

The infiltration model in Miyakejima new fine tephra deposited slope

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It is known that new fine tephra mantle lowers an infiltration capacity of the slope and results in more surface runoff generation at the time of a rainstorm. It also causes frequent mudflow occurrences.

Understanding the mechanisms of the surface runoff generation at a fine tephra mantled slope after the eruption of a volcano greatly helps taking measures against mudflow disasters in the volcanic area.

On the tephra-mantled slope in the Miyakejima volcano, which erupted in 2000, hydrological measurements have been conducting since 2002. In this study, the surface runoff generation model is proposed, which consists of the calculation of one-dimensional unsaturated flow depending on the real characteristics of soil water content and the surface runoff calculation by a simple kinematic wave method.

The result of the calculation mimics the real surface runoff measured on site and shows the applicability of the proposed calculation method to the surface runoff phenomena at the fine-tephra-mantled slope.