



Lahar simulation Using Laharz_py Program at Mt. Halla Volcano, Jeju, Korea: implications for hazard assessment

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Lahars are a catastrophic event that have the potential to cause the loss of life and damage to infrastructure over inhabited areas. This study using Laharz_py program, was performed schematic prediction on the impact area of lahar hazards at the Mt. Halla volcano, Jeju island, Korea. In order to comprehensively address the impact of lahar for the Mt. Halla, two distinct parameters, H/L the ratio of vertical drop (H) to horizontal runout distance (L), and lahar volume, were selected to influence variable for Laharz_py simulation. It was carried out on the basis of numerical simulation by estimating a possible lahar volumes of 30,000, 50,000, 70,000, 100,000, 300,000, 500,000 m³ according to H/L ratios (0.20, 0.22 and 0.25) was applied. Based on the numerical simulations, the area of the proximal hazard zone boundary is gradually decreased with increasing H/L ratio. The number of streams which affected by lahar tended to decrease with increasing H/L ratio. In the case of H/L ratio 0.20, three streams (Gwangryeong stream, Dogeun stream, Han stream) in the Jeju-si area and six streams (Gungsan stream, Hogeun stream, Seohong stream, Donghong stream, Bomok stream, Yeong stream-Hyodon stream) in the Seogwipo-si area are affected. In the case of H/L ratio 0.22, two streams (Gwangryeong stream and Han stream) in the Jeju-si area and five streams (Gungsan stream, Seohong stream, Donghong stream, Bomok stream, Yeong stream-Hyodon stream) in the Seogwipo-si area are affected. And in the case of H/L ratio 0.25, two streams (Gwangryeong stream and Han stream) in the Jeju-si area and one stream (Yeong stream-Hyodon stream) in the Seogwipo-si area are affected. The results of this study will be used as basic data to create a risk map for the direct damage that can be caused due to volcanic hazards arising from Mt. Halla. This research was supported by a grant [MOIS-DP-2015-071] through the Disaster and Safety Management Institute funded by Ministry of the Interior and Safety of Korean government.