Microphysics of Amazonian aerosol under background conditions and the impact from the urban pollution and biomass burning

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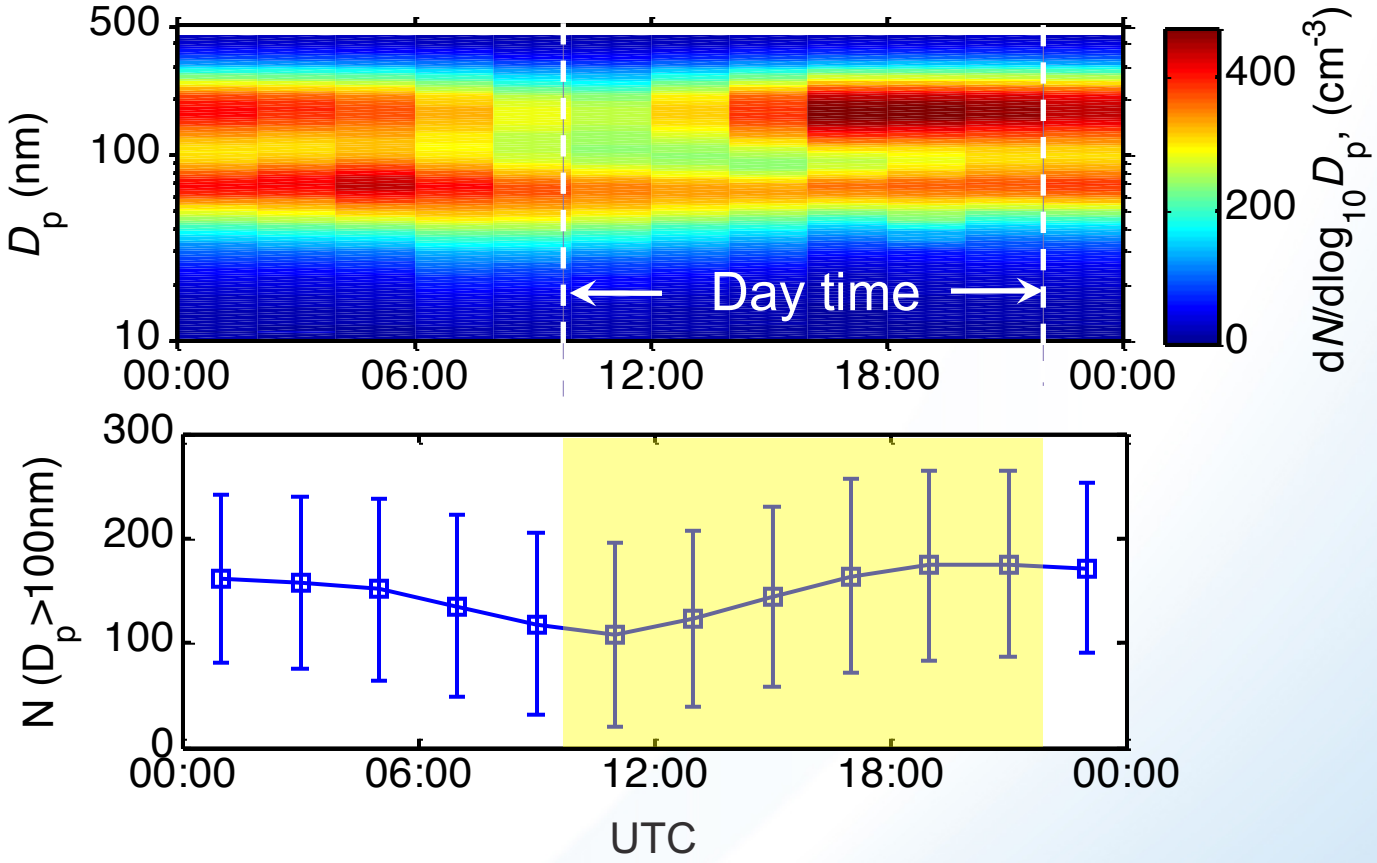
Diurnal variation of particle size distribution under background condition in wet season

