

GHG emissions from African lakes and headwaters of the Amazon River

Alberto Borges

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CO₂, CH₄, N₂O in the cryosphere, oceans, lakes & rivers

Algal pigments (HPLC), nutrients (NO₃⁻, NO₂⁻, NH₄⁺), CDOM, FDOM, ...

POC-DOC (S. Bouillon – KULeuven, G. Lepoint & L. Michel – FOCUS)



Polar seas

B. Delille (FNRS)



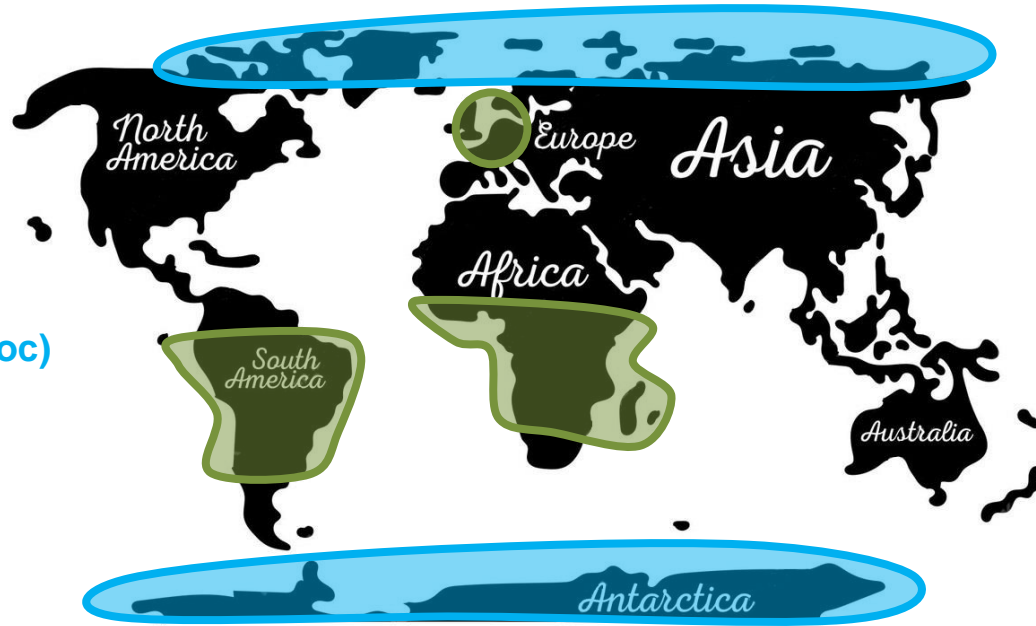
O. Crabeck (Post-doc)



S. Müller (PhD st.)



A. Brusselman (PhD st.)



Rivers & lakes



A. Borges (FNRS)



B. Lejeune (Post-doc)



T. Bauduin (PhD st.)



O. Efe (tech.)

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SCIENCE ADVANCES | RESEARCH ARTICLE

