

Relationship between the housing damages on Horinouchi area, Hakuba Village, Nagano Prefecture by the 2014 North Nagano Earthquake and geomorphological and surface geological conditions

Miyu Tomita¹, *Mamoru Koarai¹

1. Earth Science course, College of Science, Ibaraki University

“The North Nagano Earthquake occurred in the Hakuba Village, in November, 2014. Serious housing damages by this earthquake were being concentrated at the Horinouchi area and the Mikkaichiba area, Hakuba Village, where it's about 5 km away from the epicenter in the south-southwest. There are several opinions about the reason that serious housing damage concentrated in these areas. One is the influence of the surface geological feature (Ota and Hoyanagi, 2015), and other is the influence of the angle and location of the fault (Nakano and Une, 2015). On the other hand, the factor about the degree difference in the damage in these areas does not become enough clearly.

In this research, the authors did the following investigation in Horinouchi area, such as landform classification by aerial photo interpretation, building damage survey using materials, a field survey of geomorphological and surface geological feature, a micro tremor observation and hearing survey about building age. And overlay analysis about the each results was done.

The damage of old housings at the west part of Horinouchi area was limited only small damage. This result shows the damage degree is not dependent on only the age of housing. A heavy damaged houses were concentrated near landslides, and its location is low AVS30 by micro tremor observation. It suggested a possibility that the heavy damaged housings were located on soft landslide deposit. On the other hand, the influential of faults is not clear in the degree difference of the housing damage by the 2014 North Nagano Earthquake, as the housing damage in the active fault neighborhood was not serious.

This research was supported by Dr. Shigeki Senna of the National Research Institute for Earth Science and Disaster Prevention about a micro tremor observation, and Ms. Hinako Suzuki of the National Research Institute for Earth Science and Disaster Prevention about field survey.

Keywords: the 2014 North Nagano Earthquake, Horinouchi Area, Hakuba Village, landslide, micro tremor observation, Kamishiro fault