



Options for adaptive forest management in European forests

The project MOTIVE – Models for Adaptive Forest Management

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Thinkforest, Brussels 25th April 2013

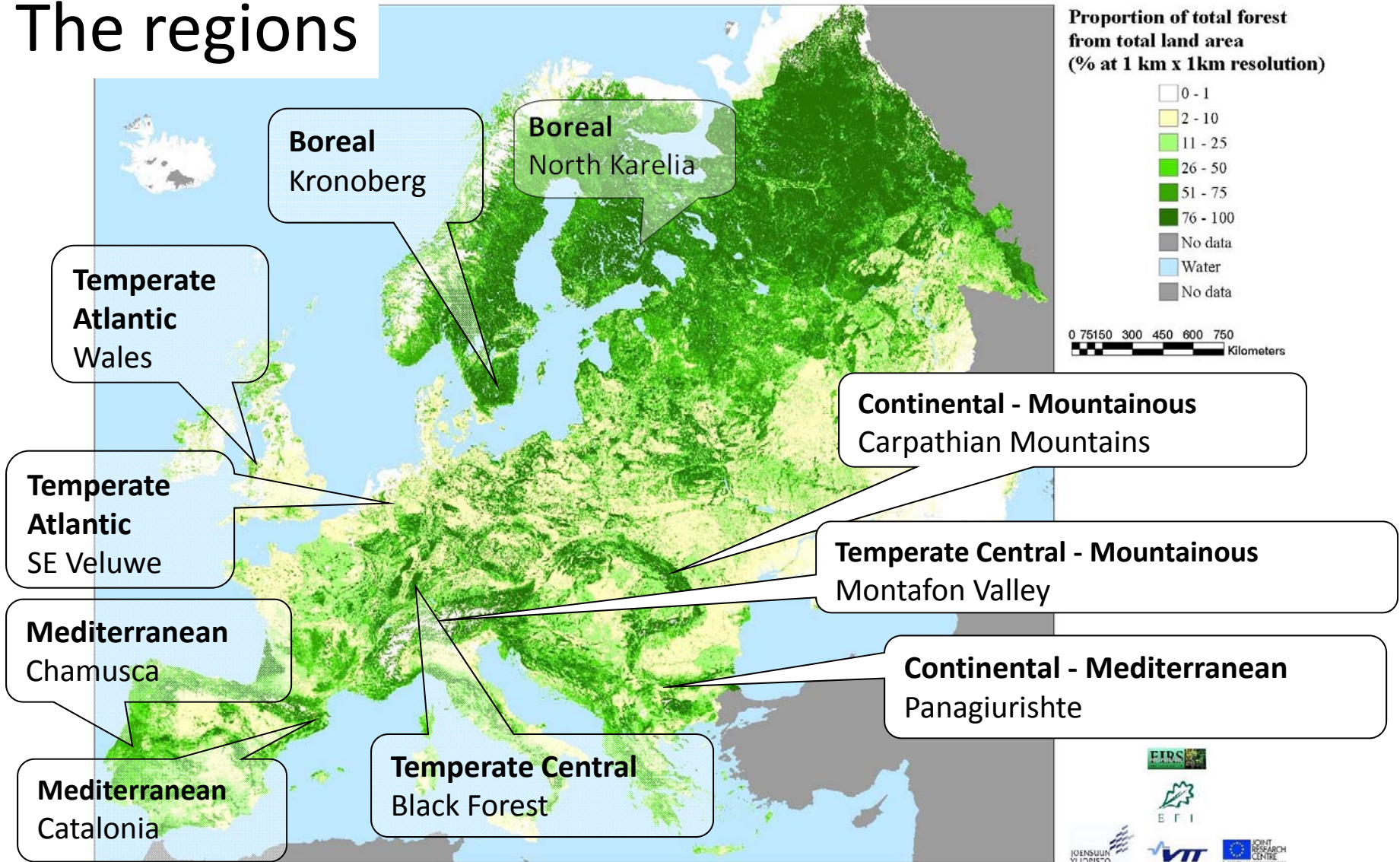
MOTIVE is co-funded by "European Commission's Environment (including Climate Change) Research Programme, as part of FP7", under nr 226544 . Sci officer: Sofie VANDEWOESTIJNE



Structure

- **MOTIVE: Models for Adaptive Forest Management - regions**
- **Why adapt – potential impacts?**
- **How to adapt – strategies?**
- **Who adapts – when?**
- **Conclusions**
- **What can EU policy do?**

