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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 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

A. Lhosmot, A. Jacotot, C. Bouchez, E. Chatton, S. Coffinet, P. Binet, R. Calisti, E. A. D. Mitchell, D. Gilbert, M-L. Toussaint, M. Steinmann, T. Meador, C. Loup, D. Combaz, L. Joly, F. Parent, N. Dumelle, G. Albora, Jean-Louis Bonne, C. Abdallah, T. Lauvaux, J. Burgalat, N-M. Hoang, L. Longuevergne, O. Mathieu, P. Amiotie-Suchet, V. Lavastre, M-N. Pons, A. Elger, R. Walcker, V. Essert, L. Millet, H. Masclaux, V. Verneaux, A. Boetsch, J. Ducasse, C. Hazard, H. Wang, V. Jassey, L. Gandois, J-S. Moquet, S. Gogo, V. Milesi and G. Bertrand

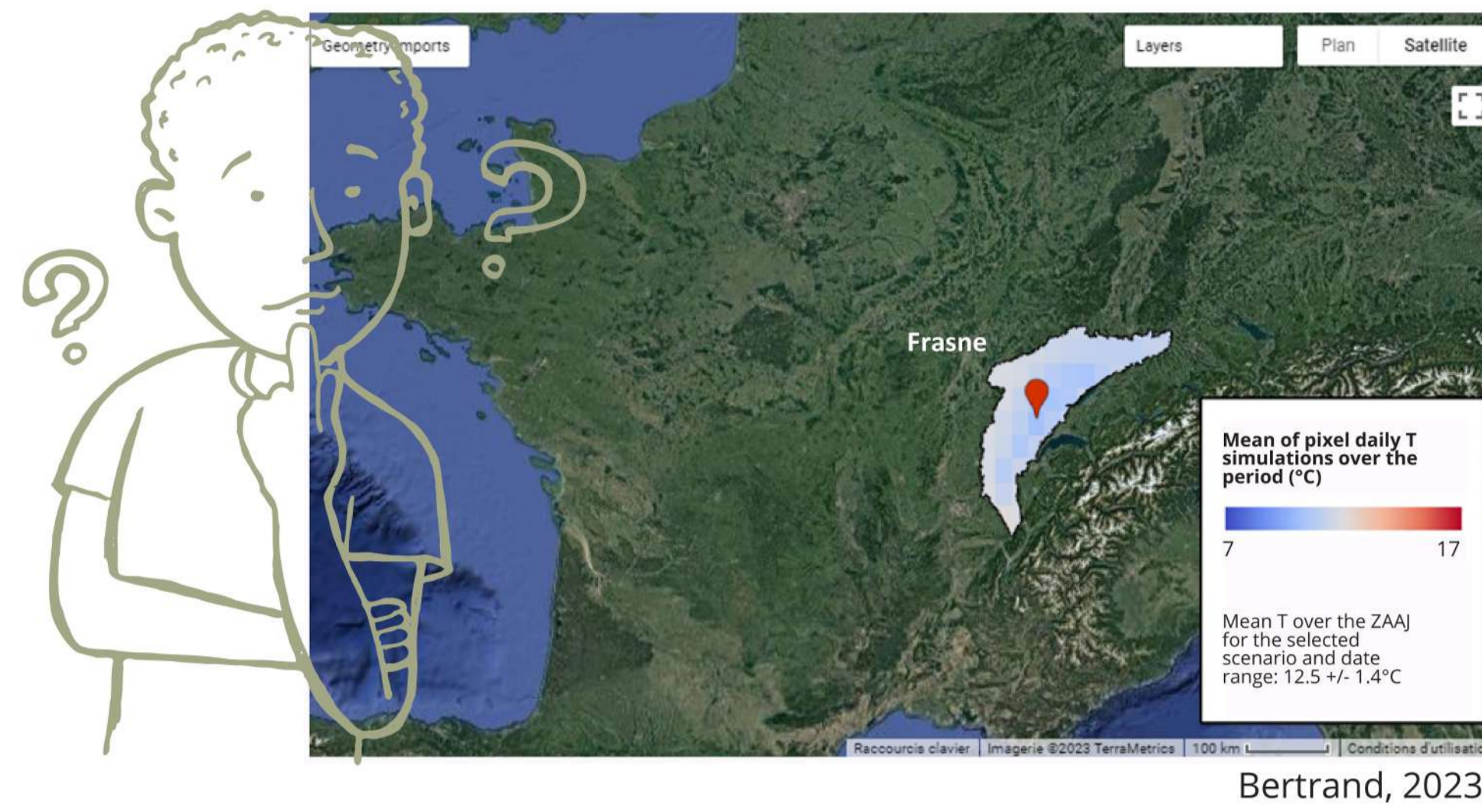
Contact: alexandre.lhosmot@univ-fcomte.fr guillaume.bertrand2@univ-fcomte.fr laurent.longuevergne@univ-rennes1.fr. Website : www.sno-tourbières.cnrs.fr

