

Interactive comment on “Characteristics of regional new particle formation in urban and regional background environments in the North China Plain” by Z. B. Wang et al.

Anonymous Referee #1

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This manuscript deals with comparison new particle formation events in urban and regional background environments in China. It was found that both sites have similar seasonal behavior of frequency of the events. Urban site had higher formation and growth rates that background site in spite it had higher condensation sink. New particle formation events increased the clearly the number of “potential” CCN and also estimated and scattering by aerosol population. This subject fits nicely to the scope of ACP. The scientific methods are valid and clearly outlined. Conclusions drawn here are supported by the measured data. The language of the manuscript is good.

Comments and suggestions: There seem to be 3 more paper by the same author in
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discussion related to size distribution measurements, it just occurred to me that would there have been possibility to combine some of these manuscripts.

Introduction is missing some long term size distribution measurement in China, at least: N. Kivekäs, J. Sun, M. Zhan, V.-M. Kerminen, A. Hyvärinen, M. Komppula, Y. Viisanen, N. Hong, Y. Zhang, M. Kulmala, X.-C. Zhang, Deli-Geer, and H. Lihavainen, Long term particle size distribution measurements at Mount Waliguan, a high-altitude site in inland China, Atmos. Chem. Phys., 9, 5461-5474, 2009

page 20540, line 17-20; ...which can be explained by the favoring meteorological conditions such as. . ., how come these favor new particle formation, is this case in all around the world or are there studies one could refer for these sites. This section should be clearly open.

Section 3.2; It would be nice to have more deeply analysis on what is causing the event to occur one place and not in the other.

Influences to light scattering; how representative this is since coarse mode is missing in the analysis. Authors use density of 1.7 g/cm^3 , how did they come up with this number? Which is dominating the light scattering, the effect of the growth of pre-existing particles or the particles from new particle events that grow to optically active size?

The share of anthropogenic emissions to “potential” CCN, it is mentioned that this is more than 50 %. Is this based on difference on the results from two sites, how much the regional background site is influenced by short or long range anthropogenic emissions ?

Was there any supporting measurements at the sites, like SO₂, that could have been used in the analysis ?

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 20531, 2013.