

Self-potential variation in the rainfall-induced landslide flume test with two-layered sands

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Recently, rainfall-induced landslides occur frequently with increase of heavy rain. In order to mitigate landslide disasters, understanding of the landslide process and developing of early warning system are important. In this study, self-potential (SP) approach has been attempted to develop an early warning system for rainfall-induced landslides. Self-potential approach is a passive method to measure potential difference under the ground by using the electrodes set under the ground. And, this approach is low cost and easy to set up.

To understand the relation between self-potential changes and landslide, laboratory experiments have been performed. The main results are as follows;

- (1)Expansion of saturated area is corresponding to that of the low potential area.
- (2)The water flow directions changes from vertical to parallel to the slope.
- (3)The trend of self-potential variations in saturated areas is explained by hydraulic gradient, theoretically.
- (4)The transient changes of self-potential variation appear below sliding segment a few ten minutes before the main collapsed, when the apparent sand displacement starts.

In the previous laboratory experiments, we had used the uniform soil layer. However, a practical field has a complex and multiple layered sands. Therefore, in this study, we tried to the laboratory experiment with two soil layers.

The details will be provided in the presentation.