GoAmazon experiment: Urban pollution interacting with natural biogenic aerosols

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The GoAmazon 2014/15 experiment (Observations and Modelling of the Green Ocean Amazon) was a great opportunity to study how urbanization can change aerosol properties under pristine conditions in a tropical rain forest. The experiment took place from January 2014 to December 2015 in the vicinity of Manaus, Brazil, where several sampling stations were operated. Properties analysed were size distribution, scattering and absorption, composition, vertical profiles and others. Remote sensing measurements shows important changes in the aerosol absorption component. It was also observed a reduction in cloud droplet size downwind of Manaus for liquid phase clouds, with impacts in precipitation. Aerosol composition showed a large dominance of organic aerosols for all sites, accounting for 65-75% of PM1 aerosol. Most of these were secondary organic aerosol (SOA), with very low sulphate and nitrate concentrations. The influence of the Manaus plume on aerosol properties was more intense during the wet season, because in the dry season a significant amount of large scale biomass burning aerosol was observed for all GoAmazon 2014/15 sites. Formation of SOA was very strong from the interaction of NOx emissions with natural biogenic VOCs. Isoprene oxidation products dominated the SOA component. Aerosol absorption was strongly affected by the urban emissions, and impacting aerosol radiative forcing.