

Thanks to the authors for moving the discussion of the calibration to the main text. I think this strengthens the paper, and clarifies the novelty of the work. I think the work should be published after the authors address minor revisions.

General comments.

I don't find the naming of the different simulations to O₃, CO₂, and CO₂+O₃ very helpful especially when the authors are referring to the gases as O₃ and CO₂ at the same time. Something like run_O₃, or run_CO₂, run_both_O₃_CO₂?

I'm a bit confused with respect to the title of the paper, especially because the authors have a section dedicated to their findings that the impact isn't as large as expected.

Line-by-line comments.

Lines 39: "its interaction with CO₂" does not sit well with me because CO₂ and O₃ are not directly interacting — rather there are interactive effects of CO₂ and O₃. Please revise.

Lines 44-46: At this point in the abstract the readers don't know what high and low sensitivity are

Line 62: citation should be parenthetical

Line 86: authors should define what they mean by background ozone

Line 94: "long-range transport of ozone"

Line 100: why are there two "e.g."s? What is Sicard et al. (2013) a reference here for?

Line 103: I would suggest cutting "currently have poor emission controls"

Line 108-109: Is there a lot of transport of ozone into Europe? I think references are needed here, or this line should be cut.

Line 112-113: Having this statement here could be misleading — for example, if a reader thought the impact of ozone on vegetation was through its ability to trap heat. It would be more clear if after "direct radiative forcing of ozone", the authors added ", a potent greenhouse gas, "

Lines 112-114: I find this a bit confusing - the authors discuss "high levels" and "elevated" ozone, but in the paragraph prior discuss mostly background concentrations. Can the authors make the transition a little smoother?

Lines 113: Please cut "future concentrations of ozone predicted for 2050"

Line 139: Here the authors refer to 46 ppb as "elevated" - in the previous sentences much higher concentrations are used. I would recommend just giving the concentrations, not qualifying them here and elsewhere

Line 153: What's the time frame for Lombardozi?

Line 194: please define ozone dose-response relationship

Line 220: I thought the authors re-arranged the supplementary figures to reflect the order they are mentioned in the text? This is the first occurrence of a supplementary figure and it's figure S5.

Line 227: of "stomatal ozone deposition"

Line 231-233: "because the impact of cumulative ozone exposure on plant productivity has already been calibrated with observations (described below)"

Line 240: Can this be changed to interactive effects of CO₂ and O₃?

Line 225: Reference is missing the year - here and in line 332 - also I'm not sure why there is a comma before the parenthetical citation

Line 288: But how is the actually PODy/ FO₃crit determined? Please specify here

Line 298: Is "a" the ozone plant sensitivity? Please specify here

Line 302: It's unclear to me how the authors incorporate the work of Bükér et al. from this paragraph.

Line 380: The g₀ term has not previously been defined. I would just say a version of the Medlyn (2011) model that does not have an intercept

Line 416: "of" is missing. Can interaction be changed to interactive effects?

Line 431: phenology is misspelled

Lines 460-474: The point I wanted clarified here is that the agricultural mask does not change from 1900 to 2100

Lines 517 & 519: I don't think an equation for the percentage change is necessary.

Figure S5 - Tg of N in b)? Tg Carbon in c)?, Gg of carbon in d)? Please specify. Are the NO_x numbers for anthropogenic sources or anthropogenic and natural? What about NMVOCs?

Table 1 - One of the "O₃"s actually reads "O₂"

Line 829: I would not say there are large improvements

Lines 841-855: A discussion of how incorporating ozone damage into JULES leads to a worse agreement with the MTE product & relevance for the authors' work is needed here

Line 860-1: Can the authors give the time frame here? Does the range represent high vs. low sensitivity? Is this for O₃ +CO₂?

Line 870: "Simulated ozone impacts will dependent on model ozone concentrations, meteorology, plant sensitivity to ozone, and process representation of ozone damage"

Lines 857-876: This section title is a bit of an oversell if the authors can't explain the differences. How can the authors "expect" results if they end of concluding the studies are so different anyway?

Line 907: It seems like here the authors need to discuss the caveat that both high and low sensitivity simulations underpredict GPP

Lines 909-910: "may dampen"

Line 941: Can this be changed to interactive effects of O₃ and CO₂?

Line 884-886: please cut this discussion - the authors' point is made - the information is lacking.

Line 888-908: The authors need to spell out the transition at the beginning of this paragraph — i.e., that another caveat of their study is that ozone is offline and the depositional sink is different here and in the model that was used to create forcing dataset. The comparison of the two g_{max} values is an apples-to-oranges comparison (one is model input, one is model output!) and I think it should be cut. I find the rest of the discussion not appropriate here - it's already discussed in the methods. Please clearly state the caveat and cut most of this discussion (i.e., after Lines 891-908).

Line 933-934: Why are the future tropospheric ozone concentrations highly uncertain?