The regions



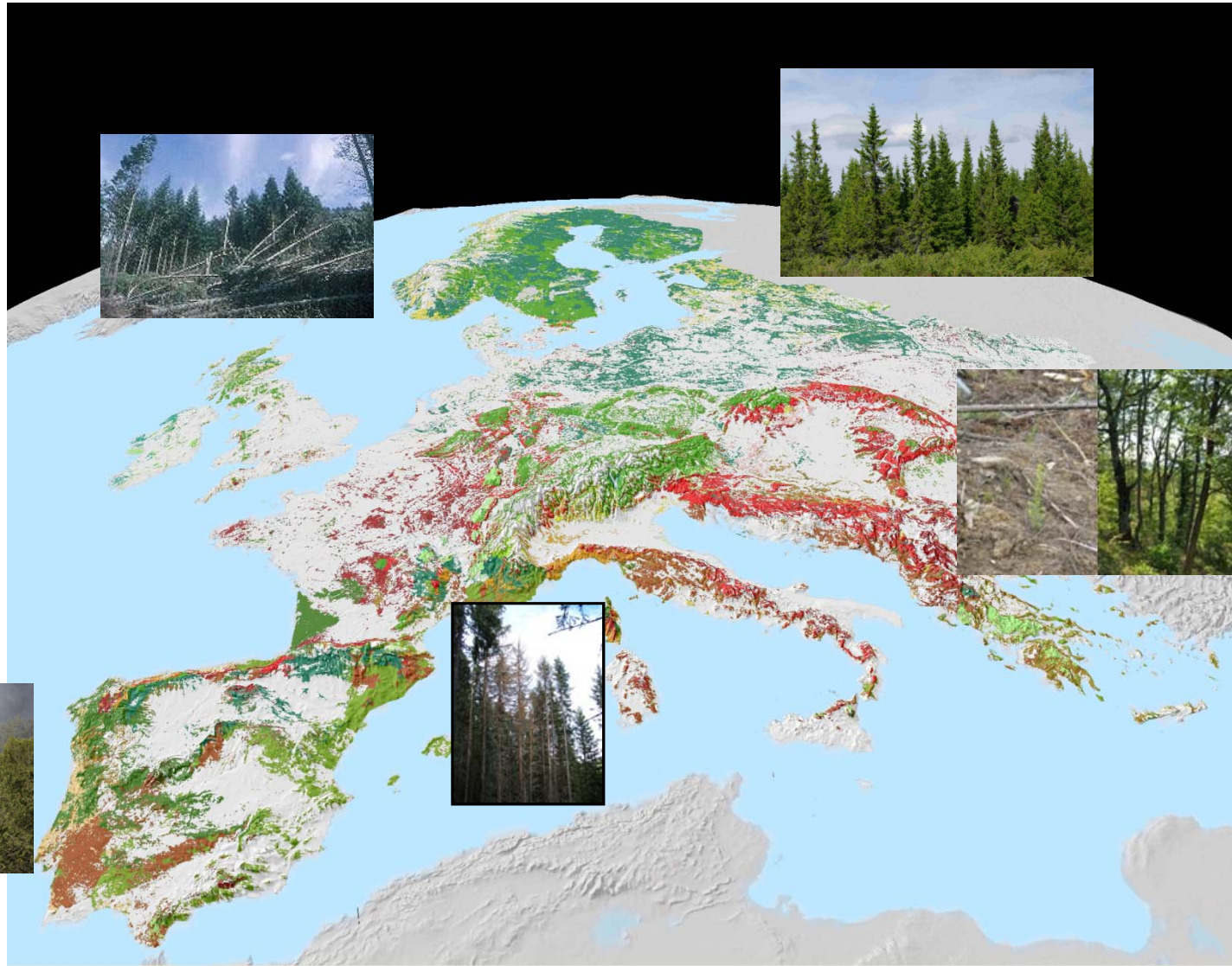
Why adapt? – Climate Change Impacts

EU27:

