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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Variability of levels of PM, black carbon and particle number concentration in selected European cities" *by* C. Reche et al.

Anonymous Referee #1

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The authors reponses to the reviewers' comments are generally adequate. A few remarks are however not answered, possibly because the remarks from the reviewer were not clear in the first place.

ad 13. The authors reply: "since more BC than CO is expected to have been eliminated from atmosphere by deposition when measuring at a distance of the emission sources". Why is this so? a typical dry deposition velocity of CO is 0.03 cm/s and for 10-100nm (diameter) particles the deposition velocity varies between 0.1-0.01 cm/s. Is deposition the real reason?

ad 15. I still do not understand how a 150 meter distance can introduce a time shift of

hours(?).

ad 19. "REPLY: The definition of S1 in page 8685 have been changed to "S1 is described as the minimum number of primary particles arising from vehicle exhaust emissions per each nanogram of ambient air BC". Still the word described is used, is this a definition or a description of how to interpret S1. Still I don't know how to calculate S1. I really would like to know. Calculate for every hour in the database (measured N)/(Measured BC)and S1 is the lowest value in the database and S2 the highest? If so this value is very sensitive to outliers. Please explain how to determine S1 and S2

ad 26 "REPLY: We mean the accumulation of pollutants in the city from Monday to Friday: "This tendency increases from Monday to Friday due to the progressive accumulation of atmospheric pollutants in the cities." I find this hard to believe. Do the authors really mean that a fraction of the exhaust emissions will stay in the city all week, Surviving all deposition (that is already important on a 150 meter scale) and advection?

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 8665, 2011.