

Velocity and deposition profile of experimentally produced quasi-steady turbidity current

*Nomura Shun¹, Mikito Furuichi¹, Giovanni De Cesare², Yasushi Takeda³, Hide Sakaguchi¹

1. JAMSTEC, 2. École Polytechnique Fédérale de Lausanne, 3. ETH Zürich

A turbidity current is a turbulent, particle-laden gravity current driven by density differences due to suspended sediment particles. It travels downslope with a large amount of sediment during its migration for over a great distance and forms the fluvial or submarine topologies.

For better understanding of the sediment transport by the turbidity currents, the spatio-temporal velocity distribution and deposition profile are important. In this study, the velocity profile and deposition process of experimentally produced turbidity currents in an inclined flume was investigated through the ultrasound velocity profiler and electrical resistance based dipositmeter.

The results of velocity distribution indicate that the turbidity current progressed in a quasi-stationary state. In addition, we found that the deposition amount along the flume bottom constantly increases with time in a specific rate and exponentially decreases along the downstream direction.

Based on the observed result, we will discuss why the turbidity current flows such a long-distance with large amount of sediment.

Keywords: Turbidity current, Velocity profile, Deposition process