ENVIRONMENTAL STUDIES

Greenhouse gas emissions from African lakes are no longer a blind spot

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ARTICLE



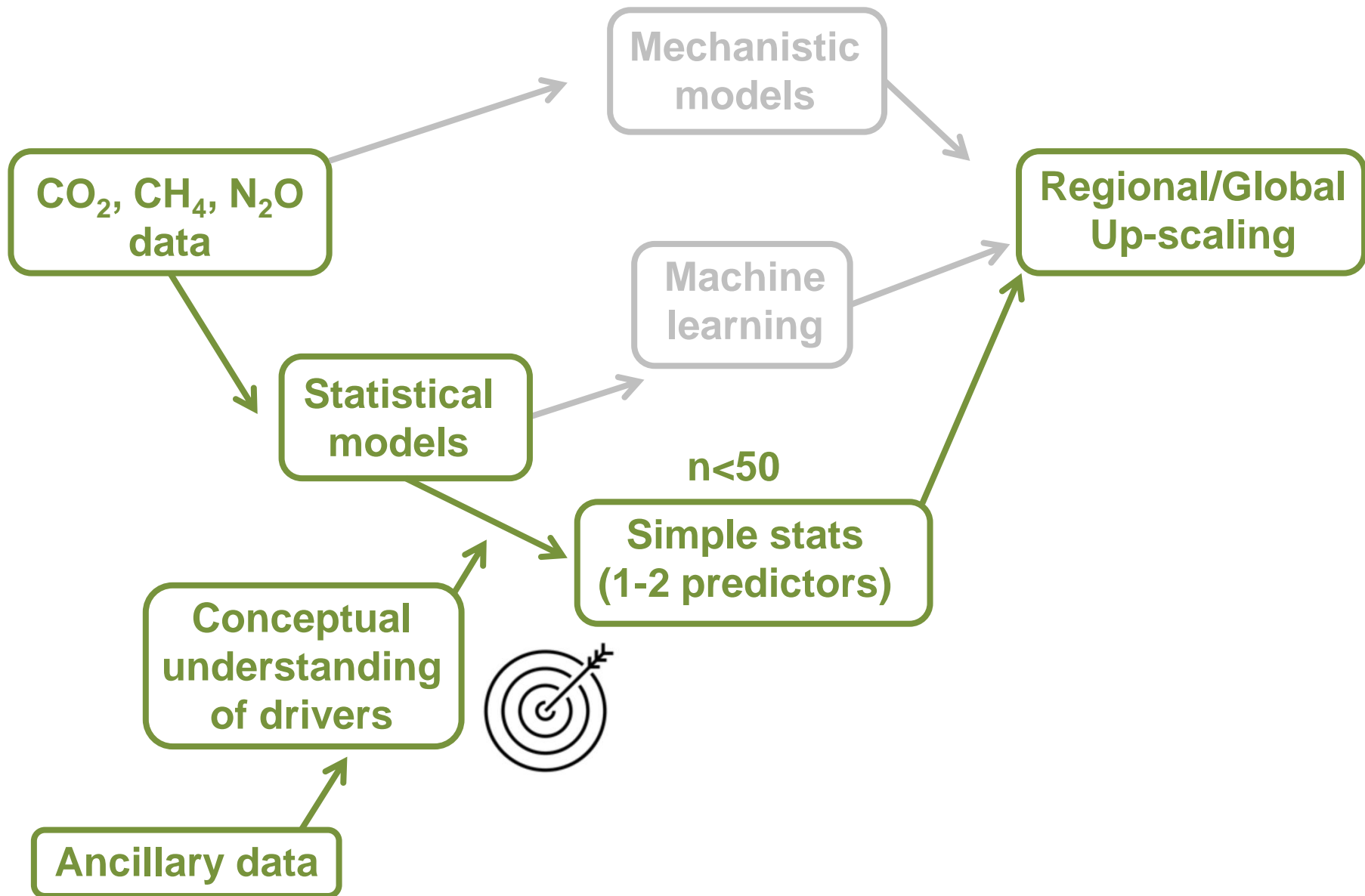
<https://doi.org/10.1038/s43247-023-00745-1>

OPEN

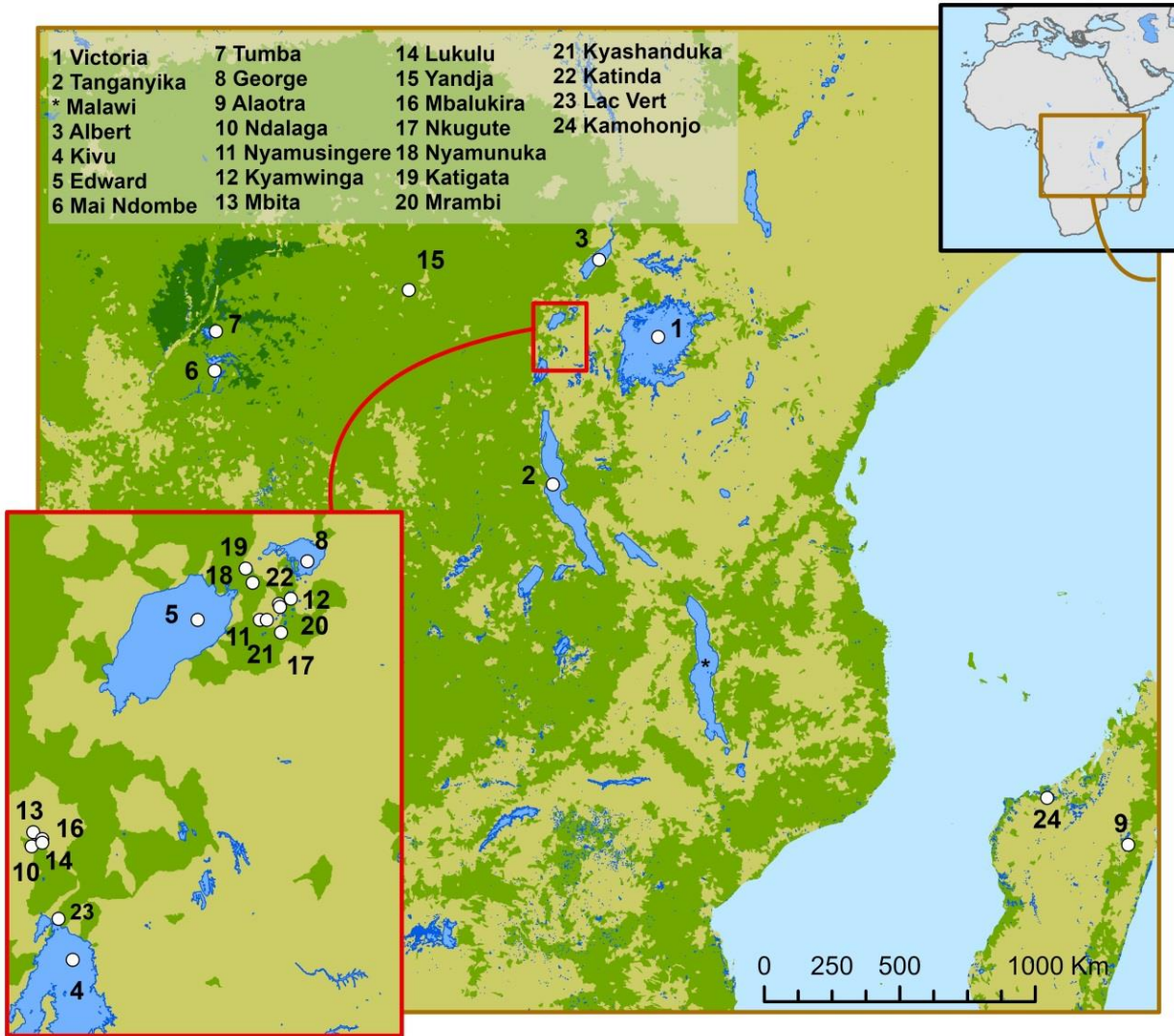
Andean headwater and piedmont streams are hot spots of carbon dioxide and methane emissions in the Amazon basin

