

## Summary of the earthquake-induced landslides of pyroclastic fall deposits for predicting the potential sites of future landslide

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Earthquake-induced landslides of pyroclastic fall deposits have occurred in many locations in Japan as well as in Indonesia and El Salvador. They were highly mobile and commonly occurred in large numbers in clusters, so that their potential sites must be predicted to get prepared for future landslides. Previous experience of those landslides tells us that most of their sliding surfaces were made in association of pumice fall deposits, pumice fall itself or soil beneath it. Other landslides of earthquake-induced landslides of pyroclastic fall deposits had their sliding surfaces in lapilli tuff, dark volcanic soil, or brown volcanic soil in contact with acid lava. All the beds that accommodated the sliding surfaces were rich in halloysite, which is a long-term weathering product of volcanic materials in the depths. The ages of those beds were from 9 ka to 84 ka with one exceptionally old one of 33 ka, suggesting a minimum age of halloysite formation. One basic cause of earthquake-landslides of pyroclastic fall deposits is slope-parallel bedding, which likely is lost in a long time, so I propose the age from 9 ka to 12 ka for the beds of potential sliding surface. Distributions of major pumice layers have been compiled in a map, which could be a starting point for the prediction of this type of landslides.

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