

Interactive comment on “Submicron aerosols at thirteen diversified sites in China: size distribution, new particle formation and corresponding contribution to cloud condensation nuclei production” by J. F. Peng et al.

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Response to Anonymous Referee #2 This manuscript summarizes the results of particle number size distributions from several field studies conducted in China, and analyses the major implications obtained from these measurements with a special focus on new particle formation and growth and subsequent cloud condensation nuclei production. The paper is definitely of interest for the scientific community. The paper appears to be scientifically sound, with no clear errors in it. I have a few minor and mainly

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technical issues that should be considered before publication.

1) The authors should be clear and consistent in the way they represent the averages, the ranges of averages and overall variability of the different quantities in the text. For example, the ranges of CS reported at the end page 15165 seem to represent overall ranges of these quantities in different types of stations (see Table 3), whereas the ranges of GR at the beginning of next page represents the corresponding ranges of site-averaged values. Furthermore, the authors have not defined what they exactly mean by these ranges in the tables (minimum to maximum values or some percentage range?).

Response: As suggested, we have now changed the statement of ranges of GR in the way of overall ranges of the quantities in different types of sites. The text now reads as: “The GRs of newly formed particles (calculated from 15 nm to 30 nm) ranged from 4.2 to 18.1 nm h⁻¹ at urban sites, 3.2 to 21 nm h⁻¹ at regional sites, and 1.6 to 7.5 nm h⁻¹ at both coastal sites and cruise measurement (Table 3)”.

For Table 3, the values outside the bracket represent the average CS or GR while those inside represents the maximum and minimum CS or GR. We have now modified the caption of Table 3 to make this clearer.

2) While the text was quite well written in general, there were some grammatical problems that should be corrected: The use of tense should be carefully checked out throughout the paper. Past tense should preferably used when representing the results or what was done. This seems to be correct in most places of the text, but in some paragraphs the authors use the present tense instead. Sometimes this causes confusion. For example, past tense on lines 11–12 in page 15161 indicates that what is said here is the results of this particular study. However, a reference is added there which indicates that is rather a more general result concerning biomass burning aerosols. Which one do the authors mean?

Response: We meant that aerosols from biomass burning are generally larger in size

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and may influence the diameter of measured particles at regional sites. We have now revised the sentence in present tense. Also, we have now got our manuscript proof-read by a native English speaker to remove any grammatical infelicities.

3) Articles are missing from several places of the text. Please check out and add.

Response: We thank the referee for pointing it out. We have checked the manuscript to remove grammatical errors.

4) Line 16 on page 15165: procurers?

Response: Thank you for pointing this typing error. We have now changed the word “procurers” to “precursors”.

5) Line 9 on page 15166: “one time higher than...” sounds strange. Do the authors mean “about twice those in...”?

Response: Revised as suggested. Thank you for pointing this out. The text now reads as “Average GRs at urban and regional sites were about twice those at coastal sites and cruise measurement, indicating that the higher concentrations of gaseous precursors in the polluted areas not only favor the formation of particles, but also accelerate the growth rate as long as the nucleation particles are formed”.

6) The format of giving variable ranges is incorrect in some places of the text. Correct way are to state ... ranged from M to N ... were in the range M-N, or ...were between M and N.

Response: We thank the referee for pointing it out. We have checked the manuscript to revise grammatical errors in lines 260, 413 and 422 as suggested.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 15149, 2014.