

Landslides induced by the Nov. 22, 2014 Nagano Prefecture Kamishiro Fault Earthquake, Japan - a primary report

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To outline the characteristics of landslides induced by the strong earthquake (M6.7) occurred in northern Nagano Prefecture on Nov. 22, 2014 (Hereafter Nagano Prefecture Kamishiro fault earthquake), we interpreted landslide using aerial photos that taken just after the earthquake and partly conducted field survey. The earthquake was considered to be occurred on the Kamishiro fault, that dipping to east and is the northern part of the Itoigawa-Shizuoka tectonic line (The headquarters for Earthquake Research Promotion, 2014). The vertical and oblique photos taken by Asia Air Survey Co., Ltd on Nov. 24, 2014 were used for interpretation.

In the study area, about 58km², a total of 104 landslides have been detected. Most of the landslides could be classified to shallow landslides. The most of the landslides occurred on terrace scarps, or around knick line of slopes. Meanwhile, many landslides occurred on slopes where previously occupied by old landslides.

In the study area, most of the landslides occurred within the distance of several km from the Kamishiro fault, in and around the Hakuba village and Otari village. However, landslides also have been confirmed in Nagano city where about 27 km distance from the source fault. In the study area, more than 70% of the landslides were located on the hanging wall of the source fault. This characteristic is coinciding with the features of landslides induced by reverse-fault earthquakes occurred in eastern Japan (e.g. Has et al., 2011). However, compare to the similar magnitude earthquakes, such as the Chuetsu earthquake in 2004 (Has et al., 2011) and Northern Nagano earthquake in 2011 (Has et al., 2012) occurred nearby the focal area of the Kamishiro fault earthquake, the number of landslides are much fewer and their dimension is much smaller. Future works are necessary for clarify these features how to related to the characteristics of strong motion, antecedent rainfall, topographical and geological conditions.

In this study, the interpretation of landslides was conducted in a very limited area, and also the field surveys were insufficient due to snow covering several days after the earthquake. For grapes the overall features of the landslides induced by the earthquake, detailed survey will be needed after snow melting.

Keywords: Earthquake, Landslide, Active fault, Nagano Prefecture