(18-220414-C) **Aerosol Optical Properties Calculated from Size Distributions, Filter Samples and Absorption Photometer Data at Dome C, Antarctica**

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Optical properties of surface aerosols at Dome C, Antarctica in 2007-2013 are presented. Scattering coefficients (σ_{sp}) were calculated from particle number size distributions and filter samples. Absorption coefficients (σ_{ap}) were determined with a 3-λ PSAP and corrected for scattering by using two different algorithms. The scattering coefficients were also compared with σ_{sp} measured at the South Pole Station (SPO). The minimum s_{ap} was observed in the austral autumn and the maximum in the austral spring. The lowest single scattering albedo $w_o \approx 0.91$ was observed in September and October and the highest $w_o \approx 0.99$ in February and March. The equivalent black carbon (eBC) mass concentrations were compared with eBC at the SPO, Neumayer and Syowa. The maximum monthly median eBC concentrations are ~3 ± 1 ng m^{-3} at all these sites in October-November.

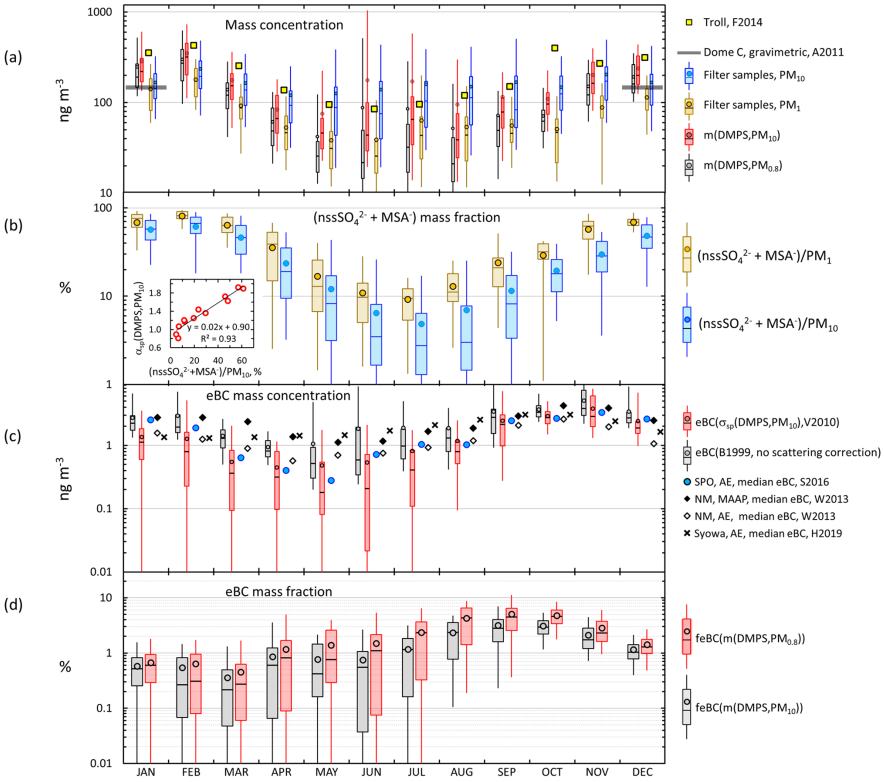

Figure 1. Seasonal cycles of a) aerosol mass concentrations, b) mass fraction of the sum of $nssSO_4^{2-}$ and MSA in PM_1 and PM_{10} filters, c) equivalent black carbon (eBC) concentrations, and d) eBC mass fractions.