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PROGRAMME
DE RECHERCHE
CARBONE ET
ÉCOSYSTÈMES
CONTINENTAUX



Mineral and microbial controls of soil organic matter stabilization in agroecosystems

Pierre Verjans - CANETE



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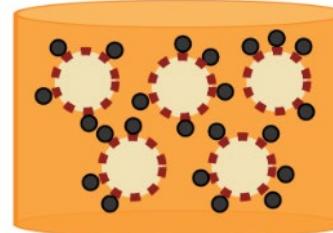


Soil organic matter (SOM) stability

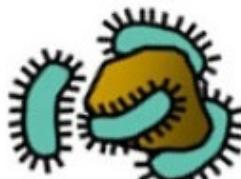
Multiple controls for a complex cycle



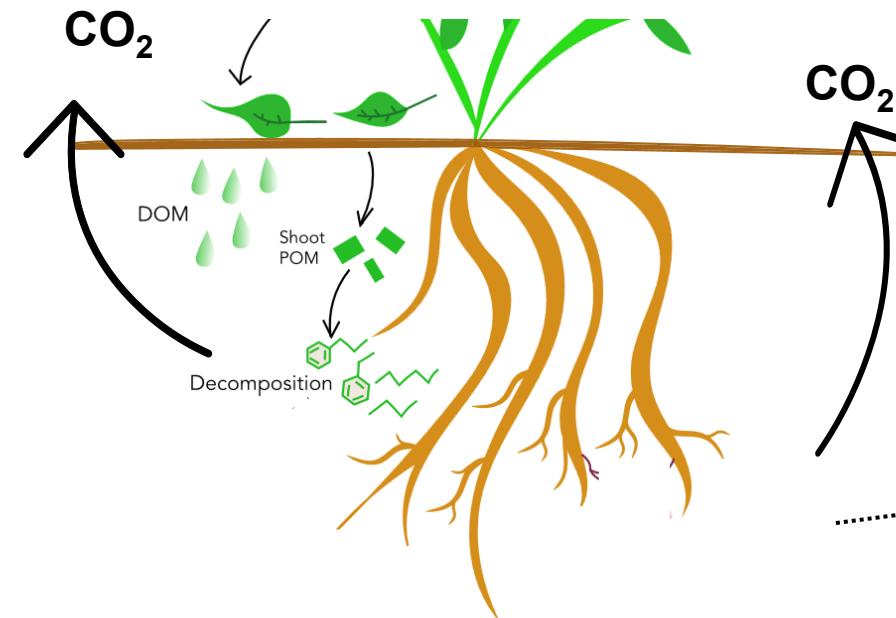
Mineral controls



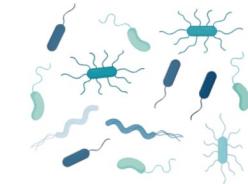
Chemical adsorption (MAOM)



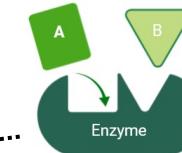
Physical barrier (aggregate)



