



Influences of Sediment Viscosity and Bed Slope on Transport and Deposition Characteristics of Debris flow in Flume Experiments

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Debris flow is a rapid flow of soil-water mixture along a confined channel. Implementing mitigation structures against debris flow, such as debris flow barrier or flexible net, is the widely used mitigation strategy to prevent the debris flow hazard. To design those structures enough to endure debris flow events, accurate estimation of flow behavior and hazardous area of debris flow is necessary. In this study, we conducted the small-scale flume experiments to analyze flow behavior and corresponding deposit characteristics according to the slope conditions of flume and viscosity of sediment mixture. In terms of flow characteristics of debris mixtures, there was a positive correlation between flow velocity and flume inclination while slower velocity was observed in higher viscosity of mixture. Results of flow depth, however, showed no significant difference along variation of flume angles and mixture viscosity. The deposit characteristics, including runout length and spreading width, showed a positive correlation with approaching flow velocity. The larger runout length and deposit width were observed in higher flow velocity, and runout length was more sensitive to the change of flow velocity compared to spreading width.

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