



Seasonality effect on physiology and Growth performances of Caribbean mangrove tree species

Félix BompY, Maguy Dulormne, Benoit Dufaÿ, Eléonore Mira, Gauthier Lequeue, Niels de Girval, Vanessa Virapin and Daniel Imbert



Study site

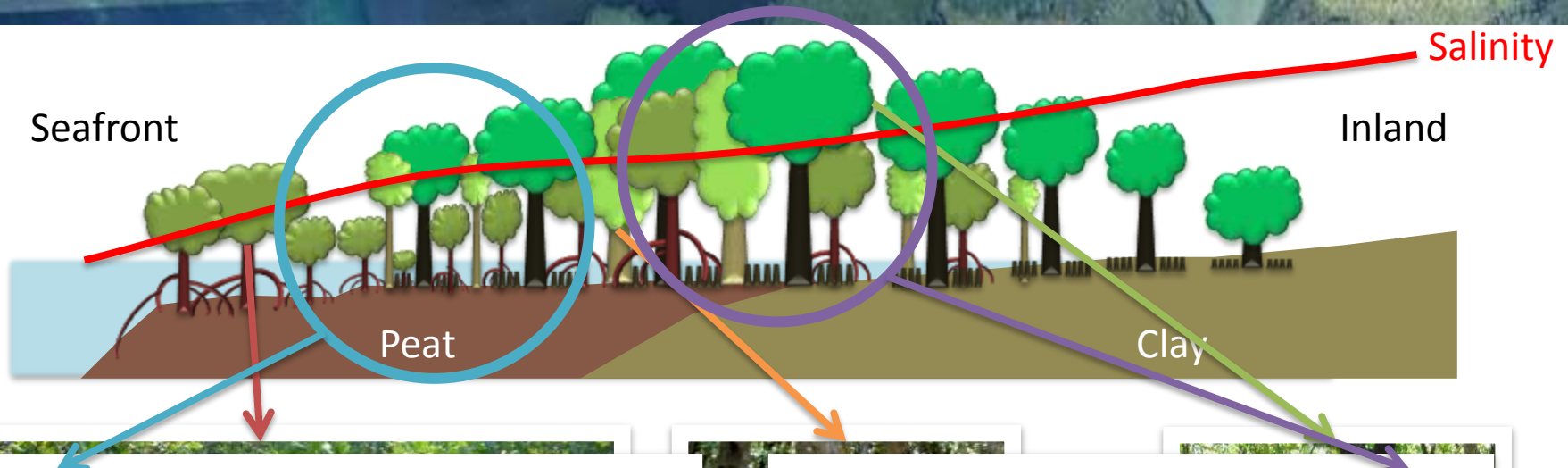
Mangrove



Guadeloupe



Mangrove forest in Guadeloupe



LM

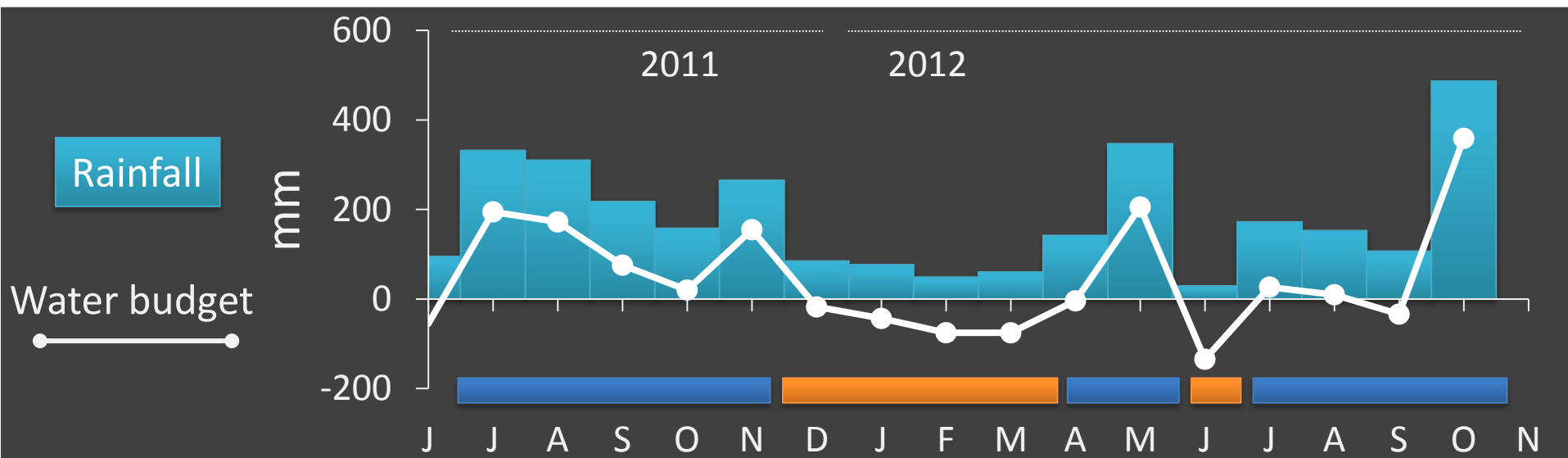


HM



Seasonal variations of rainfall

- Inter Tropical Convergence Zone
- Summer : rainy season
- Winter : dry season



Issues

How much soil conditions are affected by seasonal rainfall patterns ?

