



# From microbiological to ecosystemic scale evaluation of carbon-based (CO<sub>2</sub>, CH<sub>4</sub>) greenhouse gas sources, production, and transfers in temperate peatlands: a pluridisciplinary week at the playground for Critical Zonists in Frasné, Jura Mountains

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# FROM MICROBIOLOGICAL TO ECOSYSTEMIC SCALE EVALUATION OF CARBON-BASED (CO<sub>2</sub>, CH<sub>4</sub>) GREENHOUSE GAS SOURCES, PRODUCTION, AND TRANSFERS IN TEMPERATE PEATLANDS: A PLURIDISCIPLINARY WEEK AT THE PLAYGROUND FOR CRITICALZONISTS IN FRASNE, JURA MOUNTAINS

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Several interdisciplinary teams met on the Frasne peatland observatory to study key mechanisms for greenhouse gas (GHG) emissions at different scales. It's an important work for both developers (testing their sensor, intercomparison), researchers and managers (acquisition of original data).

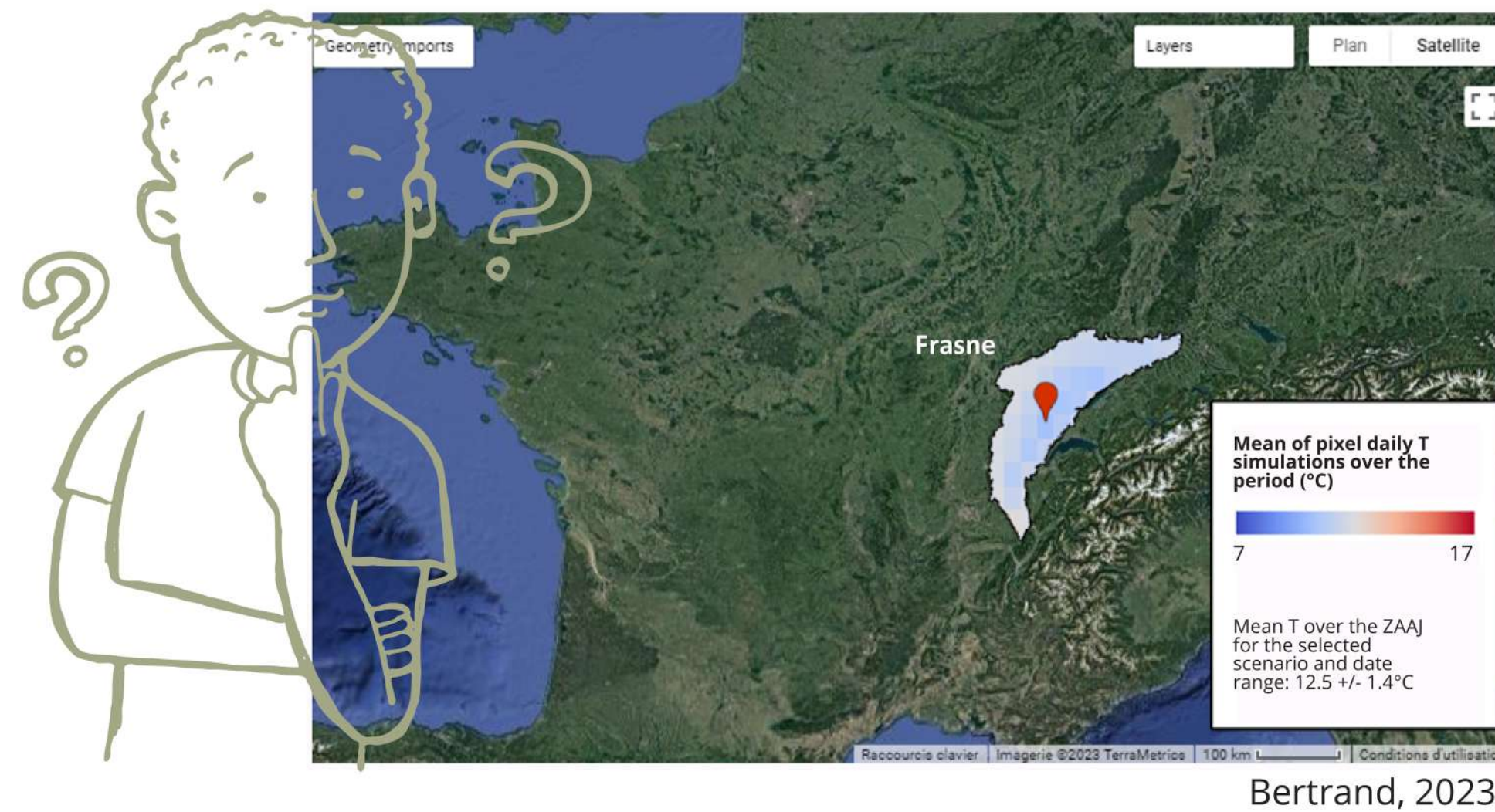
## KEY FIGURES

1 week in June 2023  
15 laboratories  
17 researchers in the field  
total 43 researchers  
12 K€ budget for analyses  
+ logistics  
33 indicators/parameters

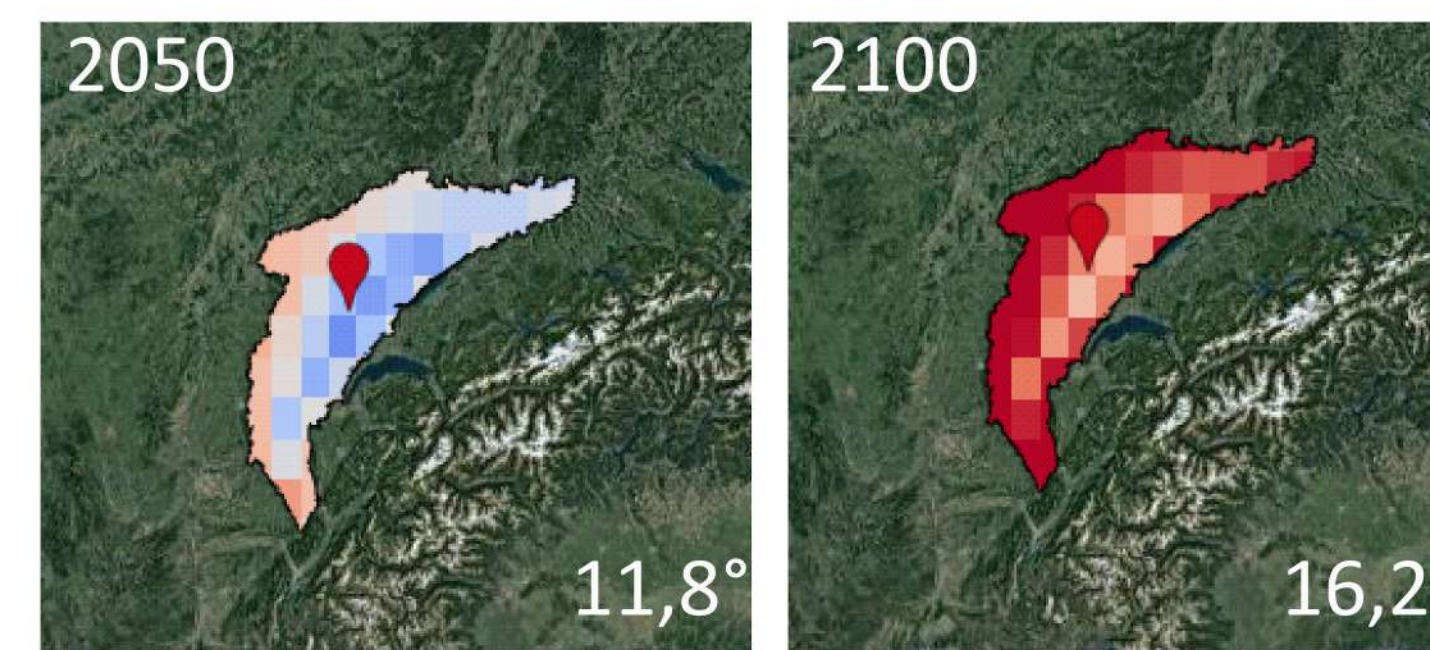
## SUPPORT FUNDING



## HOW PEATLAND ARE FACING CLIMATE CHANGE?



and how it can impacts carbon exchanges with atmosphere, lithosphere and hydrosphere?



