

## Response to Editor

Comment on acp-2021-948

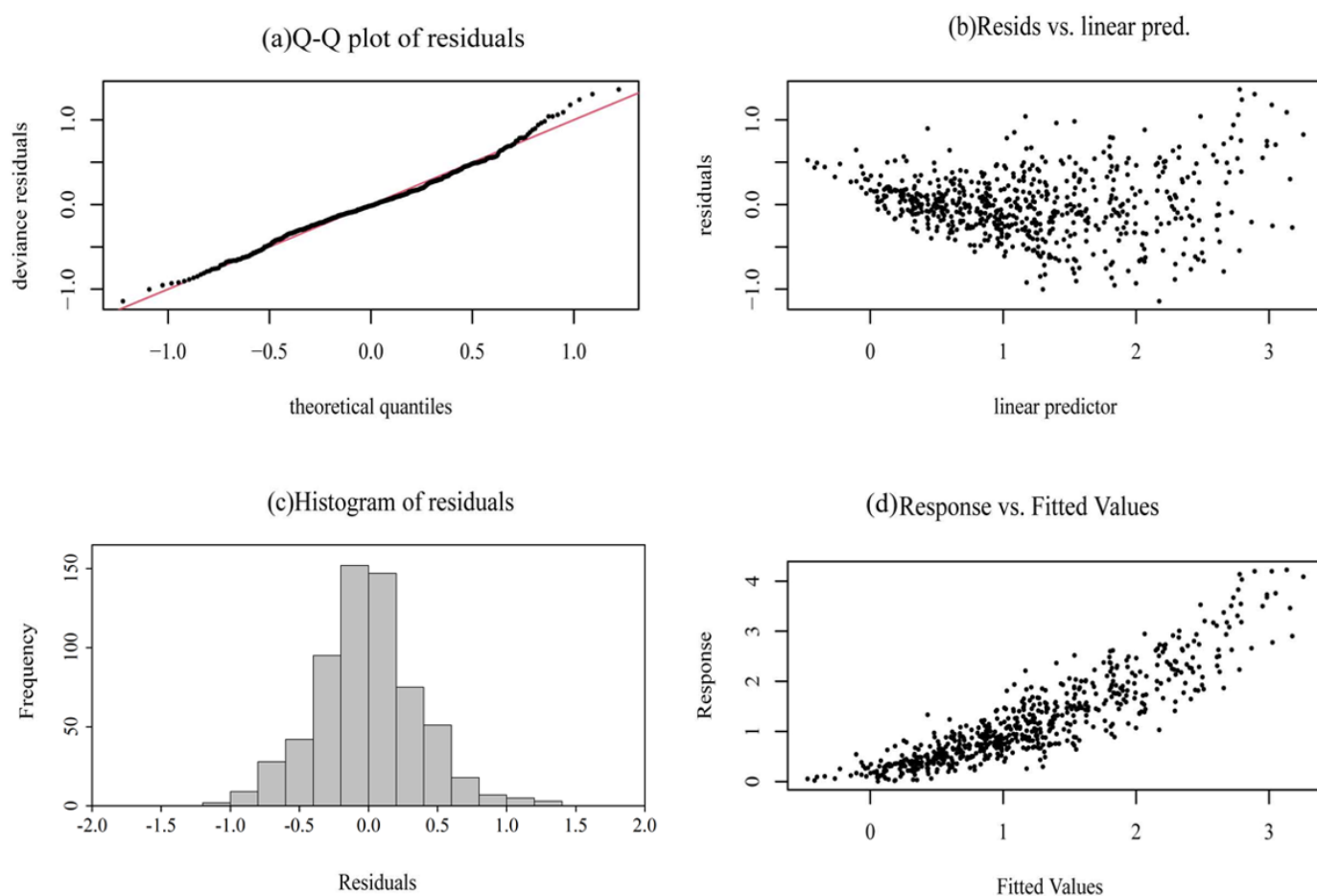
### Comments to the author:

thank you for submission of the revised version of your manuscript on PAN measurements. In general I am happy with your reponse to the reviewers and with your changes to manuscript, but there are three minor changes I ask you to to include prior to final acceptance of the draft:

