

Abstract Submitted
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Fluid-Mud Gravity Currents through Vegetation FIRAT TESTIK, NAZLI YILMAZ, Clemson University — This study was to investigate the effects of emergent stiff aquatic vegetation on the anatomy and propagation dynamics of fluid mud gravity currents. Fluid mud bottom gravity currents propagating through vegetated areas may form during coastal dredge disposal operations. Such currents have distinct anatomical and propagation characteristics. To study these non-Newtonian flows, a set of laboratory experiments were conducted with constant-flux release fluid mud (Kaolinite clay mixed with tap water) gravity currents propagating through a vegetated section of a laboratory tank. Emergent aquatic vegetation was simulated using stiff plastic rods of selected patterns. In the experiments, wide ranges of vegetation densities and fluid mud mixture concentrations were used. The experimental gravity currents experienced a drag-dominated propagation phase that was different than the typical propagation phases observed in the absence of vegetation. In this propagation phase, the gravity current exhibited a well-defined triangular / wedge profile. In the talk, these distinct gravity current characteristics associated with the vegetation effects will be discussed along with the underlying physical explanations and developed parameterizations.

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