IPCC's shared socioeconomic pathways (ssp 585)



## SPECIFIC GOALS AND SET-UP

### BALANCE AND FLOWS

Characterisation of the spatial heterogeneity of production and transfers of carbon

### METHODOLOGICAL DEVELOPMENT

Calibration: CO<sub>2</sub>/CH<sub>4</sub> concentration measurements taken by drone vs chambers and flux tower ; optical DOC (Dissolved Organic Carbon) measurements

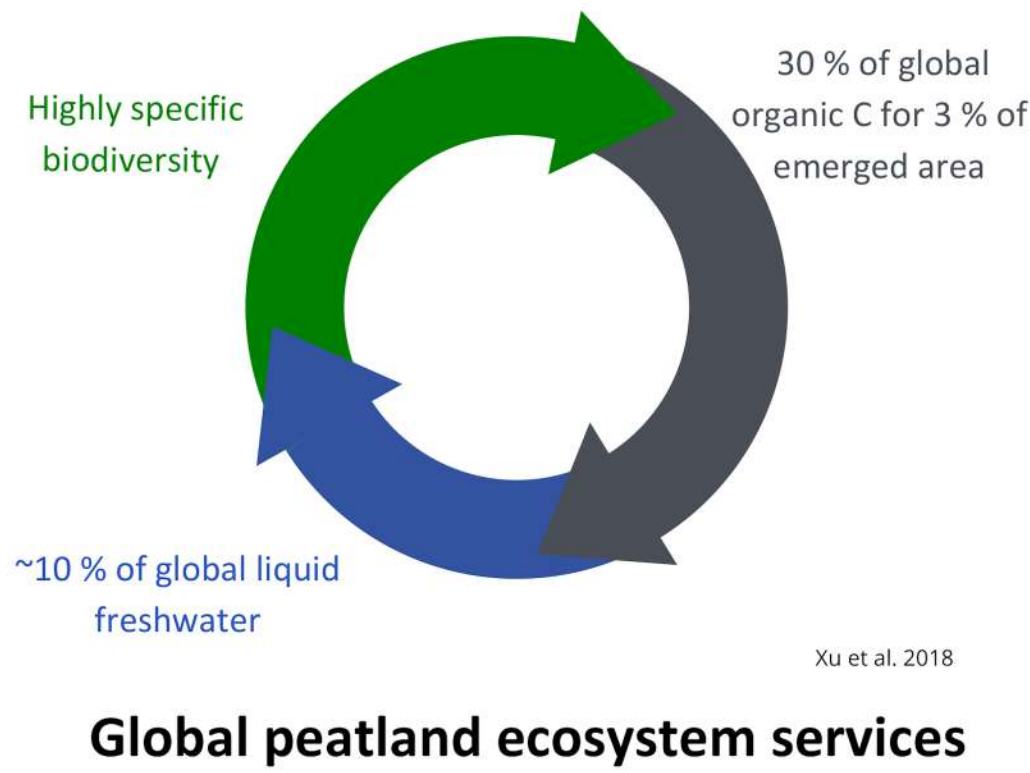
### MECHANISMS

Characterisation of aerobic respiration, methanogenesis and methanotrophy through a combination of geochemical measurements

