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Chemical composition of ultrafine aerosol particles in central Amazonia during the wet season

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Supplement

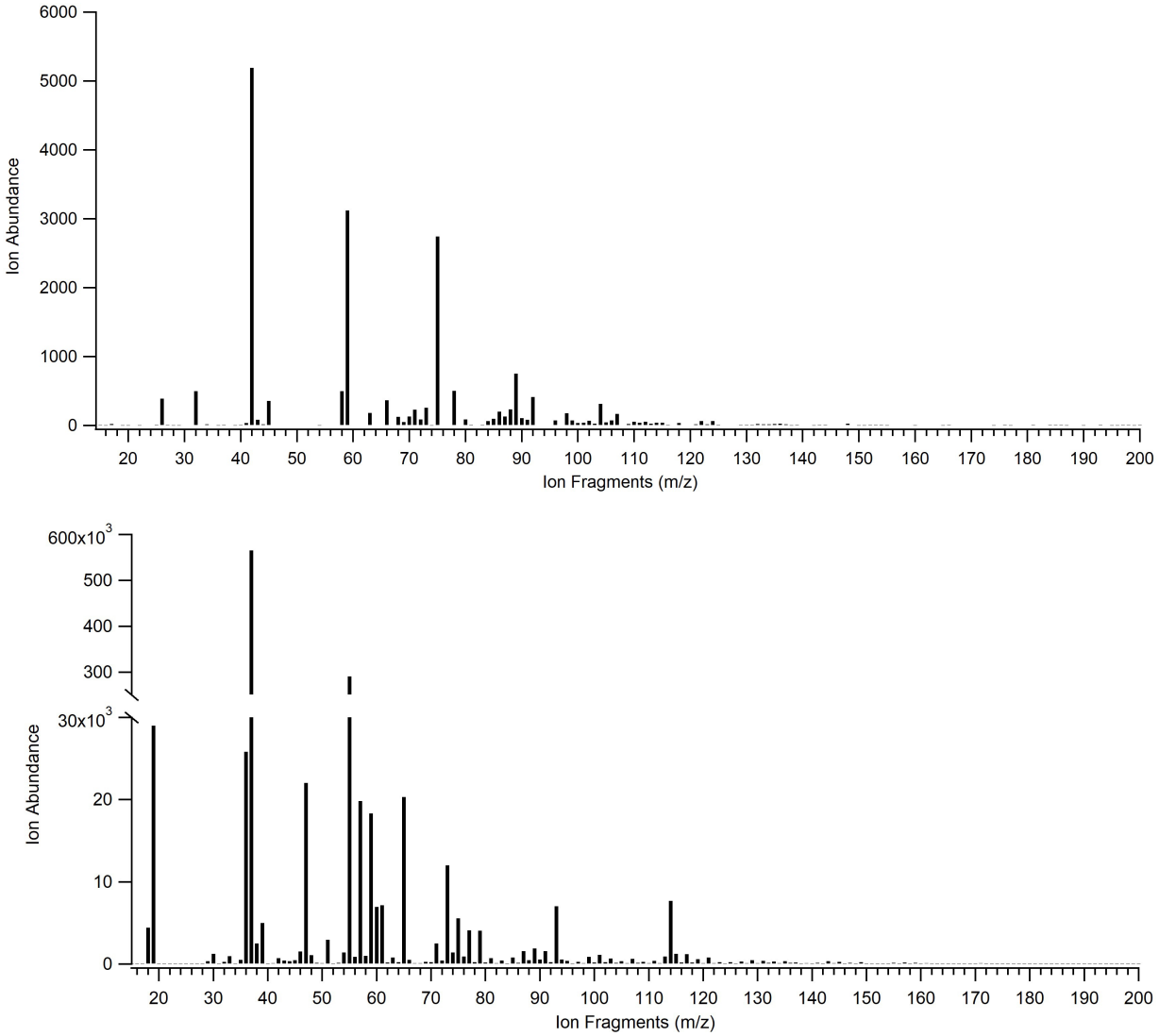

Fig. S1: (top) Complete background subtracted scan in negative ion mode on 3 February, 2014 at 4:00am local time. Of the five analyzed ions measured, m/z 42 (organic nitrogen species), m/z 59 (acetate) and m/z 89 (hydrogen oxalate) were measured. While chloride and bisulfate were not measured at this particular scan, chloride (m/z 35 and 37) was additionally selected to be