

Interactive comment on “Latitudinal aerosol size distribution variation in the Eastern Atlantic Ocean measured aboard the FS-Polarstern” by P. I. Williams et al.

Anonymous Referee #3

Received and published: 19 January 2007

General comments:

In this work, the authors report aerosol size distribution measurements in the diameter interval 0.03 - 25 μm over Atlantic Ocean from Europe to South Africa. They propose a new technique for evaluation of uncertainties associated with aerosol size distribution measurements, reveal some aspects in the shape of size distribution of marine aerosol and calculate loss rate of condensing gases, which are important in heterogeneous marine chemistry and new particle formation. The paper gives a useful contribution to scientific community. I therefore recommend the manuscript for publication in ACP after considering the following specific comments.

Specific comments:

i) In the paper by Koponen et al. (2002, J. Geophys. Res., 107, D24), the authors report aerosol size distribution measurements at the same route and approximately at the same time of year as in present study. In current work, the authors should definitely discuss and compare these previously got results with their original results, including number concentration values and modal structure of aerosol size distribution.

ii) During measurements on board the ship there is always potential that at least some of the data are contaminated, either by direct emissions from the chimney of ship or by other activities on board the ship. In this paper I would expect to see the discussion about how much the measurement result were influenced by the ship emissions. For instance, the highest values of hourly averaged concentrations (more than 170000 cm⁻³) may be due to the ship emissions.

iii) In error analysis, the authors could discuss more about the sensitivity of standard deviation to averaging time in case of their data.

iv) Fitting coefficients in Eq. (2) and Table1 should have certain units, which are not mentioned in Table 1.

v) The authors might also consider giving the values or formulas of the gaseous diffusion coefficient D_g and the average kinetic velocity of the gas molecules c_g used in calculations of loss rates. In page 12880 is said that the contribution from the spume mode is likely to be under-estimated and hence the total condensational loss rate is under-estimated. Can you give some quantitative estimation here?

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 12865, 2006.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper