



Integrated study to define the hazard of the unstable flanks of Mt. Etna: the Italian DPC-INGV FLANK Project

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Volcanoes are often characterized by unstable flanks. The eastern and south-eastern flanks of Mt. Etna (Italy) have shown repeated evidence of instability in the recent past. The extent and frequency of these processes varies widely, from nearly continuous creep-like movements of specific portions of the flank to the rarer slip of the entire eastern sector, involving also the off-shore portion. Estimated slip rates may vary enormously, from mm/yr to m/week. The most dramatic instability events are associated with major eruptions and shallow seismic activity, as during 2002-2003, posing a serious hazard to the inhabited flanks of the volcano.

The Italian Department of Civil Defense (DPC), with the National Institute of Geophysics and Volcanology (INGV), as well as with the involvement of Italian Universities and other Research Institutes, has launched a 2-years project (may 2008-may 2010) devoted to minimize the hazard deriving from the instability of the Etna flanks. This multidisciplinary project embraces geological, geophysical, volcanological, modeling and hazard studies, both on the on-shore and the off-shore portions of the E and SE flanks of the volcano. Indeed, the main aims are to define: (a) the 3D geometry of the collapsing sector(s); (b) the relationships between flank movement and volcanic and seismic activity; (c) the hazard related to the flank instability. The collected data populate a GIS database implemented according the WoVo rules.

This project represents the first attempt, at least in Europe, to use an integrated approach to minimize the hazard deriving from flank instability in a volcano.

Here we briefly summarize the state of the art of the project at an advanced stage, highlighting the path of the different Tasks, as well as the main results.