

**We appreciate the referee's valuable comments on our work. Our responses to the specific comments and some changes made in the manuscript are given below.**

Responses to the comments of Referee#2:

*Comment 1:* In the introduction, some elements should be added to depict more clearly what the challenges and the context of this scientific problematic are. For instance what do we know regarding the reactivity, fates and quantity of FA emitted from plants? Are there any global/regional estimates? What are the lifetimes of most compounds involved here?

***Reply 1:* According to the referee's comment, the following sentences have been added to the revised text (P.1, L.28-31): "Previous studies estimated global emissions of PBAPs mostly based on the abundance of fungal spores (e.g., the sugar mannitol as a biotracer) and bacteria (Carslaw et al., 2010). Among possible compounds of PBASs, however, our knowledge is very limited on the abundance and atmospheric behavior of FAs emitted from plants."**

*Comment 2:* In section 2, regarding the forest sites where the measurements have been carried out, could you give some more details regarding the vegetation itself: tree heights / tree species for Tokamokai Experimental Forest, and leaf area index for both sites? Also the information regarding wind direction has not been given for Fuji-Hokuroku Flux Research Site and should be added in order to better understand the origin of the air masses.

***Reply 2:* We have added more details to the revised manuscript on tree heights and tree species for the Tomakomai (TMK) Experimental Forest site, and LAI for the two sites, as the referee suggested. Additionally, statement on characteristics of the wind direction at the Fuji-Hokuroku Flux (FHK) Research site has been added to the text.**

*Comment 3:* In section 2 also, regarding the measurement protocol, could you specify what the sampling duration is not the same between both forest sites (1 week for the first site and 2 weeks for the second) and which impact do you expect on the results?

***Reply 3:* At the FHK Research site, the sampling duration for each aerosol sample was ~2 weeks, which is longer than that at the TMK. This is because it was much hard to access the FHK site to change filters manually. As we discuss the seasonal changes of the SFA whose time scale is much longer than that of the aerosol sampling (1-2 weeks), we believe that the difference does not significantly affect our conclusions.**

*Comment 4:* In section 4, lines 23-25, results of previously published works are presented. Could you specify on which periods of the year the compounds were observed?

***Reply 4:*** The period (spring) of the year has been given with an additional reference in the revised manuscript (P.4, L32-33).

*Comment 5:* In section 4, lines 30-35: amongst the different compounds observed, what is the status of knowledge regarding the amount and the sensitivity to environmental parameters (temperature, light, etc.) of these emissions?

***Reply 5:*** Very little is known about the emission mechanisms or atmospheric drivers of PBAP emissions, while the drivers, such as temperature, light intensity, and wind speed, likely vary with PBAP type and source.

*Comment 6:* In section 4, based on results shown in Table 1: the highest values of mass concentrations indeed always occur during spring, while lowest values do not always appear at the same season: which elements can explain this? Do we have any explanation on this, and especially on the specificity from one compound to another?

***Reply 6:*** As the referee pointed out and is described in the manuscript, the largest concentrations in spring were clearly seen for all the SFAs identified here. However, seasons when “the lowest” concentrations were observed are not clear from both Table 1 and Figure 4. Table 1 gives the average values with larger standard deviations for winter, summer, and autumn at the two sites, which means that the difference in the average concentrations is mostly not significant among these seasons. This is attributable to various factors: the difference in the emission strength, photochemical activity in the atmosphere, etc., which needs further investigation in a future study.

*Comment 7:* Technical corrections:

Figure 3: please try to make the plots and writings more visible as they are not easily readable.

***Reply 7:*** According to the comment, we have modified each panel of the Figure 3 to be more visible.