



# Accelerated succession in novel riparian ecosystems with long-term impact legacies, evidence from cross-comparison with a reference site

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**2<sup>th</sup> Management Committee meeting of CONVERGES**  
**3-4 April 2019, Prague, Czech Republic**



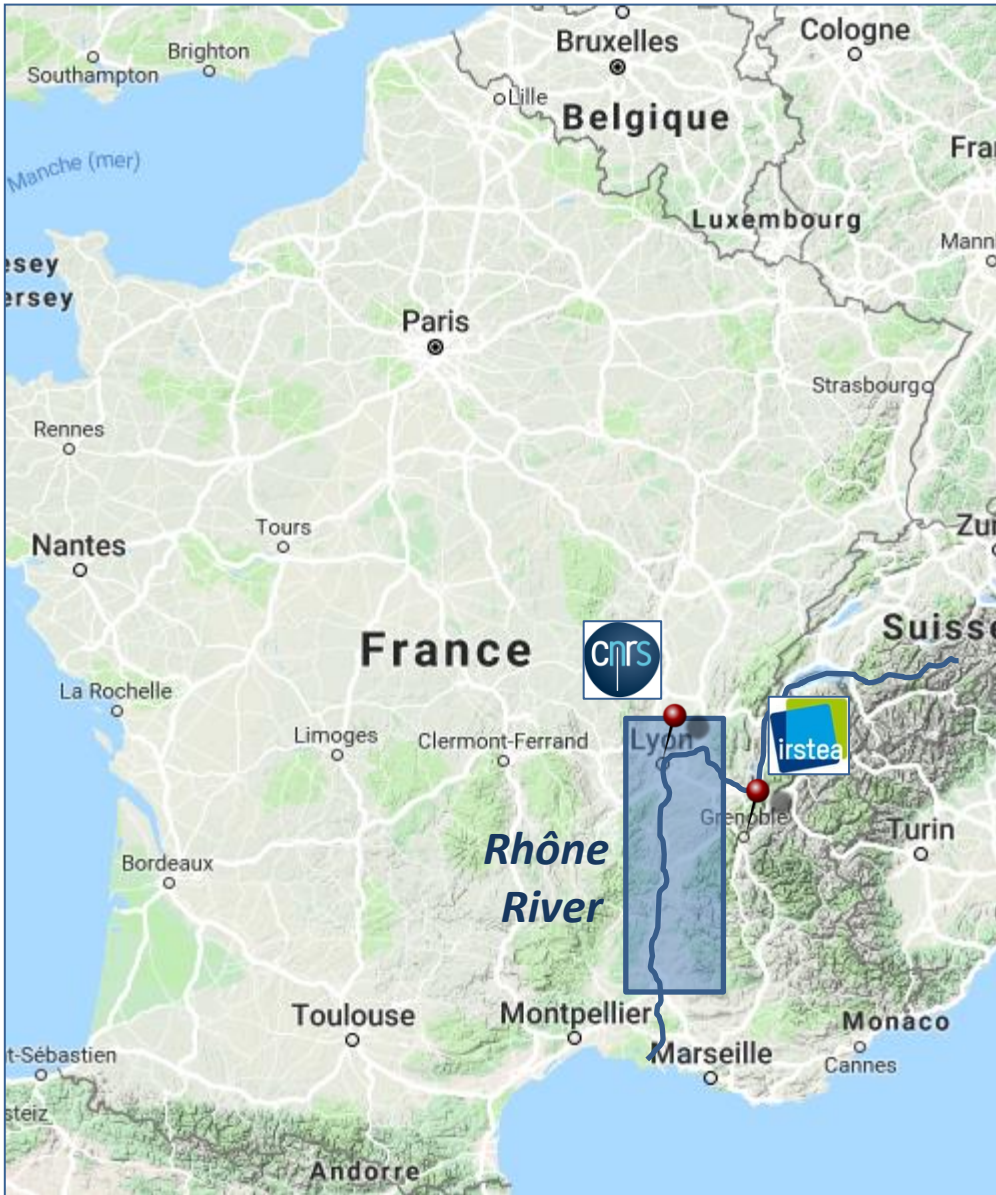
Réserve Naturelle  
ILE DE LA PLATIERE



Réserve Naturelle  
RAMIERES DU  
VAL DE DROME



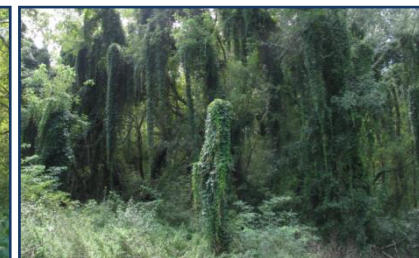
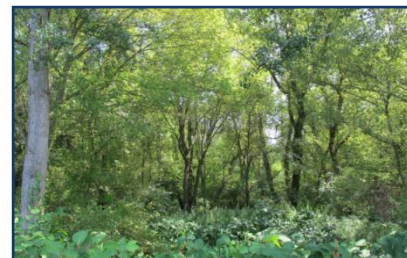
# Just to introduce myself...