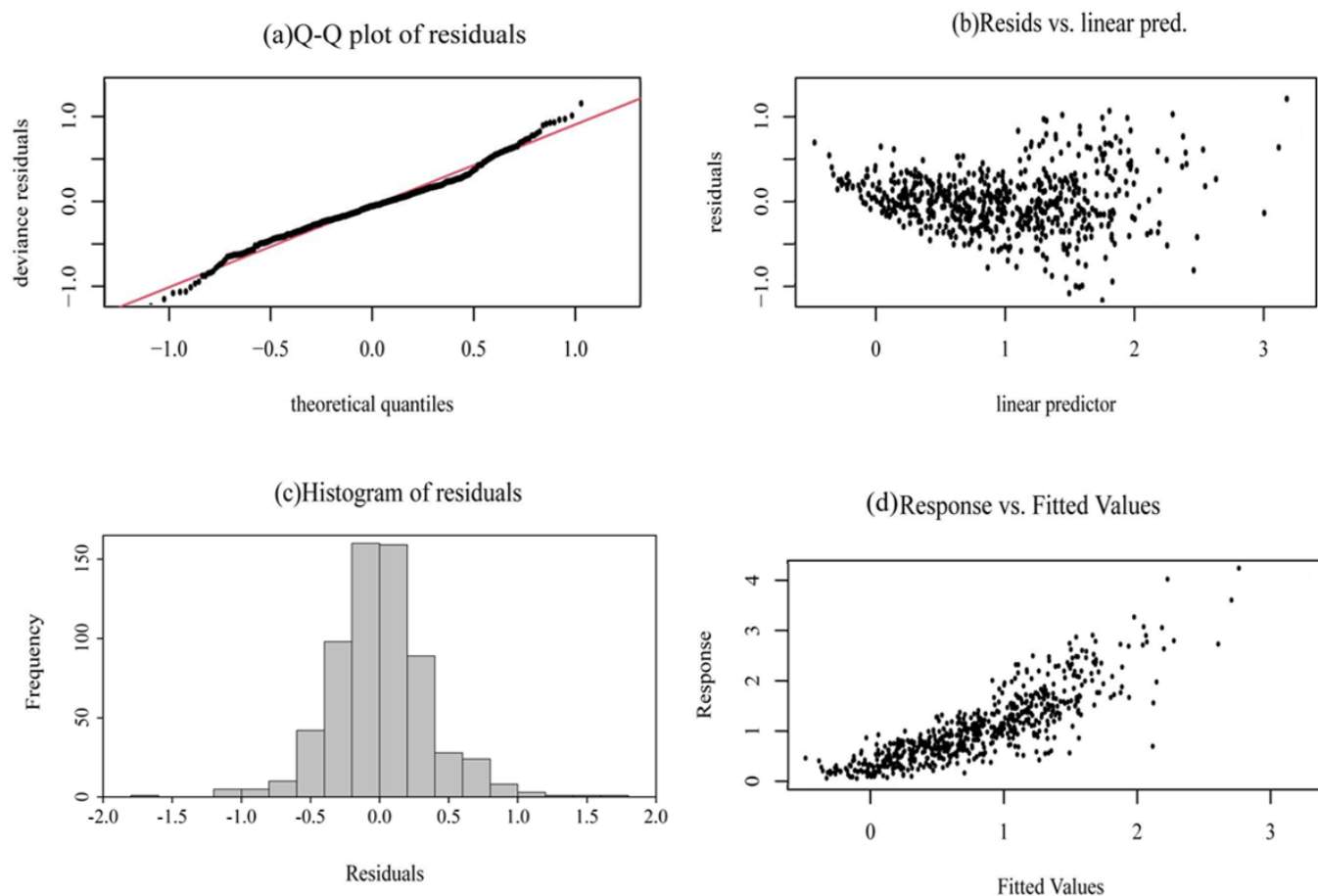
**Response:** Thanks for your valuable comments and positive feedback. We have corrected this manuscript carefully according to your suggestion.

-- From your reply to Reviewer #1 you added figures T1 and T2 to the supplemnets. I thinks these figures are very useful. Please add their captions to the introductory part of the supplementary document. In addition, I suggest to use the same axis scaling for the spring and autumn plots to facilitate comparison. In particular, I was confused by the different histogram binning used in panel (c) of the figures.

**Response:** Thank you very much for your advice. We have added their captions to the introductory part of the supplementary document. We have used the same axis scaling for the spring and autumn plots, and also changed the figures caption of T1 and T2 as S1 and S2. The detailed corrections are as follows:



**Fig. S1 Residual test results of the Generalized Additive Model (GAM) in spring.**



**Fig. S2 Residual test results of the Generalized Additive Model (GAM) in autumn.**

-- the changes you made to Lines 251-255 (track change document) do not improve the manuscript. Words like "values", "abundance" and "levels" are vague and do not refer to physical, measurable quantities. Please return to the initial use of "mixing ratio". Your reply to the reviewers comment is sufficient, but I do not agree with the wording changes.

**Response:** Thank you very much for your suggestions, we have returned to the initial use of "mixing ratio", as follows:

“Based on the above analysis, we found that the photochemical reactions were still intense and even stronger under the low precursor mixing ratios. Although the precursor mixing ratios of PAN and O<sub>3</sub> in spring were significantly higher than those in autumn ( $P < 0.01$ ), the PAN mixing ratios in autumn were comparable to those in spring, while the O<sub>3</sub> mixing ratios in autumn were much higher than those in spring. Therefore, it is very necessary to furtherly explore the key influencing factors and their formation mechanisms”.

-- In your reply to Reviewer #2 you make a statement on the selection of compounds from the full set of 106 substances identified in your analysis. Please add a corresponding sentence (around Lines 127-129 of the track change manuscript) with a reference to table S2 and a mentioning of the lack of calibration gases for some compounds.

**Response:** Thank you very much for your suggestions, we have corrected this part accordingly.

“Nine compounds (Acetaldehyde, Propanal, Crotonaldehyde, Methacrolein, n-butanal, Benzaldehyde, Valeraldehyde, m-Tolualdehyde, Hexanal) could not be determined due to lack of aldehyde and ketone calibration gases, and Table S2 showed all VOCs compounds that we used in the OBM model”.