Dear Editor and Referee #2,

Thank you for reading and reviewing the text again.

Below the reviewers' texts are written in **bold** font and the replies in standard font.

Major additions to the paper are written here an intended paragraph.

New texts are highlighted by yellow.

Detailed replies to Reviewer 2.

Minor comment of the reviewer.

The small concentrations and zero particles/cc resulted from low concentrations in the ambient atmosphere and particle loss in the inlet and tubes. Particular, the concentrations are unable to be corrected mathematically in the case of zero particles/cc. In other words, the number concentrations and optical properties remains to be underestimated after the corrections. Therefore, I suggest that short explanation is added into the text.

Reply

The two sentences on page 6, lines 8-10 were replaced with the following text:

In December 2007 – July 2009 particles were measured also with the Grimm 1.108 OPC that measures number concentrations of particles in the D_p range of 0.3 – 20 µm. The particle number concentrations in the size range D_p > 1 µm were first corrected for wind-speed (WS) dependent and particle diameter dependent inlet and sampling tube losses by dividing the raw, noncorrected number concentrations $n(D_p,OPC,noncorrected)$ with the combined inlet and tube transmittance $f_{inlet,tubing}(WS,D_p)$, as described in the supplement. The number concentrations were very small in the size ranges where the transmittance losses were significant. In a large fraction of data $n(D_p,OPC,noncorrected)$ was zero in the particle size range where $f_{inlet,tubing}$ is small. If the true concentration was larger than zero but the raw concentration in the OPC data was zero due to the instrument sensitivity and sampling losses then also the corrected concentration would be zero even if the raw concentration was multiplied by a very large number $1/f_{inlet,tubing}$. Consequently the number concentrations and the derived mass concentrations and scattering coefficients in the large-particle size range would be underestimated. The underestimation could in principle be estimated by using a collocated more sensitive instrument sampling air through a well-defined inlet with minimal particle losses. These were not available so a detailed analysis of the underestimations of the derived quantities was omitted from the paper.

In addition to the new text above the section Data Availability was changed because the Dome C data willl be uploaded to Zenodo.

Data Availability

The Dome C aerosol physical measurement data are openly available in the Zenodo data repository (a doi will be given before the final publication) . The SPO data are available at the EBAS database (http://ebas.nilu.no). The Dome C aerosol chemical composition data will be available upon request by writing to RT, BS or MS.