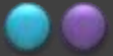
How much growth and physiology of mangrove trees are impacted by climate seasonality ?

Is any species more resistant to drought than others ? Why ?



Material and Methods

2 stands



3 species



16 monthly monitoring •

- Soil conditions (water level, RedOx, salinity)
- Diameter increment (n=10/sp/station)

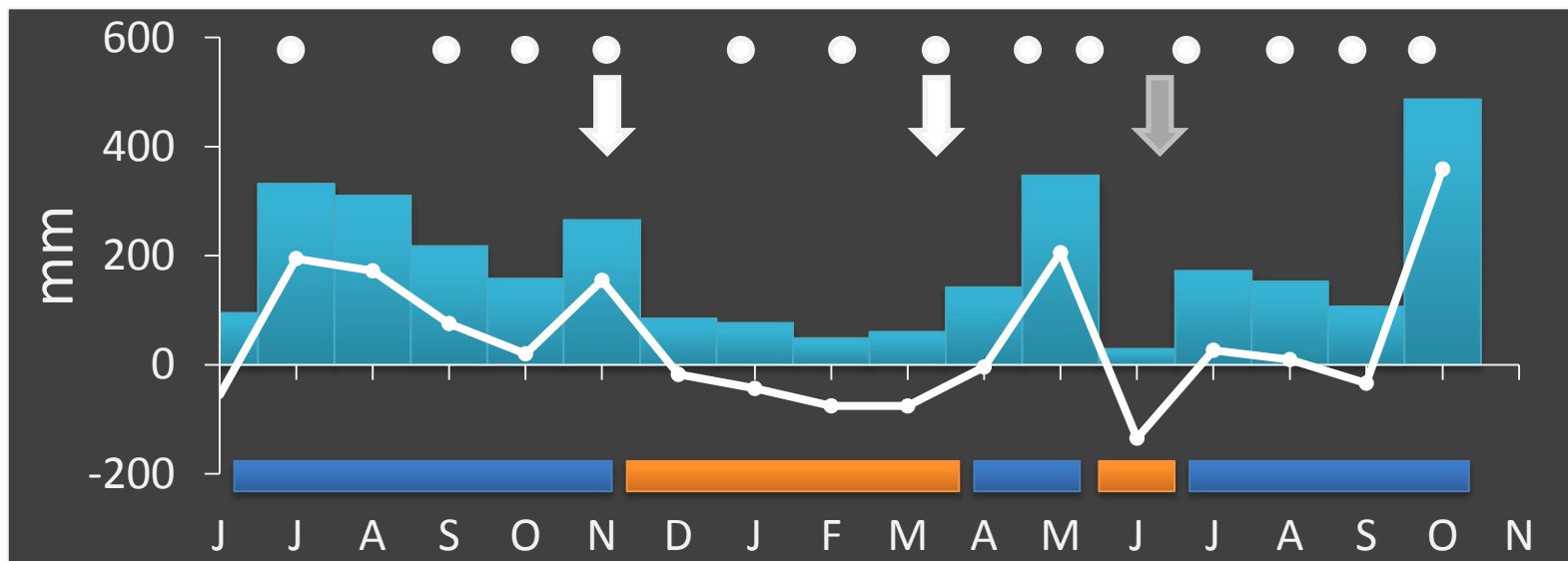
2 campaigns of leaf traits

- Leaf gas exchange (n=15/sp/station)
- Midday water potential



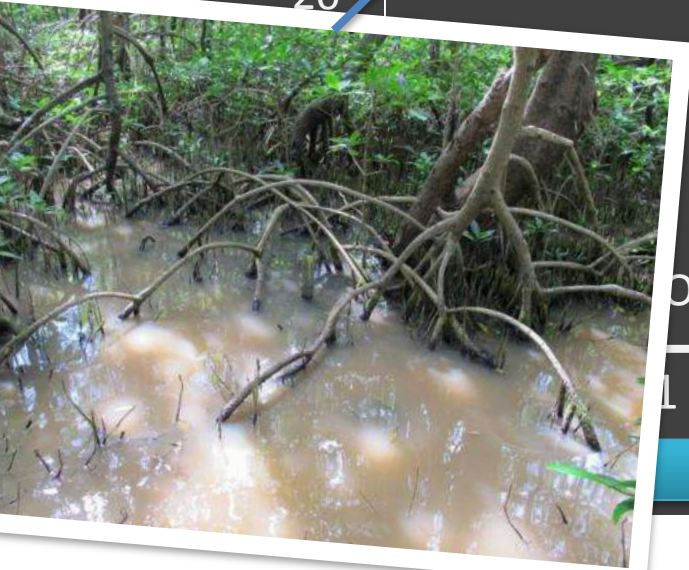
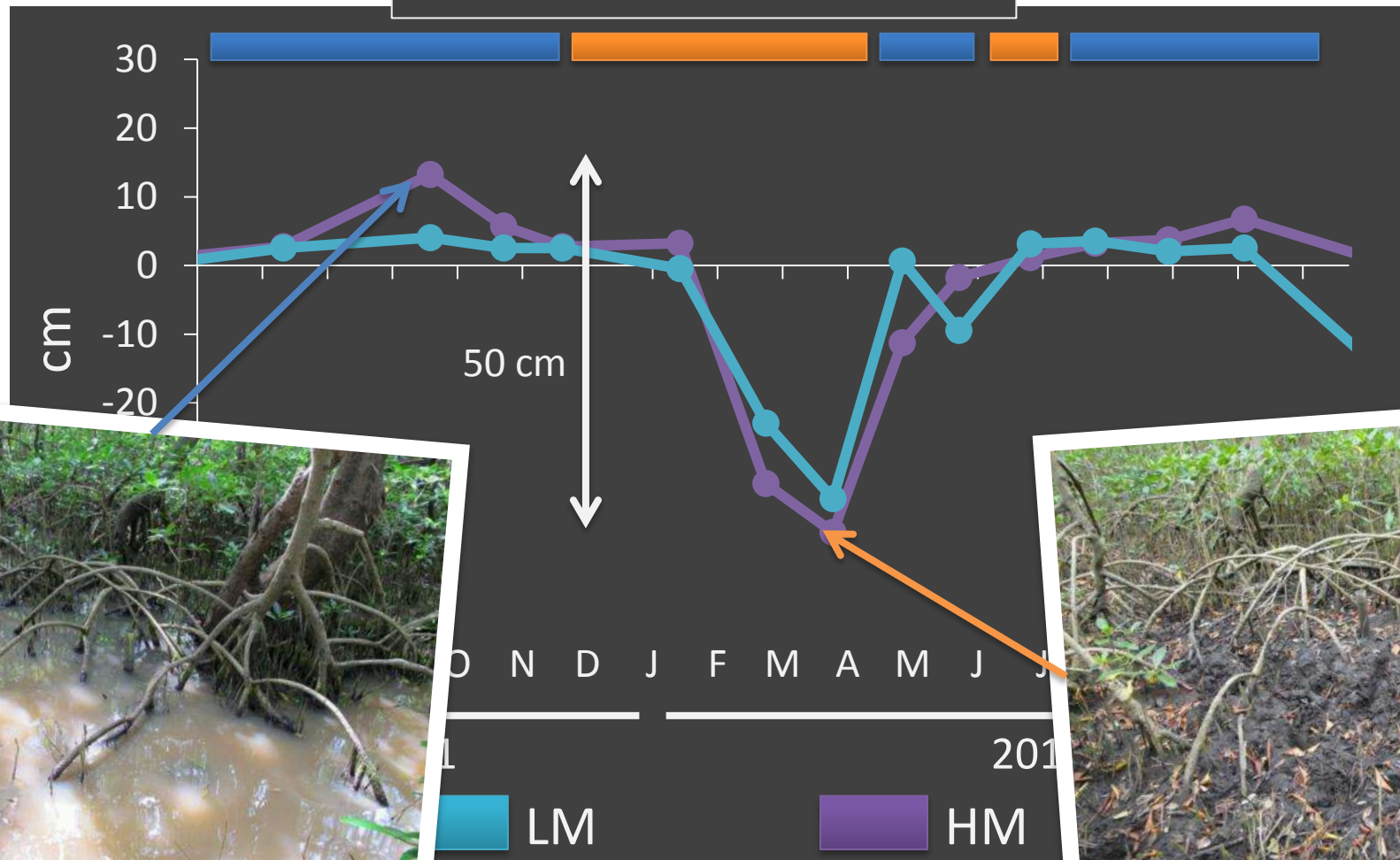
1 of wood traits

