

**Drivers of methane fluxes from soil and trees in seasonally-flooded and upland forests from the Central Amazon.**PASQUEL, Jhon del Aguila (PASQUEL, Jhon del Aguila) (/icdc-2024/authors/jhon-del-aguila-pasquel?lang=en)¹ SALESKA, Scott R. (SALESKA, Scott R.) (/icdc-2024/authors/scott-r-saleska?lang=en)¹BRECHET, Laetitia M. (BRECHET, Laetitia M.) (/icdc-2024/authors/laetitia-m-brechet?lang=en)²MOURA, Jose Mauro Sousa (MOURA, Jose Mauro Sousa) (/icdc-2024/authors/jose-mauro-sousa-moura?lang=en)³HAREN, Joost L M van (HAREN, Joost L M van) (/icdc-2024/authors/joost-l-m-van-haren?lang=en)¹ JUNIOR, Miércio Ferreira (JUNIOR, Miércio Ferreira) (/icdc-2024/authors/miercio-ferreira-junior?lang=en)³AQUINO, Felizandra Pereira de (AQUINO, Felizandra Pereira de) (/icdc-2024/authors/felizandra-pereira-de-aquino?lang=en)³LIMA, Keven dos Santos (LIMA, Keven dos Santos) (/icdc-2024/authors/keven-dos-santos-lima?lang=en)³ TAPAJOS, Raphael (TAPAJOS, Raphael) (/icdc-2024/authors/raphael-tapajos-2?lang=en)³JUNIOR, Raimundo Cosme de Oliveira (JUNIOR, Raimundo Cosme de Oliveira) (/icdc-2024/authors/raimundo-cosme-de-oliveira-junior?lang=en)⁴ALVES, Luciana (ALVES, Luciana) (/icdc-2024/authors/luciana-alves-2?lang=en)⁵ LUZ, Efraim da Silva (LUZ, Efraim da Silva) (/icdc-2024/authors/efraim-da-silva-luz?lang=en)³

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Poster

[☆ \(/user/login/ashnazg?destination=/proceedings/100434/_papers/188251/favorite%3Flang%3Den&lang=en\)](#)**HOW TO CITE THIS PAPER?****Abstract**

Methane (CH₄) is a greenhouse gas with 35 times the warming potential of carbon dioxide. In the last 15 years, the concentration of atmospheric CH₄ has sharply increased and the signature of carbon stable isotope in CH₄ has become more negative suggesting biotic sources, such as tropical wetlands, might be partly responsible for the current atmospheric methane budget. Floodplains in the Brazilian Amazon have been found to release vast amounts of CH₄ but the methane dynamics in upland forests are not very well studied. We assessed the magnitude of CH₄ fluxes from soil and tree stem surfaces across dry and wet seasons in two contrasting ecosystems in the Central Amazon basin: the seasonally flooded *varzea* and the upland *terra firme* forest. Likewise, some potential drivers of such fluxes were assessed: tree diameter, stem height of measurement, tree species, water table depth, and air temperature. Methane fluxes were measured using chamber-based techniques in the period 2022-2023. Overall, greater fluxes were released from the tree stems of the *varzea* forest during the first half of the wet season (June-August). On the other hand, the stem surface of upland trees emitted very low CH₄ fluxes (< 1 mg m⁻² h⁻¹). Methane fluxes of most trees from the flooded forests decreased with stem height, a pattern not shown by tree fluxes in the upland forest. The fluxes from tree stem emissions varied by tree species in both forest types: *Munguba* tree (*Pachira aquatica*) and *Jarana* tree emitted more CH₄ fluxes than other species in *varzea* and upland forests, respectively. The next step of our research will be the assessment of the microbial role in the methane cycle of both forest types using a combination of isotopic and -omic techniques.

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14:00 to 16:30 on 07/29/2024

Poster Session

<https://eventos.galoa.com.br/icdc-2024/calendar/activity/12770>**Institutions**¹ University of Arizona² French National Research Institute of Agriculture, Food and the Environment (INRAE), UMR Ecology of Guianan Forests (EcoFoG)³ Federal University of Western Pará, Santarém, Brazil⁴ Embrapa Amazônia Oriental, Brazil⁵ UCLA Institute of the Environment and Sustainability**Track**

- 11-The Amazon and role in the global carbon cycle

Keywords

methane flux

floodplain

terra firme

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