Use of SRTM data for the simulation of lava flows paths at Nyiragongo, DRC

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The January 17th, 2002 fissure eruption of Mount Nyiragongo, DRC, produced lava flows which entered and devastated the densely inhabited town of Goma. We present an analysis of the susceptibility to lava flow invasion by means of SRTM data as topographic basis for the simulations of lava flow paths with the DOWNFLOW code. The aim of the simulations is that of evaluating possible future scenarios. Comparison between simulation results and 2002 lava flows is employed to validate the code. A large number of simulations was done to investigate the capability of lava flows originating from different possible vents to invade the two towns of Goma (DRC) and Gisenyi (Rwanda). The town of Gisenyi can be invaded only in case of very long lava flows coming from vents in the NE area of the Nyiragongo cone. Vents in the Southern flank of the volcano show that the two main lava streams which entered Goma in 2002 followed the highest susceptibility paths in town. The morphological features of the volcanic cone North of Goma substantially decrease the extent of areas in town with high susceptibility to flow invasion. Areas where opening of new vents can produce lava flows with the capability to reach specific relevant sites in towns are identified and mapped.