- PLC (n=25/sp/station)
- Xylem anatomy



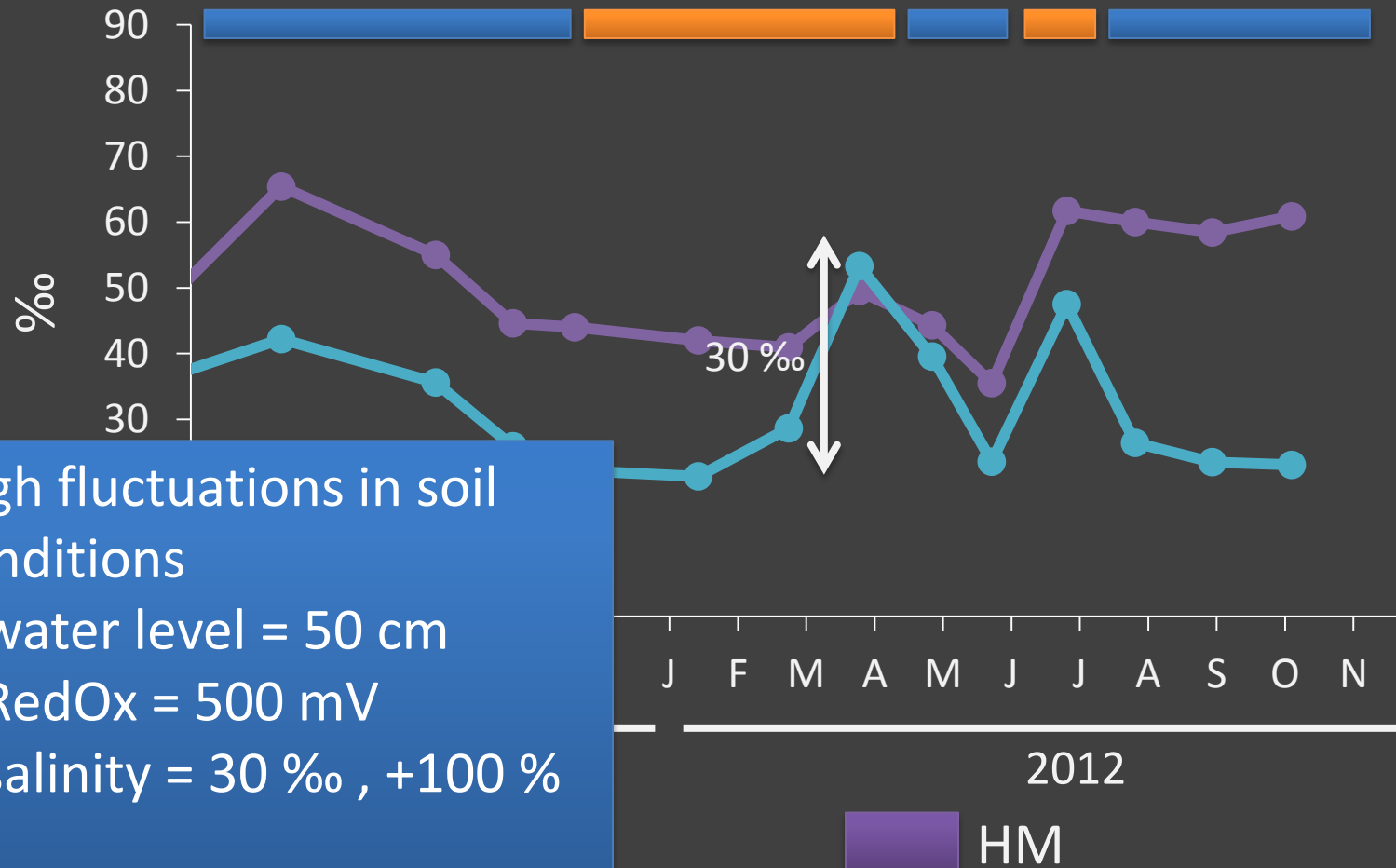
Seasonal variations of soil conditions

Water table level



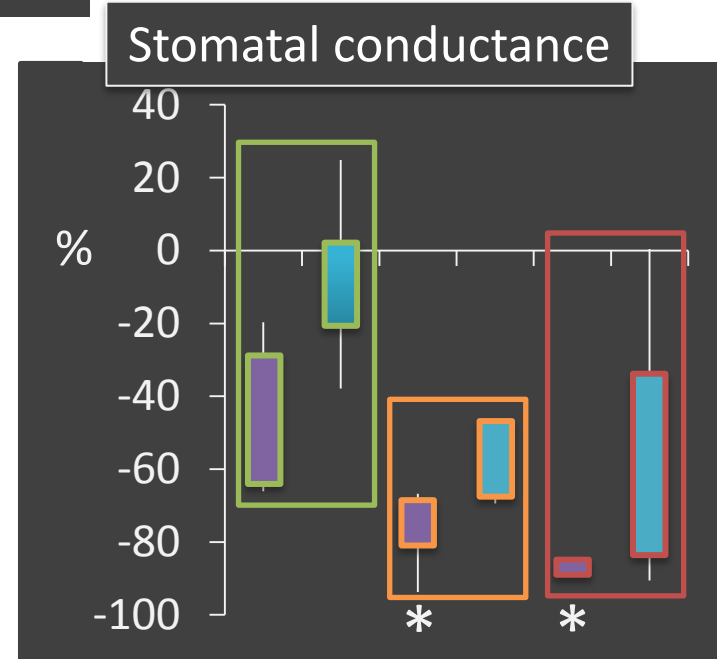
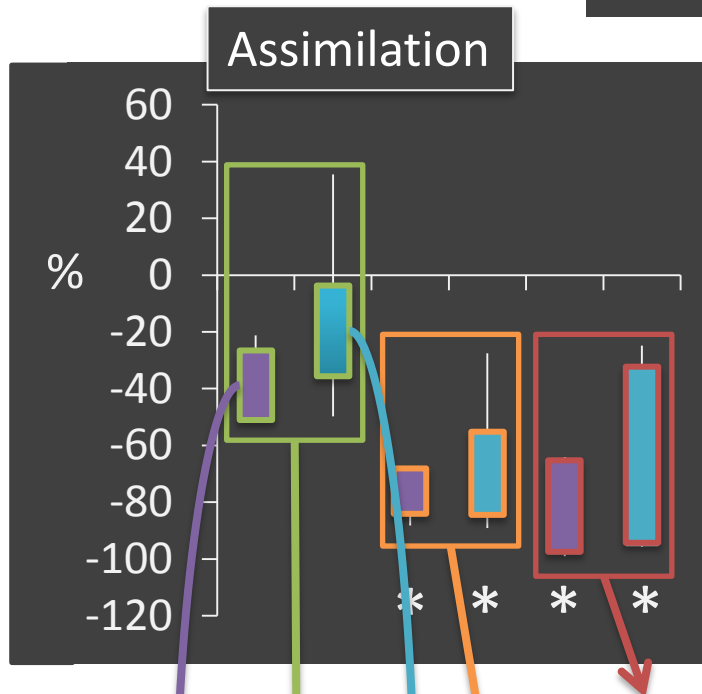
Seasonal variations of soil conditions