## OUTLOOKS

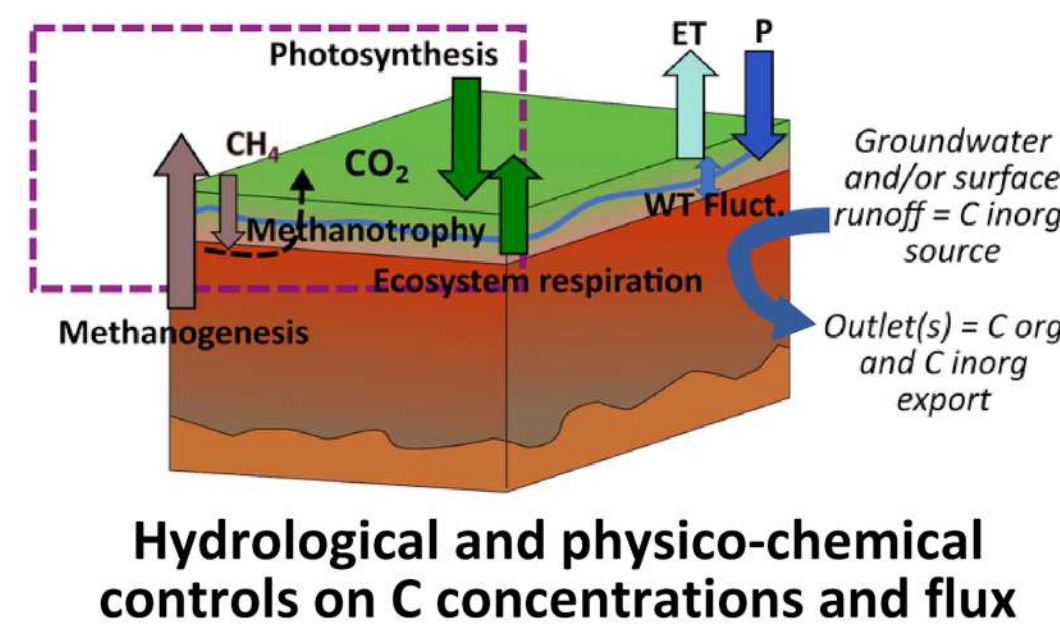
Laboratory work, modelling, data analysis and management, publication

