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The Storage Process for Landslides inner Slope During Rainfall

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In general, there are two main triggering reasons of landslides, one is earthquake and the other is rainfall. And during rainfall, the storage change inner the slope is very difficult to measure. It depends on the soil and geomorphology features not to mention the storage change on the whole watershed. Therefore in this study, we will focus on the storage process of rainfall-induced landslides.
The storage process means the rainfall infiltrating into slopes, and its volume change of the water inner the slopes during every rainfall event. In this study, Yamada model would be used to calculate this process. This model combines the tank model and storage model to evaluate the rainfall-storage-runoff process for a watershed by using the rainfall and discharge data. This model will be used to estimate the possible storage change during rainfall and the most important is the observation data of the rainfall and discharge. The rainfall data means the input data and the discharge is the output data. It means that according to the input and output, the change of the storage volume could be estimated.
Yamada model first used the kinematic wave model to conduct the relation of rainfall-runoff equation, and then the middle process of the rainfall-runoff can be inverse-estimated. However the parameters of the soil layers are very difficult to measure and decide for whole watershed. Therefore in this paper, Gauss-Newton method has used to estimate the possible parameters by input-rainfall and output-discharge data. And finally the storage process inner the slope during rainfall can be evaluated. And the estimation model for the process with time and region characteristics of watersheds also can be defined by using Yamada model. And in the future, the results of this storage process can apply to the analysis of slope stability and furthermore the early warning application.