Natural disasters and emergency strategies: an overview on major Etna flank eruptions

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During the last 400 years of activity Mount Etna has produced a number of lava flow flank eruptions, that widely propagated along its slopes modifying the landscape and threatening inhabited areas. By analyzing historical mapping datasets into a GIS environment, a reconstruction of the space-time evolution of three major events, occurred in 1928, 1981 and 2001. This reconstruction were used to evaluate the cumulated volumes and to estimate time averaged discharge rate trend. The analysis was carried out by comparing pre and post eruption topography surface, extracted by processing photogrammetric data and by analyzing the eruption chronology necessary to establish the lava flow front positions at different times. The reconstruction of past hazardous flank eruptions represents an useful contribution both to reduce the impact of future destructive episodes and to foresee actions to be taken for protecting sensitive areas. Mitigation actions against lava flow invasion by means of containment barriers were considered in order to understand the effort required for their construction and the expected performances.

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