The manuscript of "Different physicochemical behaviors of nitrate and ammonium during transport: a case study on Mt. Hua, China" by Wu et al. reported the concentration of PM$_{2.5}$ and composition of secondary inorganic aerosols at different altitudes. The authors investigated the physicochemical behaviors of nitrate and ammonium during the transport process. While the methods are reasonable and the conclusion convinced, there are several questions need to be clarified before publication, especially, more detail descriptions were needed.

- Lines 39 and 65: Please change "mountain food" to "mountain foot".
- Line 138: The "x" in "NOx" should be italic and subscript. Please unify the expression in the text.
- Line 199: "As revealed in previous studies, ...". Please add references here.
- Line 314: "As summarized in Table 1, the water-soluble ion level ...". Please indicate which site is describing.
- Lin 318-320: "Notably, this elevated contribution of WSIs was mostly attributed to secondary inorganic ions (sulfate, nitrate and ammonium, (SNA))". Note that the nitrate contribution is reduced (Figure 5).
- Line 332-334: "Furthermore, distinct nitrate size distributions were also observed between the different sites in the summertime of 2020." Please add references here. And if the data is unpublished, please indicate here.
- Line 337: In addition to R$^2$, please give p-values.
- Line 351: As Figure S3 shows, the diurnal total SNA pattern at the MS site exhibited a daily maximum value instead of MF.
- Line 355: "..., though these peaks lagged behind those observed at the MS site by 4 hours, further substantiating the vertical transport of these pollutants." The description here is wrong.
- Line 393: "As can be inferred from earlier studies......" Please add references here.
- "Based on trace gas observations, the f$_{NO2}$ values of the air aloft were very high due to...". Please describe the data quantitatively and indicate the source of the data.
- Figure 5: Remaining contributes 31-41.1% of PM2.5, but specific species are not indicated.
- Figure 5(b) : Remaining is not clear in the picture.
- Figure S1 (b): The right axis title should be "O3 at MF site".