analyzed to determine potential influence of marine air on particle composition. Bisulfate (m/z 97) was also chosen for analysis as a marker for anthropogenic influence. (bottom) Complete background subtracted scan in positive ion mode on 3 February, 2014 at 5:00am local time. Complete mass spectra were compiled over a couple of days and above are examples of two complete scans.

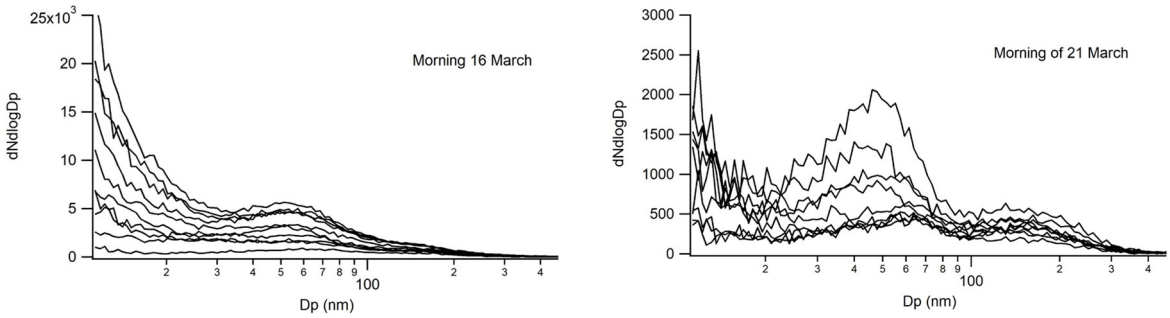

Fig. S2: Examples of particle size distributions from two mornings (midnight through 9:00). (left) Example distribution from the anthropogenic period. (right) Example distribution from the background period.

