

Analysis of causal factors of landslides during 2017 northern Kyusyu torrential rainfall disaster by using decision tree

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Causal factors of landslides induced by torrential rainfall in July 2017 in Kyushu Island were analyzed by decision tree. The landslides were mapped from orthophotos produced by GSI and overlay analysis with radar-AMeDAS rainfall data, slope, geology tree age and vegetation were conducted by using the decision tree classifier of the Scikit-learn Python module. Landslide map was defined by existence or non-existence of landslide in each 200m size grid and overlain by geological map by AIST, slope map from 10m DEM by GSI and digital forest map by Fukuoka Prefecture. The distribution of landslides was principally controlled by rainfall distribution. Slope was the secondary factor on landslide susceptibility and threshold slope decreased with rainfall intensity. Geology was the third factor. granite area was rather vulnerable comparing with metamorphic rocks and Tertiary volcanic rocks. Effect of tree age was evident in where 12hr rainfall was less than 500mm. On the other hand, effect of tree species seemed to be minor factor comparing with other factors.

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