The PANOPLI project. A morpho-architectural & isotopic approach on *Salix* to investigate the physiognomy of late glacial shrub-tundra landscapes

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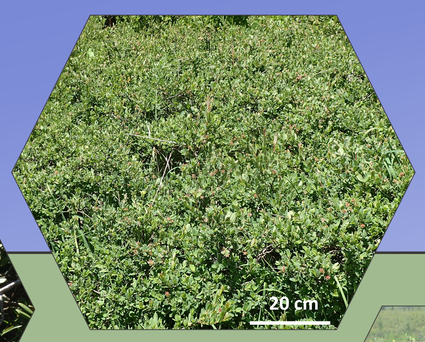
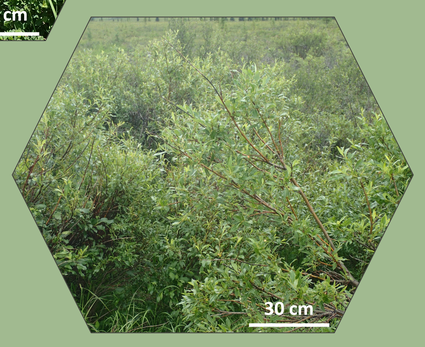
Ubiquitous willow-dominated charcoal assemblages from the Terminal Pleistocene

- Taxonomically very poor (1-3 taxa) and 95-100% of *Salix* ➡ WILLOW- RICH TUNDRA[1]
- Low taxonomic resolution[2] ➡ LANDSCAPE PHYSIOGNOMY & ENVIRONMENTS POORLY KNOWN





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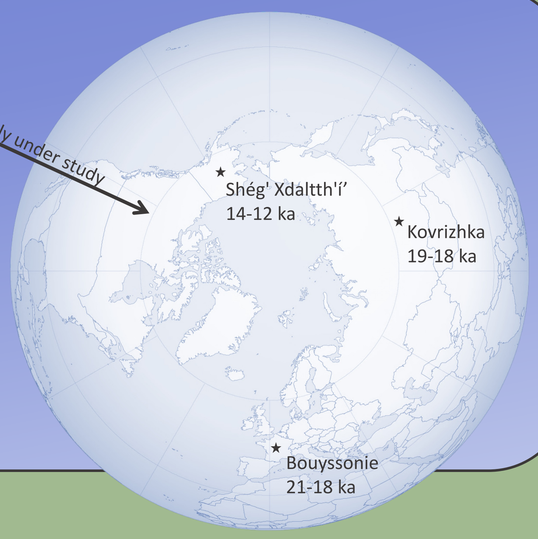


In tundra biomes today, willow grows from dwarf creeping species and shrubs up to 3m in height. It is also one of the most ubiquitous shrubs, represented within tens of vegetation types in diverse soil and moisture gradients[3]

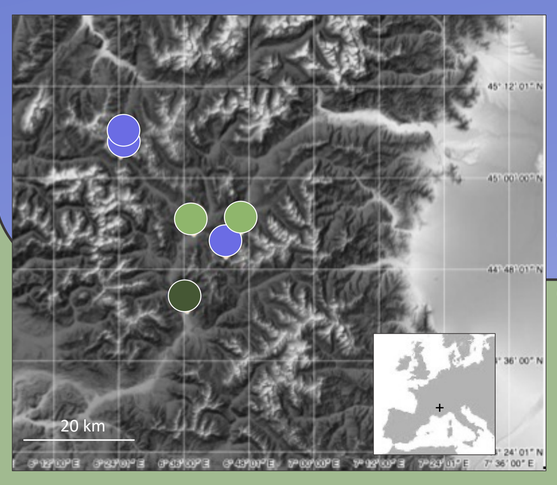
+ In the specific context of the human peopling of LGM environments, canopy height is key to understanding local landscape habitability as this parameter is indicative of biomass and environmental conditions including ground thermal conditions and wildlife habitats[4]

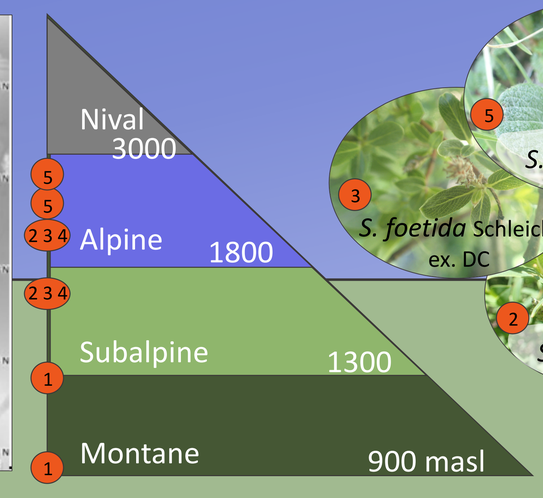
Is it possible to identify different willow types in anthracology to know more about past environments?