200 million ha

16 million owners

Multiple services



Current: 1950-2000

Legend

-  Other spp.
-  Beech
-  Spruce
-  Oak 1
-  Pine 1
-  Birch
-  Oak 2
-  Pine 2



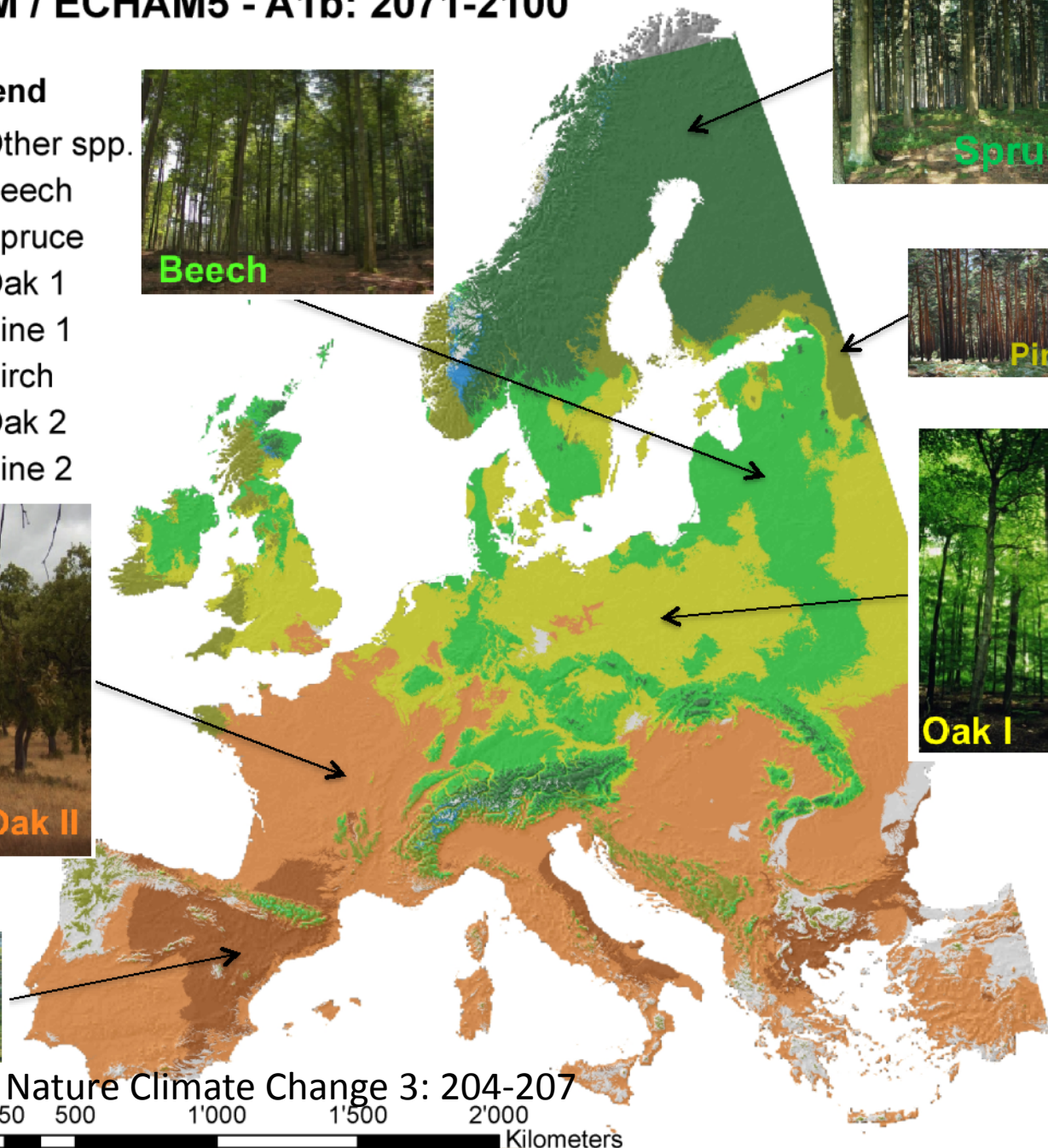
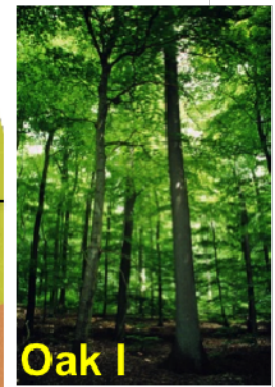
0 250 500 1'000 1'500 2'000 Kilometers

