

Interactive comment on “

Characterization of a volcanic ash episode in southern Finland caused by the Grimsvötn eruption in Iceland in May 2011” by V.-M. Kerminen et al.

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Referee comment:

This paper presents the aerosol characterization during a volcanic ash episode in southern Finland caused by the Grimsvötn eruption in Iceland on May 2011. The authors assess the physical and chemical properties of volcanic aerosol particles after

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being entrained into the surface air as well as how these particles could be separated from other natural and anthropogenic aerosol particles present in the air masses measured. In addition, the authors discuss the compatibility of their observations both with satellite measurements and dispersion model simulations. Even if the methodology used in this study is well assessed, the information presented is very important for the scientific community that carries out research studies on the characterization and dispersion of volcanic ash. Moreover, the assumptions and results are clearly presented and overall the paper is well organized and written. In my opinion, it can be published in ACP journal. I have only a few minor comments:

Our answer: We thank the referee for his/her positive comments. Our response to each of these comments are given below:

Comment: Page 24936, line16: Please provide the acronym of SMEAR.

Reply: We spelled out SMEAR in the text (Station for Measuring Ecosystem–Atmosphere Relationships)

Comment: Page 24941, lines14-15: Please provide more detailed information on the backtrajectory calculation (e.g., arrival time, arrival levels, how long have the backtrajectories been extended?).

Reply: We added the following sentence to the text: “Trajectories were calculated for 72 hours backward in time at three arrival heights (0, 500 and 3000 m a.s.l) and arrival times of 00:00 UTC each day.”

Comment: Page 24942, lines 15-16: The authors write “The PM1 mass concentration did not show any noticeable increase during the episode”. Why? Could the authors give an explanation of what they have found?

Reply: We modified the end of the first paragraph in section 3.1 into the following form: “The great majority of the elevated particle mass concentrations could be explained by coarse particles (particle aerodynamic diameter between 2.5 and 10 μm),

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since the PM_{2.5} mass concentrations remained mainly below 20 $\mu\text{g m}^{-3}$ and PM₁ mass concentrations did not show any noticeable increases during the episode". The reasons/implications of this finding are returned to several times later in the manuscript

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