

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

### **Anonymous Referee #3**

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The paper aims to assess O<sub>3</sub> damage on vegetation in a Belgian pine forest. The adopted methodology is based on the assumption that, if an O<sub>3</sub> detrimental effect occurs, a GPP model parameterized for days with low O<sub>3</sub> stomatal uptake would overestimate GPP during days with high O<sub>3</sub> stomatal uptake. In my opinion, this assumption is not valid. As the authors themselves suggested (lines 267-272), solar radiation is usually high during high O<sub>3</sub> events, so that a model parameterized under low O<sub>3</sub> condition would be also parameterized under low irradiation, leading to a GPP underestimation. The authors poorly discussed the confounding effect of solar radiation on the study. In this frame, it would be desirable to add more information about ANN processes and point out the importance of solar radiation on the ANN operation (i.e. sensitivity analysis). The paper is well structured and clearly written, it could be a novel work about O<sub>3</sub> detrimental effect on vegetation if some changes in the method were made. I would

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encourage this manuscript to be resubmitted after taken into account the confounding effect of solar radiation on the results.

A few specific comments are suggested below: Line 192: Why is  $g_{\text{areo}}$  set to 1? Lines 213-218: Authors should provide more information about network's building. Please clarify: How did the authors choose the nodes number? Before training the network, did the authors scaled inputs and target data so that their magnitudes were similar (e.i. [0 1] or [-1 1])?

Some technical corrections: Line 25: Do authors mean "IPCC, 2007" instead "IPCC, 2001"? Otherwise, insert citation in the reference list. Line 29: Use "O<sub>3</sub>" instead of "ozone" to be consistent along the text. Lines 30-31, 295, 350: Insert spaces between semicolons and references' names. Line 33: Do authors mean "affect" instead of "effect"? Lines 88-112: Be consistent with verb tenses, use past forms. Line 296: "the empirical the dose-response", replace with "the empirical dose-response". Line 344: Figure 6 is too condensate, I cannot notice what authors write: "This difference between AOT40 and POD1 during 2006 was due to stomatal closure; during high O<sub>3</sub> concentration events,  $g_{\text{st}}$  was rather low (Fig. 6)". I suggest to eliminate  $F_{\text{st}}$   $F_{\text{ns}}$  and  $F_{\text{tot}}$  plots from the figure and to show  $g_{\text{sto}}$  and [O<sub>3</sub>] horizontally. Please, inset letters to each plot of the figures. Line 520: replace "in sity" with "in situ".

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