Dear editor,

We revised the final manuscript following editor's comments. Thank you very much for your time and helpful comments. We also appreciate reviews that improved the manuscript.

I concur with referee #3 that referring to the 10-20 LT period as the "Peak" and the 01-06 period as the "Base" can lead to confusion. It appears to me that the 01-06 LT period does not accurately represent the background air masses passing over South Korea. Otherwise, how can we explain the occurrence of average maximum values between 01-06 LT over the background sites? This observation is clearly demonstrated by WRF-Chem, where the "No Seoul" scenario exhibits higher ozone concentrations compared to the control run (with an increase of >20ppbv between 01-06 LT). Additionally, when considering Ox instead of O3, the average maximum values of Ox are observed over Seoul, while the lowest values are found over the background sites. As the authors mentioned, both high values of NOx and VOC in the limited regime suppress ozone production during the day.
Hence, I suggest renaming the "Peak" period as the "daytime period," and the "Base" period as the "nighttime period" to minimize confusion.
→ **Thank you for your suggestions. We changed "Peak" period to "Daytime" period and "Base" period to "Nighttime" period. Refer to page 15 and 16 (line 5-6) and Table 2 (page 53) in the final manuscript (a pdf file with track changes).**

Nonetheless, I believe a detailed analysis of the background air is unnecessary. The current paper already contains ample material to warrant publication. The examination of the contribution from background air variability, chemistry, and long-range transport will remain qualitative.

Upon addressing the following points, I will accept your manuscript for publication:

1) In Table 2, it would be beneficial to include the standard deviation of the mean values. This addition will provide a better understanding of the statistical significance of differences between summer and spring, as well as differences between ground sites.
→ **In Table 2 in the final manuscript, standard deviations are included (Table 2) and discussed in the main text (page 15). Due to changes in calculation method, numbers (generally last decimal digits) were changed.**

2) In section 3.4.3, you mention that reducing NOx and CO would positively impact ozone levels in spring. This is indeed accurate, but it's worth noting the reverse effect on some ground sites during summertime.
→ **We agree with the editor. In the final manuscript, we mentioned the reverse effect. In page 31 line 9-11(a pdf file with track changes), we added "However, our study also indicates that the ozone exceedances notably increased in SMA and Chungcheongnam-do (where large mobile, industrial, and power plant emission sources are located) during the summer of the COVID-19 pandemic".**

3) In the Conclusion on page 32, lines 15-18, you discuss a reduction in ozone exceedance during COVID in springtime. It's important to also acknowledge the increase in ozone levels at some of the ground sites during summertime.
→ We agree with the editor. In the final manuscript, we acknowledged the ozone increases during summertime. In page 33 line 6-8 (a pdf file with track changes), we added "It should be noted that ozone exceedances substantially increased in SMA and Chungcheongnam-do during the summer of the COVID-19 pandemic".

We also updated the reference in the final manuscript because Jeong et al. (2023) was published.

Jeong, Y., et al.: Influence of ENSO on tropospheric ozone variability in East Asia, *J. Geophys. Res*., 128, 16, https://doi.org/10.1029/2023JD038604, 2023.

The reference below will be posted soon for discussions.

Kim, K.-M., et al.: Sensitivity of the WRF-Chem v4.4 ozone, formaldehyde, and their precursor simulations to multiple bottom-up emission inventories over East Asia during the KORUS-AQ 2016 field campaign, 2023 (submitted to *Geosci. Model Dev.*).