the wave crest, using a double-pulsed cinematic shadowgraph technique. It is found that droplets are primarily generated when the plunging jet of the wave generates strong turbulence during impact with the wave's front face and when large air bubbles, entrapped during the plunging process, rise to the free surface and pop. The differences between the generation mechanisms in spilling and plunging breakers is highlighted.

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