

**Response to review by editor:**

*Before final acceptance I would like to make some additional recommendations based on the modifications you made in response to my comments.*

We would like to thank the editor for his thorough review. Below is a point-by-point response on his recommendations.

*1) Please correct the error "decreased" on line 181. You may want to double check that throughout the paper you do not have the same mistake in terms of increased acidity/decreased pH. It's easily done.*

The error in line 181 has been corrected. No other similar mistake found in the text.

*2) I think your abstract could summarise better the key result. I suggest to start a new sentence at "and uncovered remarkable variability..." and add something about the increases and decreases over Europe, N America and Asia. E.g., "The simulations uncover..." You may slightly exceed the 200 word limit, but please try to reduce back if feasible.*

We thank the reviewer for his recommendation to further improve our abstract. We have added one sentence to summarize the particle acidity changes in the three main polluted regions.

*3) Regarding "aerosol particle". You are mostly consistent now, but there are a few places where you talk about aerosol acidity (in the abstract) or aerosol in place of particle. I don't think it is necessary to say aerosol particle every time. Once you have introduced in the abstract/intro that you are discussing aerosol particles (rather than cloud particles) then it is sufficient to just refer to particle pH, particle acidity, etc. Sorry if my previous comment was not clear.*

We have thoroughly revised the text following the editor's recommendation.