Responses to Editor’s Comments on Manuscript acp-2017-467

(Aerosol Surface Area Concentration: a Governing Factor for New Particle Formation in Beijing)

We appreciate the comments and suggestions from the editor. They were addressed here and revisions of the manuscript were made accordingly.

Comments:
Concerning the comment 19 by ref 2, I think it would be worth adding the value of CS corresponding to the given $A_{\text{Fuchs}}$ threshold value of 200 $\text{um}^2/\text{cm}^3$ on line 235 (for example, adding “CS = NN $s^{-1}$” into parenthesis there; note the preferred unit of $s^{-1}$, not $cm^2s^{-1}$ in current literature). This is because most other papers report values of CS, not those of $A_{\text{Fuchs}}$, these days. When discussing further the $A_{\text{Fuchs}}$ (or CS) threshold observed here, it might be beneficial to add couple of sentences on whether such threshold has been observed anywhere else (e.g. Salma et al. 2016, ACP page 8715-28 found such threshold in Budapest, Hungary, but at a particle loading of CS = 0.02 $s^{-1}$).

Response: We added “(the corresponding condensation sink is 0.027 $s^{-1}$)” in line 235 and “A similar threshold (the condensation sink of 0.02 $s^{-1}$) was found in Budapest, Hungary (Salma et al., 2017)” in lines 239-240.

Comments:
diurnal sulfuric acid -- > the diurnal sulfuric acid concentration, sulfuric acid concentration -- > the sulfuric acid concentration,
sulfuric acid -- > sulfuric acid concentration (lines 50, 54, 64, 70, 84, 154, 287, 321)
Abstract, sections 2, 4 and 5: Please check out the format of presenting dates in ACP.
line 19: environments, such as in Boulder and Hyytiälä, the daily-maximum...
line 25: 2.56, whereas the variabilities of $A_{\text{Fuchs}}$ in...
line 77: a good correlation
line 97: please specify the size. ... 10 $\mu$m in particle aerodynamic diameter. ???
line 100: The particle density...
lines 120-130: I think this paragraphs would benefit from 1-3 references.
line 157: are -- > represent
line 178: the sub-3 nm...
line 183: This sentence is unclear, please modify.
line 185: ...were assumed to be...
line 194, The following...
lines 205-206: However, this exponent is ... from the exponents no greater...., indicating that activation or...
Line 215: what is the meaning of “p=1” here?
line 223: in measured sulfuric acid concentrations...
line 233: NPF days, whereas...
line 243: delete “the” before R2
line 265: Fig. 8), indicating high coagulation losses...
Response: We appreciated detailed editing from the editor that helps to improve this manuscript. We have made the suggested changes. In addition, we read the manuscript again to correct grammar errors.