Temporal variations of CH₄/CO₂/CO fluxes in the central Amazon rainforest ~ Preliminary report: Diel variations ~

<u>Shujiro Komiya</u>¹, Jost Lavric¹, David Walter^{1,2}, Santiago Botia¹, Alessandro Araujo^{3,4}, Marta Sá³, Matthias Sörgel², Stefan Wolff², <u>Hella Asperen⁵, Fumiyoshi Kondo⁶, Susan Trumbore¹</u> ¹Max Planck Institute for Biogeochemistry, Germany ²Max Planck Institute for Chemistry, Germany ³Instituto Nacional de Pesquisas da Amazônia (INPA) · Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA), Brazil ⁴Brazilian Agricultural Research Corporation (EMBRAPA) · Embrapa Amazônia Oriental, Brazil ⁵Institute for Environmental Physics (IUP), University of Bremen, Germany ⁶Japan Coast Guard Academy, Japan Contact email: skomiya@bgc-jena.mpg.de (Photo by Sebastian Brill)

Background

Pantanal (South of the Brazil)

ATTO site





- Up wind area (NE to E)
- Upland forest
- -> Probably less CH₄ source

Gas Observation at ATTO 80 m tower





- Turbulent flux calculation
- CO₂ flux: Eddy Covariance (EC)
- CH₄/CO flux: Modified Bowen ratio (MBR)
- Net flux = Turbulent flux + Storage flux

Mean diel net CO₂ flux in wet/dry seasons



Eddy CO₂ flux ~ EC vs MBR in 2015



Mean diel net CH₄/CO flux in wet/dry seasons

6

2

-4

6

0

Mean net-CH₄ flux (nmol $m^{-2} s^{-1}$)

CH₄-Wet (February + March + April)

CH₄-Dry (July + August + September)

1⁰ Hour (LT)

CO-Dry (July + August + September)

5

2017

2018

2014

2015

2016

20

15



CO-Wet (February + March + April)



Preliminary Summary and Conclusions

- MBR-CO₂ fluxes mostly agreed with EC-CO₂ fluxes
- MBR-CH₄ flux magnitudes
 - Similar to past upland rainforest studies (Querino et al., 2011; Asperen et al., 2020)
- Diel variations in CO₂ flux
 - Wet season in each year showed higher CO₂ uptake than dry season except for 2017
 - Highest CO₂ uptake during the 2017-dry season might be linked to the largest difference in precipitation between wet and dry seasons.
- Diel variations in CH₄ flux
 - Wet season in each year was smaller than dry season
- Diel variations in CO flux
 - Wet season in each year was similar to or smaller than dry season

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