

Measurements of Aerosol hygroscopicity in a tropical site influenced by pristine and anthropogenic polluted air masses

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The Amazon region is particularly susceptible to changes in number-diameter distributions of atmospheric aerosols, corresponding to a regime of cloud properties that is highly sensitive to aerosol microphysics. This natural regime, different from other continental areas, is disrupted by anthropogenic pollution from large and growing urban centers. The main objective of the Green Ocean Amazon (GoAmazon2014/15) campaign was to study the interaction of the pollution plume with the biogenic aerosols, and the effects on cloud and aerosol life cycles. The experiment took place around Manaus-Brazil from January 2014 to December 2015. In this paper we compare the particle hygroscopicity obtained from measurements of size-resolved cloud condensation nuclei performed at three ground sites. Site T3 was about 70km downwind from Manaus experiencing urban polluted and background conditions; site T2 was just across the river running alongside Manaus and CCN measurements were performed only from Aug14 to Feb15; and T0, at the Amazon Tall Tower Observatory (ATTO), is a pristine site about 200km upwind from Manaus. Our results show a lower hygroscopicity under polluted conditions than under clean conditions (0.09 and 0.14 for SS% 0.15). At the clean site, it was possible to identify peaks of sea salt particles with organic coating, while small particles seems to be pure organic. The activation fraction and hygroscopicity will be compared and discussed as a function of particle size.