

The relationship between source faults and distribution of landslide induced by inland earthquakes in Japan - a preliminary report

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In recent years, a series of strong inland earthquakes triggered a large number of landslides in Japan. These landslides caused serious damage to the focal areas and their surroundings. Clarifying the distribution and dimensions of landslides induced by inland earthquakes may provide basic information which helps us to grasp the landslide prone area around active faults. In this study, we investigated the relationship between the distance to the source faults and the characteristics of the distribution and dimensions of landslides induced by recent inland earthquakes in Japan.

We collected the information about landslides that were induced by recent earthquakes (Magnitude larger than 6.5, and intensity larger than 5+ in JMA scale) since the great earthquake of Kobe, in 1995 based on available literature. To clarify the relationship between landslide distribution and earthquake source fault, we analyzed the occurrence and distribution of the landslides in terms of the shortest distance from the projected line of earthquake source fault to the center of the landslide source area. We summarized the characteristics of landslides with regard to the types of faults (normal fault, reverse fault and strike-slip fault), and we concerned whether the landslides are on the hanging or footwall side in the cases of normal and reverse faults.

The results show that in the cases of reverse fault earthquakes, landslides are concentrated on the hanging wall side compared to footwall side cases. Sizes of landslides on the hanging wall side are comparatively large. In the case of strike-slip fault earthquakes, no clear difference was confirmed between the both sides of the earthquake source fault.

In summary, there are differences in the characteristics of the distribution and dimensions of landslides induced by dip-slip fault earthquake and those by strike-slip fault earthquake. We will discuss about the landslide susceptibility around active faults by specifying the concentration areas and the geological conditions of landslides induced by inland earthquakes in the further work.

Keywords: Inland earthquake, Landslide, Earthquake source fault