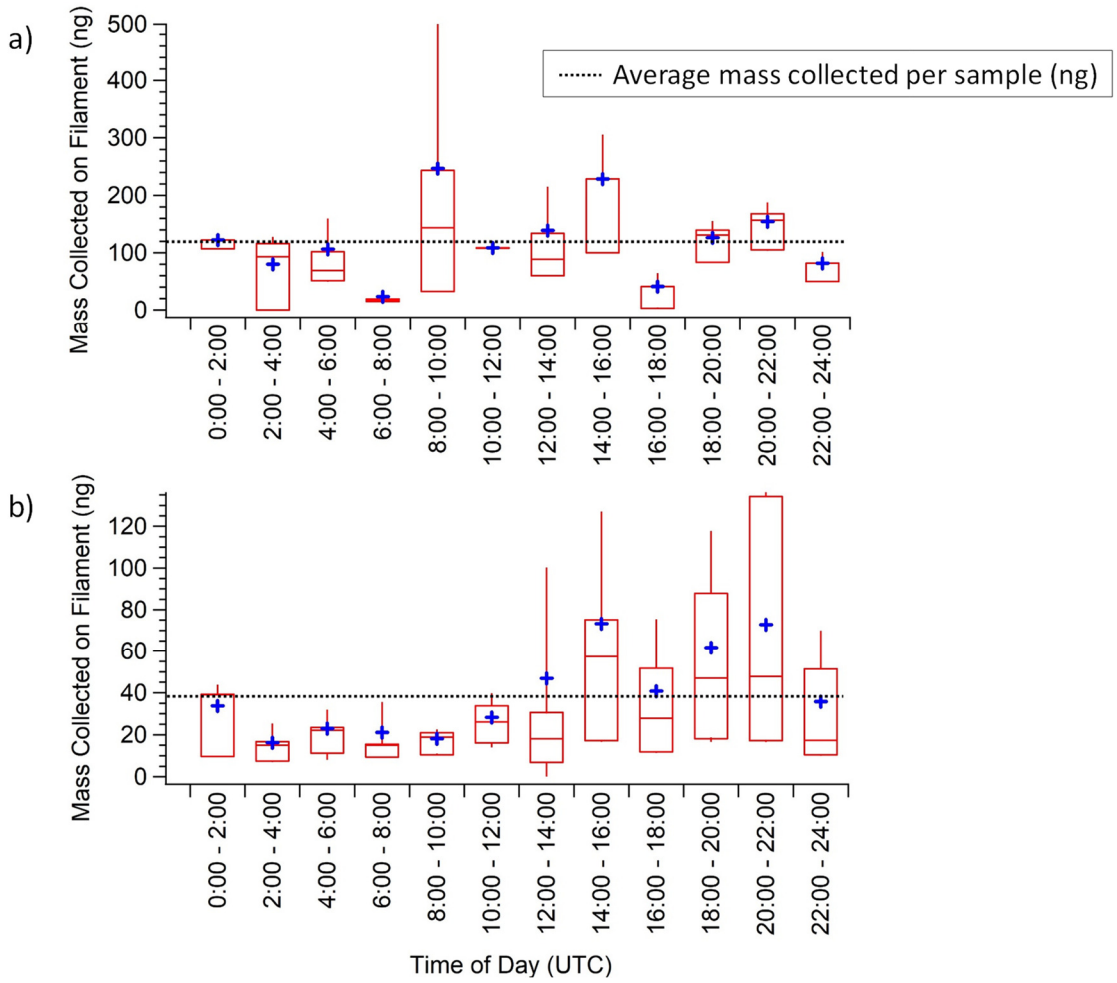

Fig. S3: Diurnal patterns of the estimated mass collected on the TDCIMS Pt filament during collection. a) Anthropogenic period: in which no regular diurnal pattern is observed. b) Background period: characterized by peaks in collected mass in mid-afternoon and at least half the mass collected compared to the anthropogenic period. The horizontal dashed lines represent the average mass collected for each period, with the average mass collected for anthropogenic period being 126 ± 124 ng and for the background period being 39.9 ± 41.2 ng.

