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Effects of wind on the generation of secondary droplets and ring waves due to drop impact onto a water surface[1] XINAN LIU, CHANG LIU, JAMES H DUNCAN, Department of Mechanical Engineering, University of Maryland, College Park, AIR-SEA INTERACTION TEAM — The effects of wind on the generation of secondary droplets and ring waves during the impact of a single water drop on a deep-water surface are studied experimentally in a wind tunnel that has a test section with a water pool. Experiments are performed by varying impacting drop diameters ranging from 2.0 to 4.0 mm and wind speeds up to 10 m/s. Secondary droplets and ring waves generated during drop impact are measured with a backlit, cinematic shadowgraph technique that employs a high-speed camera. Our experimental results show that after the drop hits the water surface an asymmetrical crown forms on the leeward of the periphery of the colliding region while a wave swell forms on the windward. Secondary droplets are generated from the crown rim. It is found that the diameters and velocities of these secondary droplets are drastically changed with the wind speed. The capillary ring waves on the windward side of the drop impact are stronger than those on the leeward side.

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