Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)
©2011. Japan Geoscience Union. All Rights Reserved.

HTT033-01 Room:202 Time:May 25 08:30-08:45

Shallow landslide assessment using two airborne laser scanner data measured before and after the rainstorm

Shoji Doshida[1*]

[1]NIED

Shallow landslides damage the human life and activity, because they occur in many numbers simultaneously even though each one is small by rainstorms and earthquakes. However, previous methodology for analyzing shallow landslides were not effective for investigating a wide area with high resolution. Airborne laser scanner data are revolutionary for analyzing shallow landslides, but the data are obtained after the disaster usually.

I analyzed the topography of the shallow landslide in Hofu area, Yamaguchi prefecture where rainstorm occured in 21th, July, 2009 used by airborne laser scanner data taken from Yamaguchi River and National highway office. The airborne laser data were obtained two times, one time is at 2005 before the rainstorm and the other time is at 2009 after the rainstorm. It is understood that the Hofu area is composed of granite, and most of the landslides are shallow landslide by the ground truthing and analyzing the airborne laser scanner data.

First, I paid attention to flow accumulation for assessment of shallow landslide. I calculated the flow accumulation from the airborne laser scanner data before the rainstorm, and the flow accumulation were compared with shallow landslide distribution. I can watch that most of the landslide had been generated near the area that flow accumulation is more than 1000 cells (1000 m2). This shows that the flow accumulation is very a critical factor of shallow landslide assessment by rainstorm.

Next, I calculated the difference of both airborne laser scanner data, and the difference shows the moving soil at the 2009 event. I assume that the moving soil around the shallow landslide is the weathering thickness in this area. I estimated the weathering thickness in wide area by analyzing the spatial relationship between the weathering thickness and various geomorphologic features.

Finally, the assessment of shallow landslide caused by spatial analysis between flow accumulation, weathering thickness, slope and shallow landslide distribution was constructed.

Keywords: shallow landslide, airborne laser scanner, flow accumulation, weathering thickness