

Authors' Responses

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

Thank you for uploading the revised version of the manuscript. I identified that few modifications or clarifications are still required:

Dear Editor,

Thank you very much for your comments and decision on our manuscript for publication with minor revision. The MS is revised accordingly, and our point-by-point responses to all the comments are provided below.

Figure 1: As of today's official country list (e.g., <https://worldpopulationreview.com/>), Taiwan should not appear in China's map.

Response: According to UN General Assembly Resolution 2758, Taiwan is only a part of China, and the government of the People's Republic of China is the only legitimate government representing China ([https://en.wikipedia.org/wiki/United_Nations_General_Assembly_Resolution_2758_\(X_XVI\)](https://en.wikipedia.org/wiki/United_Nations_General_Assembly_Resolution_2758_(X_XVI))). However, to avoid misunderstanding to the reader and involving any issue with this map, we removed the Figure 1 in the revised MS.

L177-179: Do not use capital letters in « Ion chromatography » and « Polytetrafluoroethylene ».

Response: We corrected in the revised MS (please see Lines 96-98, referring to the track change acceptance MS. The same below).

Line 182: «The concentrations of all ionic components were corrected for field blanks. ». Please specify how.

Response: The measured concentration of each ion in field blanks was subtracted from the corresponding sample concentrations. We added this point in the revised MS (see Lines 84 & 101-102)

Line 186: «it was found that the blank values (Na^+ , Mg^{2+} , and Ca^{2+}) of the blank membranes at BN were relatively high, while the measured concentrations of Mg^{2+} , and Ca^{2+} in the samples were very low ». Please specify « relatively high » and « very low ».

Response: We clarified it in the revised MS (see Lines 104-107)

Line 213: please check and rephrase the sentence « Using a UV spectrophotometer to measure the total N's absorbance at 540 nm. »

Response: We have rephrased this sentence in the revised MS (see Line 114).

Line 233 (section 2.3): please check and rephrase the sentence: «Considering the seasonal and diurnal variations in the planetary boundary layer (Wu et al., 2024). »

Response: We have rephrased this sentence in the revised MS (see Lines 133-134).

Line 373-375: «The concentrations of main secondary ions were significantly lower compared to those typically observed in urban sites, such as Tianjin, Beijing, Guangzhou, Chongqing in China, Chennai in India, and Hachinohe in Japan (Pathak et al., 2009; Qiao et al., 2019; Pavuluri et al., 2011a; Dong et al., 2023; Sun and Zhang, 2024). However, their concentrations were comparable to or even lower than those reported at rural background sites in France (Bressi et al., 2013), the southeastern United States (Nah et al., 2018), and at the forested site at K-puszt (Kourtchev et al., 2009). ». What is the contradiction here between the 2 sentences ? (Are the « However » and « even lower » justified and correct given the previous sentence ?).

Response: We corrected the language error in these sentences in the revised MS (see Lines 175-180).

Line 378: «The concentrations of SO_4^{2-} , NH_4^+ , and NO_3^- in $\text{PM}_{2.5}$ during winter were higher than those in summer, being 1.45, 2.55, and 73.00 times, respectively, at CB, and 2.57, 3.76, and 2.25 times, respectively, at BN». Is « being » the correct word ? replace by « by » ?

Response: We have replaced "being" with "by" in the revised MS (see Lines 183-184).

Line 681: «The aerosol particles released by plants (primary biological aerosols) exhibit a broader range.» : A range of what ? And broader than what ?

Response: The range refers to: " C_3 plants emit particles with $\delta^{13}\text{C}$ values ranging from -35‰ to -24‰ and C_4 plants (e.g., corn, sugarcane) have $\delta^{13}\text{C}$ values in the range of -20‰ to -11‰". And this range is broader than the range of fossil fuel combustion (coal, natural gas and petroleum) (-28‰ to -21‰) and C_3 plants biomass burning (-28 to -26‰) (Singh et al., 2018) as mentioned in lines 390-392. We included these ranges and relevant text in the revised MS (see Lines 362-364).

Line 701: «resulting in a more positive $\delta^{13}\text{C}$ value on that day compared to the regular winter level (-22.8‰ vs. -26.2‰ to -22.1‰)» = is « less negative » meant rather than « more positive»? Otherwise please clarify this sentence.

Response: We rephrased "more positive" as "less negative" in the revised MS (see Line 381).