UNIVERSITY of HOUSTON

CULLEN COLLEGE of ENGINEERING

Department of Civil & Environmental Engineering

Special Seminar-CIVE 6111 Graduate Seminar Series

Direct measurement of bed shear stress in the swash zone

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10:15 am-11:30 pm, March 12 (Thursday), 2015
Room: 102-D (Eng. Bldg. 1)

Abstract:

The swash zone, the area of the coast that is periodically wet and dry with each incoming wave, is an important region in the study of nearshore hydrodynamics. Sediment transport rates are thought to be much higher in the swash zone than in the surf zones where waves break and thus long term sustainable management of beaches is dependent on a thorough understanding of the swash zone. However, swash zone flows are typically very shallow and highly transient making them recalcitrant to measurement. Using large-scale experiments and solitary waves to drive the swash, the influence of different breaker types on the flow evolution and the spatiotemporal distribution of the bed shear stress is investigated. The bed shear stress is measured directly using a custom-designed shear plate sensor. Particular attention has been paid to the accuracy of the shear plate sensor and the challenge of correcting for the extra force that arises due to pressure gradients in the flow.