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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Multi-wavelength Raman lidar observations of the Eyjafjallajökull volcanic cloud over Potenza, Southern Italy" *by* L. Mona et al.

Anonymous Referee #2

Received and published: 29 August 2011

This is an interesting paper about the observations of volcanic ash made after the eruption of the Eyjafjallajokull. Also, a method is described how to present the data such that the evolution of the plume over one location can be followed by the creation of masks.

A comment by another reviewer on the discussion paper is already published on the web, which I have read. I agree fully with the comments made by this reviewer.

There are a few additional comments that I should like to make, which may sometimes overlap (partially) with the comments already published.

General comments

The text should be shortened by removing parts that provide unnecessary details. I particular:

- pp 12768. The description of MUSA is superfluous, as no data is used. Probably the system should not be mentioned at all, as it is irrelevant to the content of the paper.

- Pp 12775. Sec 3.3. Aerosol typing. In my opinion the lengthy description on pp 12776-12779 are actually not part of the methodology, but belong to the results section. Also, the text is too extensive, so I should suggest shortening it, by concentrating on the methodology, without goining too much in detail about specific cases. Move actual results to the next section.

- Pp 12785. Sec 4.2 I find the statement that the particle linear depolarization ratio decreases with increasing relative humidity counterintuitive. Unfortunately, I do not have a copy of the paper by Sakai et al.. My reasoning would be that humidity would tend to smoothen irregularly shaped particles, thereby achieving the opposite: lower depol with higher humidity. This is also mentioned in the abstract.

Figures should be changed for proper readability. In particular:

- Fig 3. Trajectory plots are too small to read the height scale.

- Fig 4. Trajectory plots are too small to read the height scale.

- Fig 6. Legend is not readable

- Fig 7. Annotation of axes for subfigures not readable. Legend too small.

- Fig 8. All panes are too small.

Comments to the text

The text needs a fair bit of editing and error corrections. Below is a list of examples.

- pp 12764 - line 5. The statement "both of the multi-wavelength Raman lidar measurements and EARLINET measurements performed" is unclear. EARLINET promotes the

ACPD

11, C8293–C8295, 2011

Raman measurements. Therefore I assume the contrast between Raman and elastic measurements is meant?

- Pp 12765 - line 1. Replace "a small Iceland"s ice cap" by "a small volcano under Iceland"s ice cap"

- Pp 12765 - line 8. Replace "airspace" by "airspaces"

- Pp 12765 - line 12. Replace "has been" by "has"

- Pp 12765 - line 15. Replace "have been" by "were"

- Pp 12765 - line 15. Replace "accordingly" by "according"

- Pp 12770 - line 3. Replace "warm colors" by "yellow, orange and red"

- Pp 12770 - line 9. Replace "This kind of typing algorithms is highly performing for the providing of typically reliable results in near-real time" by "This kind of typing algorithms aim to provide reliable results in near-real time"

- Pp 12770 - line 14. Replace "On the contrary" by "In contrast"

- Pp 12771 - line 16. Replace "atmosphere" by "atmospheric"

- Pp 12771 - line 18. Replace "May morning" by "May in the morning"

- Pp 12771 - line 24. Replace "feeble" by "tenuous"

- Pp 12771 - line 25. Replace "falling down" by "descending"

- Pp 12771 - line 26. Replace "intense" by "dense"

- Pp 12772 - line 16. What do you mean by "ill-posed"? Presumably, ambiguous results are expected, however, this is not the same as what is usually meant in mathematical terms.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 12763, 2011.