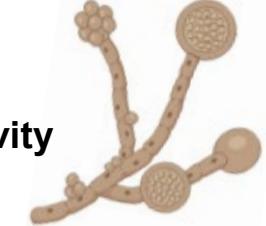
Microbial controls



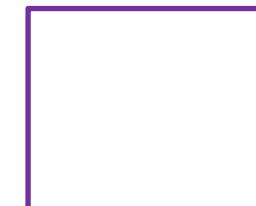
Diversity and abundance



Enzymatic activity



Physiological traits



Sokol et al., 2022 ; Bramble et al., 2024 ; Wasner et al., 2024

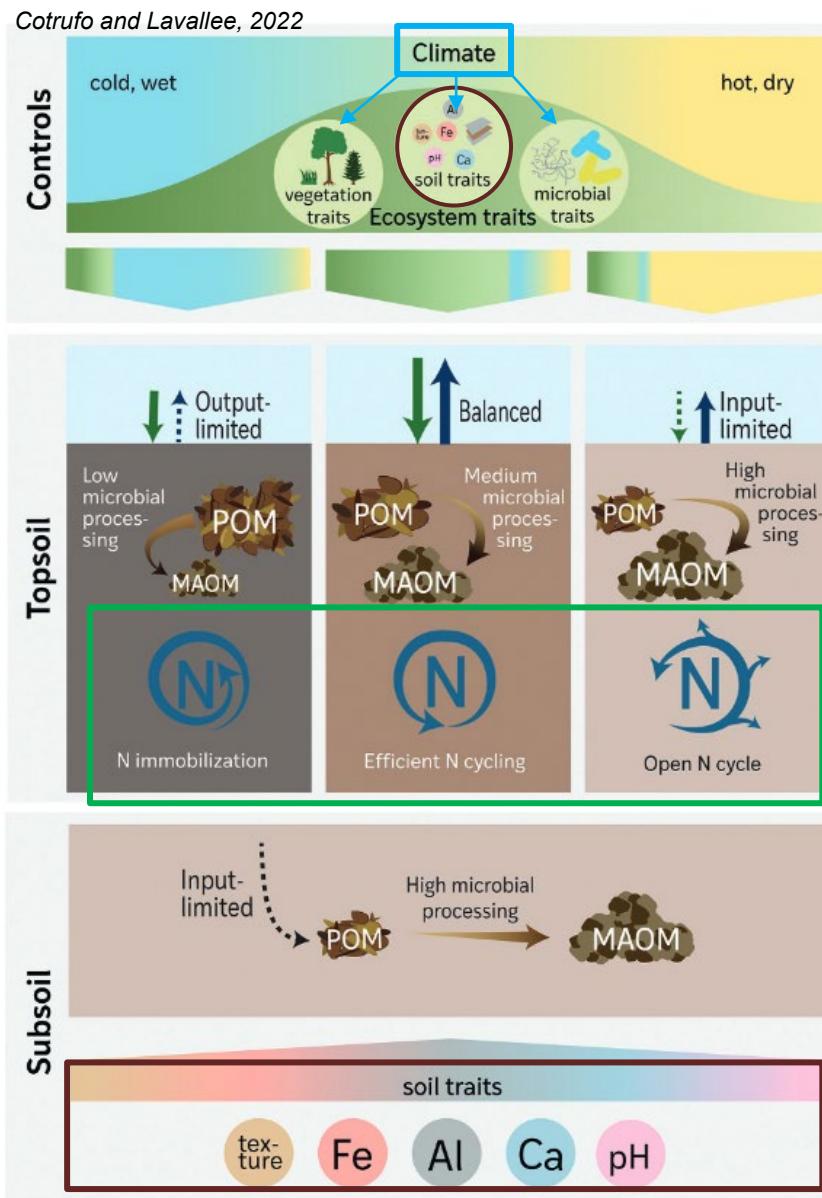


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Soil organic matter (SOM) stability

External factors



Pedological factors :

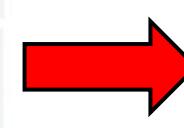
- Quantity and quality of soil minerals
- Soil properties (texture, acidity, ...)

Climatic factors :

- Shape soil vegetation and soil properties
- Soil temperature and moisture

Management factors :

