

Experimental model testing of submarine landslide using kaolin clay.

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This study is aimed to investigate the nature of submarine landslides containing 100 % cohesive soil. For that reason, 7 experimental model tests were carried out in two modes: without any sea bed material and with sea bed material with three small models of suction anchors inserted in it. The material used was a kaolin. The variables changed are tilt of panel and water content of sea bed material. Additional tests of T-bar penetration done shew a relation between a consolidation and shear strength gain for both kaolin having 100% and 110 % water contents. As a result of model tests, hydroplaning was observed in all tests with consequent turbidity current generation. Sediment or kaolin mass flow into the channel changed the water pressure due to wave formation and due to its own sliding along the bed. The maximum pressure rise of 1,87 kPa was detected by sensor 1 in test 5 and maximum pressure change due to formed wave was detected in test 6 having a value of 25 Pa. Also, the maximum runout distance of 4.7 meters from the trigger mechanism gate was measured in test 6. No significant erosion and suction anchor failure was observed in all 2nd mode tests (with artificial kaolin sea bed) unless sea bed kaolin water content was increased to 112 % decreasing its shear strength in test 7. As a result, the failure of the 1st suction anchor and a significant erosion was seen. The importance of turbidity current was observed as well particularly in test 3, when the whole outrunner block (after its stoppage) moved by 4-7 mm due to turbidity current.