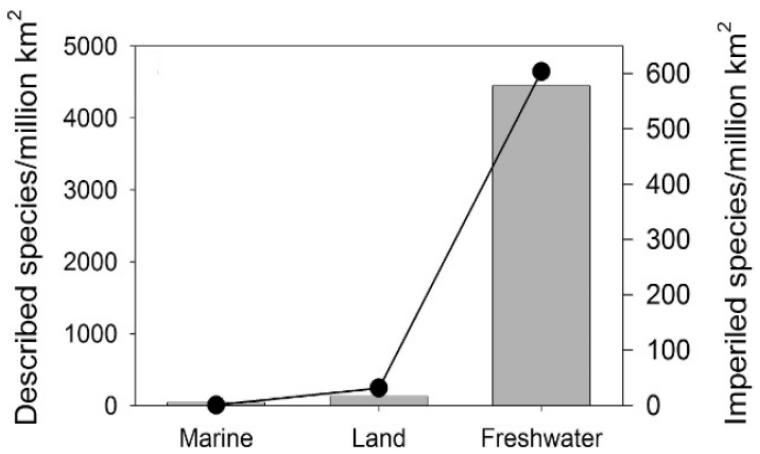
➤ Community structure on gravel bars



➤ Ecological trajectory of riparian forests

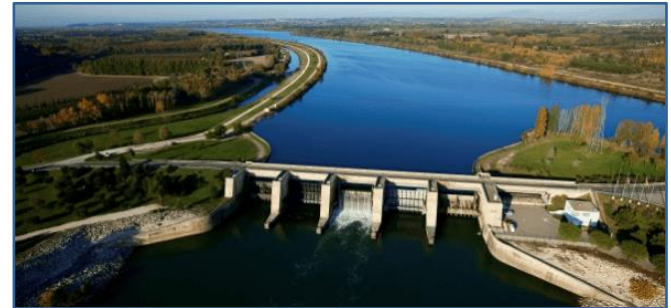
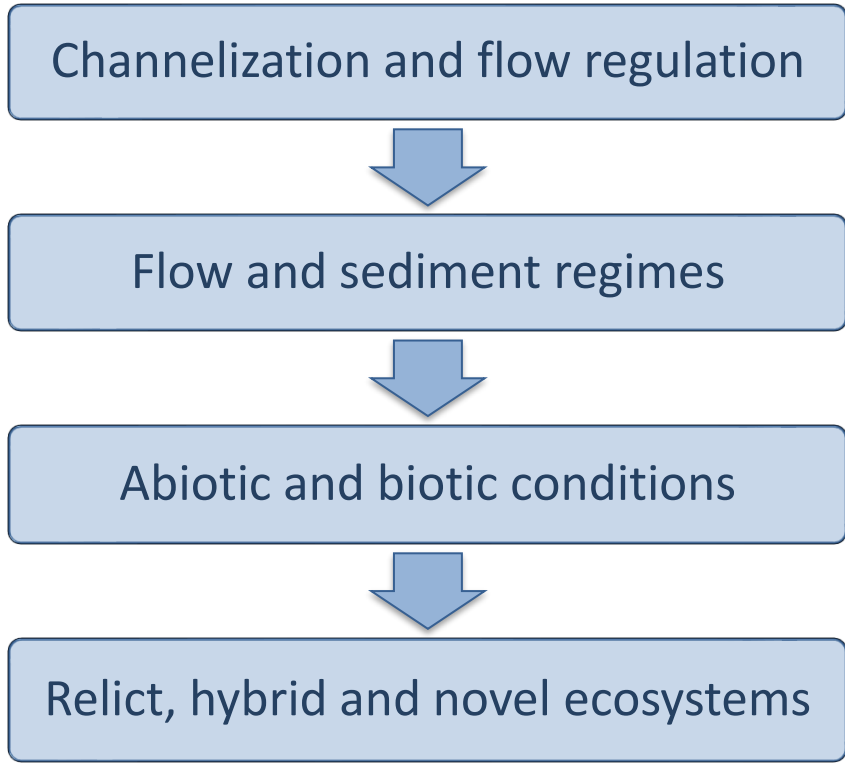


Riparian ecosystems are small natural features with ecological importance disproportionate to their size



Riparian communities from the upper to the lower part of the banks

Worldwide, riparian zones have been profoundly impacted by human activity



Understand whether channelization and flow regulation induce changes in riparian forests attributes among successional phases

