

The study entitled “The Impact of Organic Nitrates on Summer Ozone Formation in Shanghai, China” by Li et al. investigates the role of alkyl nitrates (ANs) and peroxy nitrates (PNs) in ozone (O_3) formation using field measurements and modeling. The authors highlight that PNs suppress O_3 production, and the production yields (α) of ANs significantly influence the sensitivity of O_3 formation to its precursors. These findings are critical for informing future air pollution mitigation policies. While the study is well-conducted and generally well-organized, certain areas require clarification or further analysis before publication.

Major comments:

1. The abstract mentions that “scenario analyses revealed that production yields (α) of ANs would alter the response of O_3 formation to precursors due to varying compositions of volatile organic compounds.” However, the sensitivity tests appear to use a linear relationship between α and VOC concentrations, as indicated in Fig. 8c. It is unclear how this linear relationship was derived. How does α vary with VOC composition in the sensitivity tests? Are there other factors, such as NO_x levels, that might influence the variation in α ? Adding context in the introduction about the derivation of α and its dependencies would greatly improve clarity.
2. The findings on the localized impact of organic nitrates in Shanghai are valuable but would benefit from broader context. For instance, how does the suppression effect of PNs on O_3 in Shanghai compare to other urban or cleaner environments? What factors might explain differences in the impacts across various locations? Expanding the discussion to include comparisons with other field measurements would help strengthen the generalizability of the study’s conclusions.
3. The authors emphasize that organic nitrate chemistry should inform future policy decisions. However, the study indicates that the impact of varying α on O_3 production in Shanghai is insignificant, likely associated with high NO_x levels at present. To highlight the increasing importance of organic nitrates in future scenarios, I recommend conducting sensitivity analyses with reductions in NO_x (and VOC) emissions. These additional simulations would demonstrate the evolving role of organic nitrates under cleaner air conditions and provide stronger policy-relevant insights.

Minor comments:

1. Line 54: The statement, “which are produced from RO_2 in the presence of oxidants...”, is incorrect.
2. Section 2.2: It is unclear how the impact of PNs on $P(O_3)$ was quantified. Please provide a detailed explanation of the methodology.
3. Section 3.3: The expression “a/b” is ambiguous, as it could imply either “a or b” or “the ratio of a to b.”
4. Figure 8: The caption does not include a description of panel (c). Clarify whether Fig. 8d represents simulations in Shanghai with VOC-dependent α .

5. Line 388: The phrase “particularly in high NO_x environments” appears contradictory to the statement on Line 391.
6. Line 389: The text refers to Fig. 10, but there is no corresponding figure in the main text.
7. Line 403: The term τ VOC should be clearly defined the first time it is introduced.