

Abstract Submitted
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Incipient Motion of Surf Zone Sediments¹ DONYA FRANK, Naval Research Lab, DIANE FOSTER, University of New Hampshire, IN MEI SOU, JOSEPH CALANTONI, Naval Research Lab — A combined incipient motion formulation was evaluated to determine the role of the fluid shear stresses and pressure gradients at the onset of sediment motion in oscillatory flows. Small-scale incipient motion experiments were conducted in an oscillating flow tunnel with natural gravel, acetate beads and coarse gravel-sized electronic sediment grains. The effects of sediment characteristics on incipient motion were also investigated. Results suggest that the onset of sediment motion was dominated by the pressure gradients for flows with small orbital excursion amplitudes; by the shear stresses for flows with large orbital excursion amplitudes and by the combined effects for intermediate flows. The critical threshold of the combined parameter was dependent on the static coefficient of friction and the packing concentration of the mobile bed layer. The denser, more angular gravel required greater forcing to trigger sediment motion than the spherical and less dense acetate beads and electronic sediments. The combined incipient motion parameter may be more applicable in the nearshore environment.

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