

We thank the reviewer for the careful reading and valuable comments. Below we provide our point-by-point responses to the reviewer's comments. In the following context, raised comments/suggestions are marked in black, responses are presented in red, and changes to the manuscript are indicated in blue.

### Reply to Reviewer 1

I want to commend the authors very thorough effort to improve the manuscript and respond to reviewer's comments. I believe the manuscript has greatly improved in quality. I have only a few minor comments listed below.

Note, line numbers are from the manuscript with track changes.

We thank the reviewer for the positive comments.

Line 45 "...the effect of aerosols has the largest uncertainty in global climate model radiative forcing estimates." Largest uncertainty relative to? Maybe add something like "relative to other drivers of radiative forcing" to the end of the sentence.

We clarified that we indeed meant to compare the drivers of radiative forcing and changed the sentence to "Despite a large number of studies, out of all drivers of radiative forcing, the effect of aerosols has the largest uncertainty in global climate model estimates."

Line 491-494 You repeat yourself in this sentence.

Thank you for noticing this. We removed the end of sentence ("and "continental" site classes for example, and classified the stations both based on geographic area and based on footprint").

Line 501 "However, otherwise,..." These words have similar meaning. I would remove one.

We removed "However,".

Line 835 – 837 Please revise: "...if decreases would have been observed at the same in a certain area..."

We revised it to be "...if decreases in the particle properties would have been observed at the same time in a certain area...".