

A point-by-point reply to the comments

We sincerely appreciate the editor for insightful and constructive comments, which are helpful for the improvement of the manuscript. We have revised the manuscript carefully according to the editor's comments. The following is a point-by-point reply to address the editor's comments. The original comments are presented in black and our responses are in blue, respectively. The new or modified contents in the revised manuscript are marked in red.

Comments from Editor:

Public justification (visible to the public if the article is accepted and published):

Thank you for your careful consideration of the referee comments. After careful consideration I have determined that most of the comments are adequately addressed, however, there are two comments that remain unclear. I encourage the authors to further clarify these responses so that future readers will understand the material.

Response: We sincerely thank the Editor for handling our manuscript. Regarding the two comments that remain unclear, we carefully revisited our responses and revised the corresponding sections in the manuscript to further clarify these points. The following are point-by-point responses to the Editor's comments.

The first comment that requires further clarification is on line 225 on the track changes version of the manuscript. Specifically, it regards the phrase "sharp vertical contrast while also allowing for a horizontal comparison, meaning cross-study comparisons with published results for the same periods." The meaning of vertical and horizontal are unclear to me. Is this referring to vertical and horizontal gradients within the atmosphere? The end of the sentence seems to imply that, but it is unclear if there are measurements from other locations at the same time period that would provide an appropriate comparison. Please clarify the meaning of this sentence.

Response: Thanks to the Editor for pointing out the ambiguity in the terms "vertical" and "horizontal" in this sentence. Our intention was not to describe spatial gradients within the atmosphere, but rather to emphasize that the three periods (DHP, PEP, and CLP) could be compared both internally and with other published studies for the same time periods or seasons in other years. To avoid confusion, we have revised the sentence to make the meaning clearer. Lines 217-221 in the revised manuscript:

"The pollution characteristics of the three periods (DHP, PEP, and CLP) showed distinct differences and certain similarities, enabling comparison of the pollution evolution internally among the three periods within this study. In addition, comparisons with other studies conducted during similar periods or seasons in other years helped to highlight the distinct pollution behavior observed in this campaign."

The second comment relates to the new text on lines 290-291 of the track changes

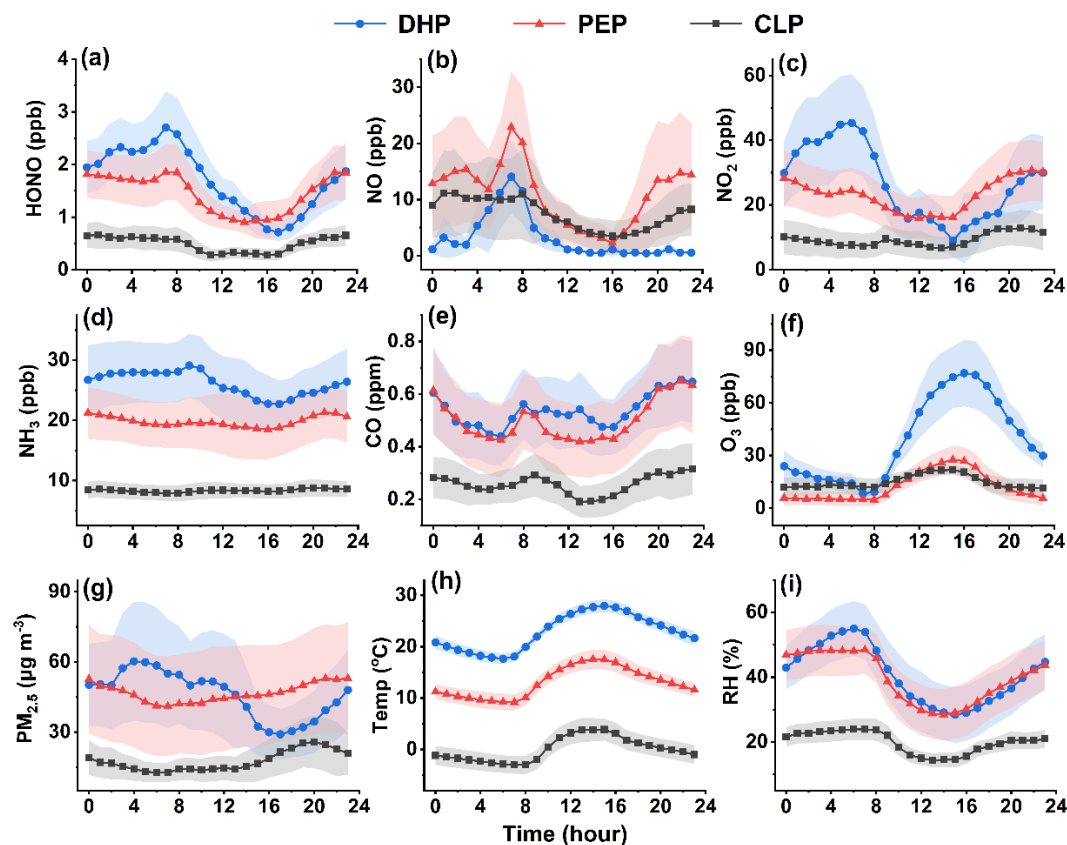
version. I agree with the referee that I do not see a significant increase in either DHP or in PEP in Figure 3a. DHP steadily increases over night with no apparent step change at the times indicated. PEP appears flat and while there is a small increase at the end, it is unclear if that is truly significant. This point about the emissions requires further justification with data or should be removed from the manuscript.

