

Relationship between weathering thickness and shallow landslide in granite area

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Landslides and debris flows were induced by a rainstorm in 21th, July, 2009 in Houfu city, Yamaguchi prefecture. Such landslides and debris flows play an important role in human activity and slope development, because they occur in many numbers simultaneously. However, previous methodology for analyzing landslides mostly depended on aerial photograph interpretation and were not very effective for investigating a wide area with high resolution.

I analyzed the topography of the landslide and debris flow in Ken-river area, Houfu city, Yamaguchi prefecture using airborne laser scanner data taken from Yamaguchi River and National highway office. It is understood that most of the landslides are shallow landslide by ground truth assessment and by analyzing the airborne laser scanner data. The airborne laser data were obtained from two different measurements, in 2005 before the rainstorm and in 2009 after the rainstorm. 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 weathering thickness was constructed by spatial analysis between shallow landslide distribution and weathering thickness.

Keywords: airborne laser scanner, shallow landslide, weathering, granite