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The intensity of segregation of the OH-Isoprene reaction –measurements above the amazon rain forest-

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Incomplete mixing (segregation) causes reduced reaction rates compared to laboratory values derived for well mixed conditions.
The dominant contribution to atmospheric chemistry is given by the most important oxidizing agent, the OH-radical, which is regarded as the detergent of the atmosphere as it reacts with the majority of atmospheric pollutants and therefore accelerates their removal from the atmosphere. Hence, to understand atmospheric self-cleansing, we need to quantify and understand the budgets (sources and sinks) of OH.
Budgets are generally derived by measuring mixing ratios of known source molecules (either primary or recycling) and the total sink for OH of which isoprene is an important part in the pristine rain forest. The production and loss terms are calculated by using the measured mixing ratios and the laboratory derived kinetic values. If reactants are not well mixed their actual reaction rates are lower in the atmosphere than in the laboratory. Therefore, segregation might play a substantial role in quantifying and understanding the derived budgets.
We measured OH-radicals, isoprene and other species (O_3, NO_x, HO_2, H_2O) with high time resolution (1-10 Hz) shortly above a rain forest canopy (41 m above ground level) at the ATTO (Amazon Tall Tower Observatory) site (02°08'38.8"S, 58°59'59.5"W). The site is characterized by high isoprene (up to $\sim$ 20 ppb) and low NO (50 ppt - 500 ppt). Simultaneous measurements of OH and isoprene with high time resolution (necessary to directly calculate the intensity of segregation) are sparse. To our knowledge this is now the third dataset for OH-isoprene segregation but the first from a tropical rain forest. The results will be compared to modeling results from different environments and the effect of trace gas exchange driven by coherent structures on the intensity of segregation will be evaluated as well.