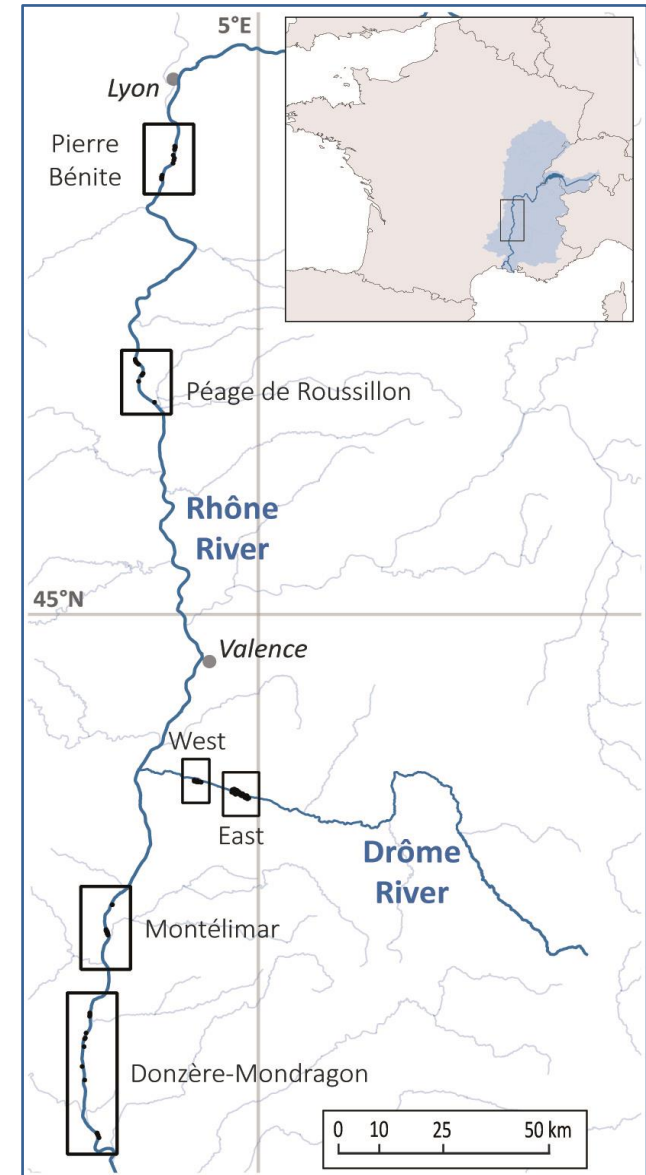
- How functional, structural and compositional riparian forest attributes vary with stand age along highly altered and a near-natural river margins?
- Are successional trajectories of riparian forests different between both river systems?



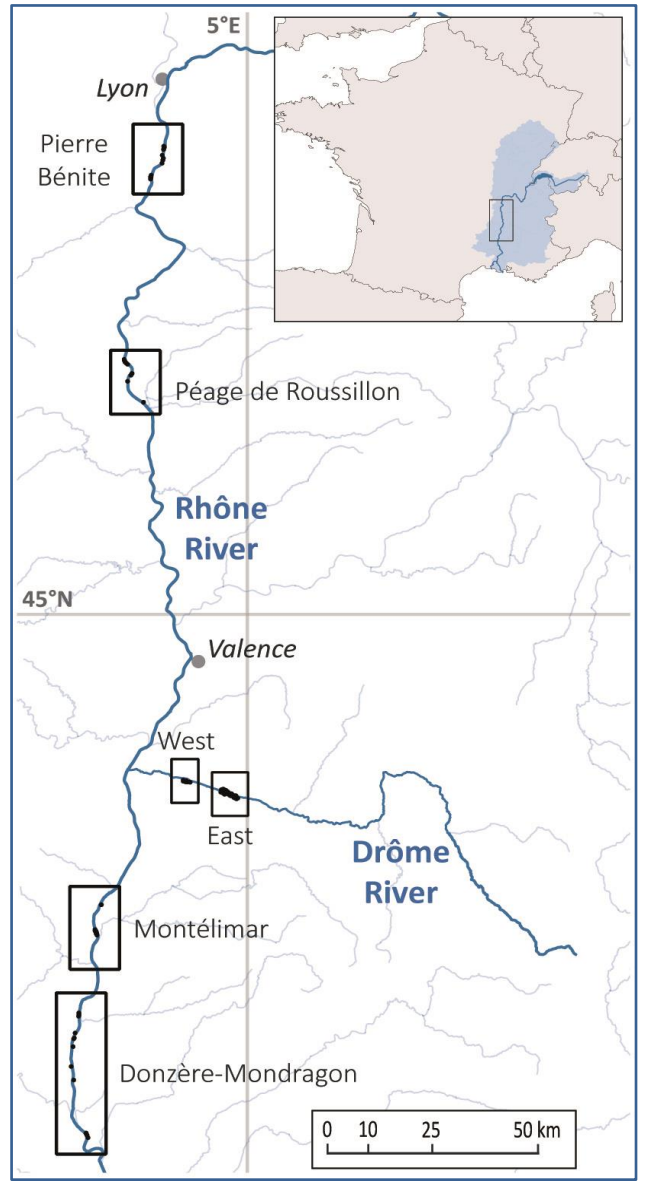
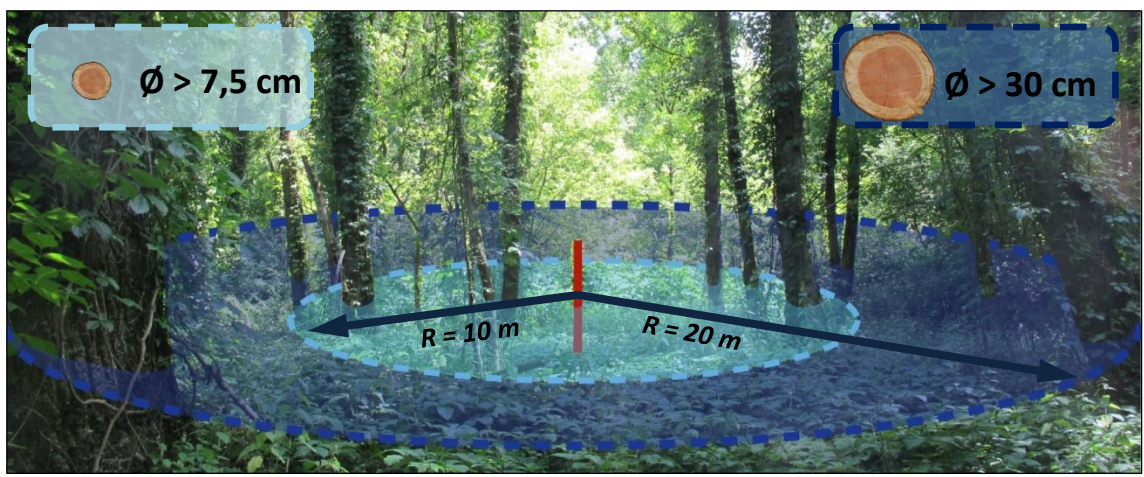
- Drôme: near-natural reference:  
n = 69, 5-62 years



