

## General comment

I appreciate the major revision undertaken by the authors. They have improved the quality of analysis. Thanks for including a timeline of the measurements, inter-annual plots and seasonal variation. However, some of the important crucial concerns are still present. I had to face hard time to read the interactive discussion for my first review, where several special characters and formulae were not typeset properly. Some examples are on page C15 and Page C16. There have been several careless mistakes in the supplement. While the main text mentions values of  $j1$  in the range of 0.12-1.22  $\text{min}^{-1}$ , corresponding values provided in the supplement table 1 are  $\sim 29 \text{ min}^{-1}$ . The figure captions and legends are difficult to follow and sometimes even not explained properly. Examples are Main text figure 3, Main text figure 5, supplement Figure 5, An important concern I want to raise for the editor is related to the journal scope which is focused on studies with general implications for atmospheric science rather than *investigations that are primarily of local or technical interest*. How does this article fit in the scope of ACP considering the investigation of air pollution of a region presented in this study?

Some other concerns are:

1. Gaseous pollutants in the title is still too broad a domain for a study reporting only  $\text{O}_3$ ,  $\text{CO}$ ,  $\text{NO}_x$  and  $\text{SO}_2$ .
2. The details of calibrations are still not provided. Given the long measurement period reported in this study, it is very important to know how the instrument response drifted over time.
3. Several major conclusions are drawn from poor correlation. Examples are:
  - Section 3.3. I am not convinced by the PSS analysis performed by the authors in the revised manuscript. Apart from the method by Trebs et al. (as suggested in the first review), authors could have used NCAR TUV model for calculation of  $j1$ . Even in the polluted environment like in Delhi, deviation from PSS was observed at  $\text{NO}_x$  values more than 10 ppb (Chate el al 2014). At such high  $\text{NO}_x$  concentration, systematic deviation from PSS with Leighton ration less than 1 was observed. Value of Leighton ratio =1 is a very rare finding in ambient environment. Hence, I again question the validity of conclusion drawn on this assumption. I again ask the authors to calculate  $j1$  using TUV model or using solar radiation and check the Leighton ratio. In any case, given that  $j1$  only depends on actinic flux, quantum yield and absorption cross-section, how would the authors explain a variation

of more than an order of magnitude during the daytime hours of the same season (line 210 of the revised manuscript).

Chate, D. M., et al. (2014), Deviations from the O<sub>3</sub>NONO<sub>2</sub> photo-stationary state in Delhi, India, Atmospheric Environment, 96(0), 353-358, doi:<http://dx.doi.org/10.1016/j.atmosenv.2014.07.054>.

- Cross over point and regime identification: First of all, legends are not provided in this figure 5. If I assume the purple points to be O<sub>3</sub>, still the fit statistics (which are not even provided either in text or in figure) are very poor. So the conclusion drawn regarding cross over points are not robust. There is no clear crossover point for the BKK sites.
- Section 3.4: The scatter plots have very poor fit for Fig 6a and Fig 6c for the non-episode events. In addition to the slope and intercept, authors should also consider the goodness of fit before drawing any conclusion.
- Section 3.5.1 (Figure V of the supplement): Even in the best case, the  $r^2$  is less than 0.3 in the best case. What is the significance of local source analysis based on such poor statistics? Why the frequency distribution of SO<sub>2</sub> (I assume it is frequency distribution as no information is provided either in figure caption or text) has wiggles in between.
- Lines 265-272: The statistics are too poor for the conclusion of  $\sim 10$  ppb enhancement in O<sub>3</sub>. The spread in delta O<sub>3</sub> ranges from -66 to +96 ppb.

Finally, even if the manuscript is considered for publication, a major proof reading and improvement in Figure quality should be done.