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).

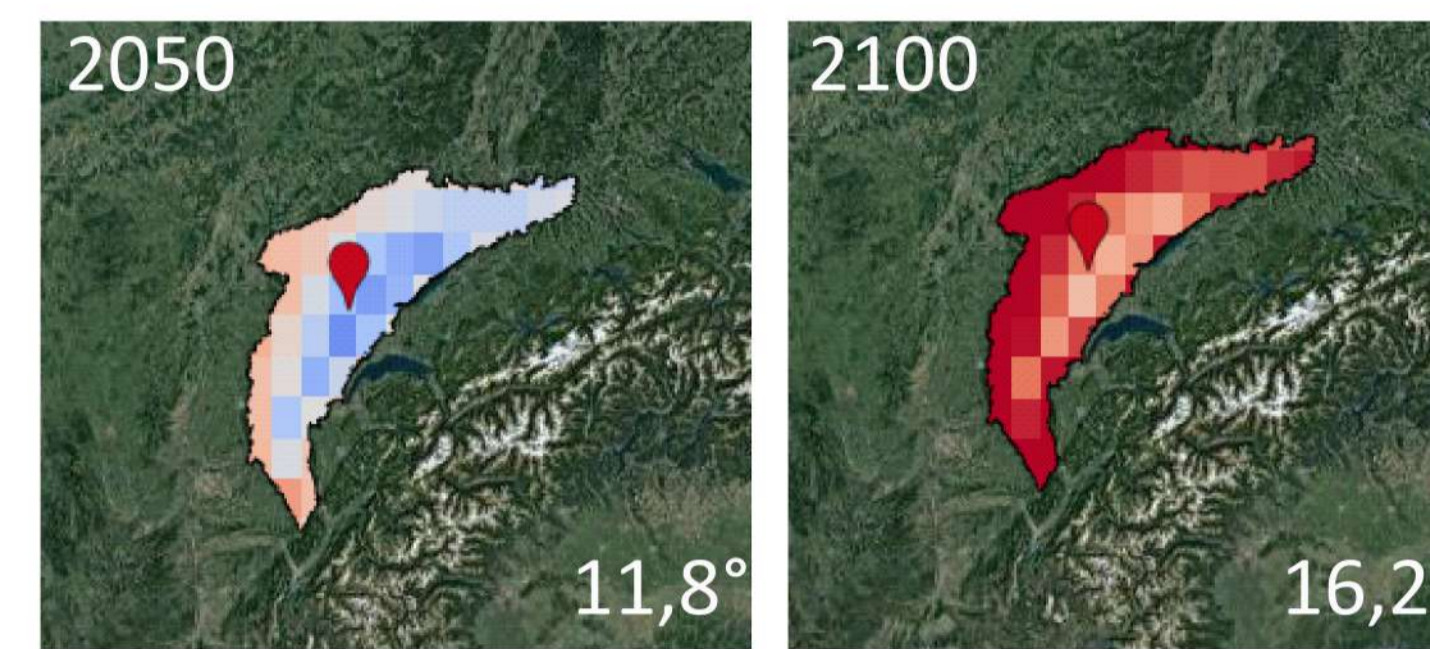
## KEY FIGURES

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

## HOW PEATLAND ARE FACING CLIMATE CHANGE?



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



