



## **First volcanological-probabilistic fallout hazard maps for Campi Flegrei and Somma Vesuvius volcanoes.**

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Integrated volcanological-probabilistic approaches has been used in order to simulate deposition from fallout event and produce fallout hazard maps for Campi Flegrei and Somma Vesuvius areas. On the basis of the analyses of all types of fallout events occurred in the volcanological history of the two volcanic areas and the evaluation of probability for each type of events, a matrix of input parameters for a fallout numerical simulation program has been performed. The multi-dimensional input matrix includes the main controlling parameters of the pyroclasts dispersion (wind profile, column dimensions, pyroclastic size distribution) as well as the set of possible eruptive vents used in the simulation program which is based on an analytical two-dimensional diffusive model for tephra transport and deposition. Results indicate that in the case of substained column eruption, both at Campi Flegrei and Vesuvius, major fallout hazard is expected in the sector east of the volcanic area (from NNE to SSE). For plinian eruption, maximum average deposit thickness exceeding one meter are expected within ca 10 km from the volcano. While loads higher than the critical load for roof collapse of 200 kg/m<sup>2</sup> is expected within a range of ca 20 km from the volcano. Minor hazard value for tephra fallout have been evidenced for areas west of volcanic areas mostly in the case of moderate magnitude eruptions.