Gonzalo Chiriboga^{1,2} & Alberto V. Borges^{1✉}

Publications



African lakes



Land cover



Flooded forest
Rain forest
Savannah

Surface area



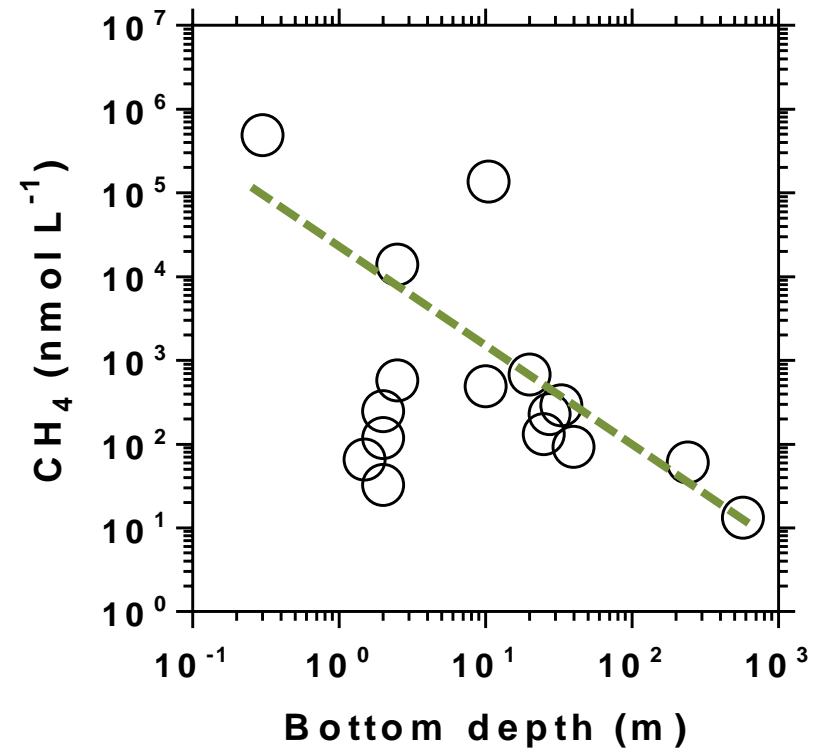
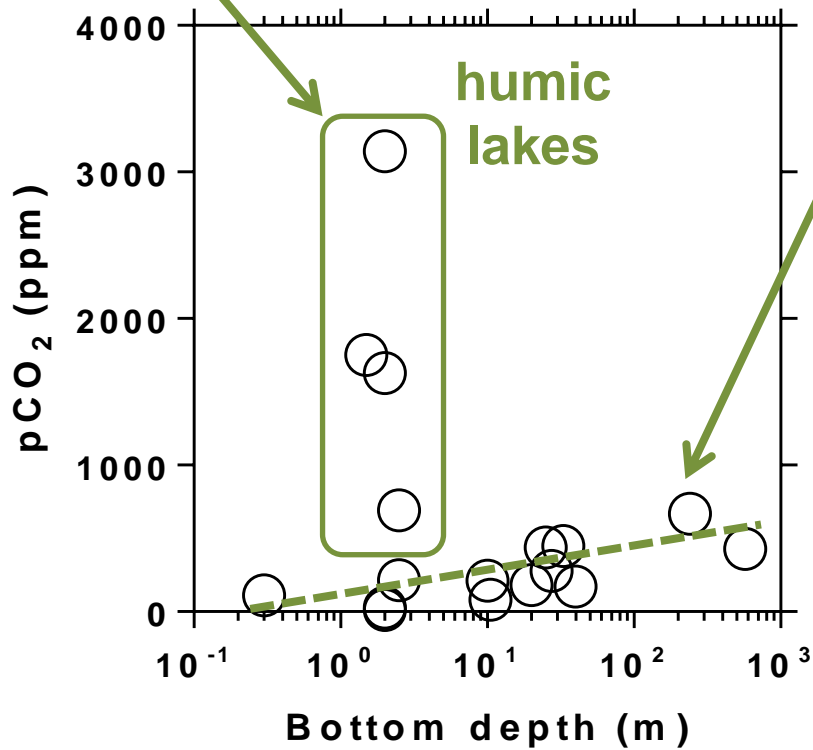
Victoria 67,000 km²
Lac Vert 0.2 km²

