(PREDHYCKT Jura XXI) : PRojetEr la Dynamique Hydrologique et du Carbone dans le Karst et les Tourbières du Jura au XXIème siècle

My project in 180 seconds

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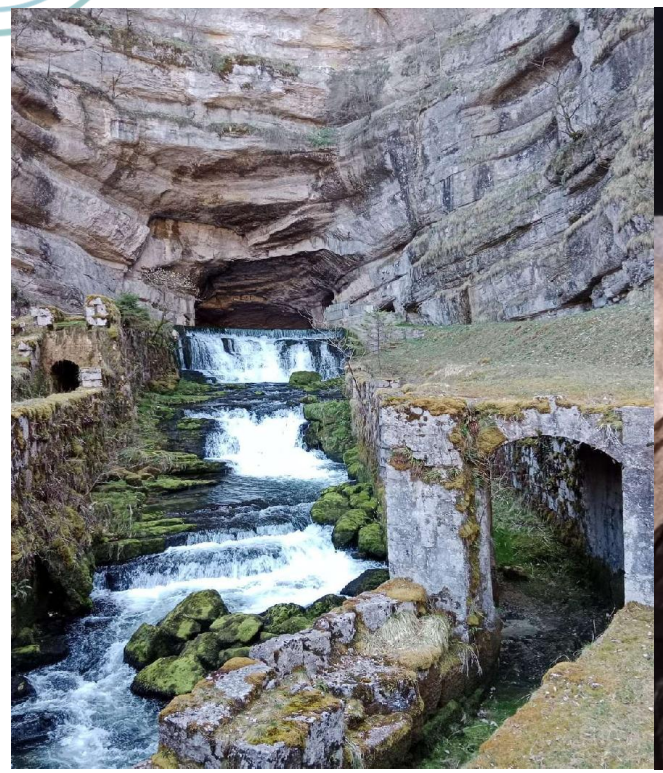
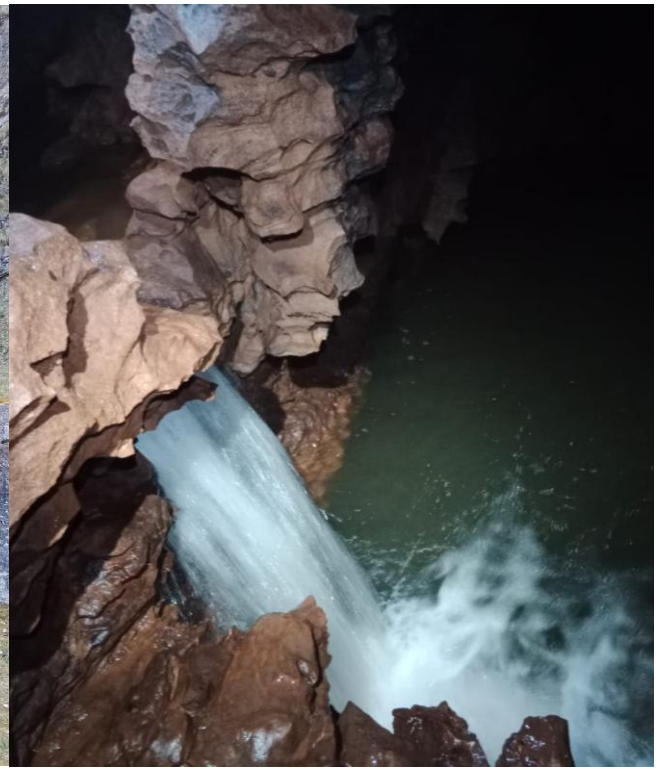
What’s a peatland?

- Continental hydrosystems formed by the lack of decomposition of organic matter in the soil
- 3% of continental surface, 30% of soil **organic carbon***
- Under **global change**: shift from **sink to source** (degraded peatlands = more **emissions** than air transport)

* Leifeld et al, 2018

What’s a karst?