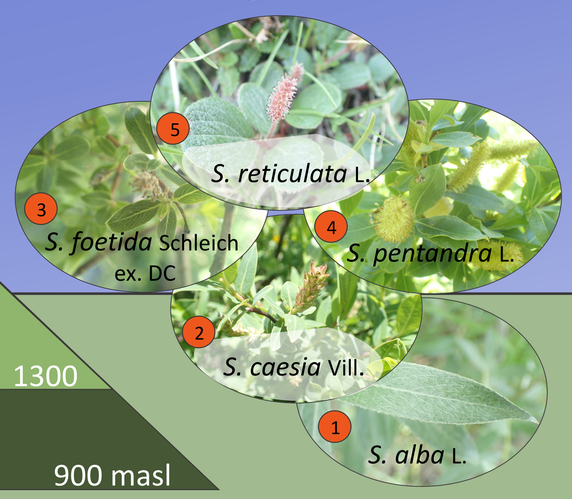
A new charcoal reference dataset for *Salix* spp.

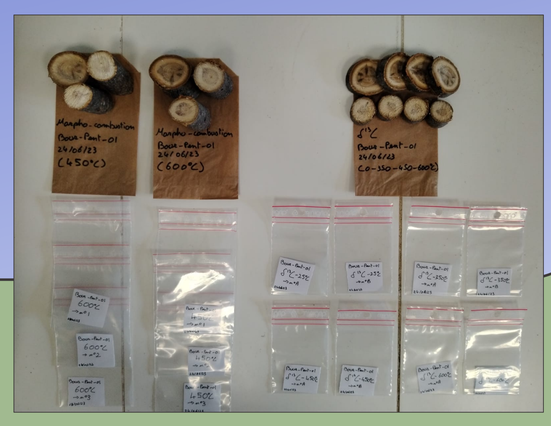
Within the PANOPLI Project (Paleolithic cultures, Plants and Physiognomy of Landscapes during the Pleniglacial), we propose a morpho-architectural and $\delta^{13}C$ isotopic approach on *Salix* spp. :

- Is there any morphological variability linked to taxonomy and/or growth forms (size and architecture) and/or environmental factors[5]?
- Is it possible to calibrate the $\delta^{13}C$ signal for willows to infer ecological conditions through anthraco-isotopy[6]?





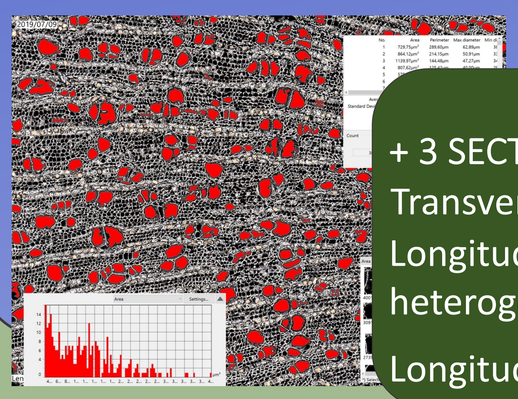




JUNE-JULY 2023, FRENCH SOUTHERN ALPS:
3 samples / 5 individuals / 5 *Salix* species / 6 stands /3 vegetation belts

CEPAM LABORATORY: Morphometry: 3 samples of different diameters / 2 different temperatures (450 / 600°C)
$\delta^{13}C$: 2 samples of different diameters / 3 different temperatures (350 / 450 / 650°C) + unburnt

Provisional measurement protocols : microanatomical features and isotopic signatures



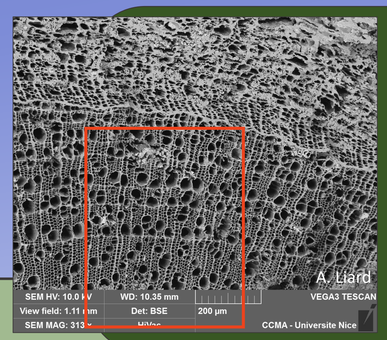
DIGITAL MICROSCOPE

+ 3 SECTIONS OF WOOD:

Transversal ➡ Pore size and distribution / Ring curvature

Longitudinal radial ➡ Size of intervascular pits / Ray heterogeneity

Longitudinal tangential ➡ Ray height



PYROLYSIS EA-IRMS

10 LAST TREE RINGS:

Physico-chemical separation through pyrolisis and analysis of the obtained gases at different °C thresholds (350, 450, 600, 1000°C+)

Analytic results at the next Anthraco Meeting !

References

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