



Adaptive forest management under climate change in Europe – strategies developed in the MOTIVE project

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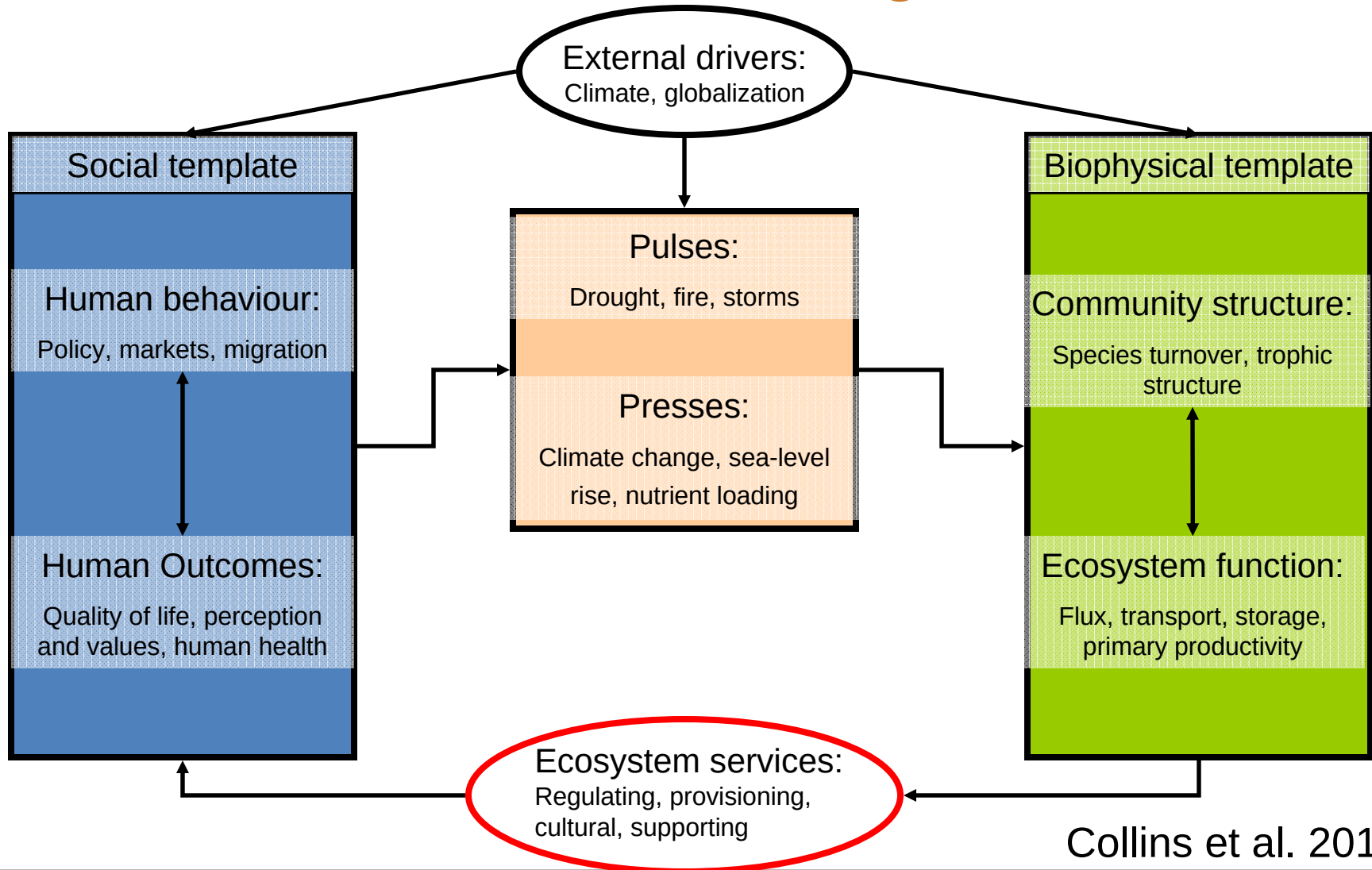
MOTIVE (MOdels for adapTIVE forest management) is co-funded by "European Commission's Environment (including Climate Change) Research Programme, as part of FP7", under nr 226544 .
Sci officer: Hartmut Barth