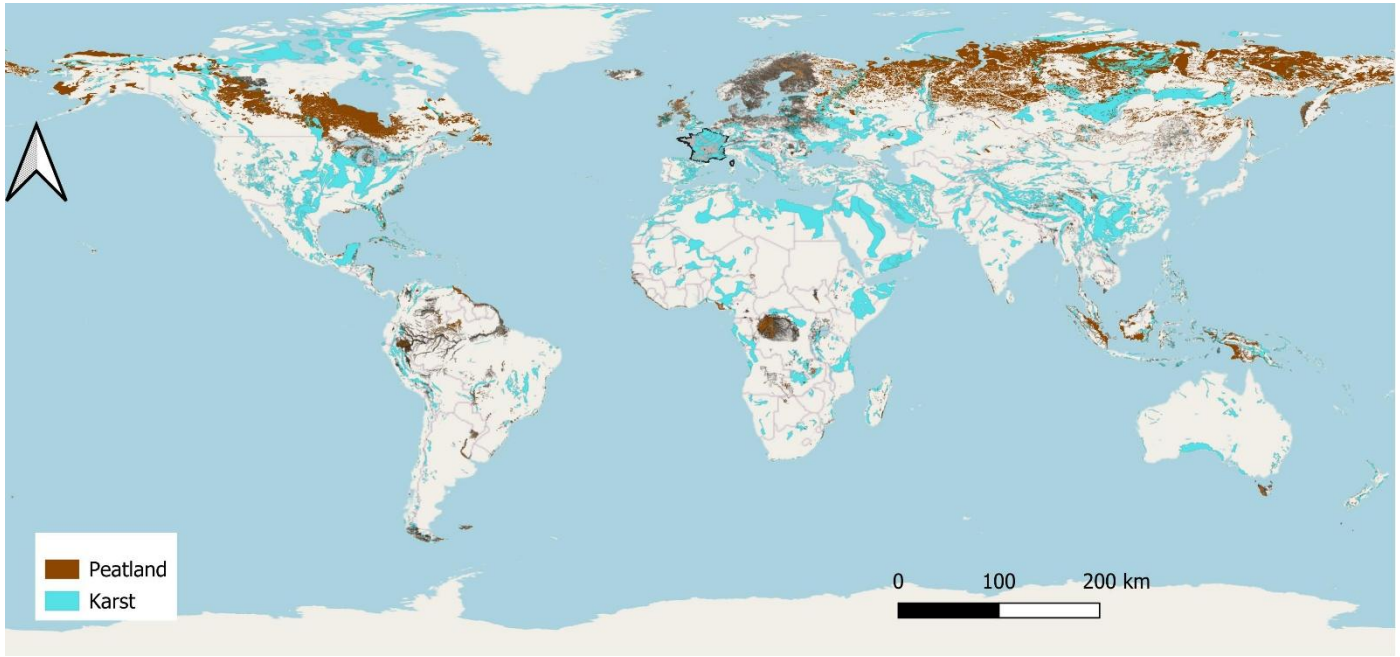




- Continental hydrosystems formed by dissolution of limestone
- 15% of **continental surface** (30% in lowland, 40% in moutain)*
- 16.5% of global population live in karstic area (25.3% in Europe)*

* Goldscheider et al, 2020

Why take an interest in both at the same time?



Global map peatland database ; World Karst Aquifer Mapping (WOKAM)

