

The MS as a measurement report mainly deals with deriving wide-range particle number size distributions from a mobility particle size spectrometer and a particle optical counter, and also presents its application, results and conclusions for Delhi. Its basic ideas, topic and outcomes are timely, important and of interest for the research community. Its evaluation methods are mostly plausible. At the same time, the MS contains several conceptual errors, which are severe, and are misleading in many ways. They cannot be tolerated in a journal with an impact factor of 6.546 and should be definitely corrected or removed before any reliable evaluation of the MS could be finalised. There is also a large number of smaller discrepancies in the text and figures which should be improved and handled. The list below gives only examples of them.

#### Major comments

1. The authors may want to emphasize better the need for and advantages of wide-range particle number size distributions.
2. The abbreviation PM expresses particulate matter, thus the set of aerosol particles (and not their any property). It is used over the whole MS in a fuzzy manner, sometimes hinting at the PM mass. A very clear distinction between the PM mass and particle numbers should be made throughout the text since the main objectives of the MS are related to particle number concentrations and size distributions. This seemingly small discrepancy results in several misleading sentences and erroneous formulations. Examples are L90-92 and L95-96: with regard to the mass or particle number? With respect to this,  $PM_{10}$  volume is correct, while the formulation “ $PN_{10}$  number” is unusual, not consequent and, therefore, confusing (L50).
3. The situation is somewhat similar with the particle size distribution (L98). The expression is meaningless in its present form. Size distributions are exclusively related to properties of particles, which are missing from the expression. There are mass size distributions, surface area size distributions, particle number size distributions, etc. This should be added at many places in the MS and the title should also be changed accordingly.
4. The size distributions consist of modes (peaks which extend from  $-\infty$  to  $+\infty$ ). Their significant content or area can be approximated by a size range. The modes are: nucleation, Aitken, accumulation and coarse, while the classical size fractions are ultrafine, fine and coarse or  $PM_{10}$ ,  $PM_{2.5}$ ,  $PM_{1.0}$  and etc. The size fractions can be defined freely. The authors should not, however, mix the modes and the size fractions. Accumulation size fraction could be preferred to accumulation mode in this aspect. In addition, in L54-L55: which mode?; in L380: area distribution?

5. The authors are requested to discuss the dependency of the particle density on the size (L232), to describe how the particle volume was actually calculated from particle number and particularly, what the resulting uncertainties from the conversion were (L380), and specify the method of deriving GMDs (L409+).
6. The diurnal variation of BC (Fig. 2) and the increasing part of the particle number size distributions with decreasing particle diameter in the range <ca. 20 nm (Fig. 6) could also be explained and discussed (better).

#### Minor comments

7. Abbreviations TEOM-FDMS (L136-137), HOA, SVOOA, BBOA and LVOOA (L431) are not resolved, UFP is defined several times (L229, L262, L368), SMPS is explained not at its first appearance in the body text (L146 vs. 158).
8. The size distribution and other properties obtained by merging the SMPS and Grimm optical spectrometer data are better to be called SMPS-OP data instead of SMPS-Grimm data, with OP standing for particle optical counter (L164, L178, L199+).
9. Part L201-L206 belongs more to the description of the experimental methods than to section Data and Quality Management. Part L220-L230 contains extensive repetitions, and its rest should be shifted to methodology.
10. The authors should revisit their rounding off strategy. Example: instead of  $36730 \text{ cm}^{-3}$  give  $3.7 \times 10^3 \text{ cm}^{-3}$  (L244).