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Interactive comment on "No tropospheric ozone impact on the carbon uptake by a Belgian pine forest" *by* L. Verryckt et al.

Anonymous Referee #4

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This paper is very interesting because the studies on the response of mature trees to ozone are not so many. I strongly encourage authors to submit it again in the light of remarks

My major criticism of this work is as follows:

The basis of the authors' reasoning is that the effects of ozone on the functioning of trees are fleeting, and last only a few days. It is unfortunate that the authors do not give references confirming this statement, because I think that it is not obvious. The literature suggests that the effects of ozone may extend over the long term, particularly by activation of defense gene or induction of senescence, especially when ozone levels are relatively high. It seems to be the case in this study, since the authors indicate that the usual critical levels (AOT40 and PODy) are exceeded each year.

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Therefore, if the trees have already experienced “high ozone fluxes days” before the days of "low ozone fluxes" selected for calibrating the model, it becomes difficult to argue that the behavior of the trees in “low ozone fluxes days” is the same as if they had never been exposed to the pollutant. On the contrary, it makes sense that there is little difference between the two situations.

I wish that the authors give more convincing arguments on this point, and justify the assumption that the trees behave in the "low ozone flux" days in the same way as if they had never been exposed to ozone.

- The question of the validity of the use of a model calibrated for low-radiation conditions to calculate fluxes in high radiation conditions should also be more justified

Nevertheless this work is interesting, and the paper is well written.

I have still some remarks, which are just details:

- The 0.61 conversion factor between the conductance values for water and ozone is questionable, many authors use 0.663 instead (see eg Grünhage et al, 2013). However, this did not have much impact on the results presented.

- The specificity of this cover (sparse canopy), and the validity of fluxes measurements on these types of vegetation could be discussed further.

- Many cited references are quite old (half are over 10 years). Are there not more recent references?

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