## SUPPORT FUNDING



## 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

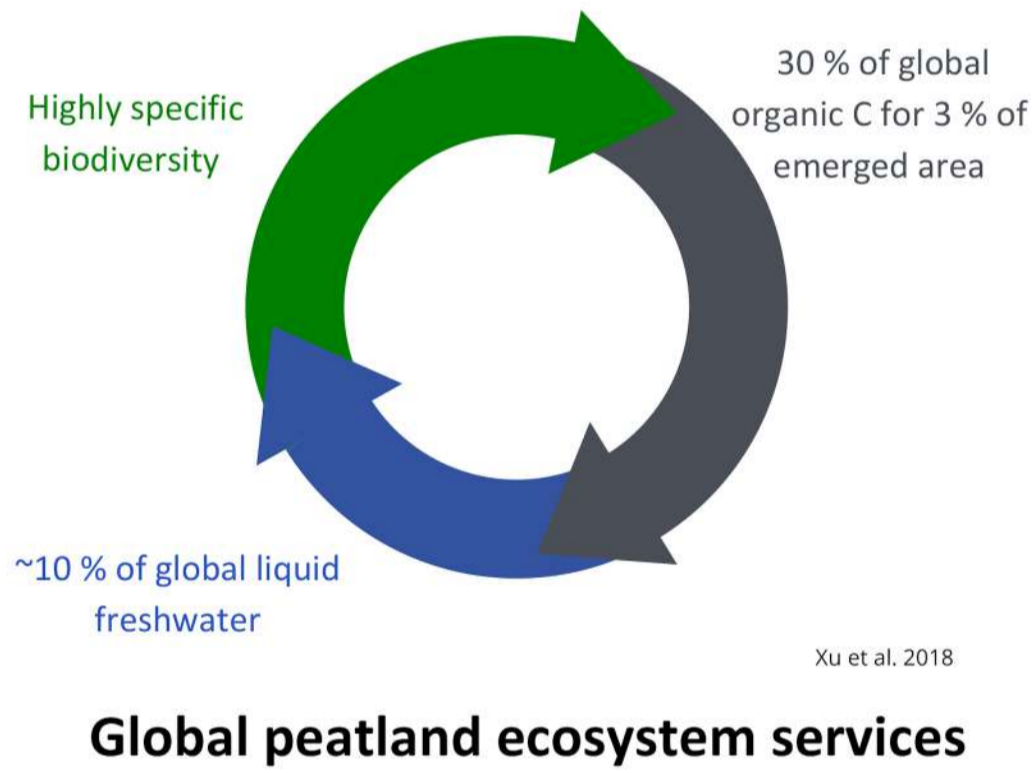
### MECHANISMS

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

## OUTLOOKS

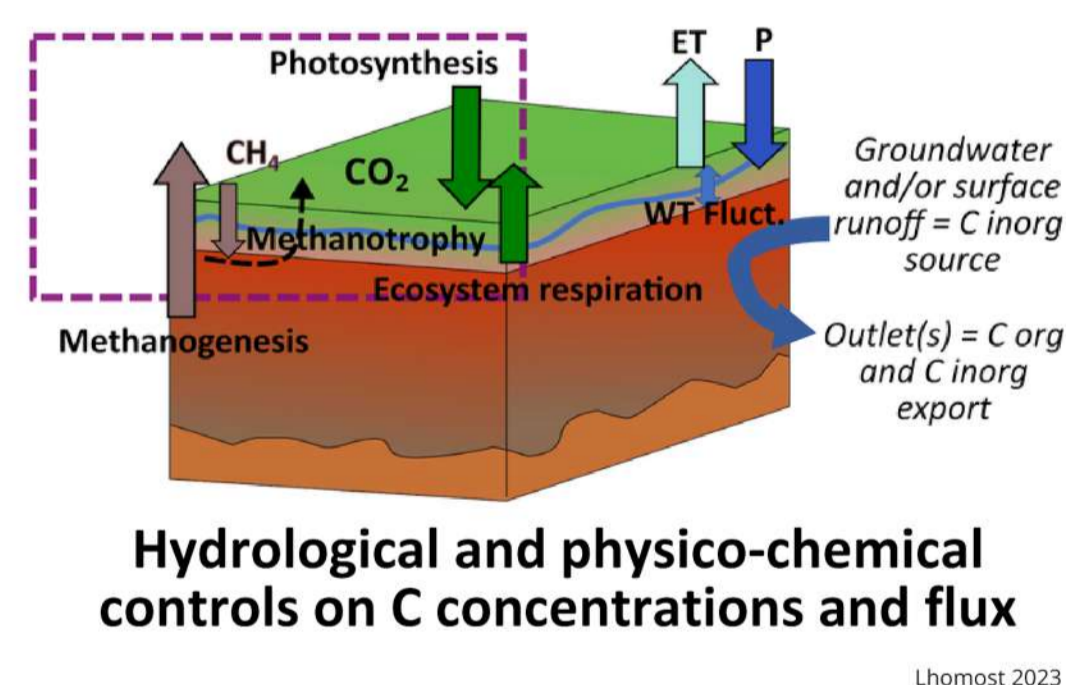
Laboratory work, modelling, data analysis and management, publication

