



Integrated study to define the hazard of the instable flanks of Etna: the DPC-INGV 2008-2009 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 just launched a 2-years project devoted to minimize the hazard deriving from the instability of the Etna flanks. This multidisciplinary project, whose onset is scheduled for April 2008, will involve 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. The main aims of the project are in fact 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. All the collected data will be inserted into a GIS database, to be promptly available to the DPC. Advanced numerical and analogical modeling will be performed with the aim to define the principal elements which originate the flank dynamic of Mt. Etna and improve the monitoring system of this volcano. 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.