Review: P.E. Karlsson et al., Ozone causes substantial reductions in the carbon sequestration of managed European forests. EGUsphere, Jan 2025.
https://doi.org/10.5194/egusphere-2024-3742
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General Comments

This work combines modelled ozone concentrations across Europe with a forest response model to quantify the effects of ozone damage, compared to a pre-industrial scenario, on carbon sequestration. The results show that these effects are substantial, especially if expressed as a fraction of the gap between gross stem volume growth and natural & harvest carbon removals. This has important implications not just regarding the sustainability of forestry in Europe, but obviously also for the role of forests in climate change mitigation, and provides another reason for supporting efforts to improve air quality.
In my opinion, possibly the most important sentence in the paper is on Line 469 in 4.1, stating that the exceedance maps derived using the methods in this paper are very different from those used by the EU, based on AOT40. This is worth repeating at the beginning and end of the paper.
The manuscript is well written and appears to be scientifically sound. Some of the explanations can be improved, and suggestions are given below.

Specific Comments

L170: that is not what is in LRTAP Ch. 3. Either explain the modifications applied to the LRTAP formulation or provide a more current reference.
L202: 1 nmol seems a bit arbitrary, particularly if it is applied to all species. Perhaps discuss in 1 or 2 sentences how this number has been justified previously, and whether adjusting it up or down makes much of a difference.
L326: verify whether you mean 3a, e and f (and not a, c and f). Define AOT40.
L398, Fig. 6. This figure could be improved significantly with some additional labels. I recommend putting the numbers right next to the bars (933, 954, 571, 363, and the difference of 80 between the first two) to facilitate making links to the text. I would also label the two arrows (e.g. a, b), which would let you be specific in the text to explain that a = 80 = 9%, b = 283, and a/b = 28%.
L405: This paragraph is somewhat confusing. Add a sentence (or replace L407-409) stating that the difference between SVSC due to harvest & natural removal is 283 with O_3, but 363 without, which is 28% higher. Change L408 to "This is a decrease by 28% in the presence of (industrial) O_3."
L418: The absolute difference
L419: a much larger relative impact
L468: dry areas in the Mediterranean; I think Iberia would be more precise
L616: This actually reads like a Summary, not a Conclusion
L628: as stated, this is incorrect – be precise: would increase sequestration to living biomass (i.e. a rate of change, not an absolute change)

Figures 5 and 8 and Table 2 could be moved to the SI to consolidate the manuscript for improved readability.

Technical Comments

L30: superfluous “and”
L87: is often
L170 (Eq [2]): missing)
L254, Fig. 2: label ANL on the figure
Fig. 3: to make this figure more readable: 1. Add labels to each panel (e.g. (a) accumulated conifers, (b) range (conifers), and 2. In (e) and (f), round the numbers on the color scale to nice integers
L333: change “from the” to “since “
Fig. 6. “ob” should be spelled out in the caption. Superfluous “-“ after natural
Fig. 8. No reason for the y-axis in b) to go to 40; go to 20 to improve resolution
L484: overestimated
L486: at
L504: superfluous); define rv