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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatial variation in particle number size distributions in a largemetropolitan area" *by* J. F. Mejía et al.

Anonymous Referee #1

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General comments

The paper describes an important topic of spatial and temporal variation of number size distributions (NSD) in a city. The text is easy to follow, quite compact and well written. One problem may be that now the text in "3 Results" is much repeated in "4 Discussion". So, combining these two could shorten and clarify the text. Literature is widely cited and the technical details are properly explained. The conclusions are interesting and seem to have a strong basis on the measurement data, although some more details could be explained. Especially I would like to see a figure or a sentence clarifying how is the difference/similarity between average winter and average summer time NSD:s at sites where this data is available. Of interest are also the average total number concentration levels at each site, which information could be easily included for

instance in one of the tables or in Figure 2. The average data from many sites is similar, which suggests that the temporal variation of average NSD:s has been small in the eleven year period. However, the text about this topic is quite scattered in the present paper, and could be focused better. At some points the text is difficult to understand.

Specific comments

Abstract, lines 14-15: give size for UFP

Introduction, page 17149, line 7: is it really mass of UFP here?
Page 17149, line 28: collected by which instruments?

Methodology, page 17151, line 6: background emissions?
- give percentage of outliers at each site

Results: page 17156, line 8: should be less than 300 nm (not submicrometre)
Page 17156, line 13: likely all NSDs have at least two modes, but partly masked
Pages 17157-58: first the differences were significant but then very small?

Discussion, page 17160, lines 6-9: note that some other studies have realized that the importance of atmospheric dilution is the main process for UFP too
page 17161, line 3: which mode?
Page 17161: explain sea breeze in more detail. One could expect sea-salt particles there.
Page 17162, lines 11-13: unclear
Page 17163: likely the GSD:s are more useful for single modes than for the sum of several modes.

Summary, page 17163, lines 2-4: unclear
- the different character of the BP site is not mentioned here
Page 17164, line 2: better to say: average NSD:s, because there surely are differences between day and night.

Tables

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EGU

Table 1: Recorded observations, but for 1 min or for 1 hour or what?
Table 1: Explain CBD
Table 2: For Minimum there is a superscript “1” ?
Table 3: one station is missing! Which numbers mean high similarity?

Figures

Figure 1: give the scale for the map

Technical corrections

Page 17155, line 11: below 300 nm
Page 17158, line 2: NMD instead of particles

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 17147, 2007.