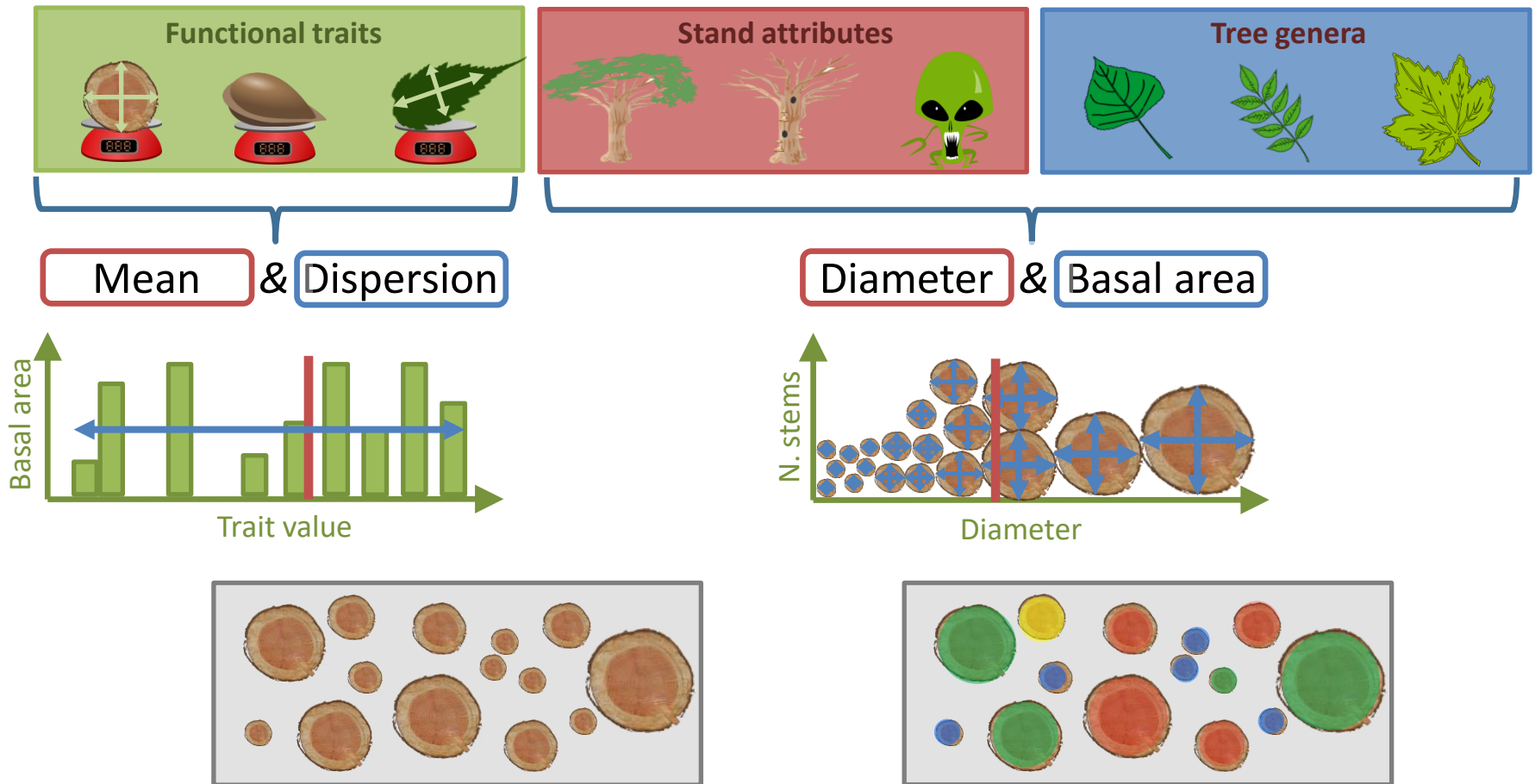
- Rhône: channelized/regulated:  
n = 65, 16-76 years