Max depth

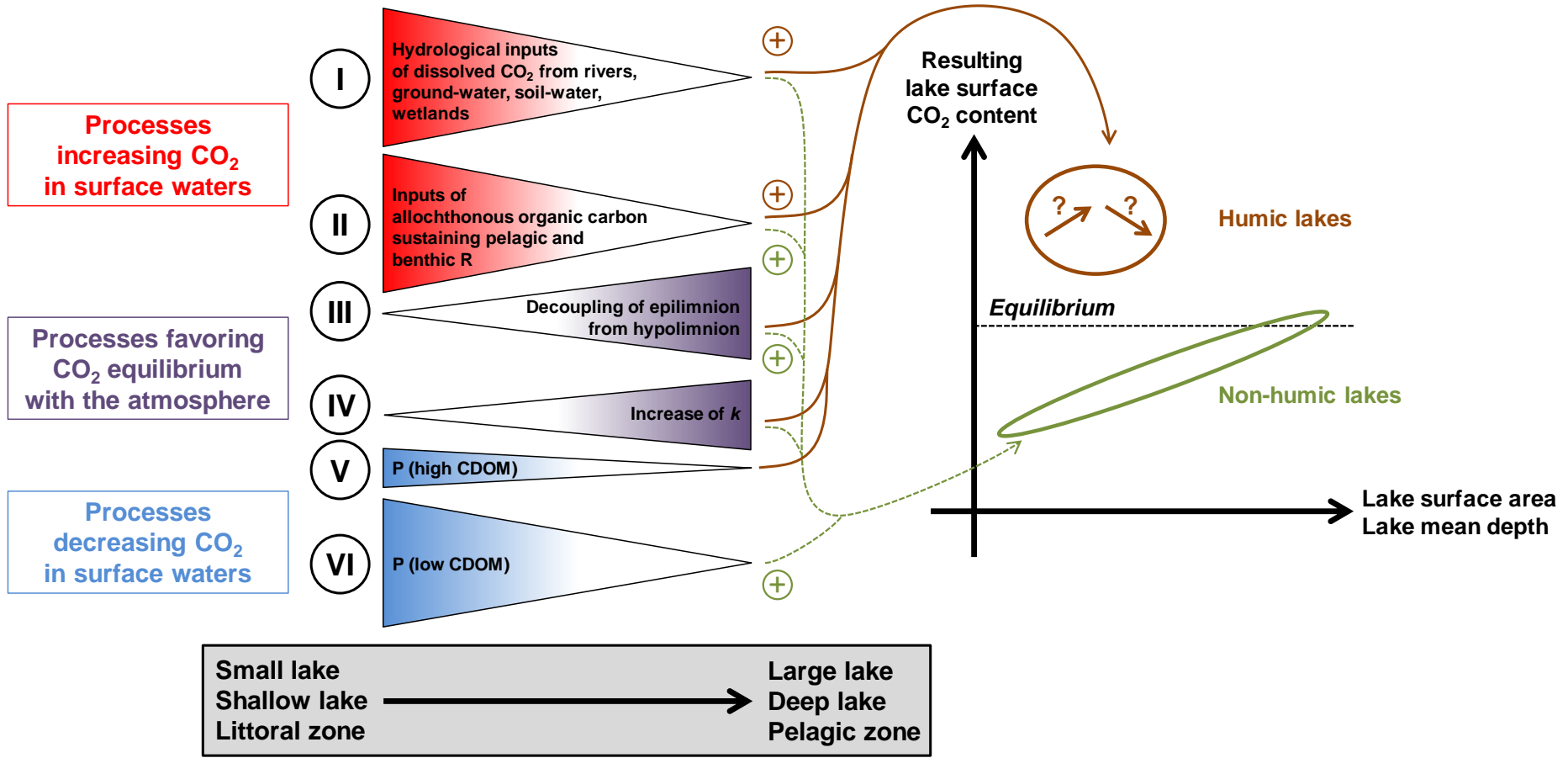


Tanganyika 1,470 m
Nyamunuka 0.1 m