## GLOBAL SCALE



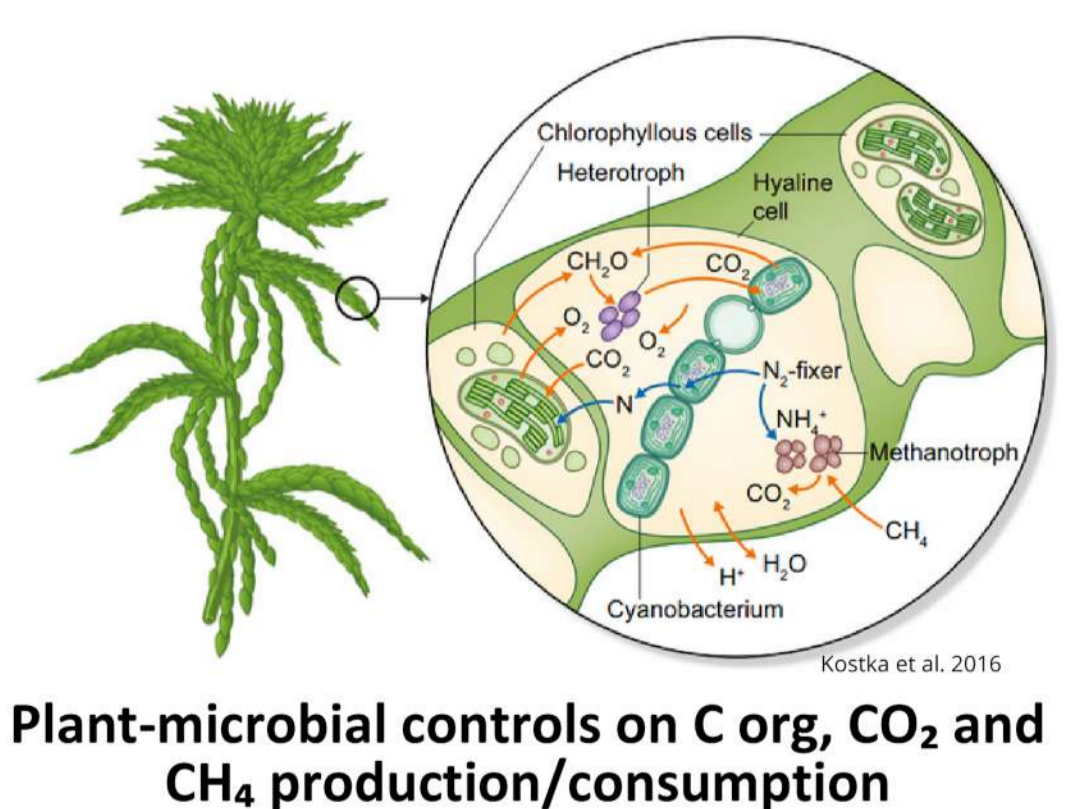
Global peatland ecosystem services

## ECOSYSTEM SCALE

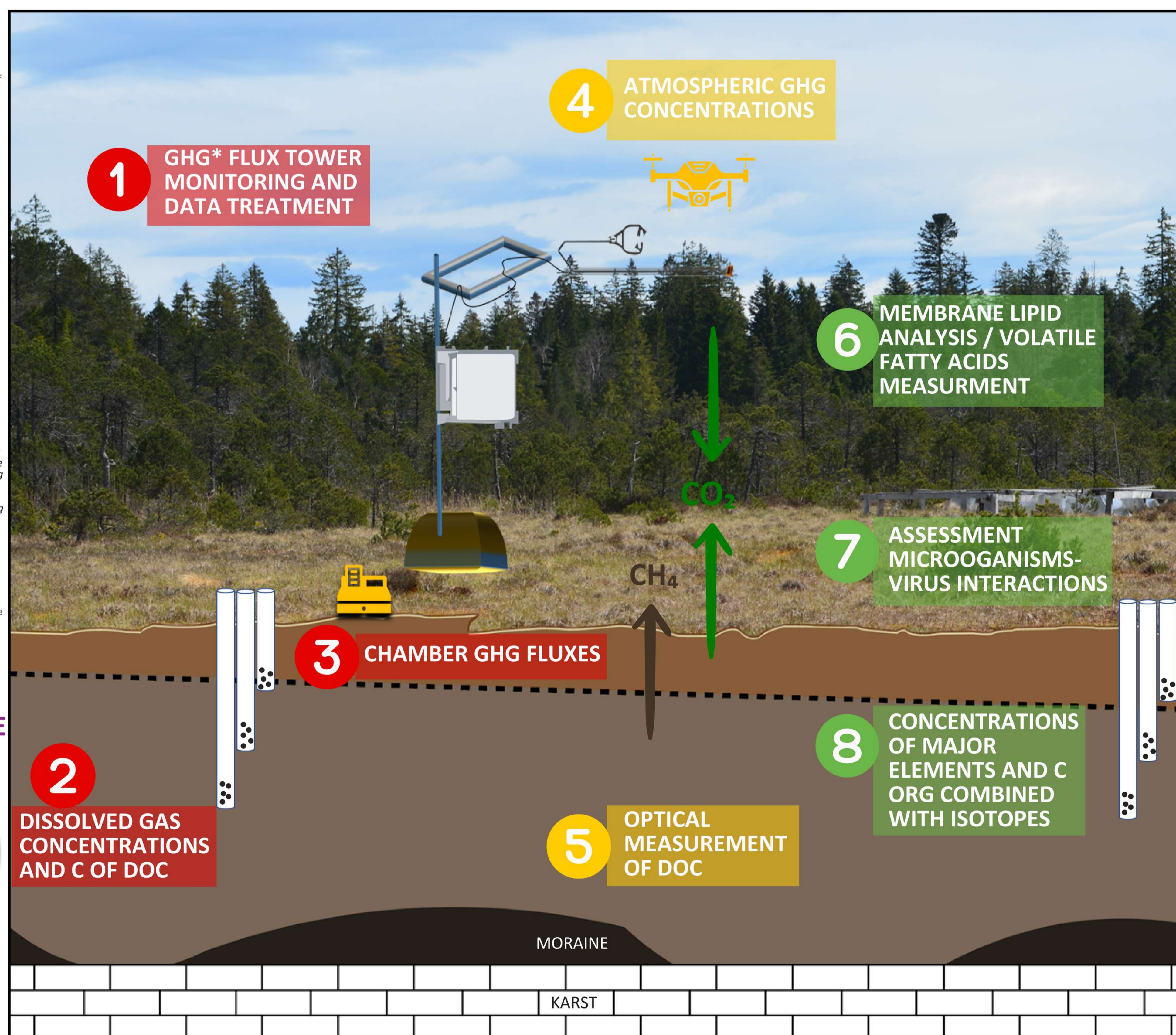


Hydrological and physico-chemical controls on C concentrations and flux

## MICROBIOLOGICAL SCALE



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



Scheme: Alex Ponçot

- 1 CHRONO ENVIRONNEMENT
- 2 SAS
- 3 GEOSCIENCES Rennes
- 4 Faculty of Science Institute of biology Laboratory of Soil Biodiversity
- 5 GSMA
- 6 LRP
- 7 ECOBIO Rennes
- 8 ISTO
- 9 ECOLE CENTRALE LYON
- 10 Laboratoire de Géologie de Lyon Terre planètes Environnement
- 11 BIOGEOSCIENCES
- 12 SOWA Research Infrastructure
- 13 CHRONO ENVIRONNEMENT



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INFORMATIONS ABOUT WEBINAR, TERRA FORMA AND SNO TOURBIÈRES



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