

Interactive comment on “Seasonal variations in aerosol particle composition at the puy-de-Dôme research station” by E. J. Freney et al.

Anonymous Referee #1

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This paper analyses the seasonal variation of aerosol chemical composition at an elevated site in central Europe. The focus of the analysis is on organic compounds, their ageing, and their relation to major inorganic compounds in different types of air masses and at different seasons. The analysis is scientifically sound and sufficiently original to be published in Atmospheric Chemistry and Physics. I have a few, mostly minor, suggestions for improvements.

The authors should mention in the text why they did not have any measurements from the spring season. Having springtime data would have completed the analysis in a nice way.

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Throughout the paper, statistical relations between different variable are described in a very loose way. It is incorrect to state that two variables correlate “to some extent” or “reasonably”. In some places of the text, it is written that a variable correlates with another one. Sure, even a non-existent correlation is a correlation. Finally, the authors have not reported whether observed correlations are statistically significant or not. The authors should check out the statistics and be more careful how they express the results of the statistical analysis.

Page 27143, line 13: Was the lower size limit of the SMPS really 50 nm? If yes, some reasoning for such a narrow size range measured by the SMPS should be given.

It seems strange that the AMS description (section 2.3.1) is a subsection of the description of lidar and temperature measurements (section 2.3), not a subsection of its own in section 2.

Page 27145: The authors mention that the procedure of calculating the AMS collection efficiency (CE) is similar to that in Middlebrook et al (2011). Do they mean that their procedure is exactly the same, or have they adopted some kind of modification to that introduced by Middlebrook et al.

Page 27148, line 23: What is meant by neutralized air masses? That the collected particle-phase was roughly neutral? Please be more specific.

Page 27149: The last sentence of section 3.1 is vague and does not properly describe the results of the analysis presented later on. I suggest that the authors remove this sentence away altogether.

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