biome shifts- mean

CLM / ECHAM5 - A1b: 2071-2100

Legend

-  Other spp.
-  Beech
-  Spruce
-  Oak 1
-  Pine 1
-  Birch
-  Oak 2
-  Pine 2



0 250 500 1'000 1'500 2'000 Kilometers

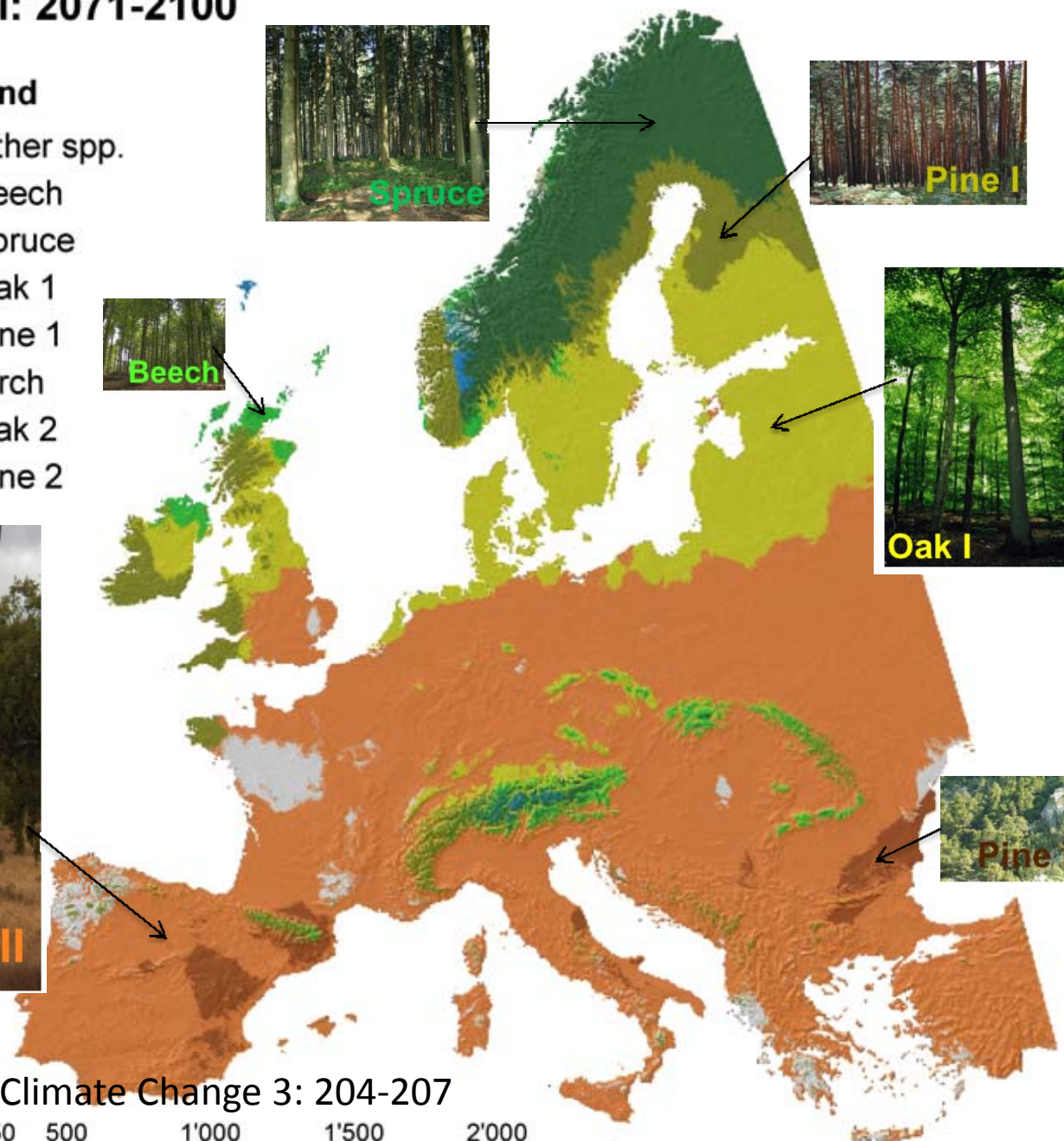


biome shifts- „extremes“

A1FI: 2071-2100

Legend

- Other spp.
- Beech
- Spruce
- Oak 1
- Pine 1
- Birch
- Oak 2
- Pine 2



0 250 500 1'000 1'500 2'000 Kilometers

Hanewinkel et al. 2013. Nature Climate Change 3: 204-207

How to adapt ? **general strategies** (Bolte et al. 2009)

i) Conservation of forest structures – “reactive”, “no change”

