Interactive comment on “Design of a mobile aerosol research laboratory and data processing tools for effective stationary and mobile field measurements” by F. Drewnick et al.

Anonymous Referee #3

Received and published: 4 May 2012

This paper describes the design of a mobile air pollution laboratory. Such mobile labs already exist but it is still worth to publish the concept of this new mobile laboratory which can serve as a reference for the work at Mainz but also guidance for other groups building such a lab.

I recommend publication after minor revisions:

- There is little information given on the reasons for the choice of the individual instruments. For some parameters, especially trace gases, instruments with better precision and time resolution exist that were probably not chosen because of money constraints or maybe others like power, etc.

- The Grimm EDM 180 does not really particulate mass but light scattering. It might be regarded as an approximation of the mass. How does the sum of the measured composition compare to the mass derived from the Grimm?

- How do the authors explain the high particle number levels upwind of the city? How well do in general the CPC and FMPS data compare?

- Reformulate: the sulfate distributions reflect the air mass origin: “Sulfate reflect the sulfur emissions where the air mass originates from” .. or similar)

- The best suited instruments/parameters for this purpose depend strongly on the brand and type of instrument. The suitability of other parameters than particle number and carbon dioxide are possible when using other instruments.

- Can this procedure be described a bit more mathematically?

- The authors should also compare to the method proposed by Bukowiecki et al. (2002) and that was also used in Bukowiecki et al. (2003). They describe the use of a low percentile in a moving window which should be discussed here as well.
