

Spence, R., I. Kelman, E. Calogero, G. Toyos, P.J. Baxter, and J.-C. Komorowski. 2005. "Modelling expected physical impacts and human casualties from explosive volcanic eruptions", Natural Hazards and Earth Systems Sciences, vol. 5, pp. 1003-1015.

Paper abstract:

A multi-hazard, multi-vulnerability impact model has been developed for application to European volcanoes that could significantly damage human settlements. This impact model is based on volcanological analyses of the potential hazards and hazard intensities coupled with engineering analyses of the vulnerability to these hazards of residential buildings in four European locations threatened by explosive volcanic eruptions. For a given case study site, inputs to the model are population data, building characteristics, volcano scenarios as a series of hazard intensities, and scenarios such as the time of eruption or the percentage of the population which has been evacuated. Outputs are the rates of fatalities, seriously injured casualties, and destroyed buildings for a given scenario. These results are displayed in a GIS, thereby presenting risk maps which are easy to use for presenting to public officials, the media, and the public. Technical limitations of the model are discussed and future planned developments are considered. This work contributes to the EU-funded project EXPLORIS (Explosive Eruption Risk and Decision Support for EU Populations Threatened by Volcanoes, EVR1-2001-00047).