Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2018-902-RC1, 2018

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Interpretation of Particle Number Size Distributions Measured across an Urban Area during the FASTER Campaign" *by* Roy M. Harrison et al.

Anonymous Referee #1

Received and published: 24 October 2018

General comments

This paper gives a very thorough analysis of SMPS, CPC and aethalometers data collected at five sites in Central London during a one month campaign in winter 2017. This paper is well-written with an excellent description of scientific methods and experiments (including the limits of using different instruments – that was highly appreciated), and with appropriate amounts of supplementary material and references. This work can be seen as an important contribution to the understanding of the fate, behaviour and sources of nucleation mode particles in the urban atmosphere. Since many results are of high relevance to the community, I recommend publication in ACP after considering

a few minor comments.

Specific comments

Figure 5 shows an excellent fitting of the modes of particle size distributions corresponding to observations associated with the wind direction sector 270° at North Kensington. What about the quality of the other modal fittings (corresponding to results presented in table S1)? I would like to ask the authors to add the numbers of observations per wind sector from which modal parameters are computed (in table S1, to support results presented in Figure 4). Such information will complement usefully the analysis of results. Indeed low numbers of observations for specific wind sectors is highly possible during a short campaign corresponding to quite homogeneous meteorological conditions (here winter conditions). Low significance of data for a wind sector due to low number of observations may explain a few results that could be difficult to interpret (e.g. no particle shrinkage observed for the wind sector 135° at Regent's park, while air masses would roughly come from Marylebone Rd if I am not mistaken).

Technical corrections

It would be better for the reader if the authors could change the order of figures in the paper according to the discussion. Could you please indicate the meaning of FWHM in the supplementary material. And also indicate in part 2.3 if "LHR" (line 212 p10 ; and in supplementary material) is the abbreviation for "London Heathrow airport" (if I have well understood).

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-902, 2018.