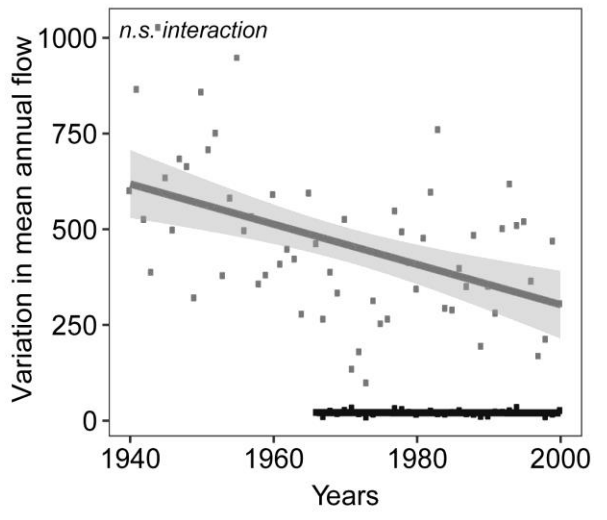
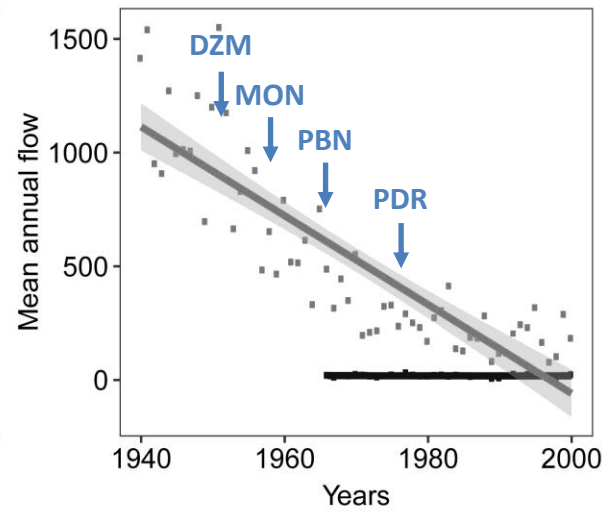
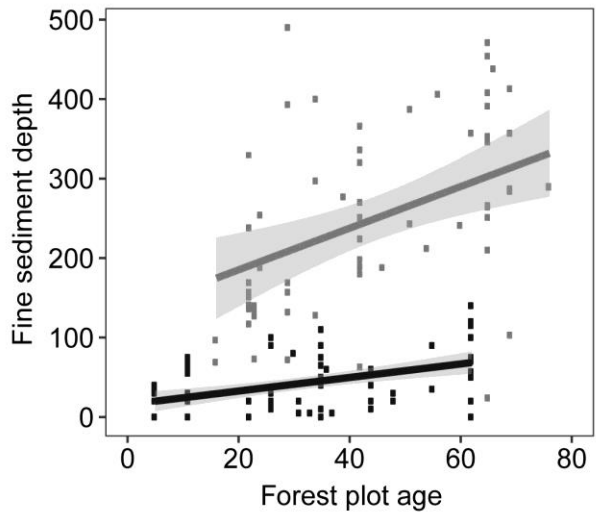
# Study area and sampling design