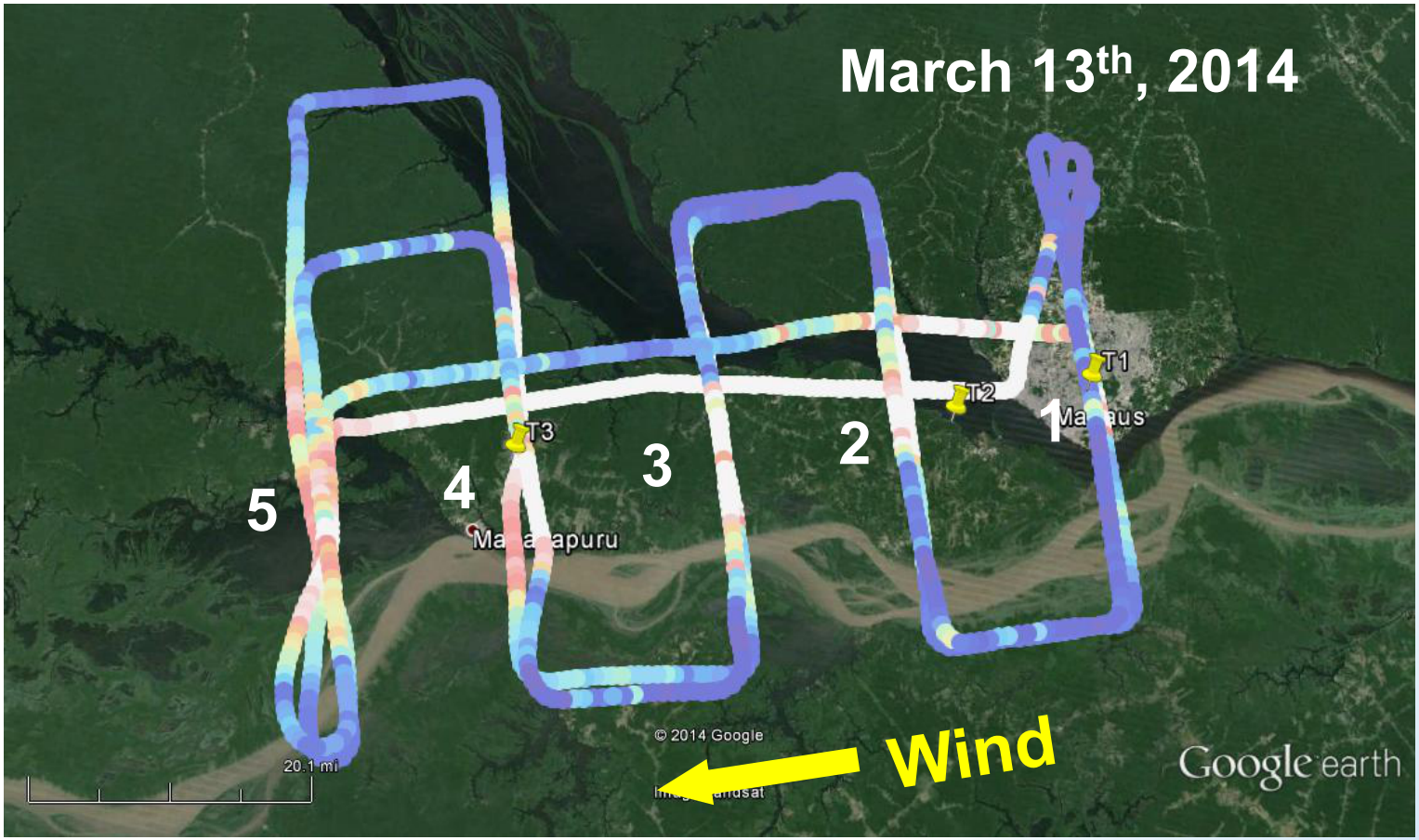
T0a site (ATTO)
Mar 1- Jun 1, 2014

N: ~320 cm^{-3}

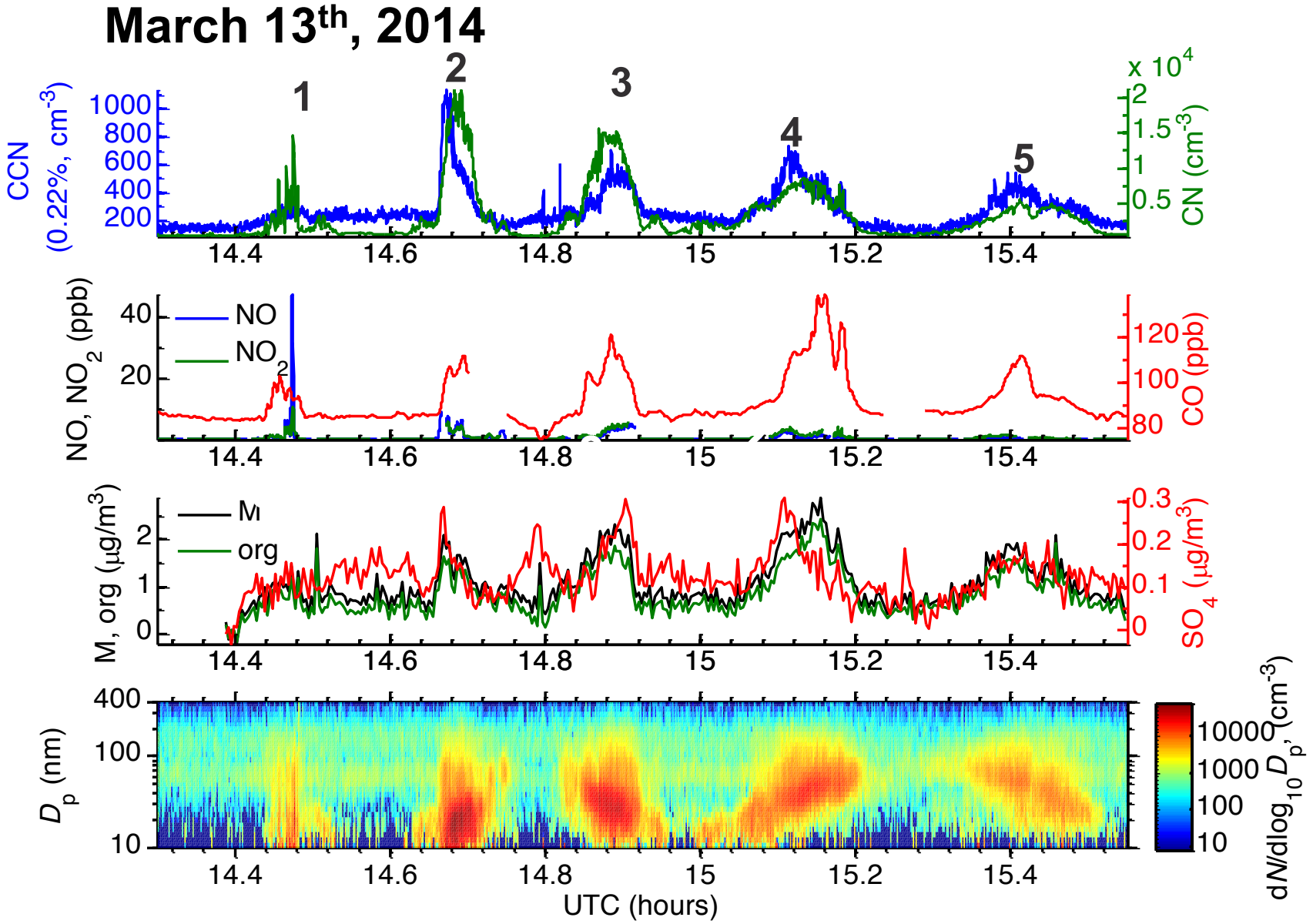


- ✓ Accumulation mode concentration decreases during evening and early morning, then increases until early afternoon.
- ✓ Aiken mode concentration starts increasing from later afternoon, peaks around early morning.

