Influence of convection on the upper tropospheric O_3 and NO_x budget in southeastern China

Response to Anonymous Referee #1

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We thank the reviewer for his/her positive comments and very careful reading of our article. The individual corrections suggested are addressed below. The reviewer's comments will be shown in **red**, our response in **blue**, and changes made to the paper are shown in **black** block quotes. Unless otherwise indicated, page and line numbers correspond to the original manuscript. Figures, tables, or equations referenced as "Rn" are numbered within this response; if these are used in the changes to the paper, they will be replaced with the proper number in the revised version.

The authors have satisfactorily answered all my comments and the manuscript has been significantly improved. However, I have still one minor comment:

- I suggested using LIS lightning data to estimate the IC DE of the employed LLS. The auhtors have not done that, but they have alternatively proposed using a constant IC:CG ratio based on literature. I think this is valid. However, they have now written:

"Although CG detection efficiency of ENGLN is not known for this region due to a lack of validation data,"

I do not agree with this phrase because the lightning data from LIS cpuld be used for validation. I suggest the authors remove this phrase before the manuscript is published.

Thanks for the correction and we have modified it. Besides, the color of figures has been updated for persons with colour vision deficiencies.

> IC data will become more accurate if more Chinese total lightning networks, such as Beijing Lightning Network (BLNET; Srivastava et al., 2017), **are available to be compared with lightning imaging sensors (Rudlosky and Shea, 2013; Poelman and Schulz, 2020)**.

References

Poelman, D. R. and Schulz, W.: Comparing Lightning Observations of the Ground-Based European Lightning Location System EUCLID and the Space-Based Lightning Imaging Sensor (LIS) on the International Space Station (ISS), Atmos. Meas. Tech., 13, 2965–2977, https://doi.org/10.5194/amt-13-2965-2020, 2020.

Rudlosky, S. D. and Shea, D. T.: Evaluating WWLLN Performance Relative to TRMM/LIS, Geophys. Res. Lett., 40, 2344–2348, https://doi.org/10.1002/grl.50428, 2013.

Srivastava, A., Tian, Y., Qie, X., Wang, D., Sun, Z., Yuan, S., Wang, Y., Chen, Z., Xu, W., Zhang, H., Jiang, R., and Su, D.: Performance Assessment of Beijing Lightning Network (BLNET) and Comparison with Other Lightning Location Networks across Beijing, Atmos. Res., 197, 76–83, https://doi.org/10.1016/j.atmosres.2017.06.026, 2017.