



A numerical simulation of overflow failure of landslide dams by particle flow technique

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This study applied two-dimensional particle flow code (PFC2D) to simulate overflow failure of landslide dams. The purpose is to discuss the differences of dam longevity and bedload impacts on riverbed among different scenarios such as different riverbed sloping, height and width of the dams. We selected the related numerical simulation parameters from literatures and then correlated the parameters using the field conditions for suitable values. The dam materials eroded during overtopping would become bedloads and impact downstream riverbed with flooding overflowed water. The impacts will induce seismic waves and propagating outwards. According to the characteristics of the seismic waves, correlation can be established among the volume of the eroded materials, vibration force, and vibration frequency. The overflowed water was numerically simulated overflow using fluid flow field of PFC2D that will “carry” the eroded dam materials (particles) downstream. We observed the phenomenon of erosion processes and numerically monitored the variations of impact forces generated by the eroded dam materials. The research results can be used to better estimate the longevity of landslide dams and can be a reference warning and evacuation timing.