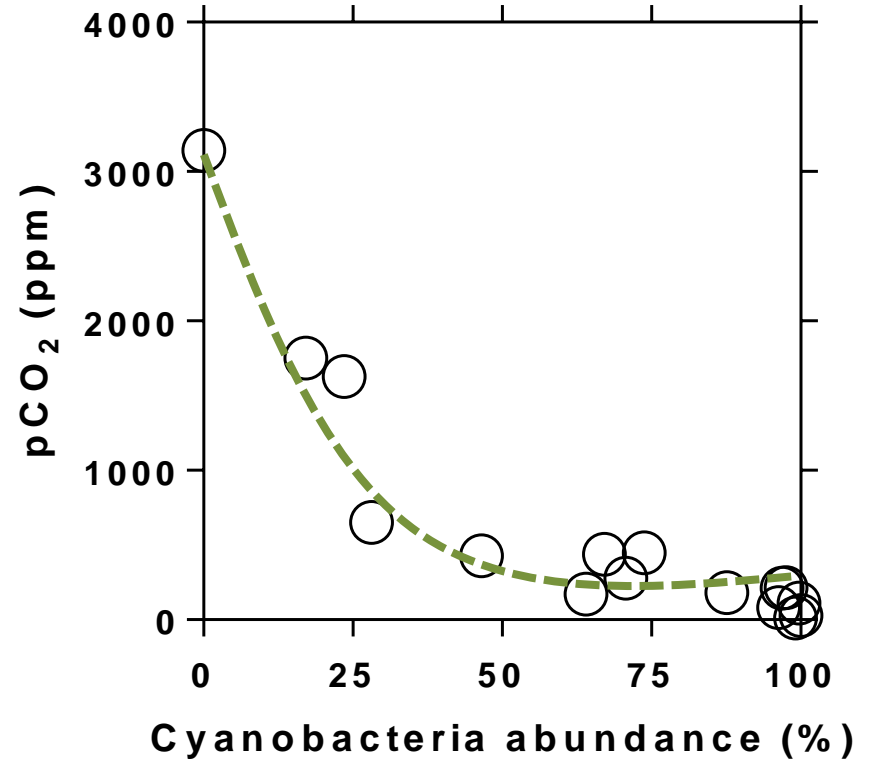
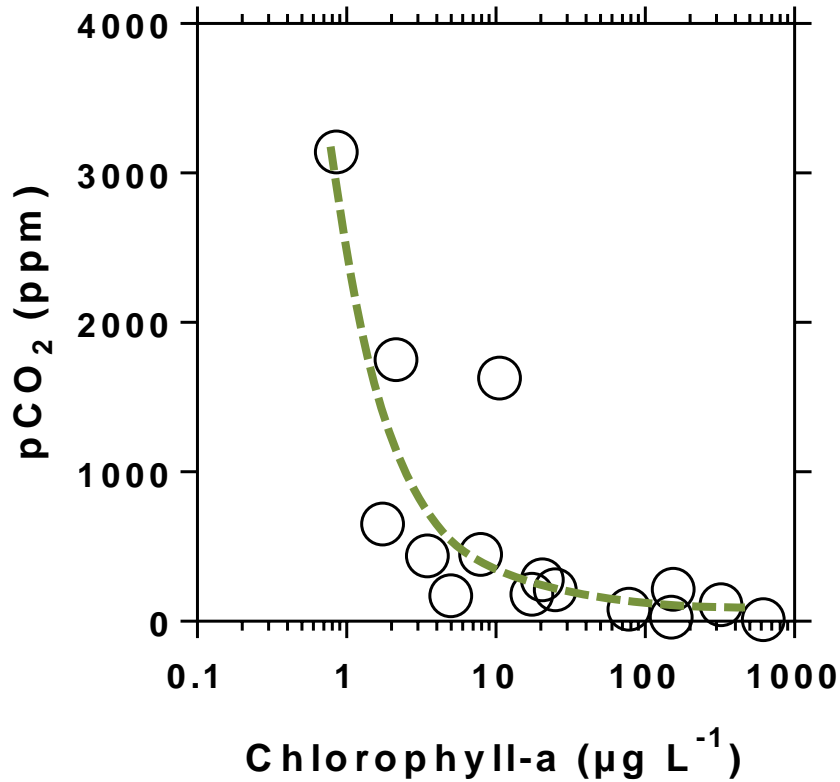
African lakes