## GLOBAL SCALE



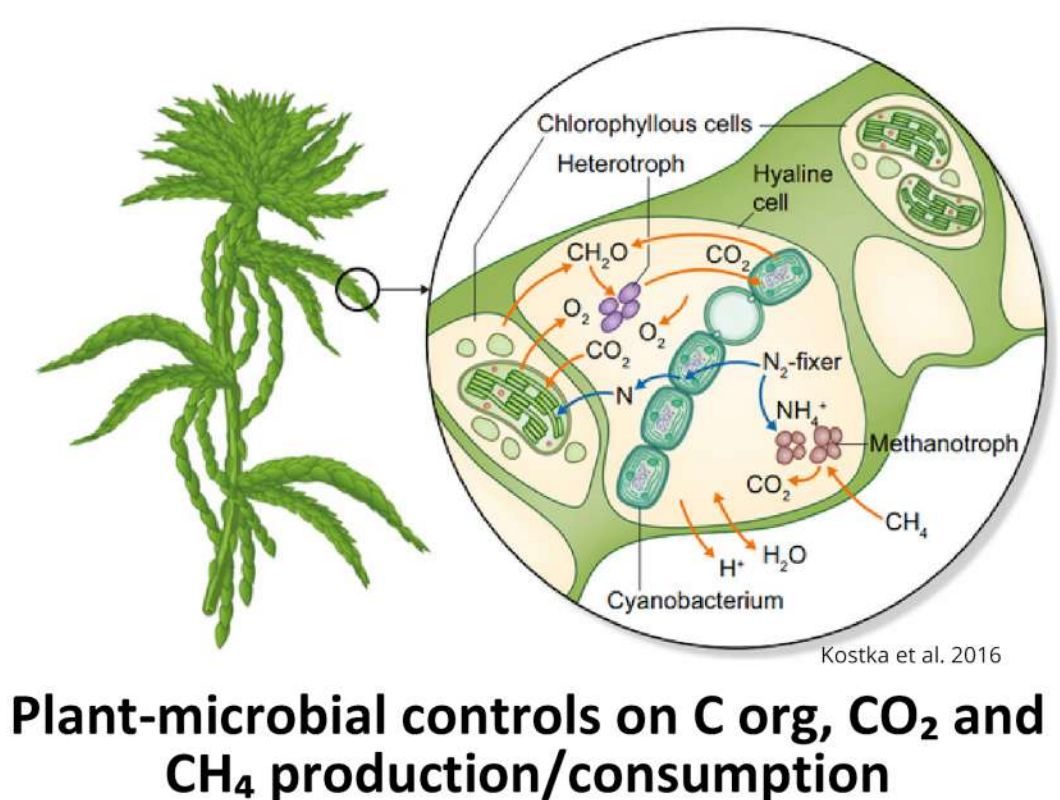
Global peatland ecosystem services

## ECOSYSTEM SCALE

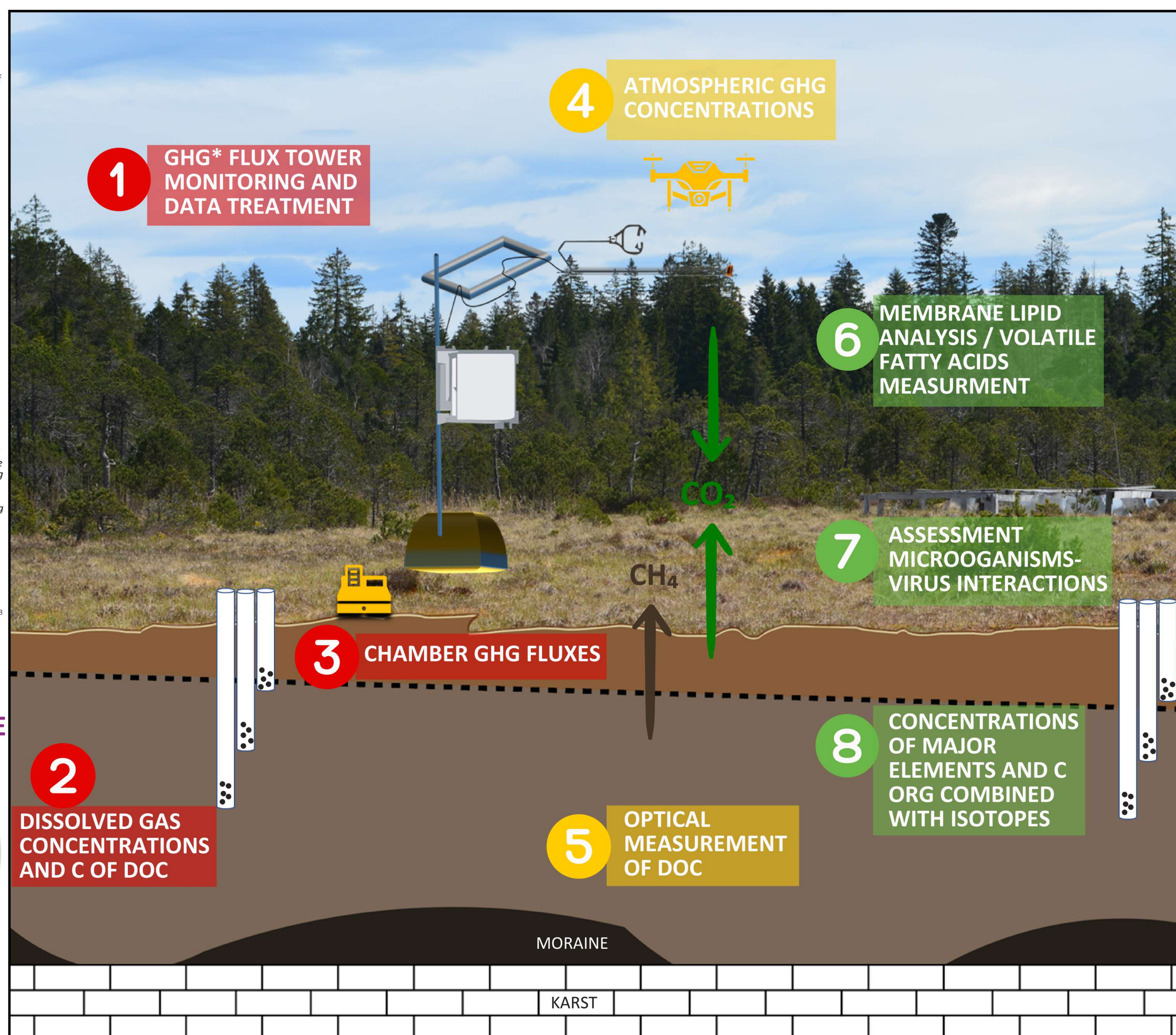


Hydrological and physico-chemical controls on C concentrations and flux

## MICROBIOLOGICAL SCALE



Plant-microbial controls on C org, CO<sub>2</sub> and CH<sub>4</sub> production/consumption



Scheme: Alex Ponçot



## REFERENCES

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INFORMATIONS ABOUT WEBINAR, TERRA FORMA AND SNO TOURBIÈRES



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