

This manuscript comments on the study of Chen et al. (2022), proposing that the nocturnal O₃ enhancement (NOE) on 31 July 2021 over the North China Plain is caused by the stratosphere O₃ intrusion after the passage of Typhoon In-fa. The authors argue that the NOE is instead due to the photochemically produced O₃, which can be brought downward from the residual layer at night. Overall, the manuscript is well-written, and the method is reasonable. I have a few points that I think could be addressed to strengthen the manuscript and some minor comments.

General Comments:

1. Although I tend to believe that STT usually has little effect on ground O₃ at low altitudes, the reasoning in the manuscript needs to be further elaborated. Could you explain more on why higher nighttime O_x than daytime O₃ is an indicator of downward mixing from the residual layer and vice versa? Also, both O₃ and PAN can be transported over long distances, and I am not sure why the in-phase changes of O₃ and PAN could exclude the possibility of STT. Lastly, the authors mention that HOLWCO could also occur in photochemically aged air, not necessarily from STT, but the photochemical age analysis in the manuscript shows fresh air with ages less than 10 hrs. Does that mean HOLWCO can occur in fresh air as well?
2. If possible, the vertical profiles of virtual temperature and winds can be added to further support the conclusion that the rapid downward transport of daytime PPO.

Minor Comments:

Line 43: 'rangeby' should be 'range by'.

Line 66-67: Better to add how many sites there are in each city to the main texts and mention that Fig. 1 is the site average.

Line 87-90: Consider putting an enlarged figure in the supplement and mark these NOEs. It is hard to identify in Figure 1.

Line 127: Change 'arrived' to 'arriving'.

The caption of Figure 3: Change 'arrived' to 'arriving' and 'based' to 'based on'.