Top Top soil salinity ntial



Leaf gas exchange

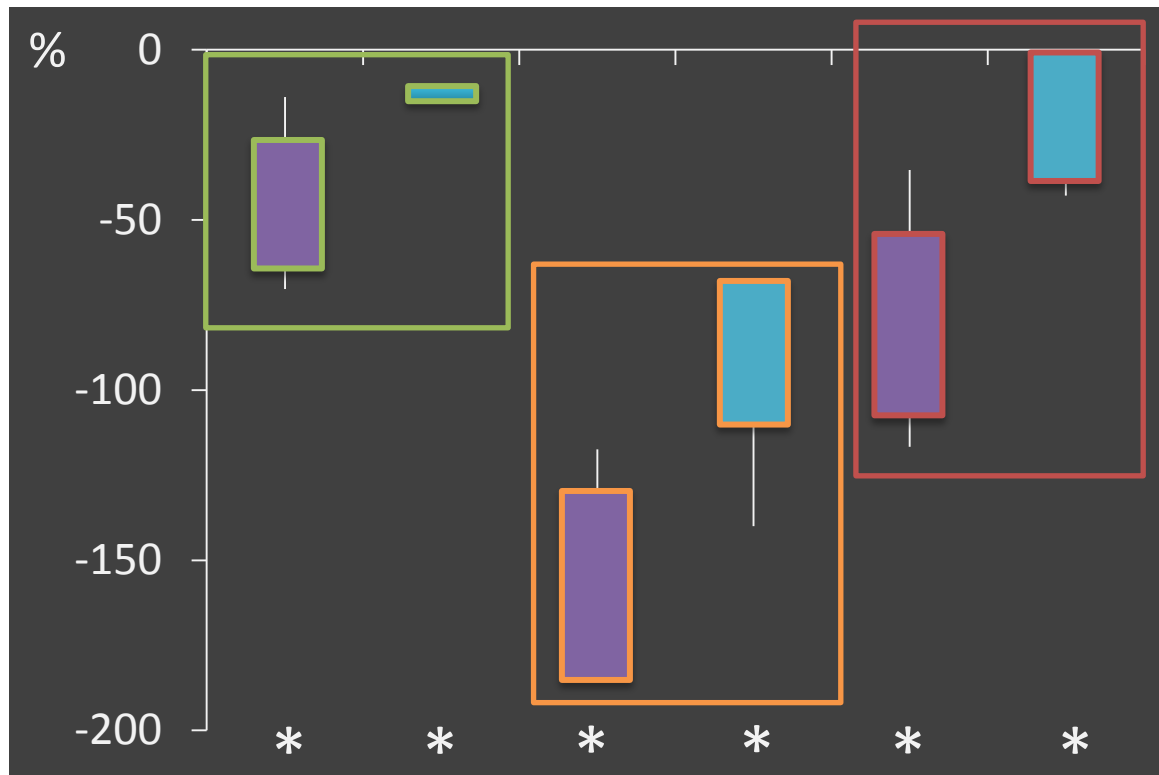
* : Rainy $\neq$ Dry



Rainy to Dry season

- Amax $\searrow$ for Rhizophora and Laguncularia, = for Avicennia
- Stomatal conductance tended to $\searrow$, LM > HM