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Tucson, 2012



A framework for socio-ecological research



Collins et al. 2011

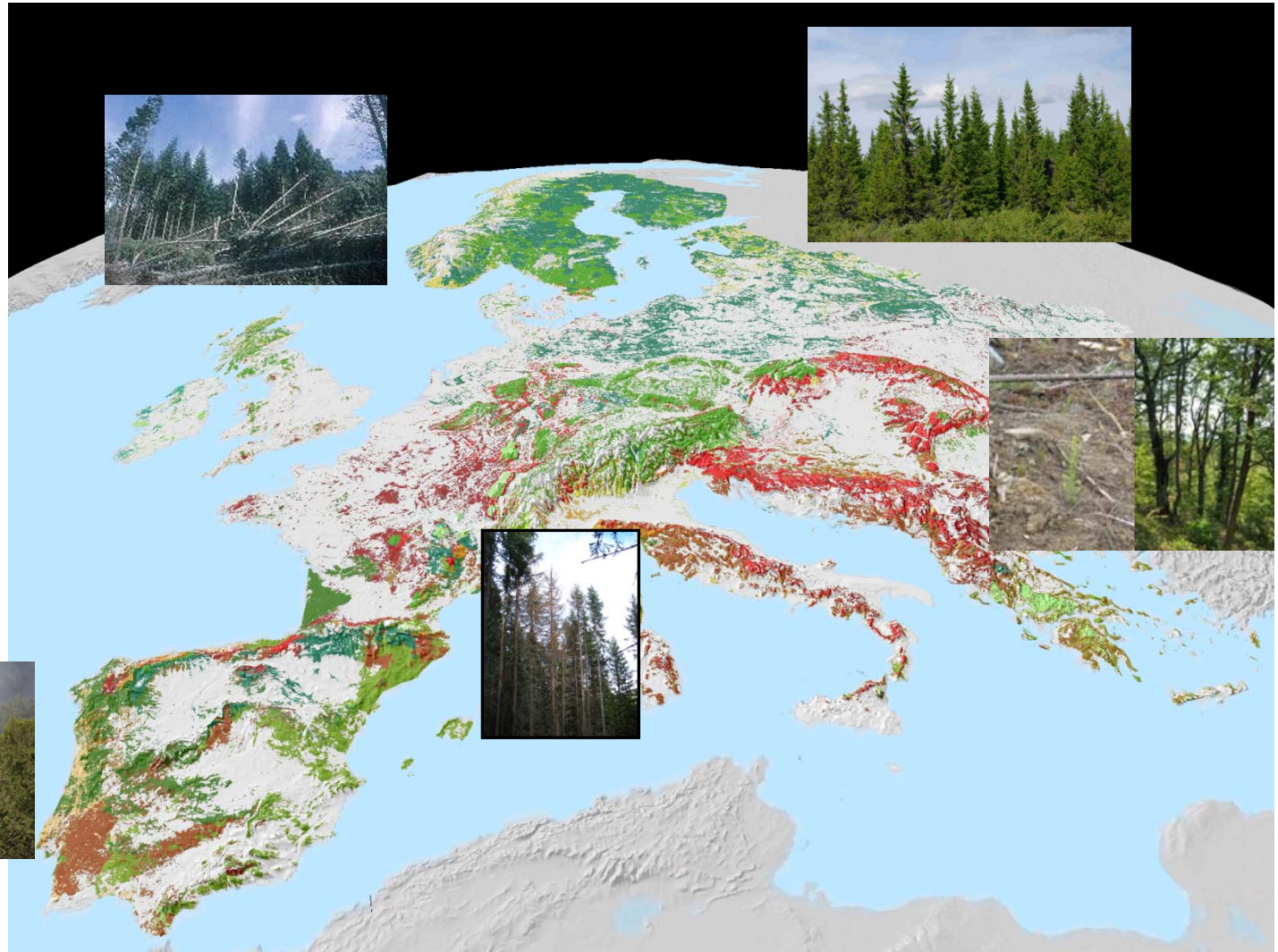
Pressures, pulses, biophysical & social changes

EU27:

