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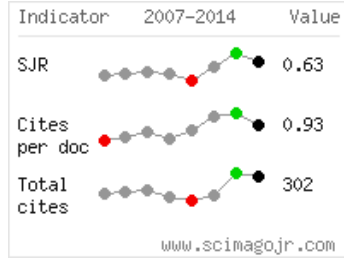
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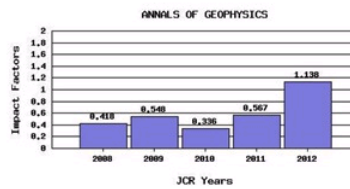
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Seismology, Volcanology, Geodesy and Geochemistry

Eruption column height estimation of the 2011-2013 Etna lava fountains

Simona Scollo, Michele Prestifilippo, Emilio Pecora, Stefano Corradini, Luca Merucci, Gaetano Spata, Mauro Coltelli

Abstract

In this paper, we use calibrated images collected by the video-surveillance system of the Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, to retrieve the height of the eruption column during the recent Etna explosive activity. The analysis is carried out on nineteen lava fountains from the New South East Crater dataset. The novel procedure described in this work is achieved in three main steps: at first we calibrated the camera, then we selected the images which recorded the maximum phase of the eruptive activity, and finally we applied an appropriate correction to account for the plume projection on the camera line of sight due to the wind. The results show that the column altitudes range between 6 and 9 km (upper limit of the camera system). The comparison with the plume height values estimated from the analysis of several SEVIRI and MODIS satellite images, show a good agreement. Finally, for nine events we also evaluated the thickness of the volcanic plumes in the umbrella region which ranges between 2 and 3 km.

Keywords

Eruption column height; Video-surveillance cameras; SEVIRI and MODIS satellites

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- DOI: [10.4401/ag-6396](https://doi.org/10.4401/ag-6396)



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Published by INGV, Istituto Nazionale di Geofisica e Vulcanologia -

ISSN: 2037-416X