

Prediction of Outflow Hydrograph caused by Landslide Dam Failure by Overtopping

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Abstract

Landslide dam failure presents as a severe natural disaster due to its adverse impact to people and property. If the landslide dams failed, the discharge of a huge volume of both water and sediment could result in a catastrophic flood in the downstream area. In most of previous studies, breaching process used to be considered as a constructed dam, rather than as a landslide dam. Their erosion rate was assumed to relate to discharge by a sediment transport equation. However, during surface erosion of landslide dam, the sediment transportation regime is greatly dependent on the slope surface and the sediment concentration in the flow. This study aims to accurately simulate the outflow hydrograph caused by landslide dam by overtopping through a 2D surface flow erosion/deposition model. The lateral erosion velocity in this model was presented as a function of the shear stress on the side wall. The simulated results were then compared and it was coherent with the results obtained from the experiments.

Keywords: Numerical Analysis, Landslide dam, Outflow Hydrograph, Breach Process

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