# Investigation of geotechnical properties and erosion characteristic of reservoir bed sediments

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In recent years, capacities of reservoirs in Taiwan have decreased due to the input of sediments from upstream watersheds, caused by the soil loss of slopeland under construction and during flood events. The lifetime of reservoirs is therefore reducing rapidly; thus dredging of reservoir bed sediments has become one of the major issues relating to soil conservation, water resources, and human society. Hydraulic desilting is one of the commonly applied measures for dredging of reservoir bed sediments in Taiwan. Accordingly, the hydraulic condition at which desilting of sediments initiates becomes a key factor for maintaining the features of targets and extending the lifetime of a reservoir.
This study focus on the fundamental geotechnical properties and erosion characteristic of bed sediments in Agongdian Reservoir, which locates in Kaohsiung City, Taiwan. First, we carried out geotechnical experiments to identify physical properties of the bed sediments. Then erosion experiments were carried out using a recirculating hydraulic flume under different flow conditions, created by adjusting different flow rates and slopes. Afterwards, we applied the modified Shields diagram to analyze the experimental data and determined the critical condition that the erosion of bed sediments initiates. With these results, we are expected to find out the appropriate hydraulic conditions for the bed sediments to be agitated and re-suspend, and provide operating strategies that promotes the efficiency of hydraulic desilting, in order to extend the lifetime of Agongdian Reservoir.

Keywords: geotechnical properties, hydraulic desilting, Shields parameter