Dear Editor,

Thanks for your suggestions which significantly help us to improve the manuscript. Hereby, we submit our responses and the manuscript has been revised accordingly. If there are any further questions or comments, please let us know.

Best regards

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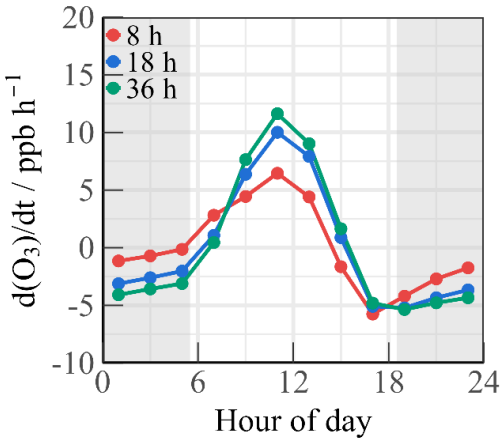
Editor (Minor Comments)

1. ***About the ozone predicting model calculations:***

   Considering the modelled O3 levels start decreasing from about 1500LT, it is very likely that some loss term is included, while the authors stated that the impacts of vertical entrainment and horizontal advection were (in general) ignored (lines 611-612). On the other hand, the authors also state in lines 593-594 that O3 was modelled with a first order loss term. Clarification is necessary. Also, the deposition process with a relatively long lifetime (15 hours) will not be sufficient to start to decrease O3 levels as early as 1500LT (as photochemical production goes on). Careful description is needed.

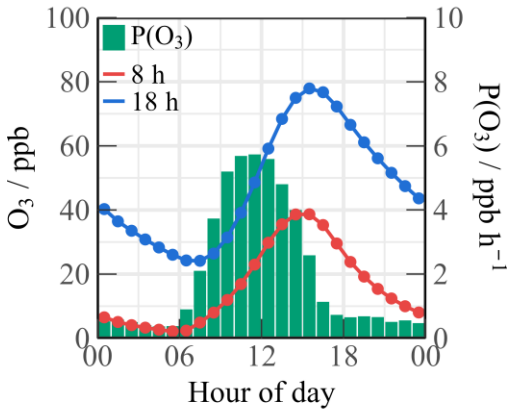
Reply:

Thanks for your suggestion. First, we verified the data and found that the simulated peak ozone concentration occurred around 16:00 and started to decrease afterwards. We acknowledge the editor's point that there are some ozone loss processes existed, such as vertical entrainment and horizontal advection. The loss of model-generated O_3 by deposition or mixing was represented as a first-order deposition rate corresponding to a lifetime of 18 hours. We clarified the description in Lines 588&604-606.



Furthermore, we also investigated the influence of different deposition rates on the simulated ozone concentration. We constrained the lifetimes to 8 hours, 18 hours, and 36 hours, which correspond to first-order loss rates of approximately 3.5 cm/s, 1.5 cm/s, and 0.8 cm/s, respectively, assuming a boundary layer height of about 1 km. Under different lifetimes, the changes in the rate of ozone concentration ($d(O_3)/dt$) did not

exceed 3 ppb/h, as the Figure above. Therefore, the influence of different deposition rates in the short term can be negligible compared to the chemical processes of ozone production.



It is crucial to consider the variability in the distribution of ozone concentration, as there are changes in deposition processes, as pointed out by the editor. With a deposition time of 18 hours, the peak ozone concentration shifted to around 16:00. As shown in the Figure above, from the perspective of photochemistry, the rate of ozone generation significantly decreases to 1-2 ppb/h after 16:00. The combined effects of other loss processes and attenuated photochemical processes contribute to a certain decrease in ozone concentration.

Revision:

Line 588: The deposition or mixing processes were equivalent to a lifetime of 18 hours to all species.

Line 604-606: The loss of model-generated O_3 by deposition or mixing was represented as a first-order deposition rate corresponding to a lifetime of 18 hours.