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Experimental and numerical observation of sediment suspension from ripple beds in oscillatory flow PHILIP KNOWLES, KEN KIGER, Dept. of Mechanical Engineeering, University of Maryland, ALBERTO SCOTTI, Dept. of Marine Sciences, University of North Carolina — The University of Maryland Oscillatory Sediment Flume (UMOSF) is an experimental facility built to investigate sediment transport mechanics within an oscillatory turbulent boundary layer over a mobile sediment bed. The range of sediment characteristics and fluid timescales are selected in the current work to study flows which generate rippled bed forms. The measurement technique utilizes a simultaneous two-phase PIV method to examine fluid-particle interactions, focusing on the suspension mechanisms and to obtain statistics to describe the two-way coupling. Specifically, measurements will focus on the upslope face, crest and recirculation zone of the ripple, where previous simulations have shown the strongest regions of suspension, injection into the boundary region, and mixing with the outer flow to occur. Results of these experiments are closely coordinated with ongoing numerical simulations, and comparison of the results from both experiments and simulations will be discussed.

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