

# A Study on the Relationship between Arias Intensity and Earthquake-induced Slope Displacement

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Earthquake-induced landslides are damaging hazards. A way to mitigate landslide damage, having a better understanding of slope movements induced by earthquakes is pivotal. Various procedures have been developed to evaluate earthquake-induced slope stability. Lin et al. (2017) devised an enhanced FS method to evaluate stability of slopes based on Newmark displacement, assuming a rigid block model. Hung et al. (2017) analyzed an earthquake-induced landslide using finite element analysis. Notice that an energy-based analysis (Arias Intensity) has been recognized as a useful measure in earthquake-induced slope stability, the study utilized a series of seismic records and performed numerical experiments to study the relationship between Arias Intensity and earthquake-induced slope displacement. The displacements in the dynamic process were examined and the correlations of Arias Intensity and displacements of slopes, considering different angles of slopes ( $20^\circ$ ,  $30^\circ$ , and  $45^\circ$ ), are presented.

## REFERENCE

1. Lin GW, Hung C, and Syu HS (2017) Evaluation of an enhanced FS method for finding the initiation time of earthquake-induced landslides. *Bulletin of Engineering Geology and the Environment*. doi: 10.1007/s10064-017-1083-7.
2. Hung C, Lin GW, Syu HS, Chen CW, and Yen HY (2017) Analysis of the Aso-bridge landslide during the 2016 Kumamoto earthquakes in Japan. *Bulletin of Engineering Geology and the Environment*. doi: 10.1007/s10064-017-1103-7.

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