

## Detection of the changes in elastic wave characteristics in the model slope before and during shallow landslides

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In order to reduce the damages due to shallow landslides, it is effective to construct an early warning system. We pay attention to the use of elastic waves which was used for the rock behavior before the main rupture (Yoshimitsu et al., 2009; Yoshimitsu and Kawakata, 2011). As a first step, we conducted a model test for propagation characteristics of elastic waves before and during shallow landslides.

Landslides occurred 4, 23, and 26 minutes after the initiation of the experiments. The travel times of the elastic waves got larger at the starting time of precipitation and ten minutes before one landslide. These facts suggest that it is possible to monitor the moisture situation and the small deformation of the slope using elastic waves.