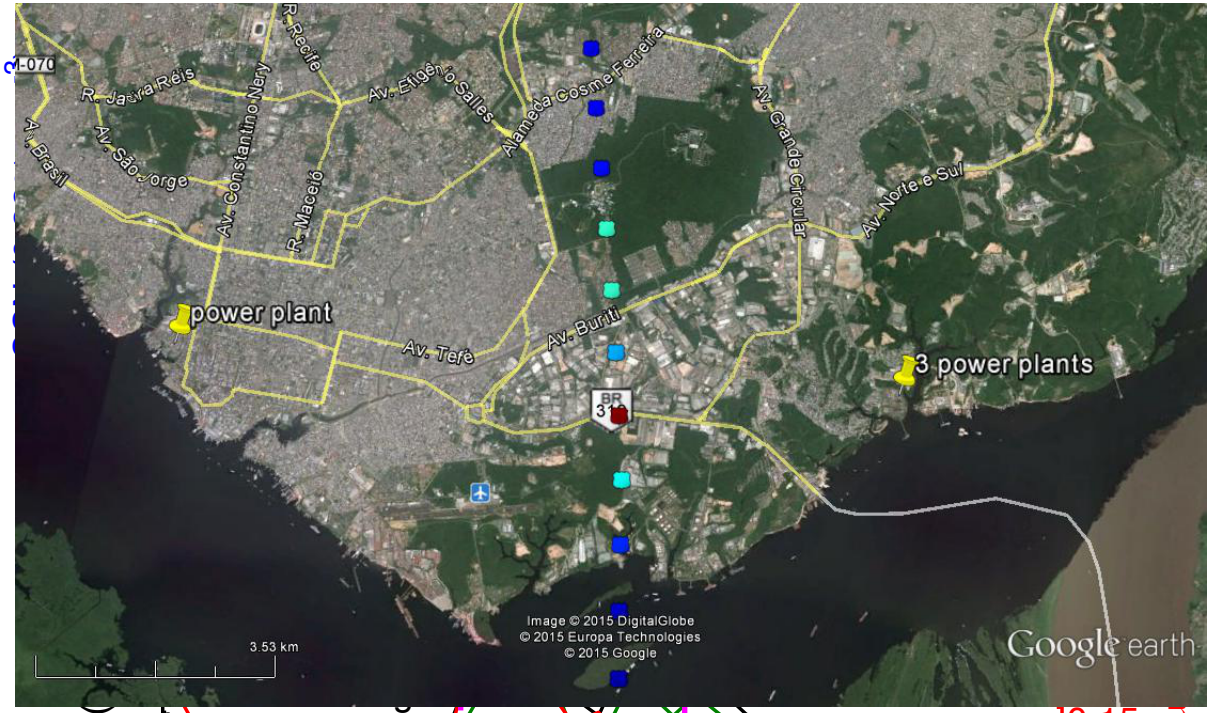
G-1 flight tracks

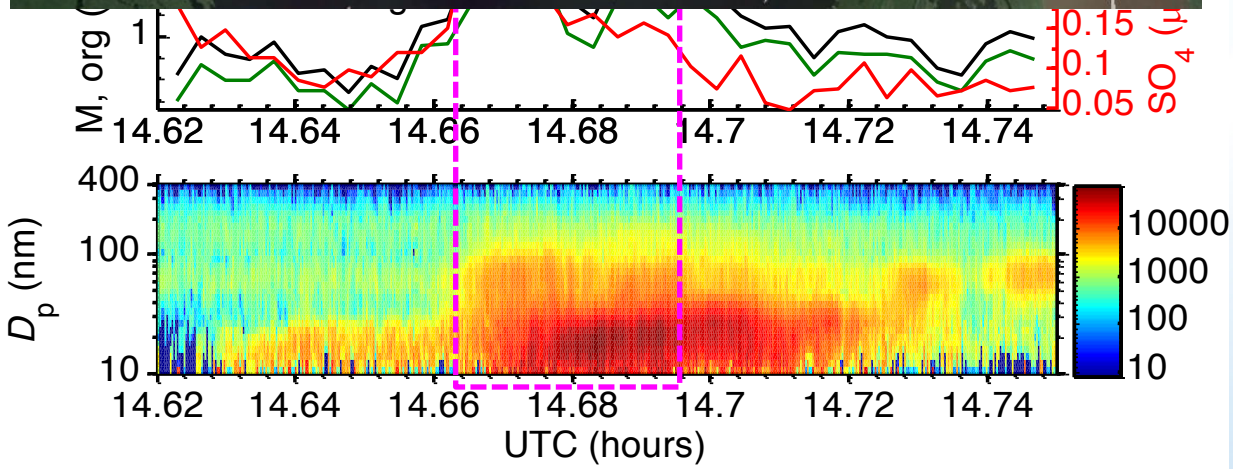


Impact of Manaus plume



Two sides of Manaus plume





South side of the plume:

- Originated from Industrial area
- High NO and NO_2
- Higher SO_4 mass concentration
- Smaller nucleation mode size

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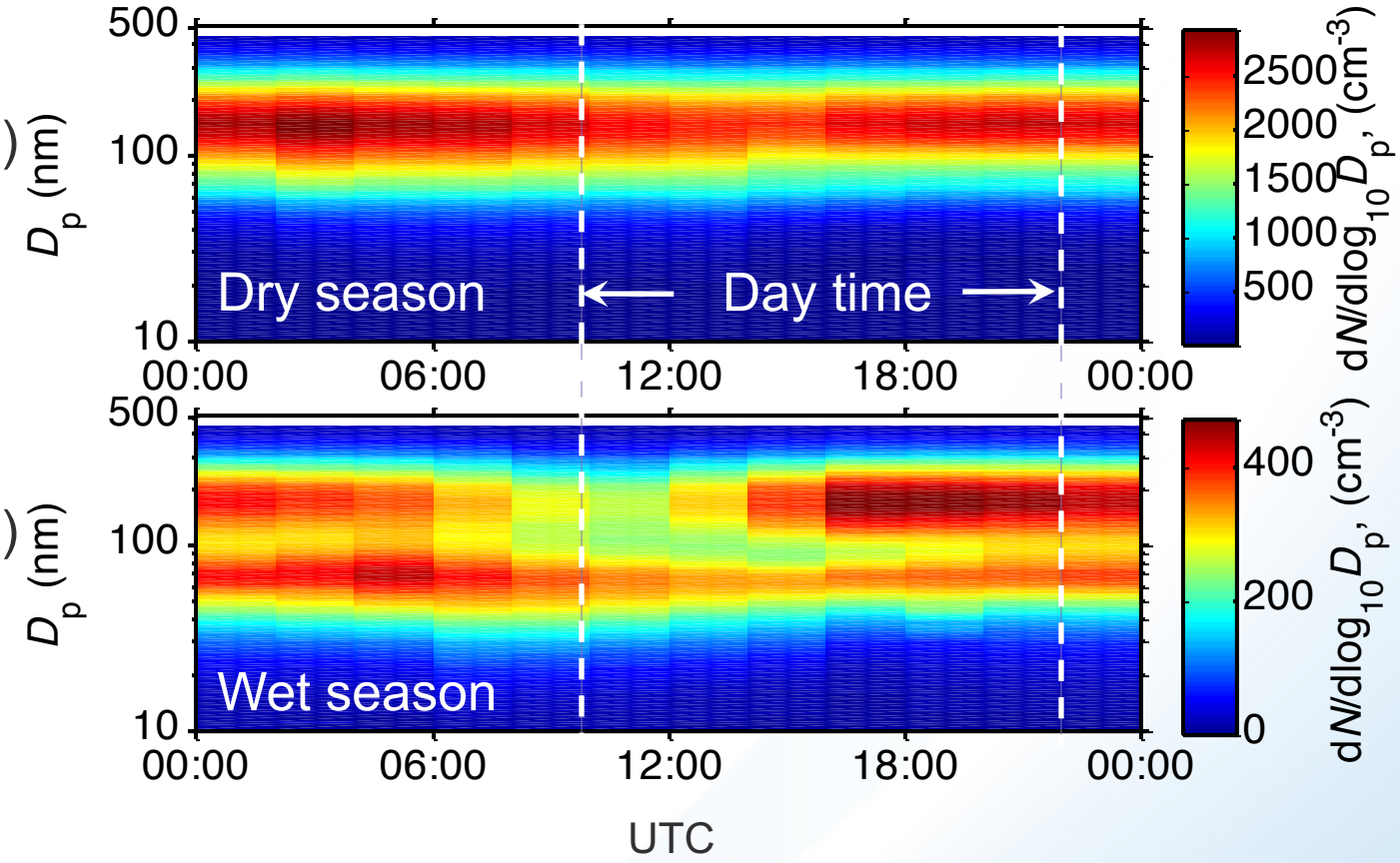
Diurnal variation of particle size distribution dry season vs. wet season

T0a site (ATTO)
Aug 15-Oct 15
N: ~1540 cm^{-3}

T0a site (ATTO)
Mar 1- Jun 31
N: ~320 cm^{-3}



- ✓ Average background concentration (T0 site) increases by a factor of ~5 (from ~320 to ~ 1540).
- ✓ Particle size distribution in dry season dominated by accumulation mode particles.

Manaus plume vs. local biomass burning