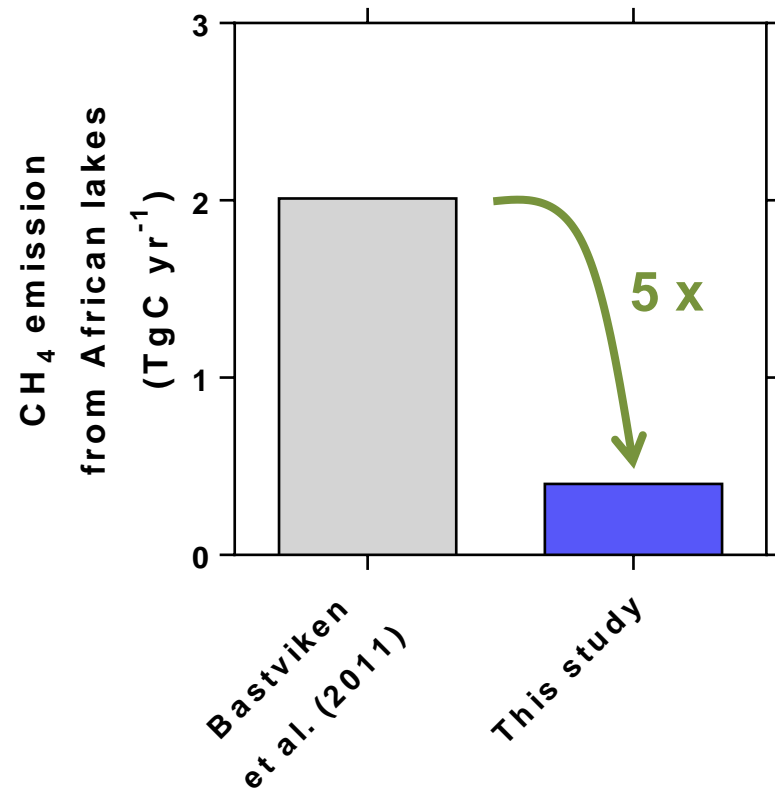
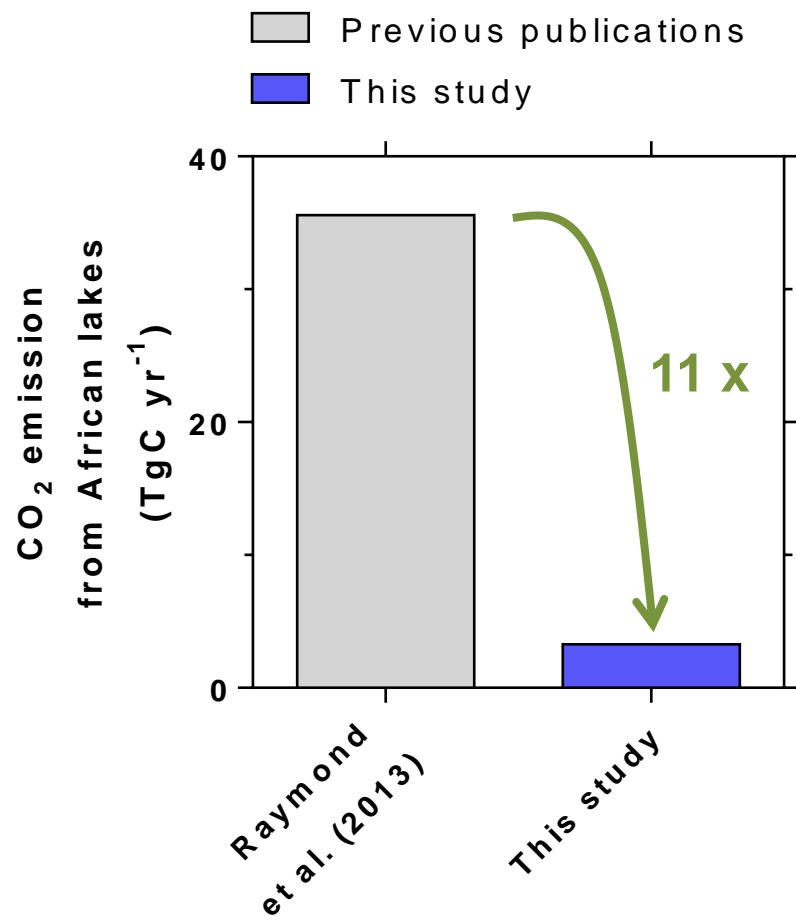
African lakes



