

Response to Editor's comments (acp-2019-964)

Response in blue

I only have one minor point. You mention on line 210-211 that the loss rate was adjusted to have glyoxal match observations and mention Figure S4 for this. However, unless I am mistaken, I did not see glyoxal in the figure.

The reference to the Fig. S4 was for the mixing layer height. The loss rate is set proportional to the mixed layer height.

1. As this loss rate is quite important, could you please add glyoxal to Figure S4.

We have added a new figure for glyoxal. Fig. S4 was already very busy, with 4 panels and 9 parameters plotted. Also, the figure contained only measurements and no model results. If we were to show the glyoxal data, it made sense to show both the measured and model data. We have therefore created a new Fig. S4 which contains a panel with the measured mixed layer height and a panel with the measured and modelled glyoxal mixing ratio. The glyoxal data plotted is provided in a new Table S8. The old Fig. S4 became Fig. S5 (and so on). The mixed layer height has been removed from Fig. S5 panel (d) as it is now in Fig. S4 and the NO data plotted in panel (b) has been moved to panel (d) so that panel (b) is less busy.

The names and references to all figures in main manuscript have been updated to take account of the new figure.

2. It has been suggested by various authors that glyoxal can have substantial aerosol loss but there is not necessarily agreement on this (Volkamer, GRL 2007 <https://doi.org/10.1029/2007GL030752>; Washenfelder JGR 2011 DOI: 10.1029/2011JD016314, Li et al JGR 2016 <https://doi.org/10.1002/2016JD025331>). It would be helpful to have a statement on the impact this has or does not have on the loss rate.

We have added a couple of sentences to address this:

“We do not consider uptake of glyoxal onto aerosol, the rate of which is highly uncertain (Volkamer et al., 2007; Washenfelder et al., 2011; Li et al., 2016). Including one would have led to use of a slower ventilation rate.”

Once this is addressed the manuscript is ready for publication.

We are grateful to the editor for the advice he has provided that has enabled us to get this manuscript to a state where it is acceptable for publication.