

## Quick analysis method for estimating debris flow prone area caused by rainfall in the volcanically disturbed watersheds

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A volcanic eruption disturbs watersheds and, if it is large enough, results in a drastic increase in the number of lahars, such as cases observed in the rivers around Sakurajima Volcano which continuously erupts and provides tephra deposit around the mountain edifice. It is known that tephra thickness is positively correlated to the risk of lahar occurrence. Therefore, it is necessary to know the distribution of tephra thickness to evaluate level of lahar risk and to show debris flow prone area at the time of rainfall.

The authors recently developed the quick analysis method to estimate debris flow disaster prone area caused by rainfall in the volcanically disturbed watersheds. This method is designed with a concept of "Most quickly as far as certain level of accuracy is ensured". In general, the 2D numerical simulation of debris flow requires a lot of parameters, so that the authors reduced the number of indispensable parameters from the point of view of sensitivity to the simulation result and the feasibility of information acquisition. Furthermore, the authors composed a simplified numerical simulation system called QUAD-V (QUick Analysis system for Debris flow caused by Volcanic eruption). Our quick analysis system was actually applied to show the area for evacuation against debris flow caused by volcanic eruption at the time of the 2011 Eruption of Kirishima Volcano. It succeeded in providing 35 hazard maps for debris flow within one week.