Ice nucleating particles in the Saharan Air Layer Supplementary Material

Yvonne Boose[1], Berko Sierau[1], M. Isabel García[2,3], Sergio Rodríguez[2], Andrés Alastuey[4], Claudia Linke[5], Martin Schnaiter[5], Piotr Kupiszewski[6], Zamin A. Kanji[1], and Ulrike Lohmann[1]

[1]Institute for Atmospheric and Climate Science, ETH Zürich, 8092 Zürich, Switzerland
[2]Izaña Atmospheric Research Centre, AEMET, Santa Cruz de Tenerife, Tenerife, Spain
[3]Department of Chemistry (T.U. Analytical Chemistry), Faculty of Science, University of La Laguna, Tenerife, Spain
[4]Institute of Environmental Assessment and Water Research, CSIC, Barcelona, Spain
[5]Institute for Meteorology and Climate Research, Atmospheric Aerosol Research, Karlsruhe Institute of Technology, Karlsruhe, Germany
[6]Laboratory of Atmospheric Chemistry, Paul Scherrer Institute, Villigen, Switzerland

Correspondence to: Y.Boose (yvonne.boose@env.ethz.ch) and Z. A. Kanji (zamin.kanji@env.ethz.ch)

1 PCVI characterization

Characterization of the transmission efficiency of the PCVI was carried out using the method described by Kupiszewski et al. (2015) and was conducted as follows: Arizona Test Dust (ATD) was dispersed using a Solid Aerosol Generator (SAG 410; Topas GmbH, Germany). The ATD-containing sample flow was subsequently transmitted through a mixing chamber in order
5 to reduce fluctuations in the aerosol concentrations resulting from variability in the output rate of the aerosol. A valve was used to direct the flow alternatingly through the PCVI or through a bypass, with each run lasting 30 s. The number size distributions of the particles thus transmitted were measured in the range of 0.5 - 20 μm aerodynamic diameter using an Aerodynamic Particle Sizer (APS; model 3321, TSI, USA). The size distributions measured downstream of the PCVI were corrected for particle enrichment in the PCVI, which is given by a factor approximately equal to the ratio of the inlet flow to the outlet
10 flow of the PCVI (Boulter et al., 2006). Finally, the transmission efficiency as a function of particle size was determined by taking the ratio of the enrichment-corrected size distribution downstream of the PCVI to the size distribution downstream of the bypass (see Fig. 1).
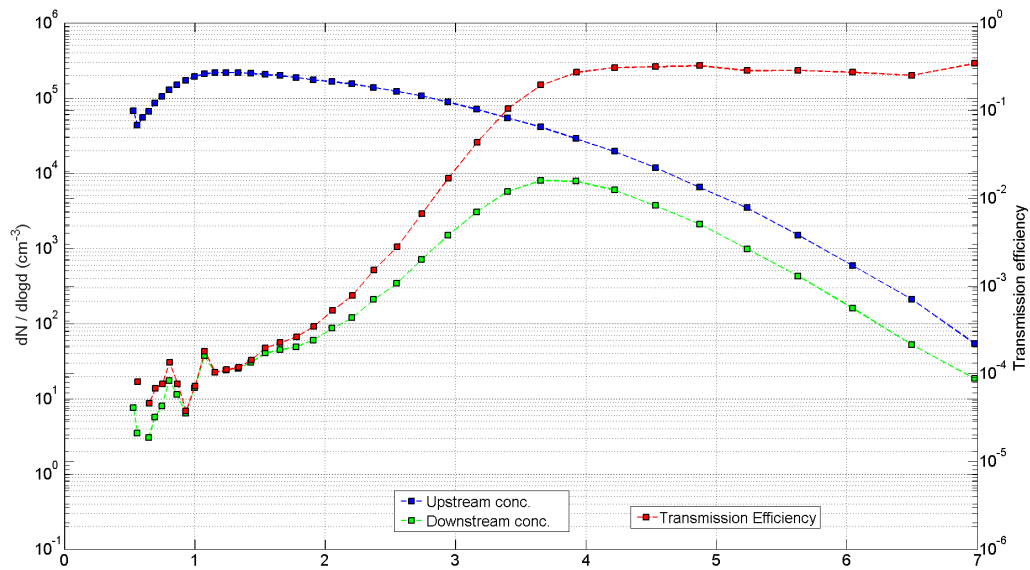
Figure 1. Particle concentration and transmission efficiency of the PCVI.

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