- Low adverse impacts of or high stand resistance to CC
- High likelihood to improve stability by silvicultural measures
- Increasing risk of catastrophic loss

ii) Active adaptation – “forward looking” , “proactive”

- Introduction of new species/provenances – ‘assisted migration’
- Change of rotation times, stand structure (e.g. density)
- Disturbance management, ...
- High costs and efforts

iii) Passive adaptation – “do nothing”

- No active interventions
- Use of spontaneous adaptation processes (forest succession)
- For forests of low economic (ecological) importance
- No measures with better cost-benefit relation

Active adaptation

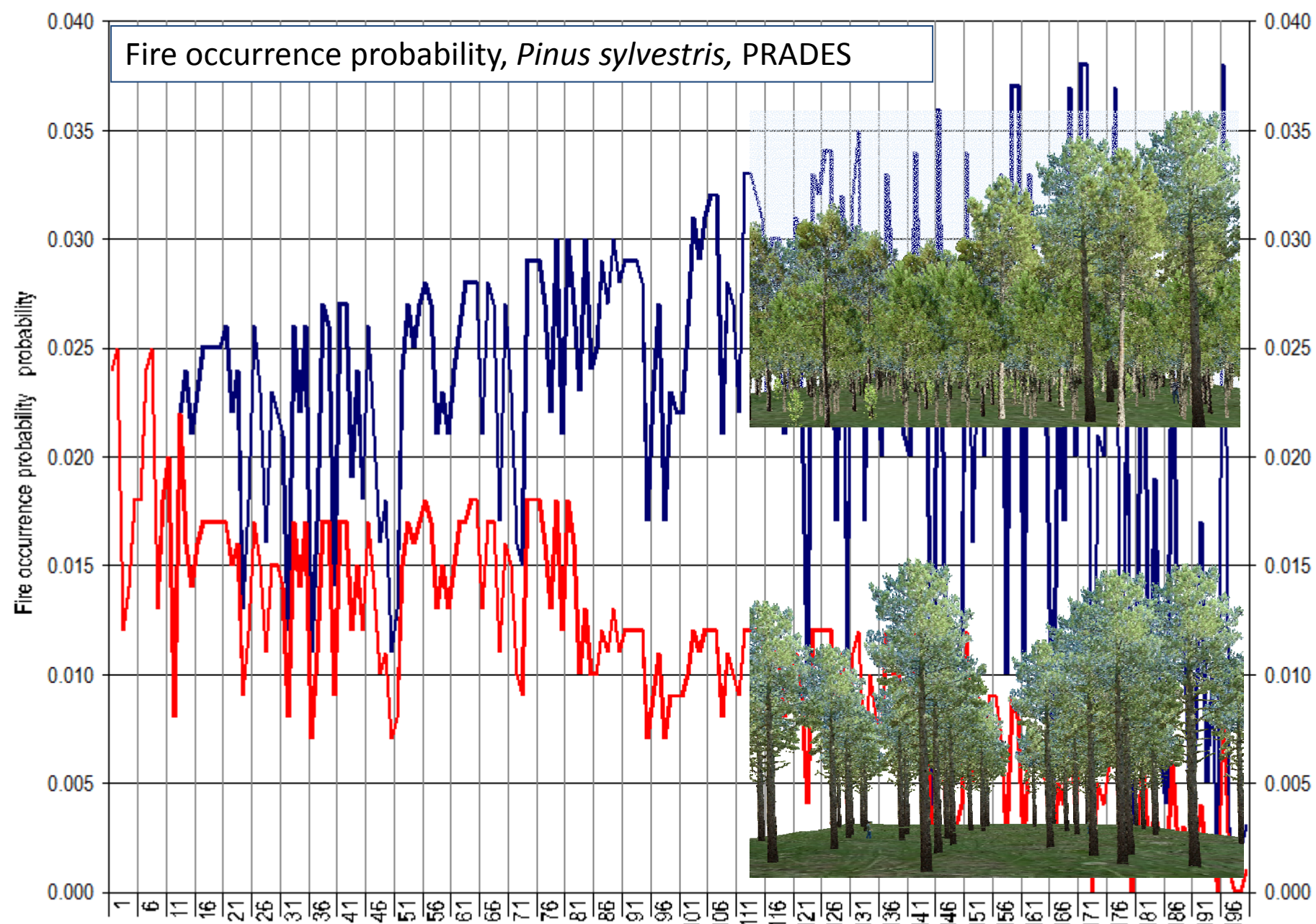
- Effect of intense thinning carried out in 1992 in reducing mortality during the drought of 1994.
- Thinning alleviates drought stress and reduces fire risk in Catalanian forests.