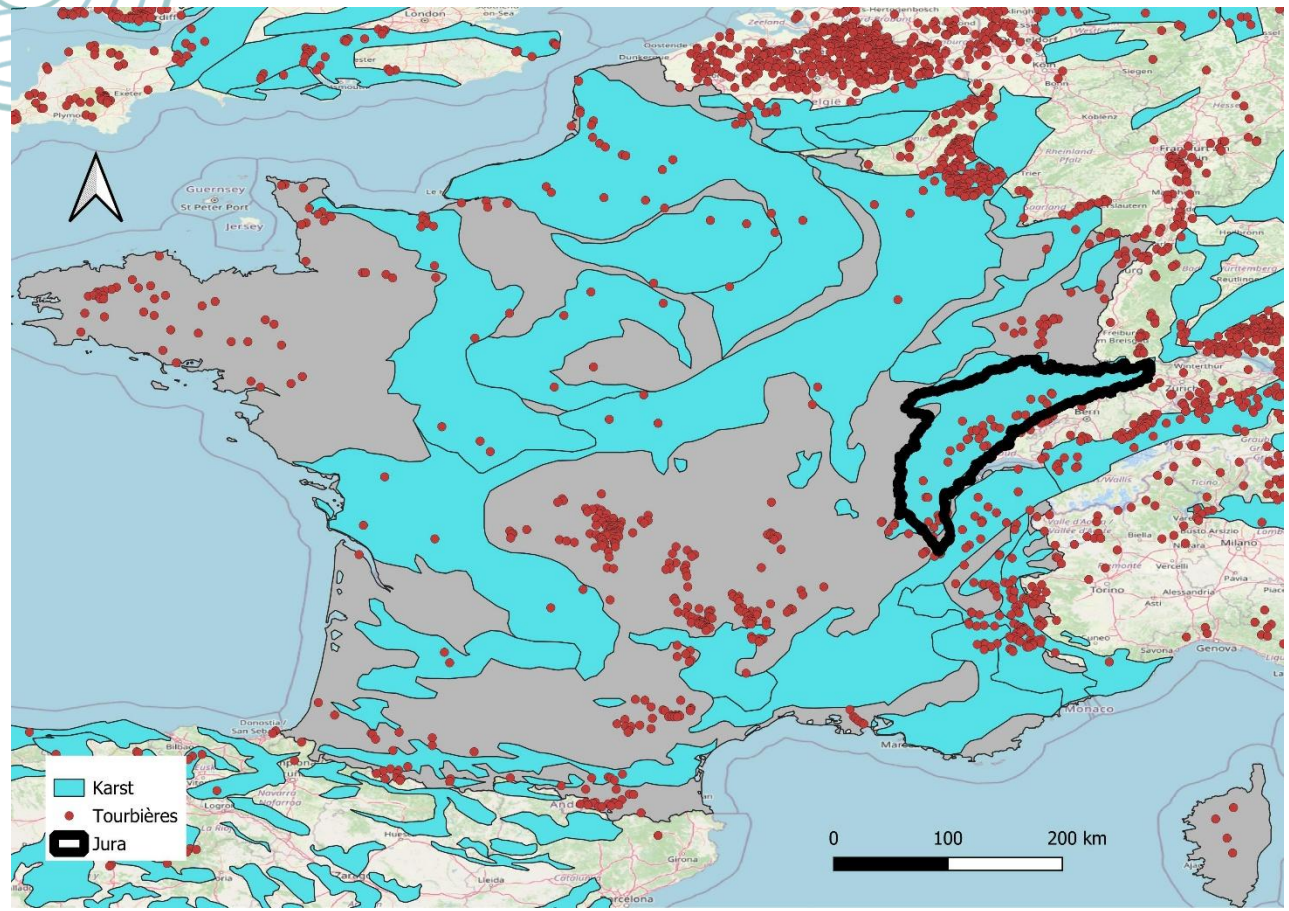
- Both very important components of Critical Zone
- Both important stocks of carbon and freshwater
- **Both intercept atmospherical carbon**
- **Both present non-linear hydrological flow inducing strong hydroclimatic sensibility**

Why take an interest in both at the same time?

Still strong uncertainties about how global change will affect hydrological and carbon cycles in these hydrosystems

→ Importance of the PREDHYCKT XXI thesis project

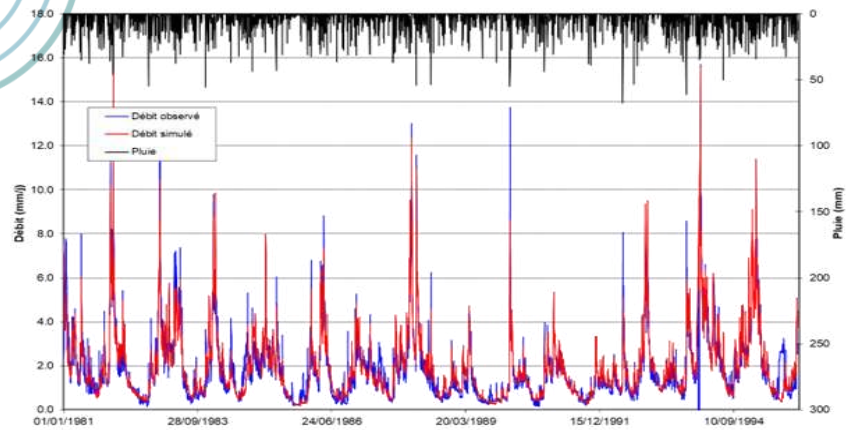
Okey, but why in the Jura specifically?