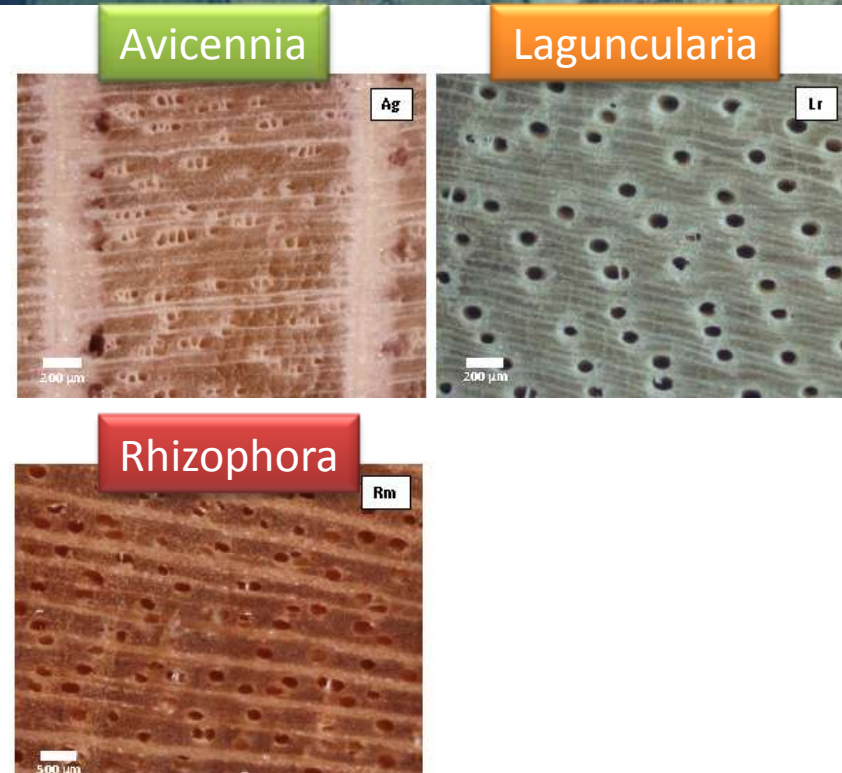
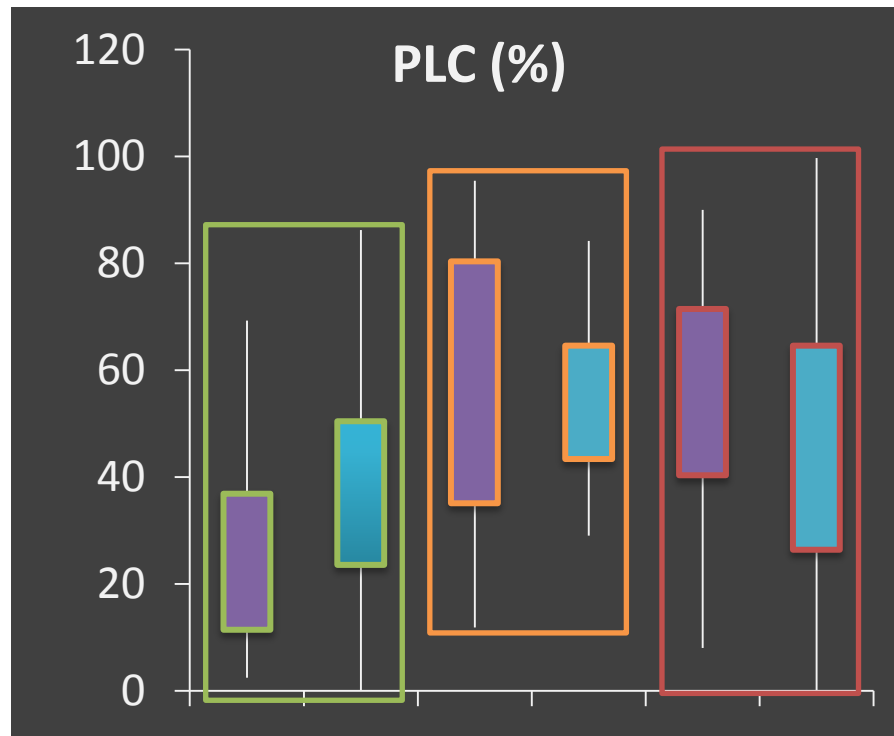
Water potentials