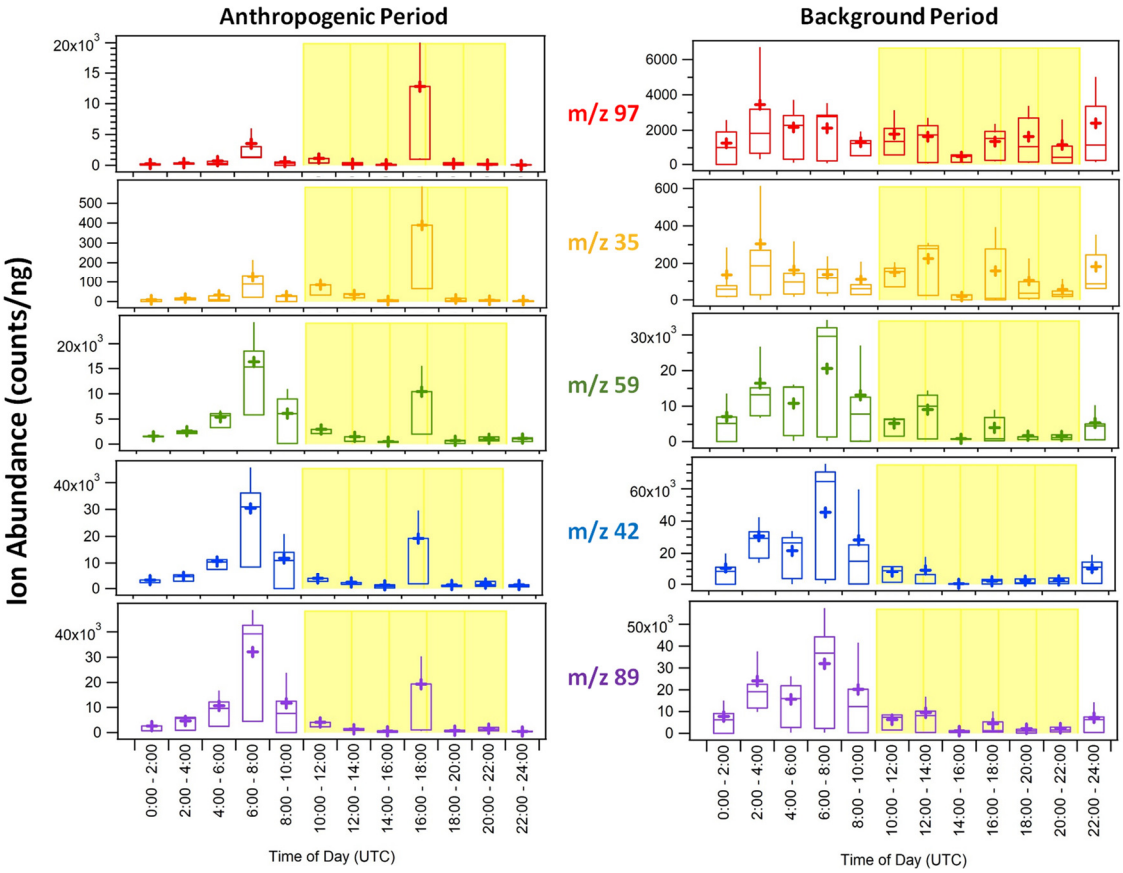

Fig. S4: Diurnal patterns for both anthropogenic and background periods of mass normalized negative ion abundances. Peaks at similar times were observed for all species, from 6:00-8:00 and 16:00 to 18:00 for the anthropogenic time and from 6:00-8:00 for the background period.

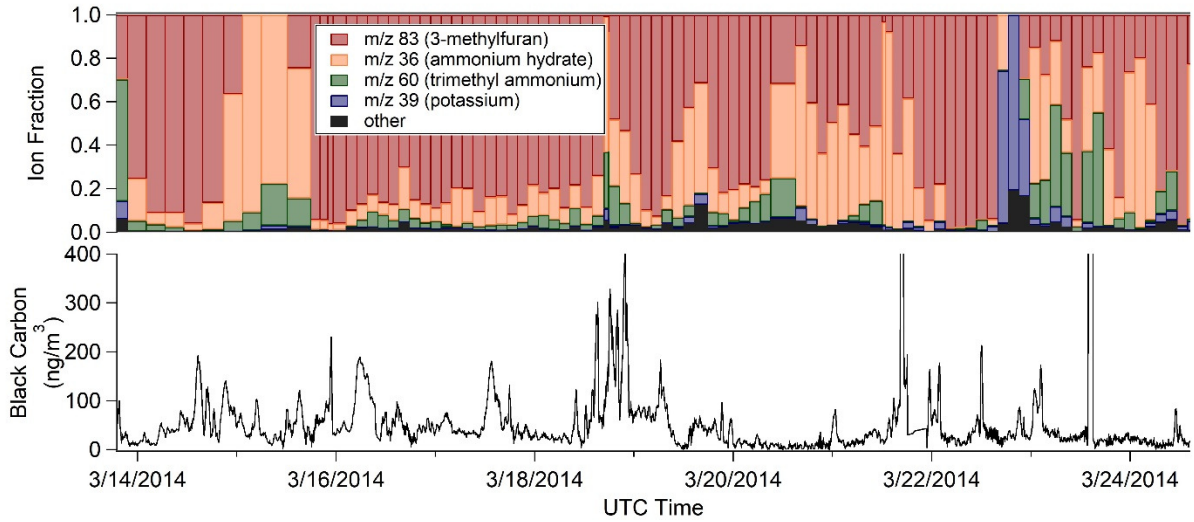

Fig. S5: Positive ion mode fraction (top) and black carbon concentration (determined from Aethalometer data recorded at 880 nm, bottom). During the background period, there were times of lower (near zero) black carbon concentration, but times of biomass burning influence as well. The potassium event observed on 22 March coincided with elevated levels of black carbon, but not as large as concentrations observed during the anthropogenic time.

