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Characteristics of debris flow and slope failure on granite slope caused by heavy rainfall on July 2009 in Hofu city

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Many debris flows and slope failures induced by heavy rainfall on July 2009, causing considerable damages to the habitants of Hofu and Yamaguchi cities. The disasters concentrated in the area underlain by granite rocks. The morphometric analysis shows that the many debris flows run down to the outside of the drainage basin in the basins with large drainage area. The field surveys show that many slip scars of surface slope failure (soil slip) were formed at the source area of most debris flows, indicating that the slope failure changes into the debris flow. The debris flow runs down with catching up channel deposits. The surveys on and near the slip scar reveal that the surface soil layer, i.e. failure materials, is composed mainly of grus and has thin thickness, and a slightly weathered bedrock underlies just below the layer. In addition, sometimes soil pipes are formed between the surface soil layer and the slightly weathered bedrock. These results indicate that the slope failure should have easily occurred on these slopes because the subsurface water concentrates in the surface soil layer.

Keywords: granite, slope failure, debris flow, drainage area