降下火砕物の地震時地すべりのハザードマッピング
Hazard mapping of earthquake-induced landslides of pyroclastic fall deposits

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Earthquake-induced landslides of pyroclastic fall deposits are special because they occur on gentle slopes and are highly mobile with long runout distance; even one landslide could have hundreds of fatalities when it occurs in a populated area. We have been examining such landslides induced by 6 earthquakes in Japan and one in Indonesia with field surveys, and here summarize their geological features to establish a methodology of their hazard mapping. Those landslides were induced by the 1923 Kanto earthquake, 1949 Imaichi earthquake, 1968 Tokachi-Oki earthquake, 1978 Izu-Oshima-Kinkai earthquake, 1984 Naganoken-Seibu earthquake, 2011 Tohoku earthquake, and 2009 Padang earthquake, Indonesia. These case histories strongly suggest that pumice deposits and a clay mineral, halloysite, are very susceptible to earthquake shaking. Stratigraphic horizons of sliding zones of previous earthquake-induced landslides of pyroclastic fall deposits are mostly specified for the cases we studied, so their distribution would be the first criteria for the hazard mapping of this type of landslide. Landslides of pyroclastic fall deposits have occurred repeatedly by earthquakes in a certain area until unstable beds are removed, so we need to consider the potential of earthquake-induced landslide is high in an area with buried pumice fall deposits at least where previous earthquakes induced such type of landslides. Another important factor of potential landslide sites is undercutting of pyroclastic fall deposits with mantle bedding. Undercutting could occur by natural erosion as well as artificial cutting, so its condition would change and make new unstable slopes against earthquake shaking.

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