



Characteristics and rainfall threshold of deep-seated landslide in Taiwan

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Deep-seated landslide (also called catastrophic landslide or large scale landslide) is one of the most serious nature disasters in the world. This kind of landslide is always induced by heavy rainfall (e.g. typhoon Morakot) or strong earthquake (e.g. Chi-Chi earthquake) in Taiwan. Due to the fact that it might cause tremendous property damage and casualties, the characteristics of deep-seated landslide should be discussed in more detail. In this study, 51 rainfall-induced deep-seated landslide cases were used to analyze the geological and geomorphological features like lithology, angle between dip direction and aspect, distance to fault/fold, daylight or not, angle of slope and so on. Besides, by analyzing 51 deep-seated landslides and 949 shallow landslides, this research found that the rainfall threshold for deep-seated landslide was much higher than that for shallow landslides, with best-fit lines (i.e. 50% threshold) were $I=164.45D^{-0.577}$ and $I=33.295D^{-0.268}$ separately. These results were essential for establishing the relationship between rainfall and geological/geomorphological features of rainfall-induced deep-seated landslide.