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Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2021-579

Anonymous Referee #1

Referee comment on "Impact of the COVID-19 pandemic on the observed vertical distributions of PM2.5, NOx, and O3from a tower in the Pearl River Delta" by Lei Li et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-579-RC1, 2021

The outbreak of the 2019 novel coronavirus (COVID-19) has brought tremendous impact on human health and social economy. Sharp declines in primary pollution provided a unique chance to examine the relationships between anthropogenic emissions and air quality. The author investigated the vertical structure of pollutants by the highest meteorological tower in ShenZhen City. They found that O3 concentrations were not sensitive to NOx concentrations during lockdown, which implies that O3 levels during the lockdown are more representative of the regional background. They deduced that reductions of anthropogenic emissions are effective to decline PM2.5 and O3 pollutant levels in the Pearl River Delta. Minor revisions are required before acceptance. Comments:

1. How are the instruments on the tower calibrated and maintained on the meteorological tower to ensure data qualityï¼□The methods need to be explained in the second section?
2. In Figure 5, why are the concentrations of PM2.5, O3 and NOx higher up than at the surface?
3. In Figure 9 and 10, how about the local photochemistry in different periods?
4. It is suggested to add motor vehicle data in the article, to explain the change of emission from pre-lockdown to lockdown..