African lakes



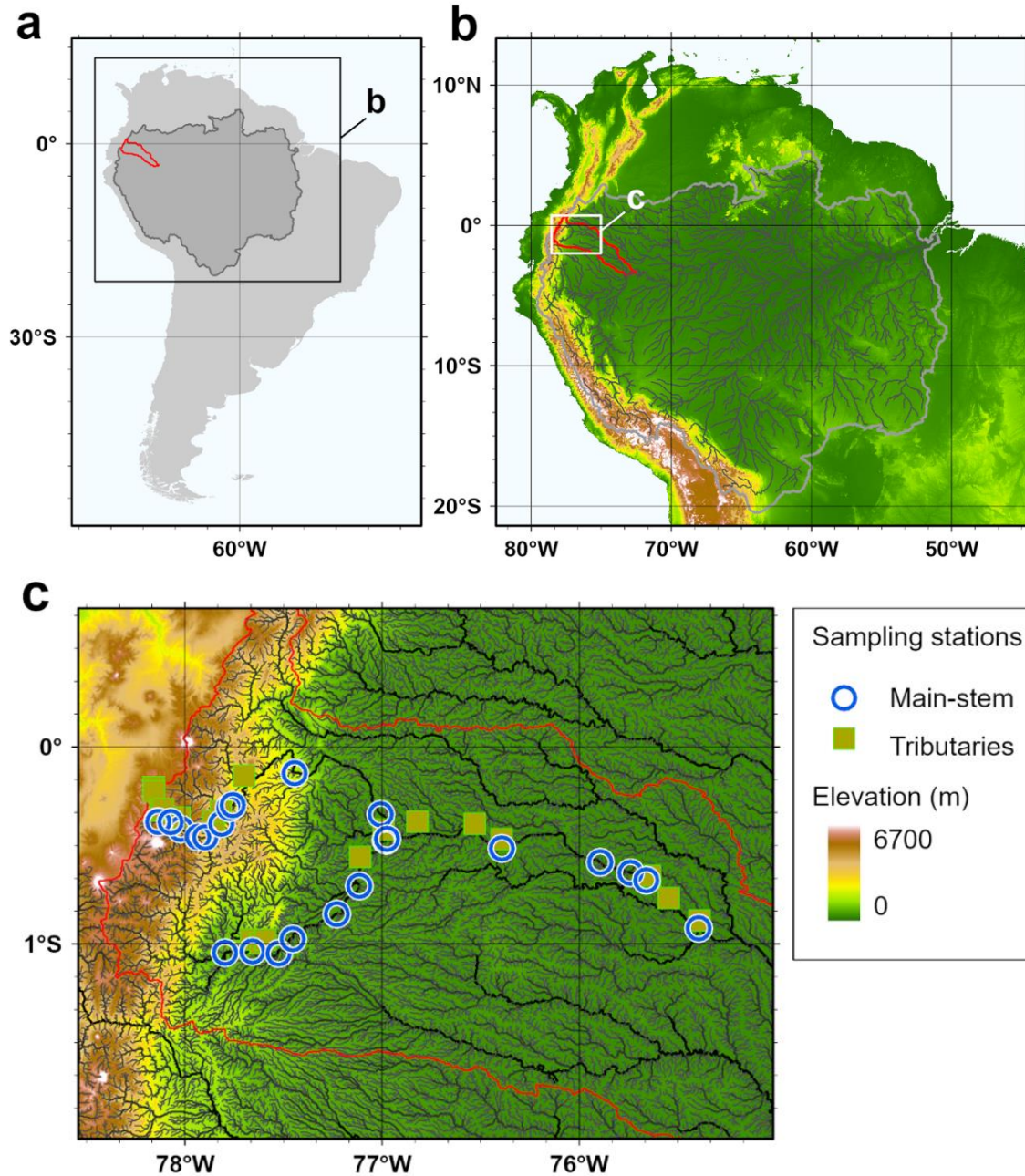
African lakes



Amazon headwaters

Napo River

Elevation
~ 4000m
~ 170m



Amazon headwaters

Flat terrain (lowlands)

Low turbulence

High temperature

Thick soils

Riparian wetlands

High CO₂
High CH₄

Steep terrain (highlands)

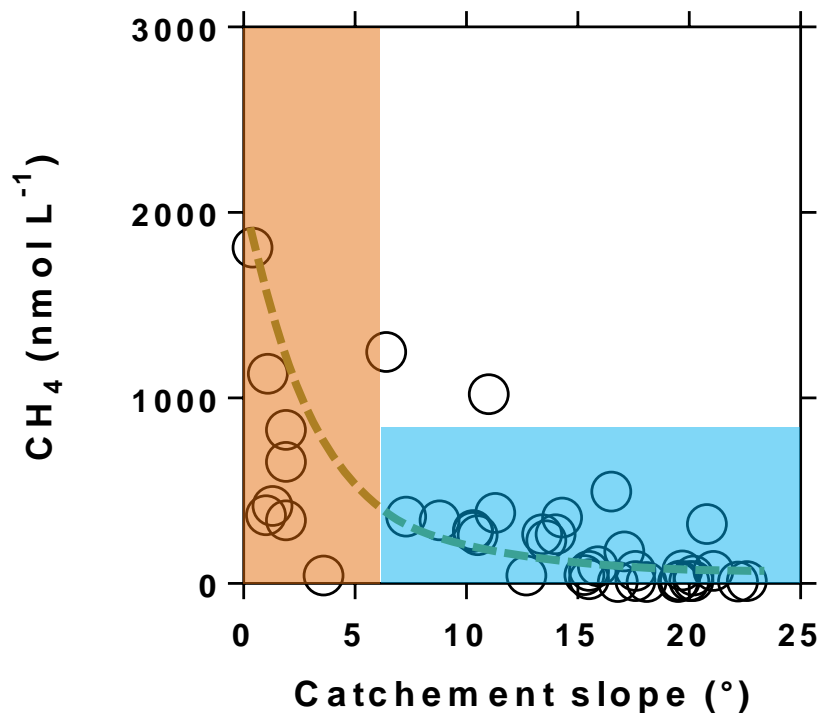
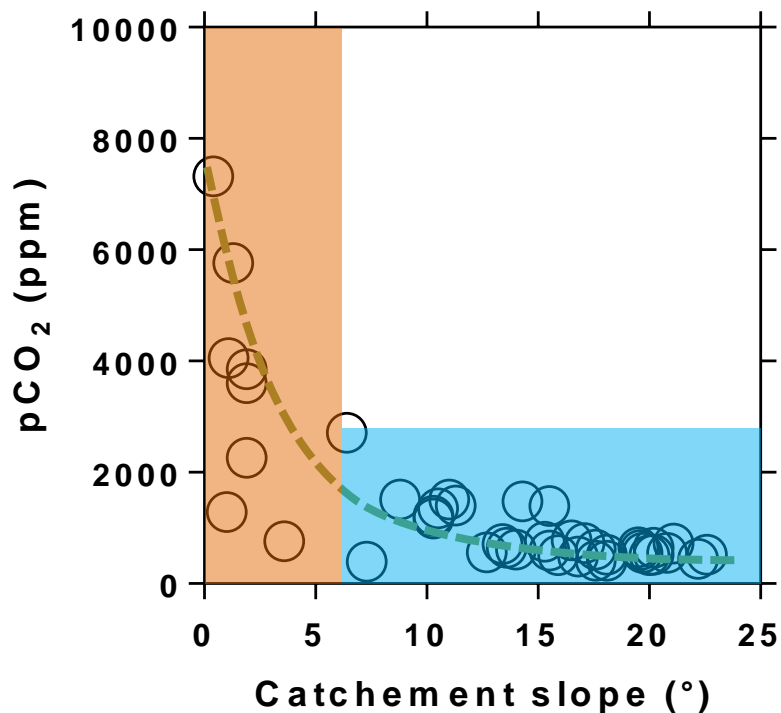
High turbulence

