



Influence of topography on lava flow quantification from satellite thermal data

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Satellite images are an accessible data source for monitoring the heat emission from lava flows during effusive eruptions. Their evaluation regarding the size of a flow and volcanic radiant power (VRP) assists the hazard assessment. VRP is a most important parameter for estimation of lava discharge rate. Thus it is important to correct its value for all possible systematic influences. As several volcanoes have steep slopes, we propose a simple topographic correction of VRP observations. It is based on the corrected size of a pixel area. The proposed correction was first tested in a laboratory experiment, where we simulated a volcanic feature by an electrical heating alloy of 0.5 mm diameter installed on a plywood panel. Two thermographic cameras record images of the artificial heat source in wavebands comparable to those available from satellite data. The influence of the slope was in the laboratory setup reduced by a factor of five. The correction algorithm has been applied also to MODIS data of Etna's 2008-2009 eruption. The time series of corrected results contain significantly less noise than the original data.