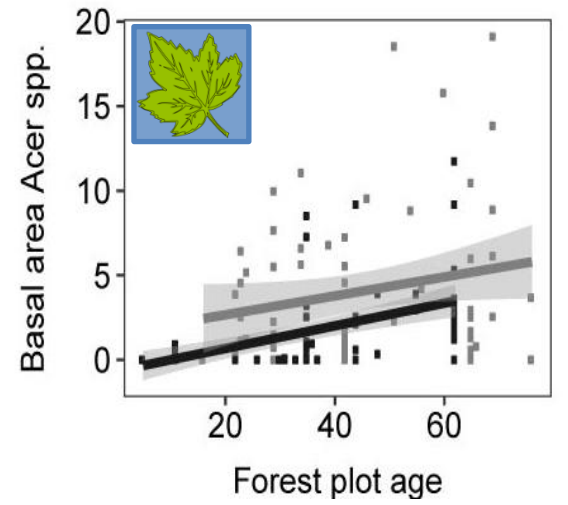
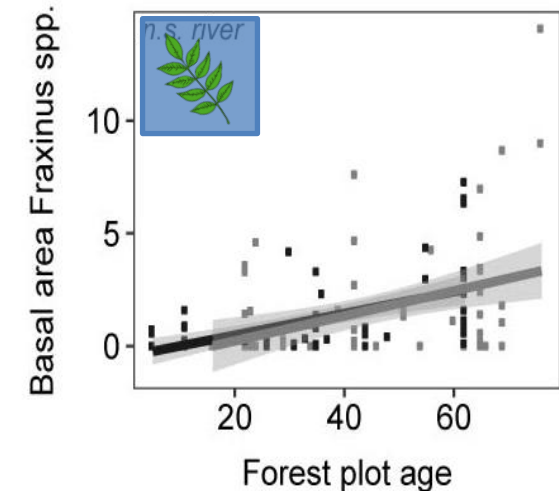
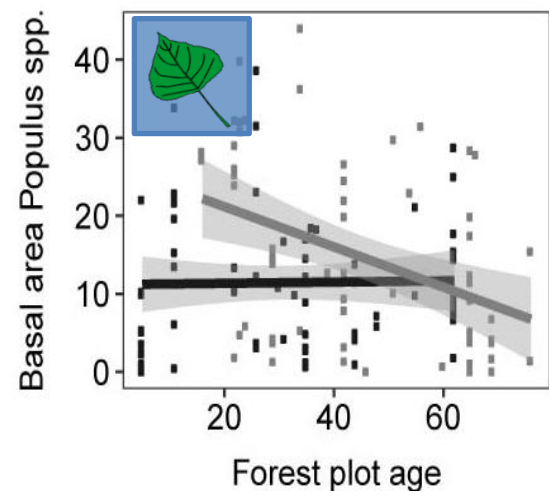
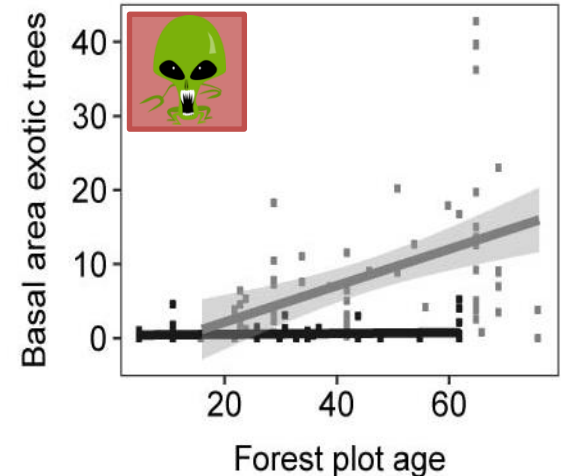
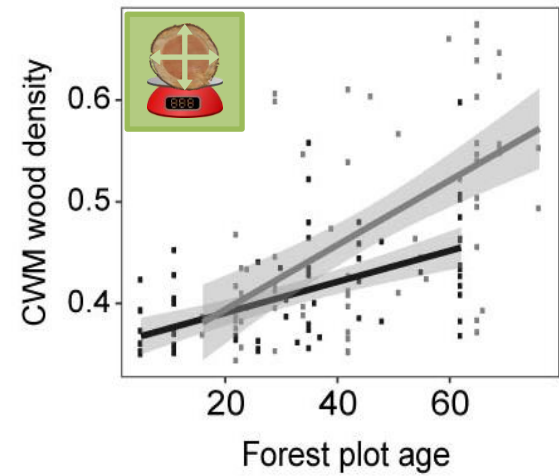
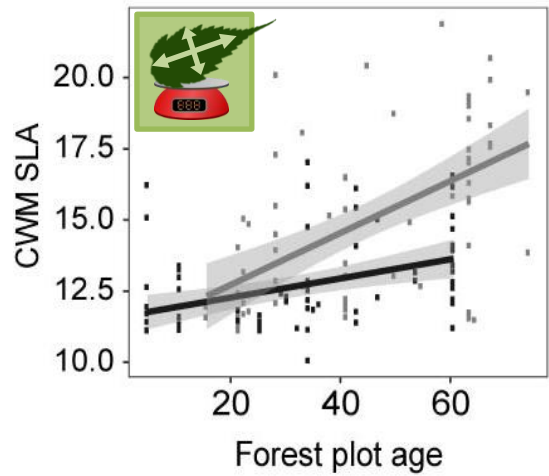
- Abiotic drivers : sediment depth, annual flow (mean, SD)
- Abiotic response :





