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**Biogeosciences Discussions**

# *Interactive comment on* "Monitoring presence and streaming patterns of Icelandic volcanic ash during its arrival to Slovenia" *by* F. Gao et al.

**F. Gao et al.**

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The authors wish to thank the reviewer for valuable comments and suggestions, which were very helpful for improving the manuscript.

Comment 1: What is "a.s.l." in Line 10 of Page 3864?

Response: The "a.s.l." stands for "above sea level". We have accordingly modified the manuscript at the referred line and elsewhere in the text.

Comment 2: Figure14: The conclusion "The correlation between c and $\alpha$ was found to be linear, c = (2870 $\pm$13)$\alpha$, with a correlation coefficient of 0.51 (right)" is very weak. I would suggest that the authors to make further analysis in order to draw some reasonable conclusions.



Response: Mass concentration is a better quantitative indicator of the presence of ash particles in the atmosphere compared to atmospheric optical properties (such as backscatter or extinction coefficient). From the lidar measurement, we can only obtain optical properties of the ash particles, while the airborne measurement can provide the information on mass concentration. As lidar and airborne measurements were performed at the same time, we made the correlation between them as they both describe the presence of volcanic ash and visually show the same trend with the altitude (Fig. 14 in the manuscript, left). The correlation coefficient of 0.51 shows the two data sets are correlated (Wilks, 1995), but is a bit weak due to the fact that measurements were performed at different locations (around 40 km apart) and influenced by the flow of the air masses.

Reference:

Wilks, D. S.: Statistical Methods in the Atmospheric Sciences, Academic Press, Burlington, MA01803, USA, 1995.

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