

## ***Interactive comment on “Long-term observations of tropospheric particle number size distributions and equivalent black carbon mass concentrations in the German Ultrafine Aerosol Network (GUAN)” by W. Birmili et al.***

**W. Birmili et al.**

wolfram.birmili@uba.de

Received and published: 8 July 2016

*Referee: It would be an added value to conclude the work here (or to start) by a very preliminary outlook of what the dataset shows (e.g., by adding some relevant figure). This is only mentioned (for different purposes) at the very end of the paper (Fig. 3, and references to previous papers).*

Reply: Thank you for the encouragement. We will include now two additional overview statistics: First, a Table comparing the statistical mean values of total particle number

C550

and eBC concentrations at all sites and, second, a basic figure illustrating the mean annual cycle of these two parameters. (A preview of this figure is supplied at the end of this comment.) We believe that this is sufficiently in line with the philosophy of ESSD in providing only some few actual data presentations in a paper. A proper manuscript that interprets the statistics of the given data set 2009–2014 is currently in preparation for an other journal (Sun et al.), and will likely fill this gap in the near future.

*Referee: To date, the data submission is not complete. This is discussed in the paper. Data are presented as either online/complete, or online/not yet complete, or under verification at EBAS, or under processing at TROPOS. This might cause some confusion, but will be improved in the future. Actually, to help users navigate online data (even when data-set will be complete), and understand what these data can be useful for, I recommend adding to the online dataset the following information (or making them clearer): (a) data coverage by year (number of data available against maximum number of data); (b) site representativeness; (c) ancillary measurements available (gas concentrations, meteo), both by site, and by year.*

Reply: Thank you. All these issues have now been fixed in the in the online version. One can now click on a text “Click here to view the data capture statistics”, and a new wiki window will open that shows the data captures of the currently most used data set (2009–2014).

*Referee: The authors clearly indicate that eBC observations suffer from different sampling heads used (PM10, PM2.5, PM1), and give indication on how to harmonize BC data to PM10. This is a very important issue that should be clearly mentioned online, as well.*

Reply: Thank you, this is now mentioned online.

*Referee: Measurements were taken at dry conditions. There is a number of ambient measurements of PNSD and eBC this dataset might be compared to in future studies. As differences can be important, this point should be mentioned in the online data*

C551

version, together with some suggestions on what this kind of comparison can generate.

Reply: Thank you. We now mention online: "In GUAN, particle number size distributions are measured in a "dry state", i.e. at low relative humidity. Technical measures ensure that the relative humidity inside the instrument's sheath air will not exceed 50% (Wiedensohler et al., 2012). Dry measurements ensure that particle number concentrations from different sites and from different seasons remain comparable. The actual values of relative humidity and temperature in every instrument are stored at EBAS and can be accessed through the data base interface there."

Interactive comment on Earth Syst. Sci. Data Discuss., 8, 935, 2015.

C552

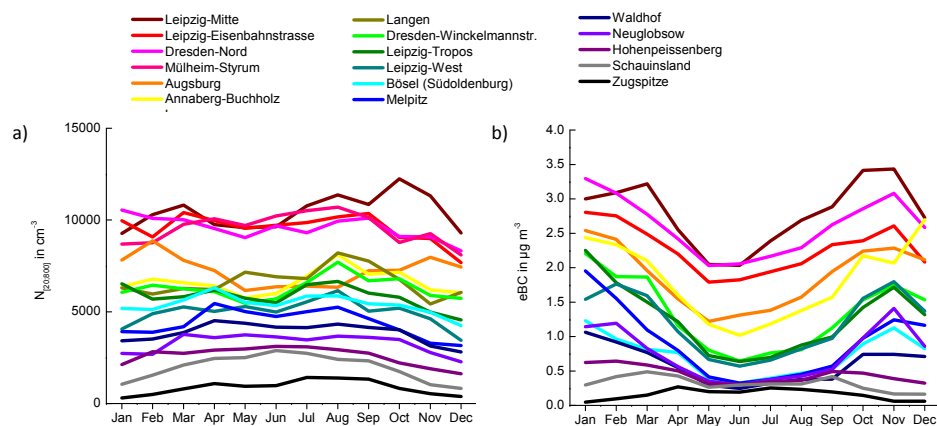


Fig. 1. Annual mean cycles of  $N_{[20;800]}$  and eBC mass concentration, 2009-2014.

C553