- Shape vegetation and soil properties
- N availability for microorganisms

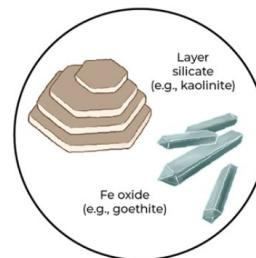
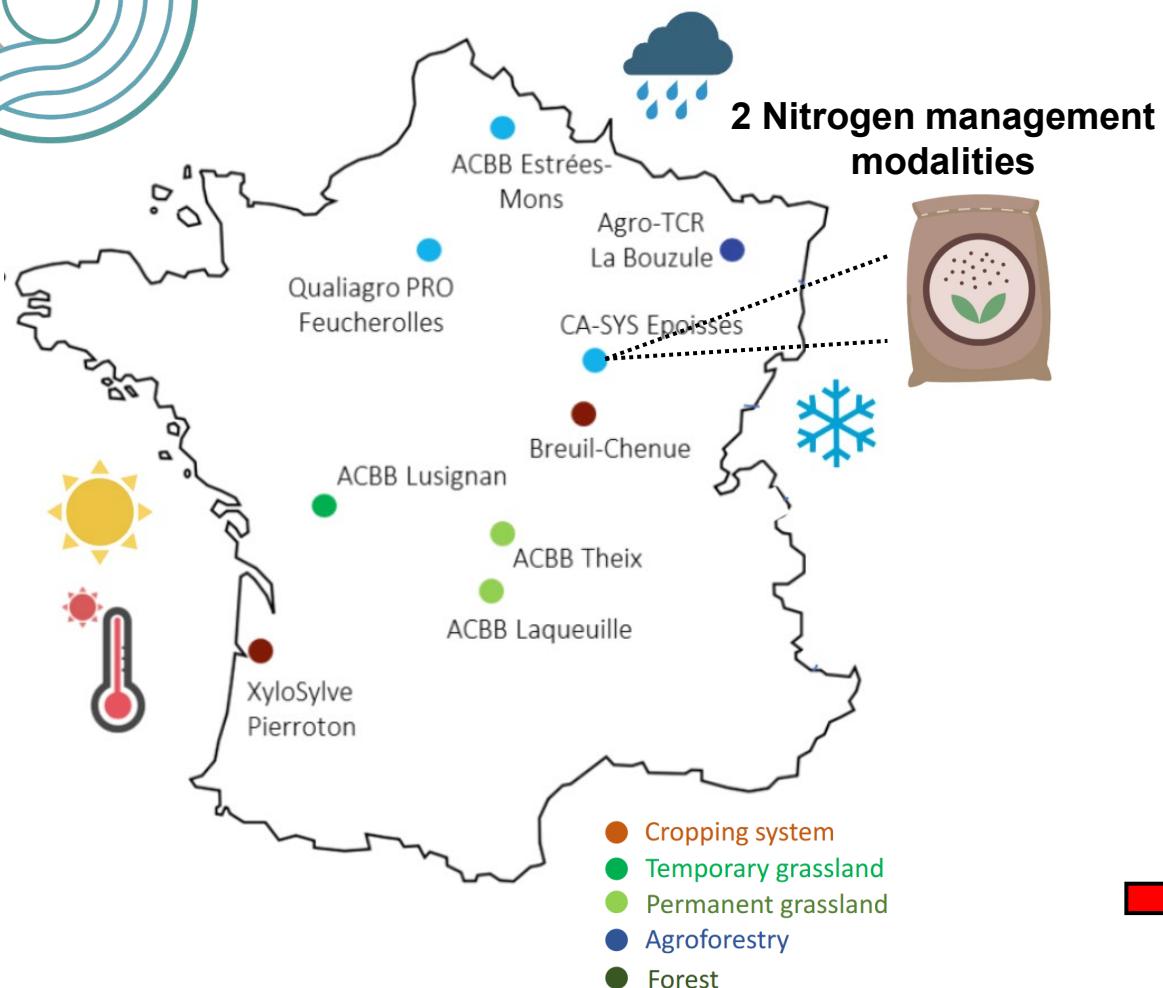
 We need to study stabilization controls in **contrasting pedoclimates and soil managements !**



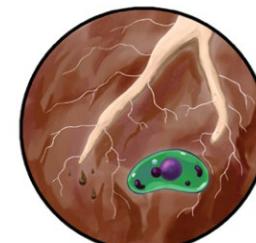


Methodological approach

Studying SOM stabilization under contrasting pedoclimates and soil managements



How does soil mineralogy impact SOM stabilization ?



How does microbial traits impact SOM stabilization ?

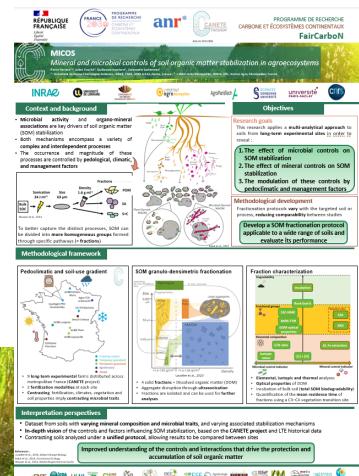


How are these controls modulated by pedoclimatic and soil management factors ?

Jilling et al., 2025



Let's discuss this further during the poster session ?



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