Low temperature

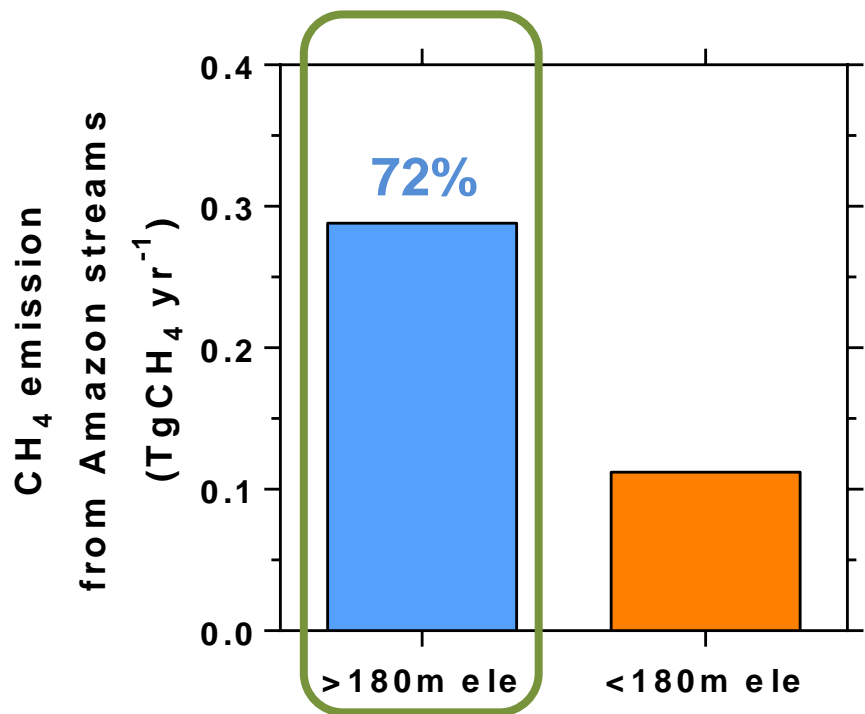
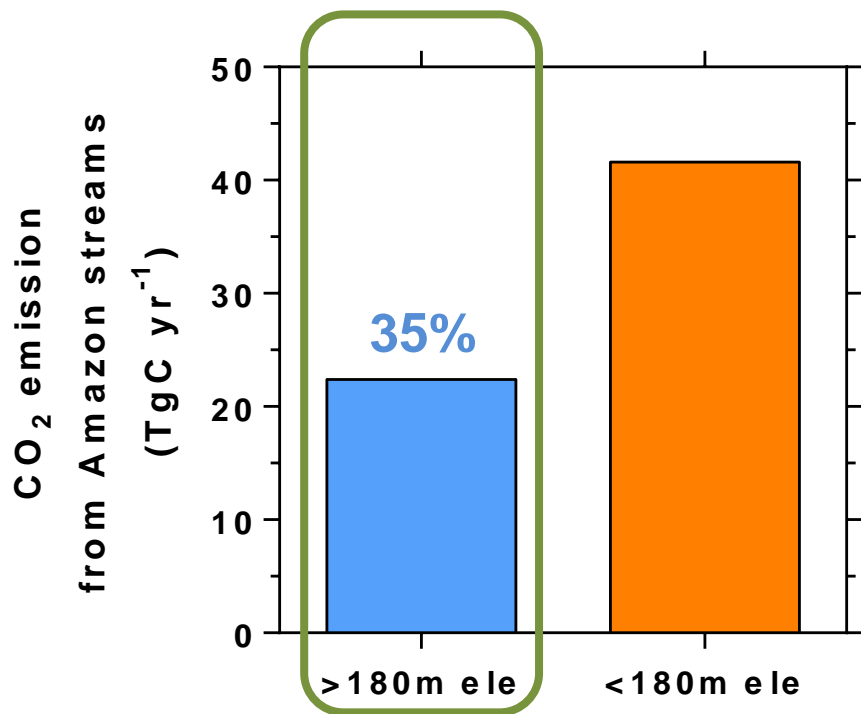
Shallow soils

No lateral flooding

Low CO₂
Low CH₄



Amazon headwaters



First time it's estimated

