Thank you again to the reviewers and editor for taking the time to provide their useful comments on this manuscript. We respond to the comments below in **blue** and include any changes to the manuscript in **green.**

Editor Review

The revised version of the manuscript has much improved as stated by the reviewers. Please address the technical correction needed mentioned by referee#2. Referee#1 emphasises (s)he still misses a consistent and adequate sectorial analysis which now doesn't accurately bring out the impact of crop burning on NO2 levels in the region, indicating that NO2 inventories should be updated in the models. This could be a good suggestion that authors can offer to the modelers. So this point could be better addressed. I would like to ask you to address this better in the next version of the manuscript.

So this refers to: "One major inconsistency noticed in the paper is that the paper starts (in the Introduction section) with a description of the post-monsoon agricultural burning in NW India and related aspects (without discussing the transport sector with associated statistics and known emissions). Towards the end of the paper, the authors find that the non-local transport sector dominates in NOx concentration in Delhi. Figure 4 TCNO2 anomaly plot for the post-monsoon/winter seasons showed positive anomalies along the transport pathways from agricultural burning areas in NW to Delhi._If the transport sector emission remains constant, more or less, around the year, the additional burden of NO2 may be attributed to the burning activities in the region. However, it is not captured in the sectorial analysis, indicating that the NO2 inventories in the model need to be updated. The authors should discuss the strengths and weaknesses of the models and inventories employed in the study.

We have added a discussion on the mismatch between the TCNO2 and NOx emissions analysis to section 4.1 lines 538-541:

It should be noted that the mismatch between the spatial pattern of $TCNO_2$ anomalies, which clearly indicate increased $TCNO_2$ over agricultural waste burning regions in the post-monsoon, and the NO_x emissions sectoral analysis may suggest fire emissions are underestimated in the fire emissions dataset. The reasons for this are discussed further in section 4.3.

And the discussion of the small contribution of fires and reasons for this which we already included in previous iterations of the paper has been extended:

Section 4.3, lines 560-599:

4.3 Comparison to previous work

The results of this study are in line with previous work by Jethva *et al.* (2018) and Sembhi *et al.* (2020). Jethva *et al.,* (2018) used 3-day HYSPLIT back trajectories which were released from 3 different altitudes (100 m, 500 m and 1500 m) in Delhi each day between October-November 2013-2016 at 13:30 local time. Trajectories were grouped according to the 24-hour averaged $PM_{2.5}$ concentration at the US Embassy in Delhi (0 to <100 $\mu g\ m^{-3}$, 100 to <200 $\mu g\ m^{-3}$, 200 to <300 $\mu g\ m^{-3}$ and >300 $\mu g\ m^{-3}$). In most cases, near surface trajectories passed over crop burning regions in north-west India (Punjab and Haryana) (52%, 81%, 89% 84%, respectively). Thus, indicating air masses passing over crop burning regions are associated with increased $PM_{2.5}$ concentrations in Delhi. In addition, Jethva *et al.,* (2018) estimated that trajectories took around 14-22 hours to be advected from Punjab and Haryana to Delhi indicating the potential for the advection of NO_x emissions to Delhi too. Sembhi *et al.* (2020) used a model to simulate air quality in Delhi during a poor AQ episode in 2016 with and without the implementation of the SSWA. They found that timing shift in agricultural burning in north-west India caused by the introduction of the SSWA contributed only around 3% to the poor AQ observed, indicating that this was largely driven by other factors. We also find that trajectories originating from the north-west during post-monsoon months have a polluted footprint in our analysis of satellite data and emissions. Both previous studies from Jethva *et al.* (2018) and Sembhi *et al.* (2020) suggest the potential for the advection of NO_x fire emissions towards Delhi from source regions. However, within our work we do not see an impact from the advection of NO_x fire emissions, which could be for several reasons. Firstly, Jethva *et al.* (2018) do not consider the interaction of boundary layer height and trajectory height when including trajectories in their analysis. Whereas, in this study, fire (and anthropogenic) emissions are only accumulated if the trajectory is within the boundary layer, which is very shallow during the post-monsoon. As a result, few trajectories are accumulated. Since fire emissions are buoyant and create plumes, which often extend above the boundary layer, the influence of fires may be underestimated in this study. Secondly, Sembhi *et al.* (2020) focussed on $PM_{2.5,}$ which has a much longer atmospheric-lifetime than NO_x (days to weeks compared with hours to days). In our results, the shorter atmospheric lifetime of $NO_{x,}$ relative to $PM_{2.5}$, leads to a smaller contribution in the advection of NO_x from fires, occurring in north-west India during the post-monsoon, towards Delhi.. Finally, and arguably most importantly, fire emissions are generated using polar orbiting satellites which have a single daytime overpass and thus may miss fires which have a short burn time; fire emissions inventories currently struggle to detect agricultural waste burning fires due to their small size and often short burn times (Zhang et al., 2020; Liu et al., 2020). Although we have used VIIRS in this study (which is able to detect smaller, lower temperature fires than MODIS) the total emissions from agricultural waste burning may still be underestimated (Zhang et al., 2020; Liu et al., 2020). In addition, inventories struggle with fire detection during hazy periods, particularly those which use active fire detection (such as FINNv2.5 used in this study) leading to underestimations in fire emissions. This is supported by the large range in fire emissions estimates for November 2018, ranging from 0.63 Tg to 5.52 Tg. To accurately quantify the influence of fire emissions on Delhi AQ in the post-monsoon fire emissions inventories need to overcome these known issues. However, with the introduction of geostationary satellites and sensors which can continuously detect smaller fires (e.g. Himawari) it should be easier to constrain the emissions from agricultural waste burning in the future.

Reviewer Report #1

Well done to the authors for addressing all my comments. Just one pending issue - Table 1 is missing a caption.

We have added in a caption for Table 1:

Table 1. Details of the anthropogenic and fire emissions datasets used in this study. These were combined to generate daily emissions for India (and the surrounding region).