

***Interactive comment on* “Direct determination of highly size-resolved turbulent particle fluxes with the disjunct eddy covariance method and a 12 – stage electrical low pressure impactor” by A. Schmidt and O. Klemm**

Anonymous Referee #2

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General comments

In the manuscript, the size-resolved aerosol particle fluxes measured with disjunct eddy covariance method in urban area are analyzed. Direct aerosol particle flux measurements are very rare in urban environments and thus the paper gives important contribution on the subject. Especially, new information is given by the different sized of particle fluxes. The manuscript is well laid out and reasonably well written. However, in order of publishing it in ACP some minor corrections should be applied on the manuscript.

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The text in the introduction should be improved. In the beginning of introduction a sentence "...atmospheric processes by influencing and driving reams of chemical activity..." is not well written. Also the second paragraph in the introduction should be improved. For example, it is not clear from where to where the focus of the atmospheric research has moved, and are the writers saying that EC technique is based on the vertical concentration gradients.

There is rather weak comparison between the aerosol particle fluxes reported here and in other particle flux studies. Are the total fluxes reported similar to those reported in other urban studies, and what about the differences of size-resolved particle fluxes in different surroundings (like forests)?

Specific comments

At the beginning of abstract, it should be stressed that both aerosol number and mass fluxes are considered.

Page 9004, line 9: Sentence "measured interval of 5 s is combined with a sampling duration of 0.4 s" could be removed since in next sentence it is repeated.

Page 9008, line 12: Sect. 3.2 should be Sect. 2.4.

Page 9010, first paragraph: Text is not referring to any figure of table, so for clarification a text "(Not shown)" should be added.

Page 9012, lines 11-14: The diurnal cycle (with daily main peak) of particle number fluxes is related to both turbulence development and anthropogenic emissions. Now it is said to be related only to the turbulence.

Page 9014, lines 25: The measured fluxes represent the net effect of vegetation uptake and anthropogenic emissions. Thus, a sentence "...show the biological net uptake by the vegetation within the city area" is somewhat misleading.

Page 9014, last line: The measured fluxes represent exchange from a certain source

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area and by assumption are not affected by the long-range transport.

Table 3: It would be nice to have also the daily averages of total aerosol particle fluxes.

Figure 2: In the legend, it should be more carefully stated what the different variables, lines and equations represent in the figure.

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