Response: Thanks to the Editor for the constructive comment. To improve clarity, we revised the description of $\text{HONO}_{\text{emis}}$ variations in Figure 3(a) by describing the three periods separately and providing a clearer explanation of their nighttime patterns. The revised text more accurately reflects the observed differences among the three periods. Lines 282-292 in the revised manuscript:

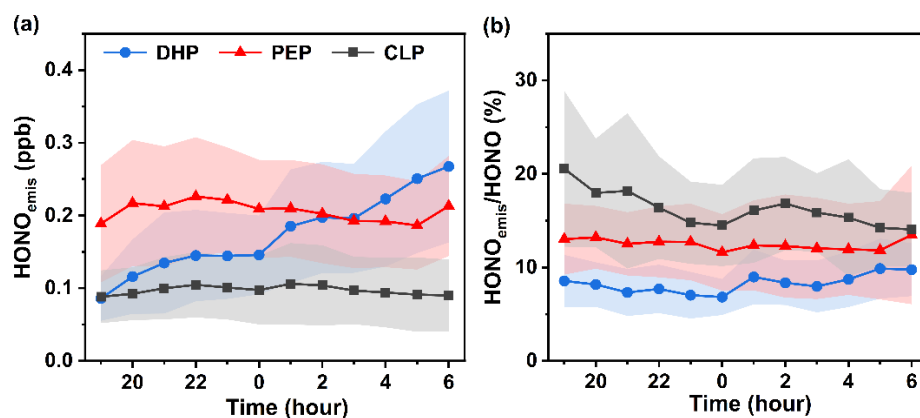
“As shown in Figure 3(a), the directly emitted HONO ($\text{HONO}_{\text{emis}}$) exhibited distinct nighttime patterns among the three periods. $\text{HONO}_{\text{emis}}$ steadily increased over night in DHP, suggesting continuous accumulation driven by persistent vehicle emissions and reduction in boundary layer height. During the PEP, $\text{HONO}_{\text{emis}}$ remained relatively stable at nighttime and modest increased during both the evening (~19:00 LT) and early morning (~06:00 LT) rush hours, reflecting enhanced traffic activity. $\text{HONO}_{\text{emis}}$ during the CLP was markedly lower than in DHP and PEP, remained at low levels over night, indicating weaker vehicle emission.”

Additionally, please clarify in the captions of Figures 2 and 3 if these are medians or means. Please consider adding variability indicators (standard deviations or interquartile range) as well. That would help the reader to understand the observed variability and better evaluate statements such as “significant” changes as referenced in my previous comment regarding Figure 3.

Response: Thanks to the Editor for this helpful suggestion. In the revised manuscript, we clarified in the captions of Figures 2 and 3 that the curves represented the mean values of the corresponding data. To better illustrate the variability, we also added shaded areas indicating the standard deviations for each period. These changes provided a clearer representation of the observed variability and allowed readers to more accurately evaluate the magnitude and significance of the discussed changes. Lines 222-226 and lines 297-301 in the revised manuscript:



“Figure 2: The diurnal variations of chemical species (HONO, NO, NO₂, NH₃, CO, O₃, PM_{2.5}) and meteorological parameters (Temp, RH) during the three periods. The blue, red, and black dotted lines represent the mean hourly values for DHP, PEP, and CLP, respectively. The shaded areas represent half of the standard deviations ($\pm 0.5\sigma$).”



“Figure 3: The hourly variations of (a) HONO_{emis} and (b) HONO_{emis}/HONO at nighttime during three periods. The blue, red, and black dotted lines represent the mean hourly values for DHP, PEP, and CLP, respectively. The shaded areas represent half of the standard deviations ($\pm 0.5\sigma$).”