

## ***Interactive comment on* “Evaluation of tropospheric ozone and ozone precursors in simulations from the HTAPII and CCMI model intercomparisons – a focus on the Indian Subcontinent” by Zainab Q. Hakim et al.**

### **Anonymous Referee #2**

Received and published: 15 February 2019

Hakim et al., present results for intercomparison of HTAPII and CCMI models on the evaluation of ozone levels over India using different observations, where surface observations are scarce. It is an interesting study and identifies some key challenges of climate models in reproducing observed ozone levels over India. I have a number of questions and comments in addition to reviewer #1 before the manuscript can be accepted for publication in ACP.

1) Are there no rural sites to be used in model evaluation?

Printer-friendly version

Discussion paper



- 2 ) Figure 1 caption: Please make clear that these are total (anthropogenic + natural emissions).
- 3) Line colors in Figure 2 are difficult to be attributed to the individual models, please consider changing color scale.
- 4) Figure 3. Change “Mean” to “MMM” in the figure to be consistent with the text.
- 5) In Table 1 caption, also refer to Fig. 4 for monitoring site locations.
- 6 ) Are there any filtering for missing data in the calculation of monthly mean observations?
- 7) What is special about Chennai that leads to poor temporal model evaluation?
- 8) Among the monitoring sites, Delhi seems to have much higher NO<sub>x</sub> and CO values compared to the other sites. Values reaching to almost 200 ppb for NO<sub>x</sub> and 5 ppm for CO do suggest that this station is not a typical sub-urban station. Can the authors comment on this?
- 9) It is interesting that for CO, the two stations with poorest correlations have the lowest biases judged from Fig. 9. Can the authors comment on this?
- 10) What is the difference between AATOC and MTOC?
- 11) What do the PC1 and PC2 components refer to in these analyses? Is PC1 the monsoon system?
- 12) Can the reason why EOF do not provide clear understanding in comparison to other studies be the temporal resolution of o<sub>3</sub>? Can i.e. looking at daily or sub daily resolutions give more answers (like in i.e. Solazzo et al., 2017)
- 13) Adding MMM in Figure 13. could be helpful to interpret results.

---

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-1235>, 2018.