Review of manuscript titled "Concentrations and biosphere-atmosphere fluxes of inorganic trace gases and associated ionic aerosol counterparts over the Amazon rainforest" by Ramsay et al. submitted to EGU's *Atmospheric Chemistry and Physics*

This work provides, high temporal resolution (hourly) surface-atmosphere flux and deposition products such as concentration, flux and deposition velocities of inorganic trace gases and their aerosol counterparts, not routinely or simultaneously measured previously over a tropical rainforest. Provided, deposition velocities and fluxes used for dry deposition parametrization in modeling studies for tropical forest have been interpolated so far from temperate forest observations. This work is pertinent for understanding boundary-layer chemistry and improving dry deposition and flux estimates of inorganic species discussed (NH_3, HONO, HNO_3, SO_2 and their corresponding aerosol counterparts) in modeling studies, specifically for tropical forests. However, the scope of this study is limited to the 2017 dry season (October-November) in Amazon rain forest as stated in the manuscript. Authors point towards the need of future work expanding to wet season to understand annual pattern of surface-atmosphere exchanges in tropical forests.

The manuscript is well written with findings presented well through descriptive statistics and visualizations. The findings are critical for a wider regional- and global- scale modeling community interested not just in surface-atmosphere interactions but in specific aspects such as, Nitrogen deposition critical to biosphere. I will encourage this manuscript for publication, once authors address the following edits/comments:

1) As mentioned in the manuscript: "Based on the height of the tallest trees, the canopy height (h_c) is 37.5 m (Chor et al., 2017)." While, for this study two heights used for gradient measurements on the 80-m walk up tower were: z1= 42 m and z2= 60 m, *both are above-canopy*. Also Fig. 2 exhibits marginal difference in hourly concentrations measured at these two sampling heights above canopy. Can authors elaborate more on any limitations on doing measurements at a sampling height < h_c (i.e. < 37.5 m)? Concentrations between above-canopy and below-canopy sampling heights would have shown more substantial gradient and possibly given better insights on canopy reductions and boundary layer chemistry of different species in a tropical rain forest? Is that something that can be focused in a future study (as discussed for HONO briefly in Lines 680-690)?

2) Please consider shifting some figures to supplement or split up some busy figures. For instance, if you want to keep the molar mixing ratios shown on secondary axes of Figs. 2 and 3, might be better to show them separately in supplement for clarity. Also increase text size of labels in figures wherever possible.

3) Line 340: correct 'HNO)3' to HNO_3.

4) Lines 348-360 and Figure 3: Authors mention there is a significant difference between GRAEGOR and ToF-ACSM measurements for both NO_3^- and Cl^-. Maybe consider adding any linear regression analysis as done for SO_4^{2-} and NH_4^+ to reach that conclusion (to ensure it is not a scale issue- NO_3^- and Cl^- ToF-ACSM measurements being order of magnitudes lower than GRAEGOR) ?

More discussion on how different sampling heights of GRAEGOR and ToF-ACSM measurements (60 m and 321 m respectively) matter, might help? Consider merging the argument made in Lines 427-429 to explain the GRAEGOR vs TOF-ACMS difference for : "…V_{ds} with increasing particle size, the larger median V_{ds} values for Cl^- and NO_3^- are consistent with the GRAEGOR vs ACSM comparison which suggests that these aerosol counterparts were present in the super-micron (>PM_1) fraction."

5) Lines 362-365: "Although the diel cycle of HONO exhibited a maximum during night and a minimum during the day (0.02 $\mu g\ m^{-3}$ at 14:00), it remained above the detection limit even during daylight hours (Figure 4), which, given the high photolysis rate of HONO during daytime, implies the presence of a daytime source." Can this day-time source of HONO point to biogenic soil HONO emissions? How would they compare to anthropogenic sources in 'polluted' conditions?

6) Figure 5: Please clarify in the caption that pre- and post- correction deposition velocity trends are denoted by colored and grey lines respectively or use same convention in Fig. 5 labels and caption.

7) Line 390: "……although the results would be sensitive to the R_b parameterisation used, which for forests can vary significantly". Please provide any suitable reference to this.

8) Lines 401-402: "For HONO and NH_3, respectively, 26% and 19% of calculated fluxes were positive, i.e. emissions." Is this indicative of anthropogenic and biogenic sources or either one of the two as predominant source (refer to comment # 5 and Lines 455-460: BC_e were strongest for NH_3 (r_s= 0.60)….HONO……not as strongly correlated)? Any details on source characterization at ATTO site that might be helpful to explain it further? That might also explain more on: "why desorption would have been more important for HONO than for NH_3."(Line 697)

9) Lines 413-414: "From process-orientated modelling of aerosol V_d, it has been suggested that particle V_d increases over increasingly rough surfaces." Provide suitable/recent references other than Gallagher et al. (2002) if possible.

10) Line 575 and Figure 15: Instead of 'Total suspended particulate' simply use 'inorganic particulates' to be more accurate? And keep that consistent throughout the manuscript.

11) Lines 730-742: As authors note that: this study is conducted around October 2017 only, it might be too conservative to assume ‘annual dry deposition of total reactive nitrogen for the ATTO site to be 1.7kg-N ha^{-1} a^{-1} (i.e. same as for this study done in non-growing season for agriculture)’. Since, peak agricultural activity might be occurring between May-September. Clarifying more on time-period of Trebs et al. (2006) study that gives more than twice the total dry deposition value than this study would help.

12) Line 759: please correct typing error: “ABLE-2A of $NO^{+}{}_{3}$” to NO_3^-