Object: Asking for changes to the proof document “acp-2020-1328-typeset\_manuscript-version4.pdf”

Paris, the 21march 2022

Dear Editor

I hereby explain the request to change numbers in Table 1 and Table 2 and TS2/TS3 comments of the above-mentioned manuscript.

In Table 1:

* some text needs to be deleted or adjusted, due to a lack of attention of myself when producing the revised manuscript. Indeed I have deleted two compounds (m/z 111 and m/z 113) to answer a request from the reviewers to reduce the manuscript size. I therefore deleted the mention to these unknown masses in the text and for coherency, deleted the masses in the Table. These number are still accessible in the supplementary material Table. There are therefore only 9 compounds in the Table, so we need to adjust the table legend accordingly.
* To answer one of the text editor questions, I read through the Bachy et al. 2020 paper again and realised that it would be more straightforward to give a reference to their fluxes expressed as mean and standard deviations (in µg m-2 h-1) for methanol, acetaldehyde, isoprene and monoterpenes which is given at the end of their manuscript (Table 5 in the Appendix). Indeed, in the current version of the manuscript I used some ranges evaluated from the Figure 4. Then the flux per dry mass of vegetation (in ng g-1 DW h-1) was estimated by dividing the flux by the biomass (in g DW m-2), which was taken as the maximum leaf + stem biomass given in Figure 1 in their paper as 10 T ha-1 = 1000 g DW m-2. I think this method this is more appropriate and it does not change the overall comparison with their work and interpretations.
* A consequence of the previous comment is that the note \* should be replaced by a note for B2020 which explains how the flux in ng g-a DW h-1 is computed based on the flux in ng m-2 h-1. I therefore suggest deleting the \* footnote and adding the following one : “In B2020 a biomass of 10 T ha-1 (1000 g m-2) is assumed to evaluate the flux in µg g-1 DW h-1 based on the flux in µg m-2 s-1. This biomass is the maximum leaf + stem biomass over the season”
* The reference to Konig et al. 1995 is not the right one here. It should be Kanda et al. 1995, the one dealing with DMS, so I suggest deleting the reference to Konig et al. 1995.
* The note # should be deleted as it is a part remaining from the previous version of the manuscript (before revision). I have decided in the reviewed manuscript to leave this part on m/z 68 as a proxy to m/z69 in the supplementary material. This was a decision following a reviewer recommendation to be more cautious on this interpretation of the mass m/z 68.
* Overall Tale 1 should be revised as below

Table 1. Fluxes and mixing ratios of the 9 most emitted VOC found in this study, together with isoprene and monoterpenes, compared to literature values using different methods of measurement. VOC fluxes measured by eddy covariance refer to the whole ecosystem including soil and are expressed per m2 of ground surface. Fluxes from chamber measurements refer to projected surface and dry weight of the enclosed aboveground organ of wheat. Means ± standard errors and [min – max] ranges.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **m/z** | **Tentative identification** | **Mixing ratio**  **ppb** | **Flux** | | **Measurement method** | **Reference** |
| **µg m-2 h-1** | **ng g-1 DW h-1** |
| 33.033 | Methanol | 3.4 | 63 ± 4 | 30 ± 2 | Eddy cov. | this study |
|  |  |  | [680 – 1100] | Dyn. Chamb. | G2019 |
|  | [1 – 10] | 62 ± 3.3 | 62 ± 3.3 | Eddy cov. | B2020 |
| 47.049 | Ethanol | 1.7 | 41 ± 4 | 20 ± 2 | Eddy cov. | this study |
| 93.033 | Furan (C6H4O) | 1.7 | 30 ± 1.5 | 15 ± 1 | Eddy cov. | this study |
|  |  |  | [10 – 50] | Dyn. Chamb. | G2019 |
| 45.033 | Acetaldehyde | 0.3 | 9.6 ± 0.6 | 5 ± 0.4 | Eddy cov. | this study |
|  |  |  | [10 – 50] | Dyn. Chamb. | G2019 |
|  |  | -2 ± 0.8 | -2.3 ± 0.8 | Eddy cov. | B2020 |
| 59.049 | Acetone | 0.7 | 9.1 ± 0.3 | 4.5 ± 0.15 | Eddy cov. | this study |
|  |  |  | [80 – 180] | Dyn. Chamb. | G2019 |
|  |  | -2 ± 0.8 | -2 ± 0.8 | Eddy cov. | B2020 |
| 63.026 | DMS | 0.1 | 2.9 ± 0.15 | 1.5 ± 0.1 | Eddy cov. | this study |
|  |  | [0 – 11.6] | [0 – 14.5] | Static chamber | K1995 |
|  |  |  | [0.2 – 0.5] | 0.03 | Dyn. chamber | F1988 |
| 95.049 | Phenols | 0.1 | 3.2 ± 0.3 | 1.6 ± 0.1 | Eddy cov. | this study |
| 69.070 | Isoprene + fragments | 0.2 | -1.3 ± 0.2 | -0.6 ± 0.1 | Eddy cov. | this study |
|  |  |  | 4.8 | [0 – 6000] | Dyn. Chamb. | M2016 |
|  |  |  | -2.8 ± 0.6 | -2.8 ± 0.6 | Eddy cov. | B2020 |
|  |  |  |  | [0 – 50] | Dyn. Chamb. | K2009 |
| 137.132 | Monoterpenes | 0.2 | -2.6 ± 0.1 | -1.3 ± 0.05 | Eddy cov. | this study |
|  |  |  | [-50 – 18] | Dyn. Chamb. | G2019 |
|  |  | [0 – 12 000] | [0 – 420 000] | Dyn. Chamb. | M2016 |
|  |  | -0.5 ± 0.7 | -0.5 ± 0.7 | Eddy cov. | B2020 |

F1988 (Fall et al., 1988). K1995 (Kanda et al., 1995). K2009 (Karl et al., 2009a). B2020 (Bachy et al., 2020). G2019: (Gonzaga Gomez et al., 2019). M2016 (Morrison et al., 2016). In this study, 18 T ha-1 dry biomass, which is the mature wheat field biomass, was used as a scaling parameter. K1995: closed chamber measurements were performed over 10 minutes twice a day in PVC chambers. In B2020 a biomass of 10 T ha-1 (1000 g m-2) is assumed to evaluate the flux in µg g-1 DW h-1 based on the flux in µg m-2 s-1. This biomass is the maximum leaf + stem biomass over the season..

In Table 2:

* I propose to delete the references to unused references Ruukanen 2011 and Kesselmeir 1998. I actually forgot to get rid of these unused references when I updated the manuscript from the original to the revised version.

Comment TS3:

* H2O.H2O.H+ is another way to write H2O.H3O+: It is a protonated cluster of two H2O molecule. I propose to homogenise the notation to H2O.H3O+, which is used in all the rest of the document including equations 1 and 6.

Comment TS2:

* Please let us know if e-11 in Eq. (1) should be adjusted to 10^-11 or left as is.

Thanks for considering these revisions at the proof stage and sorry for the inconvenience.

With my best wishes

Benjamin LOUBET

