

Title: Probabilistic volcanic hazard analysis (PVHA)

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Research program

Volcanic eruptions are a major threat for society with the capability to impact at global scale. The short- and long-term probabilistic volcanic hazard analysis (PVHA) is the scientific contribution to establish sound risk reduction strategies. The research program under development at the Department of Earth, Environmental, and Resources Sciences at the University of Naples, Federico II, is primarily focused on developing innovative procedures for PVHA. This requires multidisciplinary competences, such as the knowledge of pre-eruptive processes, the physical and stochastic modelling of hazardous processes, and the probabilistic calculation. The ultimate purpose is to integrate the current volcanological knowledge and the uncertainties of different kind to build scientific models which may assist decision makers in reducing the volcanic risk.

Proposal for a PhD position

The Department of Earth, Environmental, and Resources Sciences at the University of Naples, Federico II, invites applications for one PhD position in Earth Sciences. The potential research is related to the improvement and application of the Bayesian Event Tree (BET) to evaluate the short- and long-term volcanic hazard assessment in real volcanoes. In particular, the research aims at exploring new procedures to improve the quantification of the epistemic uncertainty and the propagation of uncertainties across the different nodes of the event tree. The procedure has to be applied to one or more Italian volcanoes or other dangerous volcanoes in other countries.

The candidate is expected to have and to develop a good skill in volcanology, software programming, and statistics.