

RESEARCH ON THE DECLINE OF PERMEABILITY OF VOLCANIC ASH AND THE IMPACT OF THE DEPOSITION THICKNESS ON SEDIMENT RUNOFF

Abstract : For the purpose of developing prediction method of long-term and short-term sediment discharge from the volcanically disturbed watersheds through clarifying the relationship between the thickness of the newly-deposited volcanic ash and sediment discharge caused by the post-eruption rain storms, the Volcano and Debris Flow research Team has conducted research activities since F.Y. 2006. As a result, the following results have been obtained.

- 1) The authors made revision of the existing model which is capable of calculating water-sediment discharge for the volcanically-disturbed watersheds and checked its reproducibility through comparing the calculation results with the sediment discharge data obtained in the Miyakejima Island.
- 2) Gully erosion volume was quantitatively estimated in the upper reach of watersheds of the Miyakejima Island where a large amount of ash fell in 2000 and the post-eruption sediment discharge caused lots of damages. The authors figured out time-dependent development characteristics of gullies in the Miyakejima Island and indicated that geographical conditions and erosion control properties of ground had significantly affected the gully formation characteristics and post-eruption sediment discharge.
- 3) The automatic tephra gauge has been developed and actually applied to the field site in the Sakurajima volcano.
- 4) The simple method to estimate tephra-isopachs from limited number of measurements of tephra thickness has been developed and tested in the case of the actual volcanic eruption of the Sakurajima volcano
- 5) The integrated method to assess the risk posed by post-eruption debris flows was proposed to enable work offices of MLIT to optimize its decision to conduct emergency works after the volcanic eruption.

Key words : volcanic ash, erosion, Sakurajima volcano, automatic tephra gauge