

Editor

We thank the editor for their valuable comments which have greatly improved our manuscript. We address the specifics of their feedback below.

General comments:

Please provide some justification for selecting the period 1996-2005 as being representative of the current climate. The mid-point of this 10-year time-slice is 2000, and it is now 2025, so we are 2.5 decades past this period. The latest estimate from NASA (<http://www.columbia.edu/~mhs119/Temperature>) is that Earth's surface temperature is increasing at the rate of 0.18 C per decade. Therefore, the planet has warmed by 0.45 C since the year 2000. Given the clear warming of the Earth since the year 2000, the period 1996-2005 does not seem to be representative of the current climate. The CEDS emissions inventory has been updated to include recent years (Hoesly et al., 2024), so a more current period could be used.

We acknowledge this point and agree with the reviewer that we cannot claim 1996- 2005 is a current climate. Since the point of the paper is to show how climate change changes in ozone concentration might influence the relative importance of both combined and individual water and ozone stress we change 'current' to 'recent past' making clear that we select time periods to show substantial differences in both climate and ozone levels.

Regarding Section 3.3 (Effect of climate change on O3 sensitivity), please make clear the type of climate impact(s) that you are investigating. Several studies have explored the impact of the "climate change penalty", which is the impact of a future climate on ozone levels if emissions are held constant (Wu et al., 2008; Zanis et al., 2022). Your analysis does not seem to be addressing the "climate change penalty", and to avoid any confusion, please make this point clear. But please consider the impacts of the climate change penalty on your study region, as Zanis et al. (2022) concluded that India and China would be the regions with the strongest impacts.

This has now been made clear in Section 3.3 by adding the following text to the end of this section:-

'It is important to clarify that in this study we explore future changes in ozone concentration due to changes in climate due to changes in O3 precursor emissions. Ozone studies often explore the effect of a 'climate change penalty' which is the impact of a future climate on O3 levels if emissions are held constant (Wu et al., 2008; Zanis et al., 2022). Although this is not specifically investigated in this study it is worth noting that India is one of the global regions with the strongest effect of a 'climate change penalty' (Zanis et al 2022). Given the interplay between climate and O3 in determining the extent of stomatal O3 uptake, and hence crop sensitivity to O3, it is worth noting that even without changes in emissions, O3-induced crop damage would still be likely to change to some extent under future conditions'.

References

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