



OH and HO₂ measured over a tropical rain forest: An indication for yet unknown HO_X chemistry

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Direct measurements of OH and HO₂ over a tropical rain forest took place for the first time during the GABRIEL campaign in October 2005. The measurements were done with a new instrument developed at the MPI for Chemistry and adapted to fly in a Learjet wingpod, named HORUS (HydrOxyl Radical measurement Unit based on fluorescence Spectroscopy). Unexpectedly high mixing ratios for both OH and HO₂ were encountered in the boundary layer over the rain forest, where biogenic emissions strongly influence the OH and HO₂ mixing ratios and their diurnal variability as the air is transported over the forest. The extensive dataset measured during GABRIEL including measurements of many other trace gases and photolysis frequencies allows quantification of the main sources and sinks of OH. Comparison of the derived formation and loss rates of OH indicates the existence of additional sources of OH over the tropical rain forest. Different possibilities for the nature of these additional sources are discussed.