



The Condition of the Debris Barrier for the Impulsive Force of Debris Flow by Climate Change

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The frequency of the heavy rainfall has been increasing due to the climate change, and it further amplifies the debris flow in a mountainous area with severe damages to property and life. Here, we estimate impulsive force of debris flow on the debris barrier, which is installed under the higher risks by the debris flow, with several scenarios including the various location of the debris barrier and the variance of the inflow of water supply. In this research, we applied the erosion and deposition model based on the numerical analysis model using Finite Difference Method (FDM). In addition, the impact force of the debris flow influencing the debris barrier is applied by governing equation satisfying the conservation law of mass conservation and conservation of momentum considering the continuity of the fluid. The results of this model indicate that the peak impact force of debris flow was captured at the section of 0-5 sec and 15-20 sec. This means that by the increasing the water supply, the velocity of debris flow became faster, and by the faster velocity of debris flow, the consolidation between the particle of the water and the sediment made energy increased. Therefore, it is necessary to investigate the impulsive force of the debris barrier at each position when a plurality of the debris barrier is continuously installed in the mountain area. The results of this study will provide useful information for predicting the impulsive force of structures located in slope for the debris flow control and setting the proper position of the debris barrier.

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