Atmos. Chem. Phys. Discuss., 13, C3275–C3277, 2013
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Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "Observations of fluorescent and biological aerosol at a high-altitude site in Central France" *by* A. M. Gabey et al.

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Received and published: 7 June 2013

Congratulations for this challenging study which applies the hierarchical cluster analysis method on WIBS single-particle bioaerosol data collected at the Puy de Dome in France. The study also includes an interesting cluster time series which is suggested to be representative for bacteria by the authors. With this short comment I would like to point out some important facts which I believe should be discussed within the context of the manuscript.

3034, 24: The authors give important references in which ultra-violet light induced flu-

orescence (UV-LIF) method has been used to study atmospheric biological particles. Our recently published study (Toprak and Schnaiter, 2013) can also be given here to see the complete picture. We used the latest version of the Waveband Integrated Bioaerosol Sensor (WIBS-4) at Karlsruhe, Germany and presented bioaerosol number concentrations as well as size distributions for the exact sampling period that the authors showed. We found a similar diurnal cycle of fluorescing particles with maximum number concentrations during night time which was interpreted to be a specific humidity-driven local spore release. Since there are not many studies on biological aerosols based on the UV-LIF method, the quality of the manuscript may be enhanced by discussing the results also under the light of our findings.

Response: We thank the author for the supporting material and we will include a reference to the suggested publication in the introductory material discussing UV-LIF and we will include its findings in the relevant discussions.

Fig. 1: One important feature of Fig. 1 is that the Tryptophan-like and NADH-like fluorescence is not correlated. This finding motivated us to perform a similar analysis on our data set for the time period from 22/06/2010 to 03/07/2010. The resulting plot is given in the supplementary. In contrast to the results shown in manuscript, we found a clear correlation between the Tryptophan-like and NADH-like fluorescence channels during the enhanced NADH-like fluorescence periods. Together with the size information and the observed humidity correlation we interpreted these events to be related to local fungal spore releases (Toprak and Schnaiter, 2013). This distinct difference between the spectral fluorescence for the two measurement sites supports the argument given by the authors that unlike fungal spores, bacteria may dominate the air during enhanced NADH-like fluorescence at pdD.

Response: We thank the author for the supporting evidence and we will include a discussion of the Toprak and Schnaiter (2013) study in the section discussing the diurnal cycle of NNADH.



ACPD
13, C3275–C3277, 2013





References

Toprak, E. and Schnaiter, M.: Fluorescent biological aerosol particles measured with the Waveband Integrated Bioaerosol Sensor WIBS-4: laboratory tests combined with a one year field study, Atmos. Chem. Phys., 13, 225-243, doi:10.5194/acp-13-225-2013, 2013.

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Interactive comment on Atmos. Chem. Phys. Discuss., 13, 3031, 2013.