

# Department of Ocean and Resources Engineering

*Seminar*

## Hydraulic Characteristics of Tropical Island Sand

by

**David A. Smith**

Department of Ocean and Resources Engineering  
University of Hawaii at Manoa

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### **Abstract**

Quantitative comparisons and relationships for the hydraulic characteristics of calcareous sand collected on Oahu are presented. The fall velocities and drag coefficients of 984 grains are examined as functions of particle size and shape and new relationships are presented. The results are compared with published data on smooth pebbles and natural quartz grains, illustrating the effect of the secondary shape features of the calcareous particles. The proposed empirical relationships offer insight into the transport characteristics of tropical island sediment.

Additionally, an intensive flume study was conducted to determine initiation of motion and bed-load transport rates for 4 natural and 5 sieved tropical island sand samples. Conventional criteria are supplemented with visual observations to determine the threshold condition for initiation of motion. The results are presented and compared with other non-spherical data on the well-known Shields Diagram. In comparison with spherical particles, the critical shear stress of a non-spherical particle is higher in the laminar flow regime and lower in the turbulent flow regime.