Abstract Submitted
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The effects of wind on the impact of a single drop on a water surface[1] XINAN LIU, University of Maryland — The impact of single water drops on a water surface was studied experimentally in a wind tunnel. Water drops were generated from a needle oriented vertically from the top surface of the wind tunnel test section. The wind speed ranged from 0 to 10.0 m/s. After leaving the needle, the drops move downward due to gravity and downstream due to the effect of the wind, eventually hit a shallow pool of water on the bottom of the test section. The drop impacts were backlit with a halogen lamp and photographed with a high-speed movie camera at 1,000 frames per second. It is shown that the water drop obliquely impacts the water surface and the impingement angle relative to vertical increases with increasing wind speed. After the drop hits the water surface, a chain of secondary drops are formed and move in the leeward direction. This is followed by a stalk formation at the location of the water drop impact. It is found that the shape of the secondary-drop chain and the appearance of the stalk are markedly affected by wind speed. The effects of wind speed and initial drop size on a number of parameters, including the number, diameter and total mass of secondary drops were investigated. The dynamics of secondary drops in the presence of wind are discussed.

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Xinan Liu
University of Maryland

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