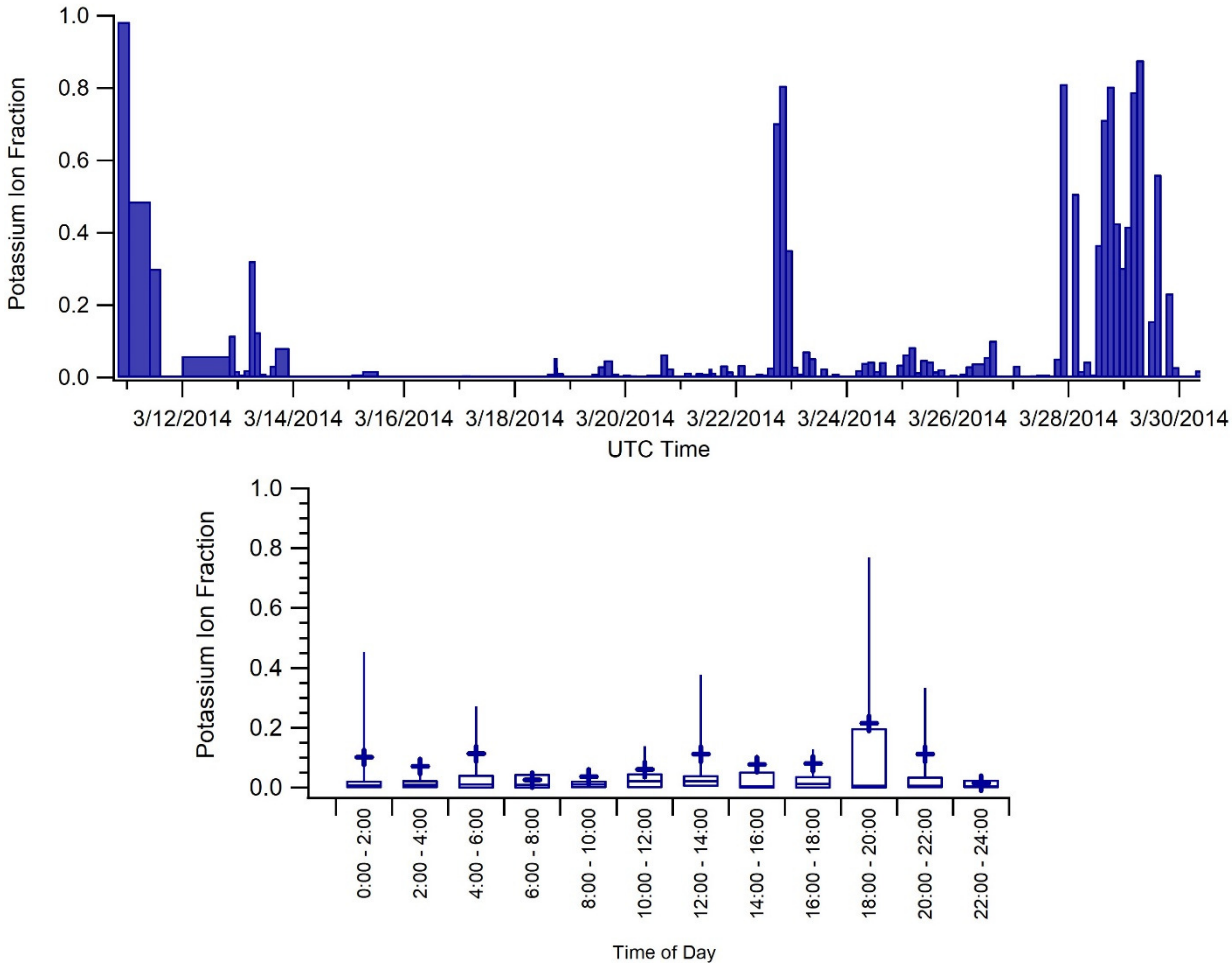

Fig. S6: Potassium ion fraction for all of IOP1 and diurnal pattern for ion fraction. Of 163 measurements during this twenty-day period of measurements, roughly 14% of measurements had a potassium ion fraction greater than 0.1. Also, roughly 12% of measurements had no measureable amount of potassium.