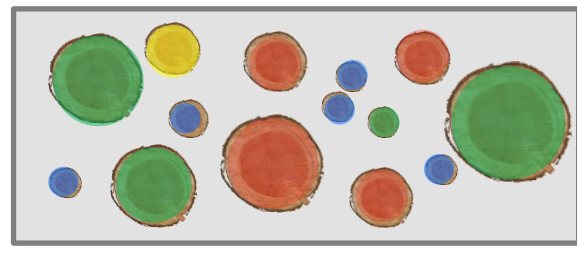
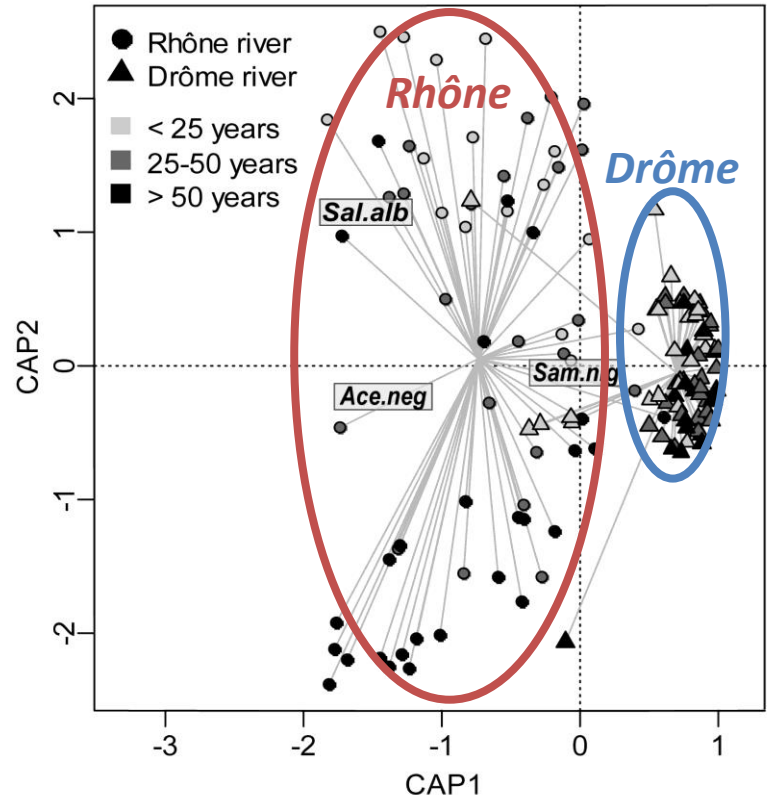
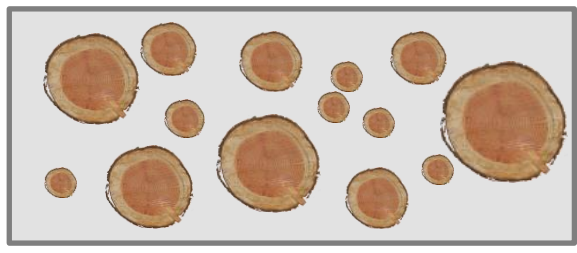
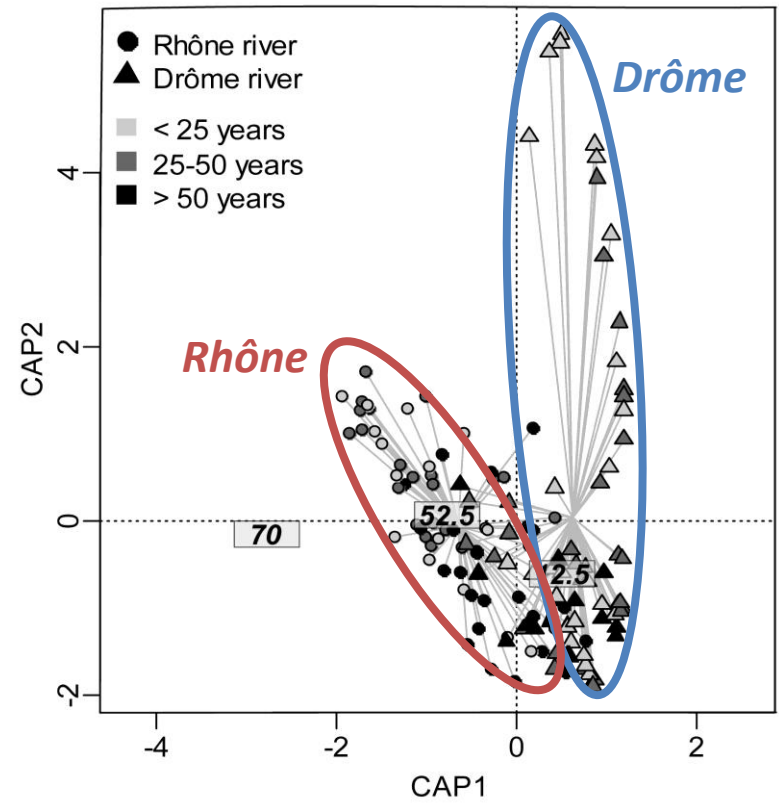


