

Atmos. Chem. Phys. Discuss., referee comment RC3  
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## Comment on acp-2021-930

Anonymous Referee #3

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Referee comment on "Cellulose in atmospheric particulate matter at rural and urban sites across France and Switzerland" by Adam Brighty et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-930-RC3>, 2021

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The manuscript by Brighty et al. describes long-term measurements of cellulose in atmospheric particles from nine sites across France and Switzerland. This is an important topic since the contribution of cellulose to organic carbon is not negligible, particularly in rural areas, and because current information about the sources and atmospheric distribution of this polysaccharide is very scarce.

The manuscript has no major problems. It is well written and is easy to follow. The research seems to be well-planned and conducted. The obtained results make sense, and are clearly presented and discussed. The conclusions are supported by the results.

I believe that this study will be of great value to the community of atmospheric chemistry researchers and recommend publication in ACP after the following minor comments are addressed:

- The title should be more informative. I suggest something like "Cellulose in atmospheric particulate matter at rural and urban sites across central Europe".
- Table 1 – French sites are described with acronyms and Swiss sites with full names. I suggest using full names only throughout the manuscript.
- Lines 324 to 333 – Supplementary information should not be essential to understand the comparison with previous data. Therefore, tick labels in Figure 2 should include the countries names after the sampling site names (or acronyms). If not possible, because of the length of tick labels, this information should be added to the figure caption.

- Line 364 – At the ANDRA-OPE sampling site, the contribution of cellulose in PM<sub>2.5</sub> to that in PM<sub>10</sub> seems to be much lower than 18%. Please, check if there is a calculation error here.

- Table 4 – Sampling site name should be corrected to ANDRA-OPE.

- Line 372 – The authors should provide an explanation for not having calculated the PM<sub>2.5</sub>/PM<sub>10</sub> ratio at the ANDRA-OPE site. Do you have any explanation for the low levels of cellulose in PM<sub>2.5</sub> at this site?

- Lines 374 to 375 – References to previous studies reporting a higher abundance of cellulose in the coarse mode should be given.

- Lines 390 to 391 – The relationship between biological activity and meteorological conditions needs to be better explained. A higher abundance of plant debris from decaying leaves is expected to occur in autumn. How is it related with the summer to autumn temperature decrease and humidity increase?

- Line 632 – Table sequence needs to be changed in the supplementary material file in order to follow the same sequence of the Results and Discussion section.

#### Supplementary information

Table S1 – The authors should provide the classification of sampling sites (urban, rural, coastal, mountain, etc.) described in previous studies.