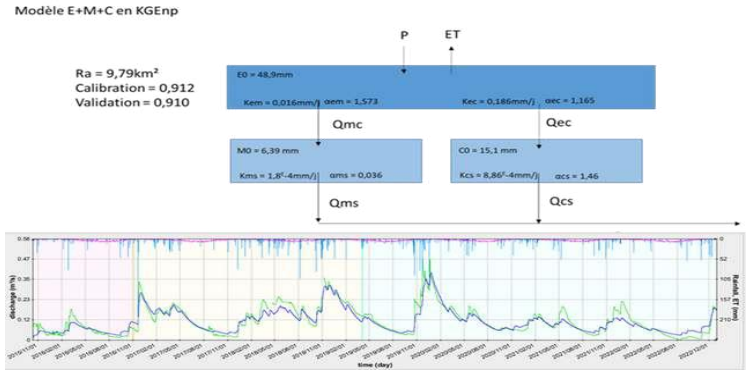
- Karstic geomorphology and high density of peatlands
- Strong societal issues with hydroclimatic sensitivity (droughts, flood…) and conflicts around the ressources

Global map peatland database ; World Karst Aquifer Mapping (WOKAM)

How can we do that?



Rainfall-runoff modelling



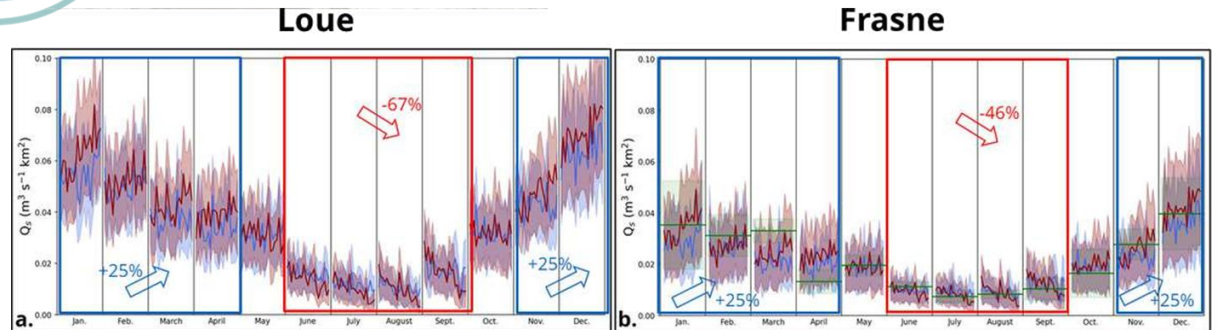
Karstic hydrologeological modelling (KarstMOD)

1. **Quantify water and carbon fluxes at several time scales**

How can we do that?

1. Quantify water and carbon fluxes at several time scales
2. **Characterize their origins and proportions**

How can we do that?



Monthly discharges estimated up to 2100 for the source of the Loue (a) and the Frasne peatland (b) according to climate scenarios SSP2-4.5 and SSP5-8.5, (based on tutored project by Bernard M., PillaiI L., Tardy R., Pohl B., Lhosmot A., Bertrand G., 2024)

1. Quantify water and carbon fluxes at several time scales
2. Characterize their origins and proportions
3. **Extrapolate for future decades by integrating climate scenarios**

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How can we do that?

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Online availability of projections for the territory's stakeholders

How can we do that?

Thank you for listening!

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2. Characterize their origins and proportions
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Online availability of projections for the territory's stakeholders