Rhône  Drôme 



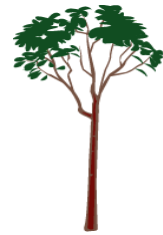
Rhône  Drôme 

# Results: biotic response





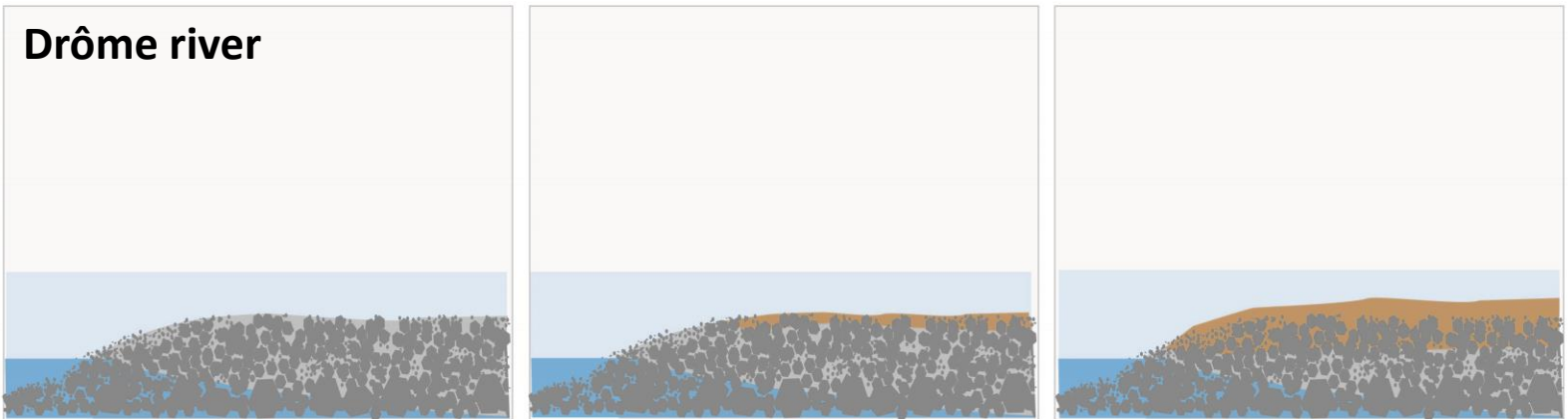
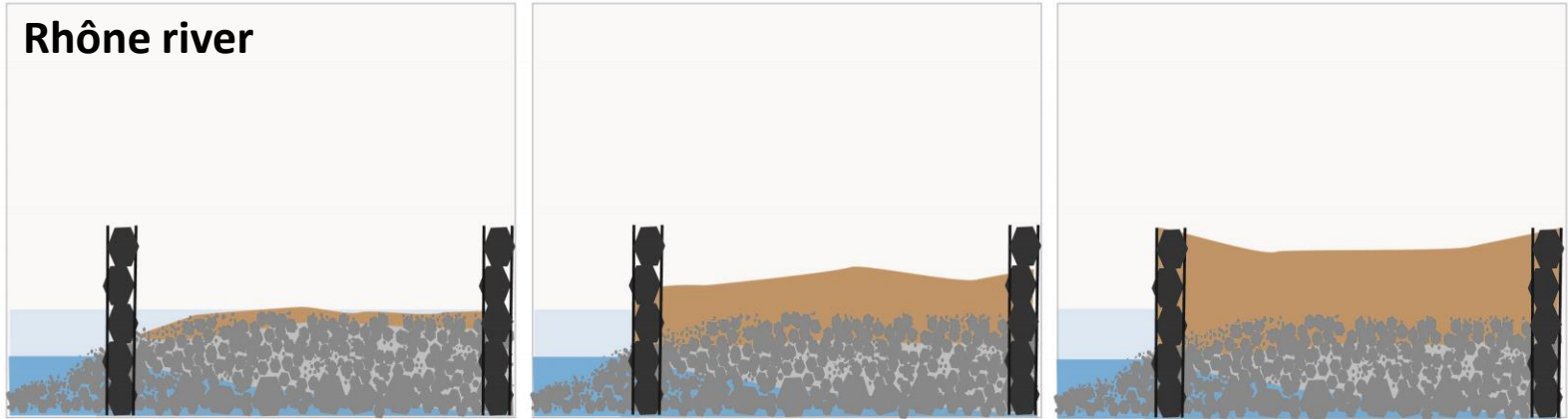
Pioneer



Post-pioneer



Exotic



Riparian forest age

- Common pattern of shifting in functional traits or in species composition exist in the early successional phase;
- Differences in composition and structure appear and increase along successions between both river systems;
- Channelization and flow regulation have induced a more rapid terrestrial-like succession and accelerated transition to the mature successional phase;
- Resource-rich environment facilitate the establishment success of exotic invasive species;
- Differences in abiotic and biotic conditions lead to rapid and irreversible divergences in ecological trajectories;
- Riparian forests along the Rhône river could be regarded as a “novel ecosystem” for which restoration thresholds are most likely exceeded;
- Alternative strategies should be developed to manage degraded riparian forests.

## Plant trait values:



## Financial support:

