

## Fluxes of CO<sub>2</sub>, CH<sub>4</sub>, CO, BVOCs, NO<sub>x</sub>, and O<sub>3</sub> in an Old Growth Amazonian Forest

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The Amazon Forest includes a diverse combination of vegetation characteristics, climate, and land usage that influence emission of the reactive trace-gases that influence atmospheric chemistry and particle formation. A better understanding of atmospheric chemistry across this region requires consideration of variation in precursor emissions. To complement the intensive GoAmazon measurement campaigns we have established a suite of measurements including NO<sub>x</sub>, O<sub>3</sub>, CH<sub>4</sub>, CO<sub>2</sub>, at the km67 site in the Floresta Nacional do Tapajós: 600 km east (upwind) of Manaus. The site is situated midway between the Tapajos River on the west and the BR 163 highway to the east (upwind). The nearby surroundings for up to 6 km on all sides is intact rain forest. A strip along the east side of the highway and adjacent roads has been cleared for agriculture, but the upwind area is otherwise sparsely populated. The site is away from urban sources but is influenced by the nearby agricultural activity in some seasons. Observations of CO<sub>2</sub> concentrations and flux were established at km67 in 2001. In 2014 we added a new profile inlet system to measure gradients of NO/NO<sub>2</sub>, CH<sub>4</sub>, and O<sub>3</sub> and will highlight them here. An intensive campaign near the end of wet season in June-July 2014 focused on emissions of biogenic hydrocarbons and formation of fine aerosol.

Both O<sub>3</sub> and CH<sub>4</sub> are depleted in the canopy space relative to air above the trees, demonstrating deposition to the leaves and overall soil uptake of CH<sub>4</sub> at this site. Large-scale variability in ambient CH<sub>4</sub> concentrations, however, suggest there may be some regional sources. The soils at this site appear to be strong sources of NO. NO<sub>x</sub> levels are highest close to the ground where emissions are trapped in a stagnant layer, but still approach several ppb above the canopy at night.