Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

HDS027-P02 Room:Convention Hall Time:May 24 16:15-18:45

Topographic characteristics of mountain slope where landslide induced after 2008 Iwate-Miyagi Nairiku Earthquake

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Authors have reported that landslide induced newly by the rainfall during 3 months after the 2008 Iwate-Miyagi Nairiku Earthquake, and moreover that cracks induced by the earthquake existed around the new landslide. This report introduces about the topographic characteristics of mountain slope where landslide induced after the earthquake by comparing shaded-relief maps and 1 m-contour maps made from the LiDAR data at two times (immediately after the earthquake and passed the earthquake 3 months), and the result of the field survey, on Tsukinokidaira area of Ichinoseki city, Iwate prefecture.

The micro-topography before the landslides induced after the earthquake occurred was interpretated, by the shaded-relief maps and 1 m-contour maps made from the LiDAR data. As the results, the spots where the landslides occurred after the earthquake was the convex, semi-circular, or horseshoe-shaped low gradient slope area. Such micro-topography was interpretated on several slopes where the landslide had not been generated yet. From the field survey, the occurrence of the cracks was found on these slopes. Around one of these cracks, simple penetration test was carried out. As a result, a weak layer existed in the depth of 2 m from surface in the slope below the crack. Thus, it was guessed that the weak layer was formed with the occurrence of the crack at the earthquake and it had led to the landslide by the rainfall after the earthquake.

Keywords: landslide, crack, LiDAR, low gradient slope area, simple penetration test, Iwate-Miyagi Nairiku Earthquake