Rainy to Dry season

➤ Water potential $\searrow$ for all species

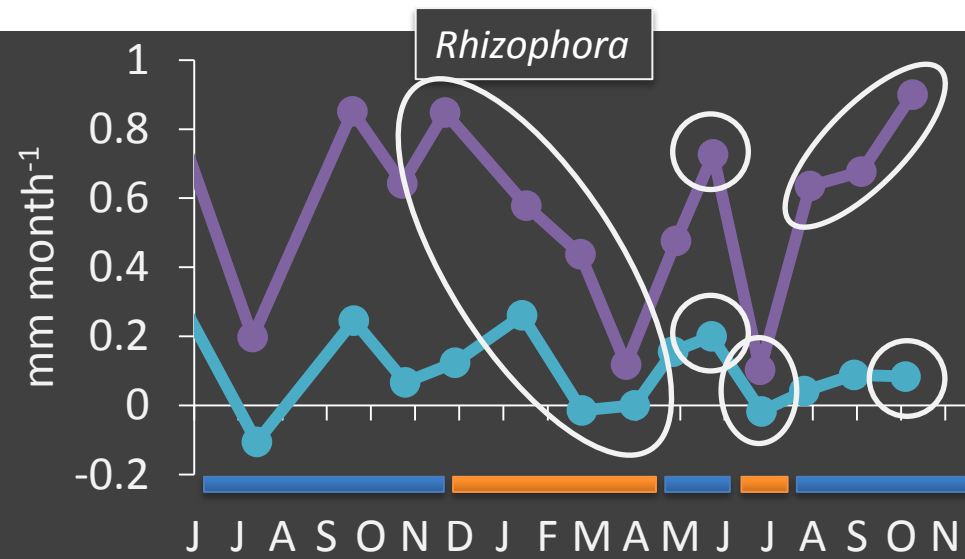
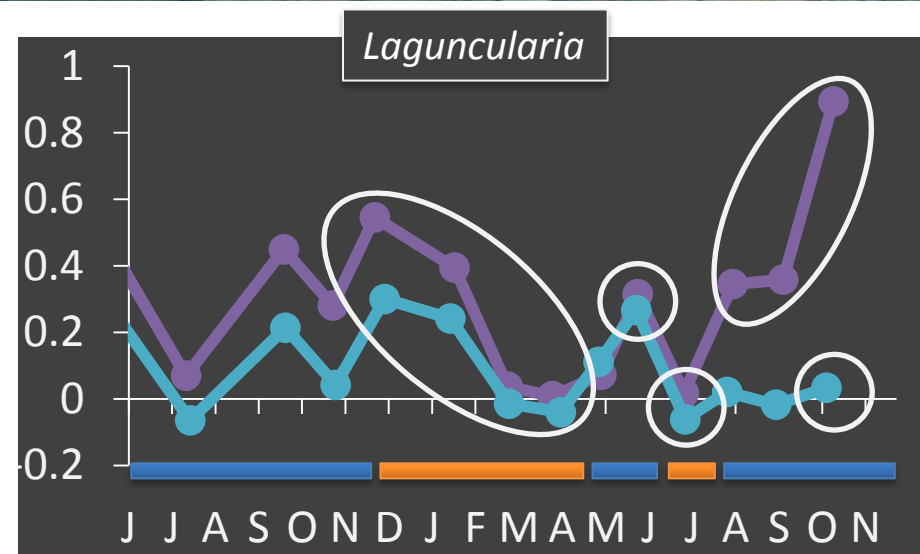
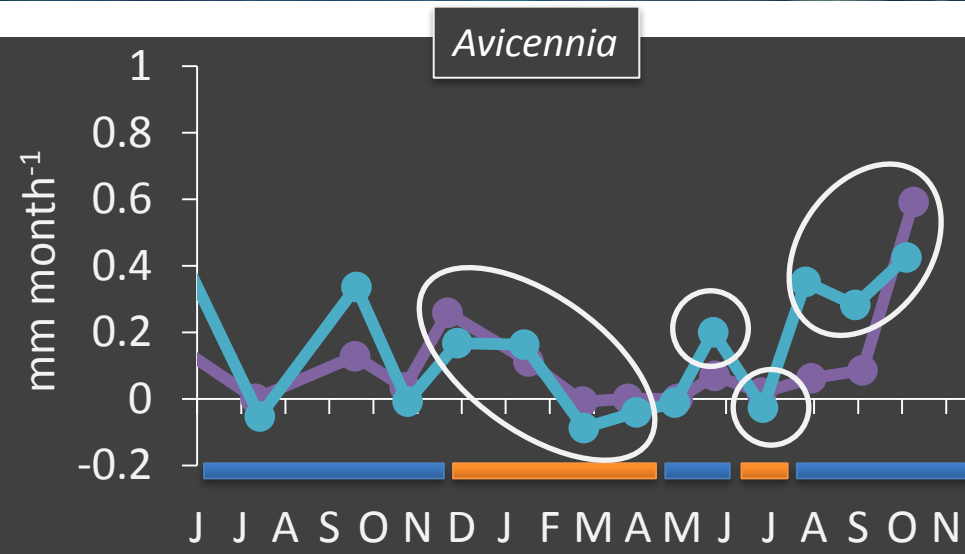
Embolism & Wood anatomy



Avicennia vs. Other species

- tended to be less embolized
- short & narrow xylem vessels
- high proportion of grouped vessels

