Editor

Dear authors,

Thank you for your detailed and thoughtful response to the reviewers' comments. I have one remaining minor comment/question and would like to ask for a brief revision before the manuscript is formally accepted.

In both the response document and the main text, the statement appears multiple times that "organic nitrates generally exhibit lower volatility than hydroxylated products with the same carbon number." In my view, this statement is somewhat ambiguous. Within commonly used frameworks such as VBS or SIMPOL, a nitrate group (-ONO2) contributes to volatility reduction at a level comparable to a hydroxyl group (-OH), while the -NO2 moiety itself does not substantially reduce volatility. It is therefore unclear whether your observation reflects systematically higher oxidation states of the organic nitrates, differences in O-containing functional groups, or some other factor.

I therefore ask that you please revisit this statement and revise the relevant sections of the manuscript, as appropriate, to ensure that the description of functional group effects on volatility is accurate and clearly conveyed.

Reply: We appreciate the editor for this valuable suggestion. In this statement, we aimed to discuss the reason why Day-HNO_x-LVOA exhibits a volatility comparable to that of Day-urban-LVOA, despite their substantially different oxidation states (-0.01 vs 0.8). We acknowledge that attributing this behavior solely to the presence of organic nitrates is ambiguous, as variations in volatility may arise from the combined effects of multiple functional groups rather than a single functional group

However, given the limitations of our measurement techniques, it is challenging to directly identify the specific functional groups associated with different OA factors. Thus, we revised this sentence in the former line 315-318 as follows,

"**Despite its lower oxidation state, the volatility of Day-HNOx-LVOA is comparable to that of Day-urban-LVOA, which may reflect differences in functional group composition. For example, a nitrate group (-ONO_2) contributes to volatility reduction at a level comparable to that of a hydroxyl group (-OH) and generally more strongly than carbonyl functionalities such as aldehydes (–C(O)H) or ketones (–C(O)–) (Pankow and Asher, 2008). However, due to instrumental limitations, we are unable to directly resolve the functional group composition of individual OA factors, and further measurements employing new**

techniques are needed to better constrain the role of functional groups in controlling the volatility of ambient organic aerosol."

In addition, we have deleted the sentence in the former lines 593–595,

"Moreover, organic nitrates generally have lower volatility than hydroxylated species with the same carbon number (Donahue et al., 2011; Ren et al., 2022). It suggested that a higher fraction of nighttime organic nitrates could lead to lower OA volatility (Kiendler-Scharr et al., 2016)."

Reference:

Pankow, J. F. and Asher, W. E.: SIMPOL.1: a simple group contribution method for predicting vapor pressures and enthalpies of vaporization of multifunctional organic compounds, Atmos. Chem. Phys., 8, 2773-2796, 10.5194/acp-8-2773-2008, 2008.