

Abstract Submitted
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Light Attenuation Method for 3D data acquisition (LAM3D) of bottom particle deposits JENN WEI ER, ADRIAN W. K. LAW, Nanyang Technological University, E. ERIC ADAMS, Massachusetts Institute of Technology, YANG YANG, Nanyang Technological University — We have developed a novel experimental technique, Light Attenuation Method for 3D data acquisition (LAM3D), to acquire three-dimensional spatial characteristics and temporal development of bottom particle deposits. The new technique performs data acquisition with higher spatial and temporal resolution than existing approaches with laser and ultrasonic 3D profilers, and is therefore ideal for laboratory investigations with fast varying changes in the sediment bed, such as the developing deposition profile from sediment clouds commonly formed during dredging or land reclamation projects and the dynamic evolution in movable bed processes in rivers. The principle of the technique is based on the analysis of the light attenuation due to multiple light scattering through the particle deposits layer compared to the clear water column. With appropriate calibration, the particles size and distribution thickness can be quantified by the transmitted light spectrum. In the presentation, we will first show our measurement setup with a light panel for calibrated illumination and a system of DSLR cameras for the light capturing. Subsequently, we shall present the experimental results of fast evolving deposition profile of a barge-disposed sediment cloud upon its bottom impact on the sea bed.

Jenn Wei Er
Nanyang Technological University

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