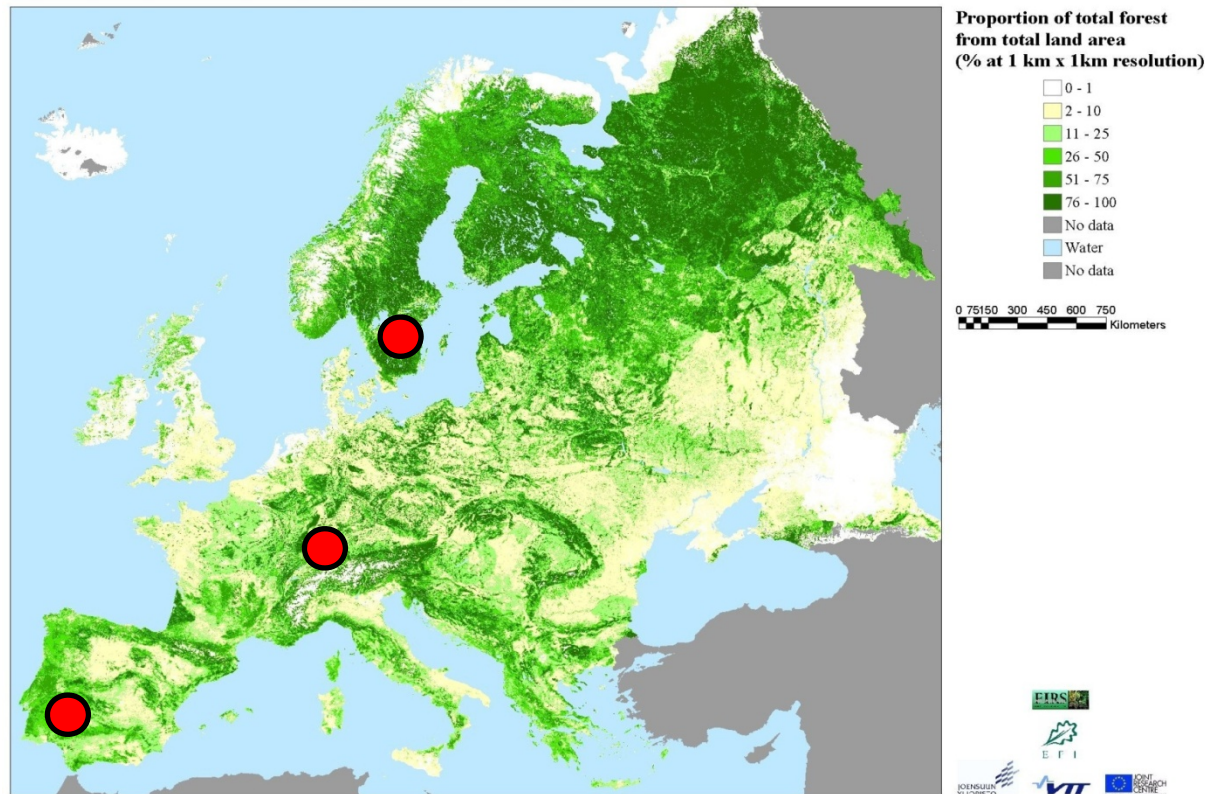
1992



1994



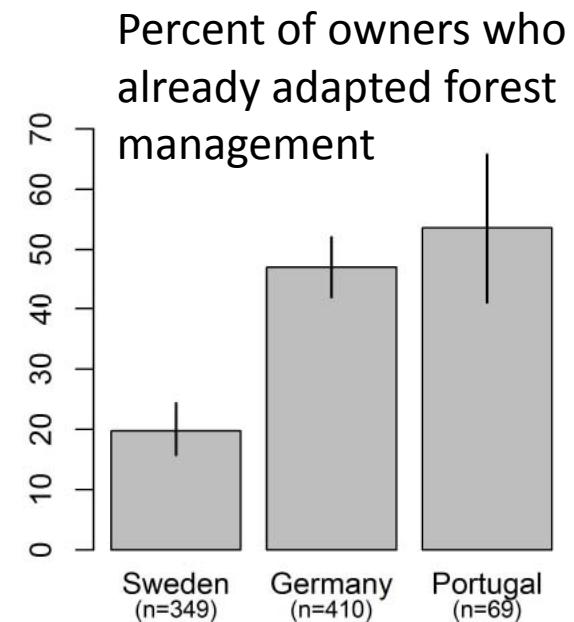
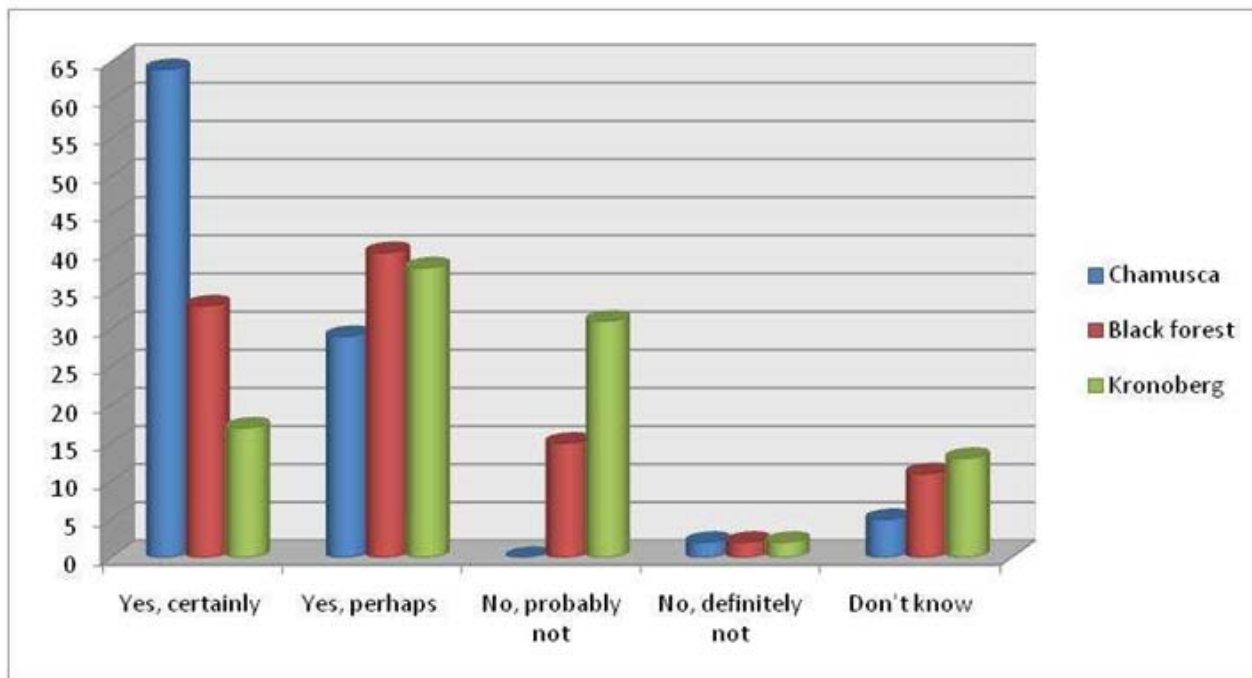
Who adapts – when?



Case study areas (March-April 2010)

- Sweden, Kronobergs län (3000 – 50% replies)
- Germany, Schwarzwald (650 – 65% replies)
- Portugal, Chamusca (<100 replies)

When forest owners believe in and see the effects of climate change, they are more likely to have taken adaptive measures



Outreach in member states is required !

The awareness of forest owners and practitioners is critical for implementation of adaptation to climate change



Conclusions

1. Severe but highly varying impacts of climate change on European forests are foreseen
2. Major trends: increase of disturbances, biome shifts, increase in net primary productivity (e.g. in the North of Europe)
3. Climate change will have economic consequences to forestry
4. Adaptation strategies: active adaptation necessary where forest functions are threatened
5. Adaptive measures depend on perceptions of stakeholders



What can EU policy do to support adaptation?

1. Keep on raising awareness on Climate Change
2. Support regions where active adaptation is crucial (e.g. Mediterranean, ...)
3. Support concerted actions to deal with Climate Change risks
4. Keep on supporting research on Climate Change (Horizon 2020)
5. We need long-term data series for Europe!!



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