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Atmospheric Chemistry and Physics Discussions

Interactive comment on "An assessment of the impact of a nation-wide lockdown on air pollution – a remote sensing perspective over India" *by* Mahesh Pathakoti et al.

Anonymous Referee #3

Received and published: 6 September 2020

The authors investigate the air pollution trends over India during COVID-19 lock-down period. This is a very interesting topic. The authors have tried to cover multiple species, including NO2, CO2, and AOD. However, I feel in-depth investigations are missing and the writing needs improvement.

General comments: 1. Abstract. "An increase in CO levels was noticeable, probably due to its longer life-time as compared to NO2 and aerosols." The support for this conclusion seems to be missing from the manuscript.

2. Section 3.1. The reason for the increase in NO2 levels is observed in the north, north-east and western parts of India shall be carefully explained.

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Discussion paper

3. Section 3.2. “During the pre-lockdown period (1-10th March 2020), CO levels were higher as compared to 2019 by ∼2%, which is expected due to anthropogenic activities.” I suppose 2% change is not a significant change. The reason why this change is driven by anthropogenic activities is also missing.

4. The contribution from natural sources, e.g., biomass burning, is neglect from the whole analysis.

Specific comments:

1. Page 2, line 36. I didn’t quite get the logic of putting this sentence here, since it seems not to be associated with the above contents.

2. Page 3, line 71. KNMI and ESA shall be cited when referring to TROPOMI observations.

3. Figure 2. The quality of the figure is not good enough for me to catch the details.

4. Page 4, line 103. I didn’t quite get the reason for mentioning the sentence below: “NO2 lifetime is shorter at day time due to reactive photochemical processes in presence of sunlight and longer at night (Richter et al., 2004).”

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