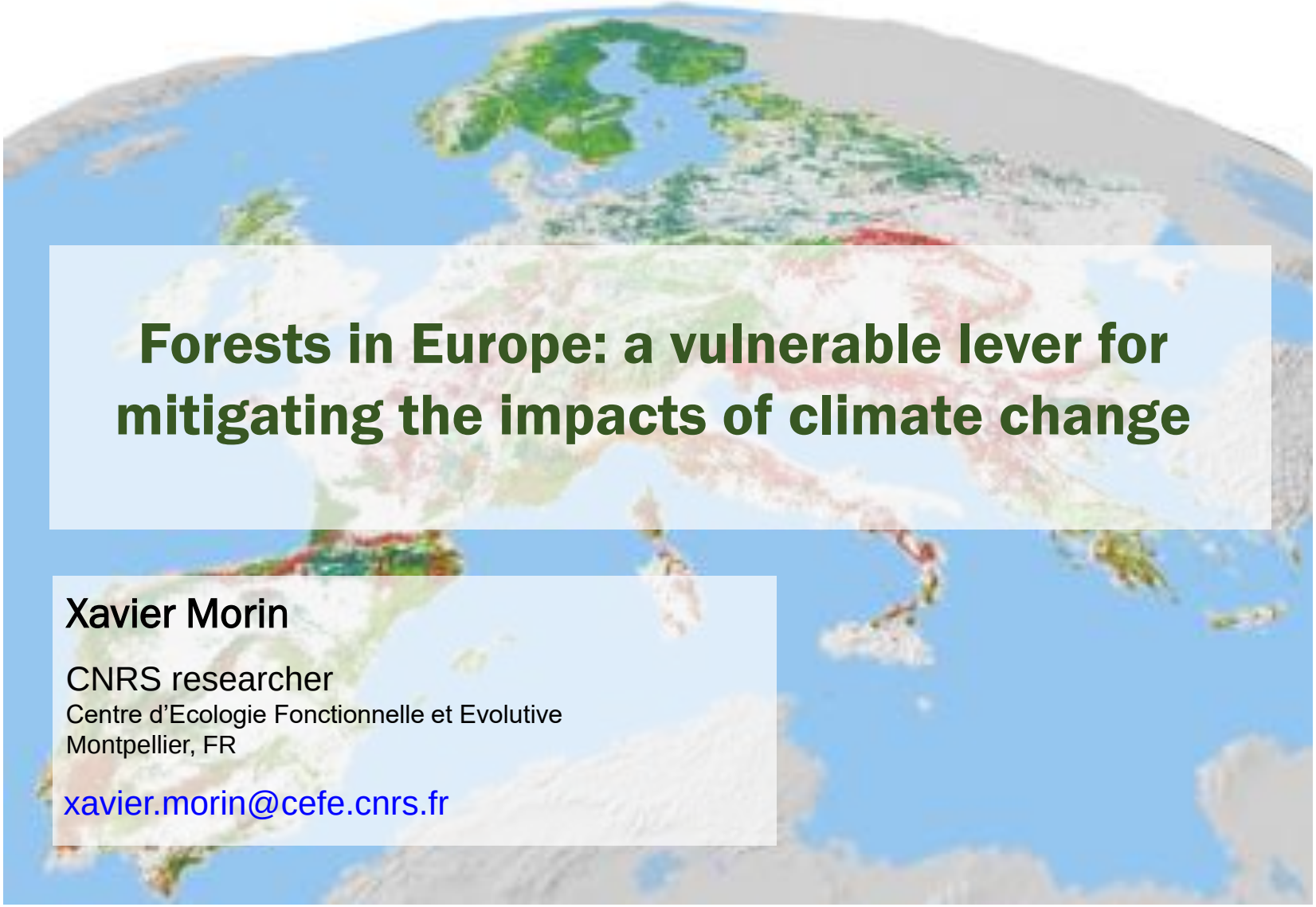

Forests in Europe: a vulnerable lever for mitigating the impacts of climate change

