

Abstract Submitted  
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**The Effects of Surfactants on Wind Waves**<sup>1</sup> X. LIU, M. TAVAKOLINEJAD, J.H. DUNCAN, University of Maryland — The effects of surfactants on wind waves are studied experimentally in a tank that is 11.8 m long, 1.1 m wide and 1.8 m high. The water depth is 1.0 m and the top 0.8 meters of the tank contains air flowing with speeds up to 10 m/s. A mechanical wave maker, which resides at the upwind end of the tank, is used in some cases to superimpose a monochromatic wavetrain with frequencies of about 2 Hz on the wind wave system. Wave profiles are measured along the center plane of the tank with an LIF technique that utilizes a high-speed digital camera. The measurement system is mounted on an instrument carriage that can be set to move along the tank with various speeds. Measurements were performed with clean water and with water mixed with Triton X-100, a soluble surfactant. The results show that in clean water strong and active gravity-capillary wave phenomena are observed at the leeward side of wind wave crests. In the presence of Triton X-100, these capillary wave phenomena become weaker and eventually disappear as the surfactant concentration (Triton X-100) is increased. The detailed experiments to quantify these features are undergoing.

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