

Submicron aerosol and trace gas composition near Manaus as observed during GoAmazon2014/5

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The Amazon Basin, during the wet season, has one of the lowest aerosol concentrations worldwide, with air masses covering thousands of kilometers of pristine forest with negligible human impact. The atmosphere in such regions is strongly coupled with the biosphere through primary biological aerosols, biogenic salts and secondary aerosols from oxidation of biogenic VOCs. The natural environment is strongly modified nearby urbanized areas, in particular Manaus, a city of nearly two million people. The urban pollution plume has high concentrations of oxides of nitrogen and sulfur, carbon monoxide, particle concentrations, and soot, among other pollutants, strongly contrasting with the clean air masses reaching the city. Such unique location provides the ideal laboratory to study the isolated urban emission, as well the pristine environment by perturbing it in a relatively known fashion. The GoAmazon experiment was designed with these questions in mind, combining remote sensing, *in situ* and airborne measurements. This manuscript describes the measurements currently taking place at the T2 site, near Manaus, frequently impacted by relatively fresh emissions from the city. This presentation focuses on aerosol properties and trace gas composition at the T2 site.

PM1 mass concentration from March up to July 2014 has been observed to be dominated by organics ($1.51 \mu\text{gm}^{-3}$), followed by BC ($0.83 \mu\text{gm}^{-3}$), SO4 ($0.17 \mu\text{gm}^{-3}$), NO3 ($0.08 \mu\text{gm}^{-3}$) and NH4 ($0.6 \mu\text{gm}^{-3}$). Mean aerosol number concentration was 3600 cm^{-3} , with a mean geometric diameter of 70 nm. As for the trace gases, initial estimates of isoprene ambient concentration is 0.95 ppb, whereas MVK+MACR has been estimated to be 0.76 ppb. Average mixing ratios of toluene, benzene and C8 aromatics were 0.31 ppb, 0.16 ppb and 0.15 ppb, respectively, correlating relatively well with markers of anthropogenic activities, such as BC. Such measurements will carry on throughout GoAmazon 2014/5, providing a unique dataset to understand the aerosol life cycle and the impact of urban emission in the heart of the Amazon Forest.