Xavier Morin

CNRS researcher
Centre d'Ecologie Fonctionnelle et Evolutive
Montpellier, FR

xavier.morin@cefe.cnrs.fr

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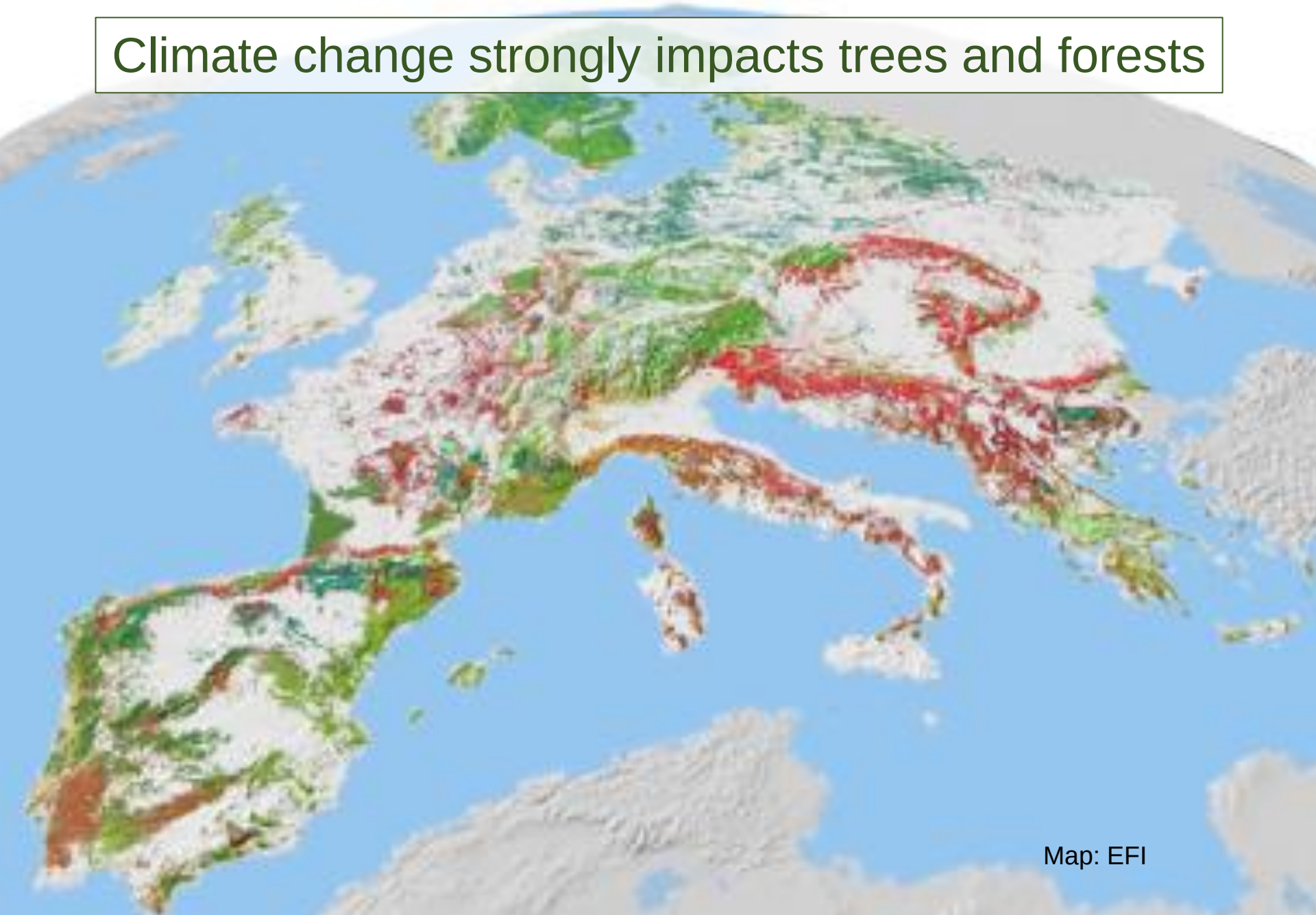
Climate change strongly impacts trees and forests



Map: EFI

Climate change strongly impacts trees and forests

Various trends on the productivity of forests (+ impact on phenology)

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Climate change strongly impacts trees and forests

Various trends on the productivity of forests (+ impact on phenology)

Significant increase in mortality events in the last 30 years

eg. Siver fir in the Mont Ventoux

Climate change strongly impacts trees and forests

Various trends on the productivity of forests (+ impact on phenology)

Range shifts of tree species in latitude and elevation

Changes in community composition

Significant increase in mortality events in the last 30 years

eg. Siver fir in the Mont Ventoux

Climate change

Cascade of impacts on trees and forests

Trees physiology
- Growth
- Phenology
- Survival

Species distributions & community composition

Ecosystem functioning and services (incl. carbon storing)

Climate change

Ecological models predict increased changes
regardless the climate scenario

Cascade of impacts on trees and forests

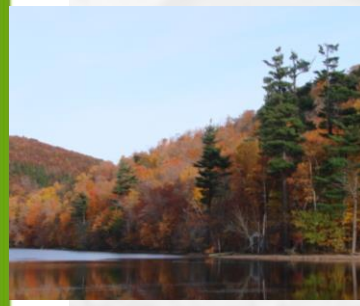
Trees physiology
- Growth
- Phenology
- Survival

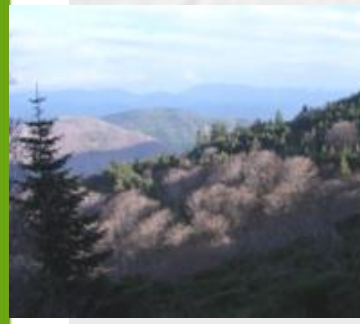
Species distributions & community composition

Ecosystem functioning and services (incl. carbon storing)

Our forests are increasingly vulnerable
We must address that for effective mitigation

