



## The effect of Etna volcanic ash plumes on the Maltese Islands

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Research was carried out to gather information about Etna's eruptions which involved the Maltese Islands, starting with historical eruptions dating back to the 14th century to more recent ones. A statistical approach was utilized to provide tephra deposit load and ash concentration using PUFF – a model which simulates the transport, dispersion and sedimentation of volcanic ash. Three different eruptive scenarios that characterize Etna's recent activity were considered; the first scenario representing the 2001 eruption (S1), the second scenario representing the July 1998 eruption (S2) whilst the third scenario represents the recent activity in 2011-2012 (S3). We found that the time taken for the volcanic ash plume to reach the Maltese Islands when the wind direction is toward the south-west ranges from 4 to 8 hours. The effect of wind speed and direction was also studied and it emerged that the probability that an Etna volcanic plume reaches Malta during an eruption is around 13% per annum. The now calibrated model, which will daily produce deposit load and cumulative area of volcanic ash dispersal, will thus allow provision of adequate alerts to civil aviation authorities and Malta airport. This will be of direct use to local communities and aviation.