



SRTM systematic study of the morphology of flow-dominated volcanoes: defining, quantifying and understanding end-member volcanoes

I. Belien, M. Kervyn, M.-A. del Marmol, G. Ernst

Mercator & Ortelius Research Center for Eruption Dynamics, Geological Institute, University of Ghent, Belgium

The shape, size and vent distribution of volcanoes have not been systematically investigated despite the fact that much information about the typical character, specific circumstances and evolution of a given volcano is contained in their time- and space-integrated morphology. The end-member shapes of volcanoes and their significance in terms of processes have not been systematically documented or investigated. SRTM 30m and 90m resolution DEM data are now available for the USA and for the rest of the world respectively, enabling systematic and detailed studies of volcano size, geometry and distribution. The size and morphology of a number of “end-member” volcanoes are quantified, focusing first on flow-dominated volcanoes: eg. single and multiple event caldera volcanoes where the volcano morphology is controlled by ignimbrite lag-breccia (near-vent) and outflow deposits (further away), gentle and steeply-dipping shields dominated by pahoehoe, aa or block lava are identified. Controls on the slope profiles of diverse volcanoes and implications for hazard assessment are discussed.