The relative vulnerability of mixed *vs.* monospecific forests





Forests, climate change & adaptation

- European forests are **strongly impacted** by climate change
  - Species range shifts
  - Local extinctions of populations (especially at the southern edge of distribution)
  - This **vulnerability** is expected to **increase in the next decades**

- **More research still needed** (and should be supported)
  …but we **need to act now**, informed by the latest science

- **Increasing the pressure** on forests may put them at **risk**, *eg.*:
  - Bioenergy at industrial scale
  - Clear cutting
  - Short rotations
  - Monospecific plantations

Forests, climate change & adaptation

- **How adaptation reduces vulnerability & promotes better mitigation?**
  - Promoting mixed forests = biodiversity as a mitigation tool
  - Assisted migration of pre-adapted species/populations

- **Which activities to prioritize in forests?**
  - Restoring degraded forests & **preserving old-growth forests**
  - Encouraging a silviculture with **continuous forest cover** and longer rotation
  - Reducing stand density in situations where it decreases drought stress btw trees
  - Tree planting… (mixed plantations)

Thank you!

European Commission

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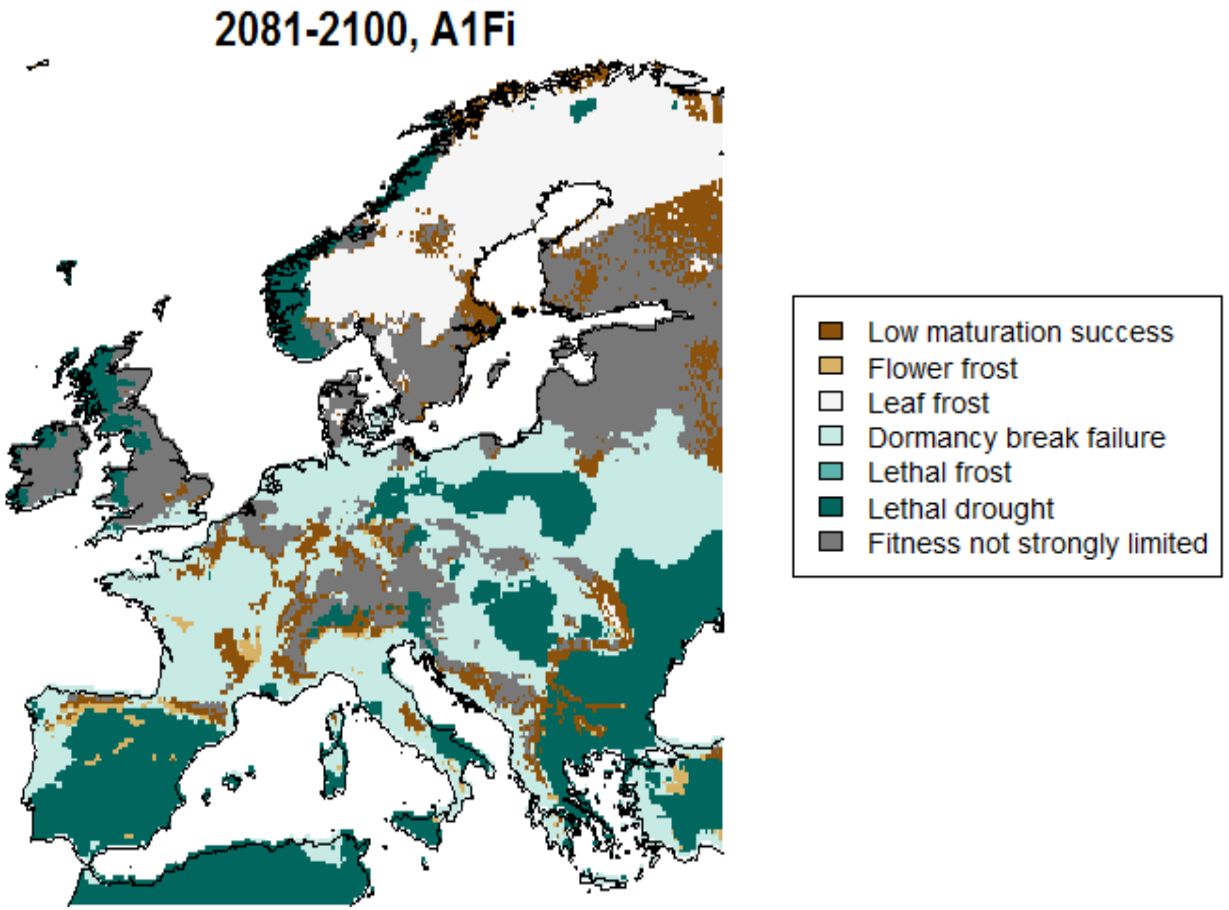
Centre d'Ecologie Fonctionnelle & Evolutive

Impacts on trees and forests: species distributions

Forecasting future distributions = a range of modelling approaches



Saltré et al. 2014