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## The Amazonian Low-Level Jet and its effect on Ozone concentrations above the rain forest

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The pristine Amazon rainforest is a unique place to study ozone (O<sub>3</sub>) deposition rates and tropospheric transport, due to the absence of nearby sources of anthropogenic pollution. Parts of the low background O<sub>3</sub> are considered to be transported from the stratosphere into the troposphere. This occurs due to general entrainment of stratospheric air at the tropopause. Within the troposphere, downdrafts provide effective vertical mixing and are known to increase surface O<sub>3</sub> values. Low-level jets can also enhance O<sub>3</sub> concentrations due to long range transport and locally induced mixing in the nocturnal boundary layer. Therefore, we study these phenomena based on long term datasets from 2012 to present from tall measurements towers (80 m and 325 m).

Ozone mixing ratios were measured at the ATTO site (Amazon Tall Tower Observatory) in the Central Amazon (02°08'38.8"S, 58°59'59.5"W) since 2012 at 8 different heights between 5 cm and 80 meters and additional measurements from 80 m up to 325 meters are running since 2017. From 2015 to 2017, 3-dimensional wind measurements have been performed in 150 meters height in 10 Hz sampling rate, showing evidences for the formation of a nocturnal low-level jet (LLJ), which leads to higher turbulent mixing inside the residual layer/ stable nocturnal layer. We were comparing the nocturnal LLJ with downdrafts of air due to strong thunderstorms which led to increases of O<sub>3</sub> as well. We are analyzing these events regarding their in-canopy air exchange, their frequency and seasonality and comparing them with the effects of the nocturnal LLJ. As the data series comprises more than eight years of data we are also analyzing the interannual variability.