Desk-based survey method for slope hazard investigation using 3D point cloud data

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In Japan,continuous rainfall and torrential rains during the rainy season and typhoons cause a high number of slope hazards every year.Currently, hazardous areas are identified using contour maps and basic forest maps to select field survey points for road disaster prevention inspections. However, it is difficult to accurately represent the ground surface, and in particular, the sources of rockfall are often overlooked or missed. The problem is that the ground surface cannot be accurately represented and, in particular, the sources of rockfall are often overlooked or missed.Therefore, aerial laser survey data (hereinafter referred to as LP) is also used as a method to accurately represent terrain. However, it is difficult to say to what extent hazardous areas can be quantitatively represented. The data is used as a method to represent the terrain with high accuracy, but it is difficult to say how far the hazardous areas can be quantitatively represented.In recent years, attempts have been made to represent landforms in detail by combining various surfaces created from LP data. The use of microtopography enhanced maps has been increasing, with emphasis on steep cliffs to prevent rockfalls. However, few studies have quantitatively investigated the effectiveness of this method of microtopographic highlighting.This study reports the results of a validation of the use of microtopographic highlighting maps to compare desktop and field investigations of rockfall sources.

Keywords: Slopes, rockfalls, aeronautical laser measurements, in-flight surveys, microtopographic maps