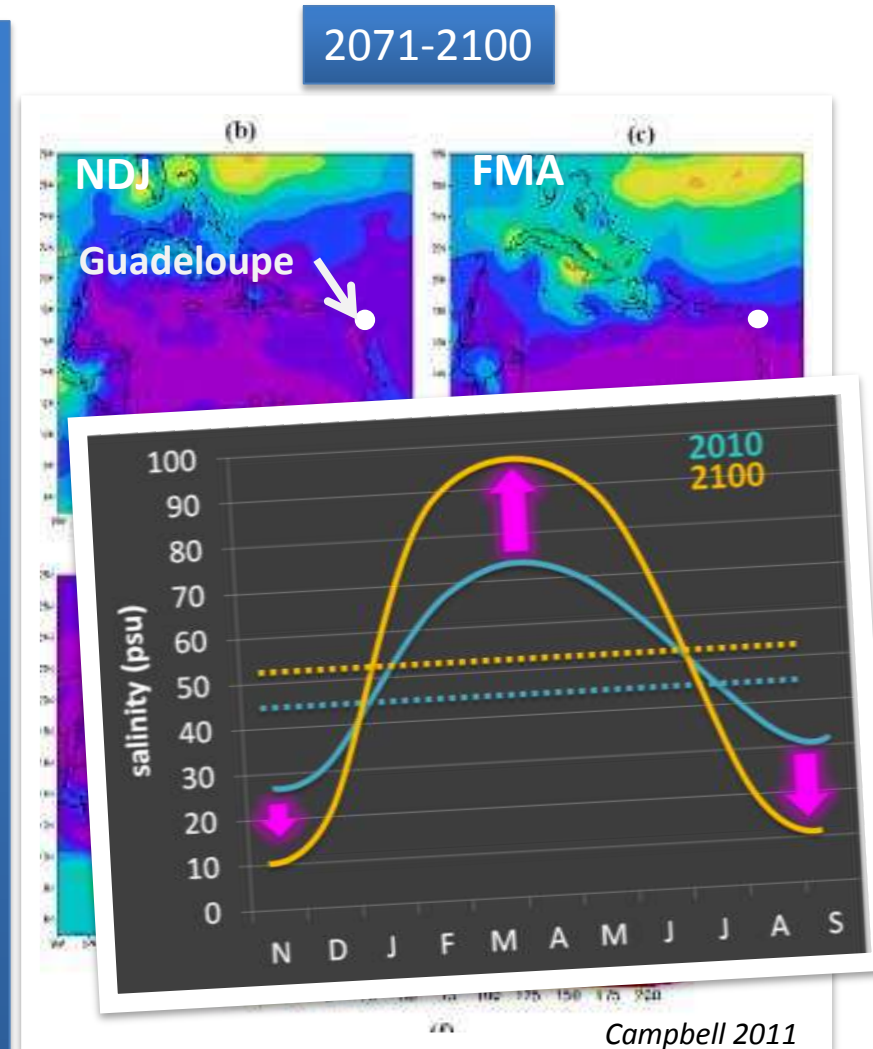
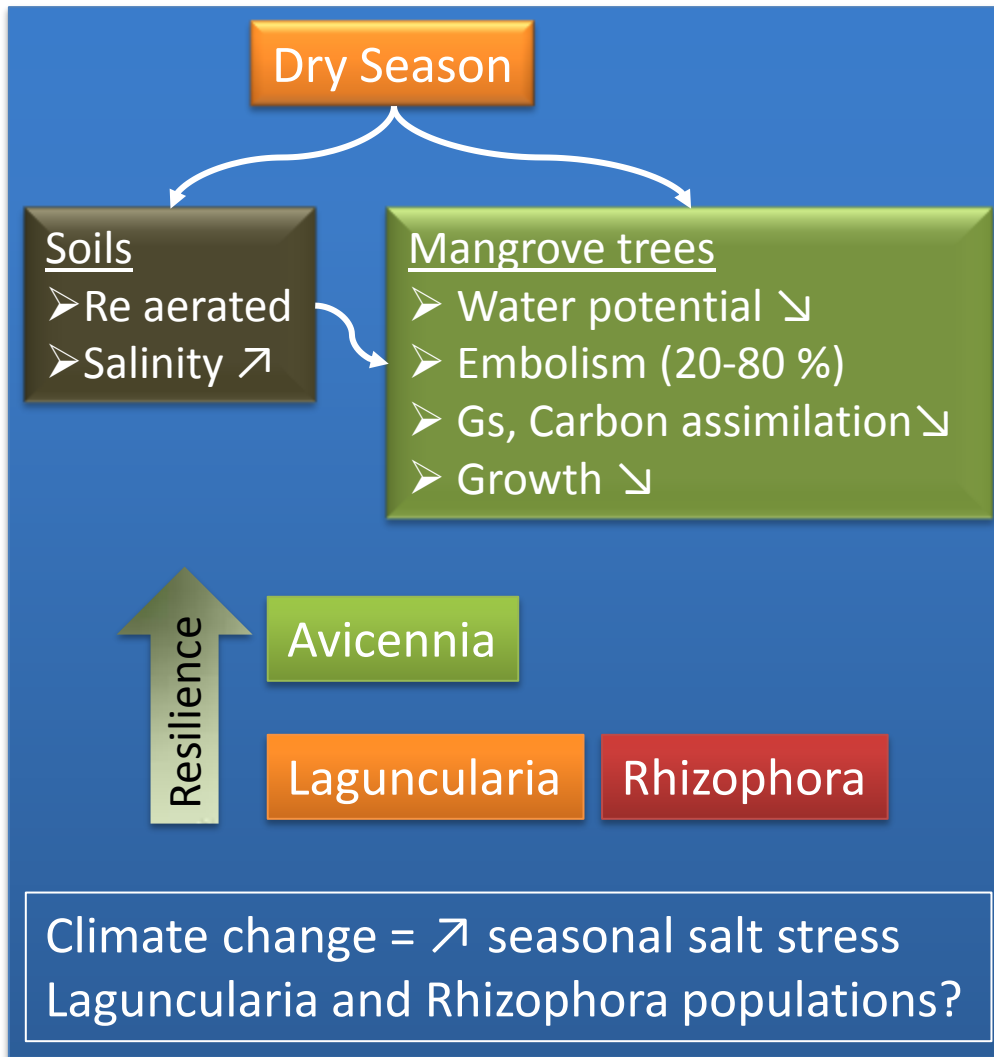
Diameter increments



Data : Average diameter increment (n = 10)

- Growth $\searrow$ Dry periods (- 98 %)
- Growth HM > LM
- Slower growth resilience in LM for *Laguncularia* & *Rhizophora*

Conclusions - Perspectives





Thank you for your attention

From the DYNECAR team : **Félix Bompoy**, Maguy Dulormne, Benoit Dufaÿ, Eléonore Mira, Gauthier Lequeue, Niels de Girval, Vanessa Virapin and Daniel Imbert



felix.bompoy@univ-ag.fr

