

Apologies to the late reply. These are the comments to the revised version

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The scope of this manuscript is broad, as it is about the relationship between land use change and air pollutants emission, it is relevant in a global scale. The research question is important for interdisciplinary interest and has real world implication. The research has a high potential for societal and policy impact.

Wong and Geddes use a factorial experiments approach to investigate the relative impact of Agricultural emissions, LULCC and Anthropogenic emissions. Wong and Geddes found that agricultural emissions have strong effects on PM_{2.5}, while LULCC has strong effects on O₃.

Thanks a lot for consolidating the comments into a revised manuscript. It is much better now especially after addressing the comments from Reviewer 2.

Here are some specific comments for your consideration.

1. I feel that the title of the paper does not sound right. Perhaps it could be "Study on the competing effects ..." Instead of starting with "On" .
2. There are many complex sentences that I think it is too long. Try split those long sentences into several short one, it would improve the readability.
3. The Introduction is a bit short; it would be helpful if you could include more detail about how agricultural emissions lead to the formation of secondary PM_{2.5}. Under what conditions that would affect its formation. Same for O₃ as well.
4. Line 67: Any better word usage other than "contemporaneously"? How about simultaneously?
5. Line 89: "an" instead of "a"
6. Line 93: Why use "fifth" here instead of "(5)", be consistent.
7. Line 145: "in"
8. Line 179: area with regionally consistent deforestation experience increase in LAI? I thought it would decrease LAI when turning forest into grass, please explain.
9. Line 183: LAI increases in northern China is not because of decrease of agricultural land but could be afforestation and turning desert to farmland? You can search for the keywords: Green wall of China. And this Nature paper <https://www.nature.com/articles/s41893-019-0220-7>
10. Line 227: what causes the sharp decline of agricultural emissions in Europe? Reduce farming activity? Implementation of clean air policies?
11. Line 235: Could be explain by afforestation. See point 9.
12. Line 272: I still do not understand clearly how you calculate the population-weighted average. Do you mean per capita? Where do you get the population data from?
13. Line 281: "land change phenomena", do you mean land use change? Or the area change as what Table 3 suggests? Please use a word that would not confuse the readers.
14. Conclusions: It is good that you mentioned about the limitation in the study. You could also add several sentences to discuss about the implication on policies. What policies could help reduce or mitigate the impact of LULCC, agricultural and anthropogenic emissions? How do you prioritise it? It will increase the impact of your paper to policymakers.

15. The caption of the figure should allow readers to understand the figure without looking at the main text, self-explanatory. If possible, write the complete form of acronyms that are not used frequently in the main text, for example CEDS in Figure 4. If space allows, I will write "Leaf Area Index" instead of LAI in Figure 2. Same for Figure 5b and 6b, you could write "Agricultural Emissions effect" instead.