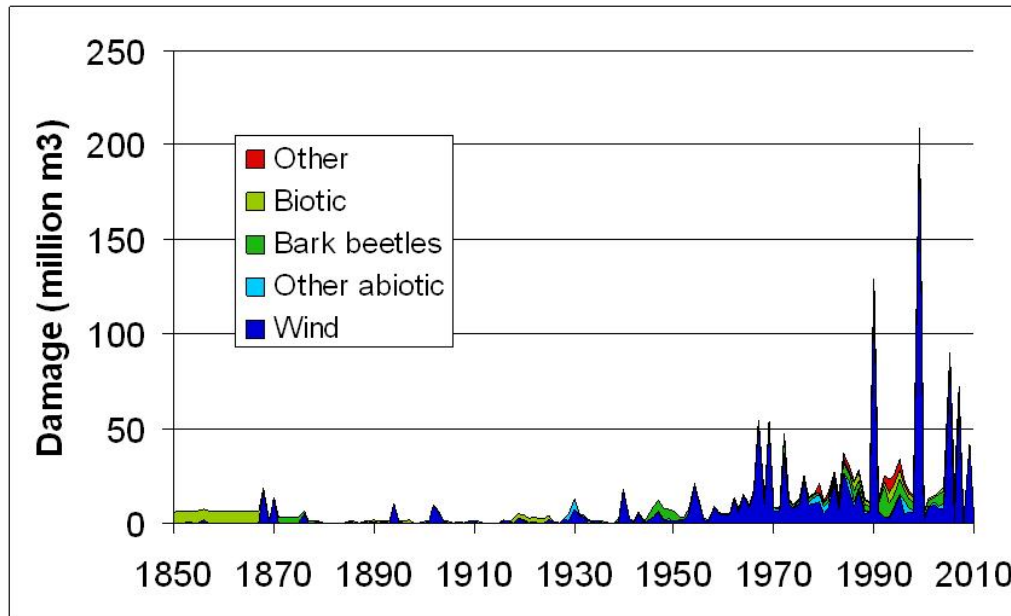
178 million ha

16 million owners

Multiple services
& challenges



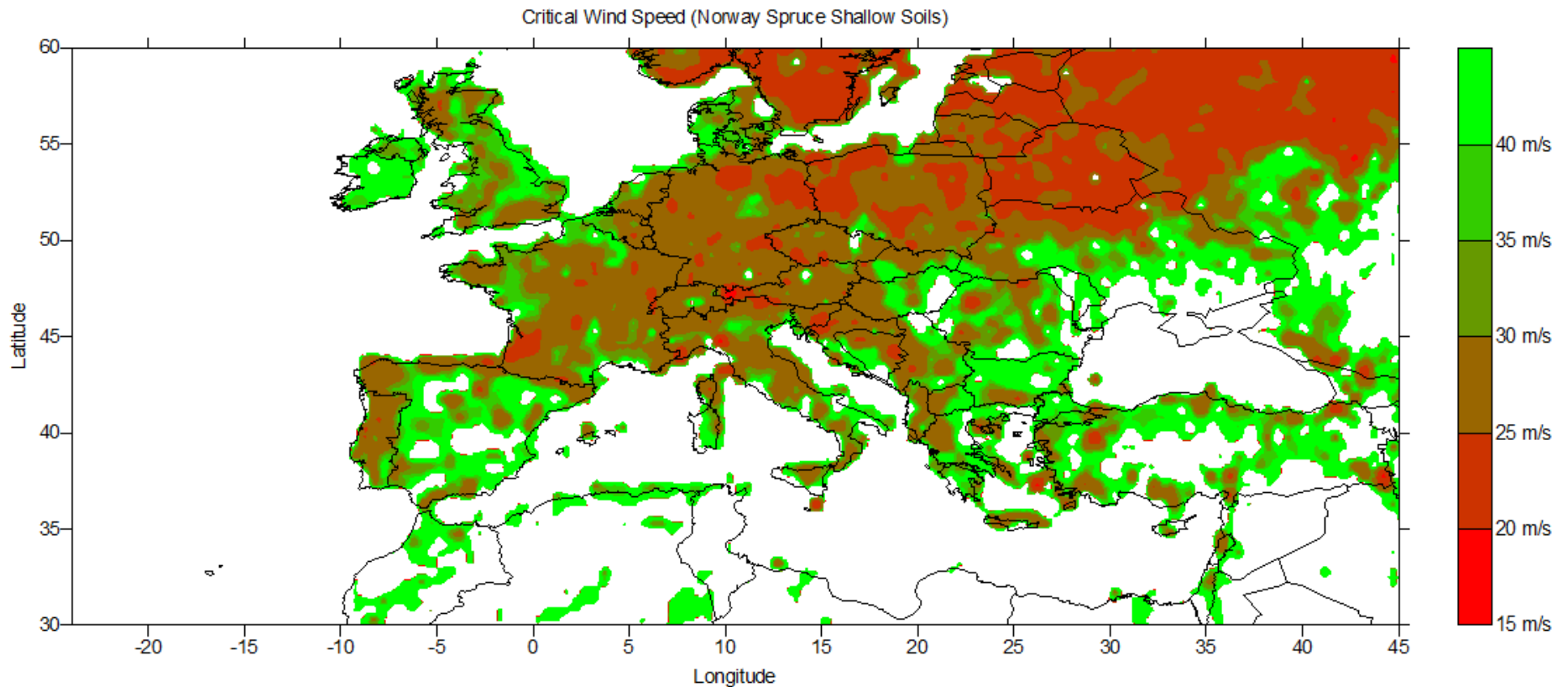
Pulses: Increasing disturbances



Schelhaas et al. 2003

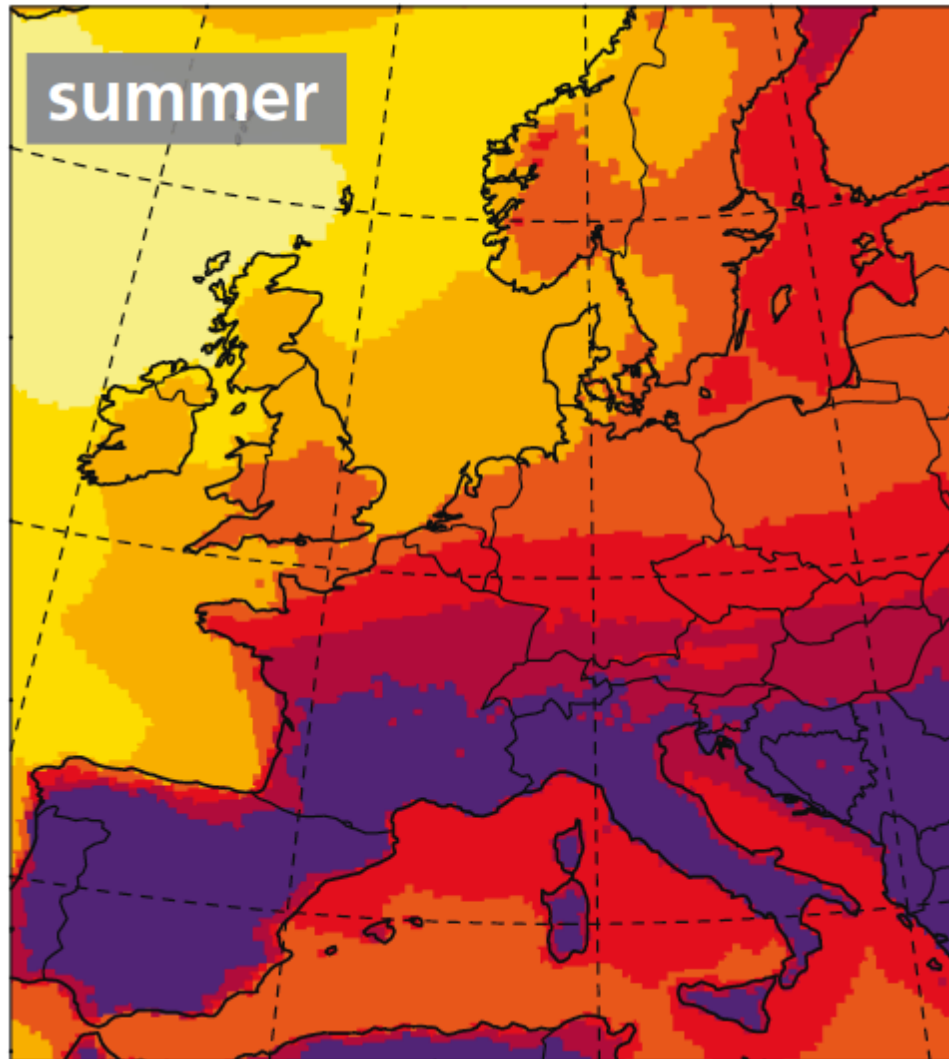


Pulses: Critical wind speeds for Norway spruce

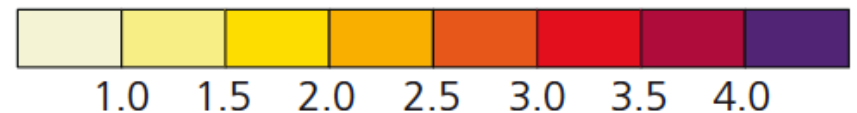


Gardiner et al. in preparation

Presses - Climate Change



Temperature change [°C] 2071-2100 to 1961-1990, A1B

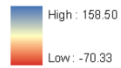


Presses - Climate Change

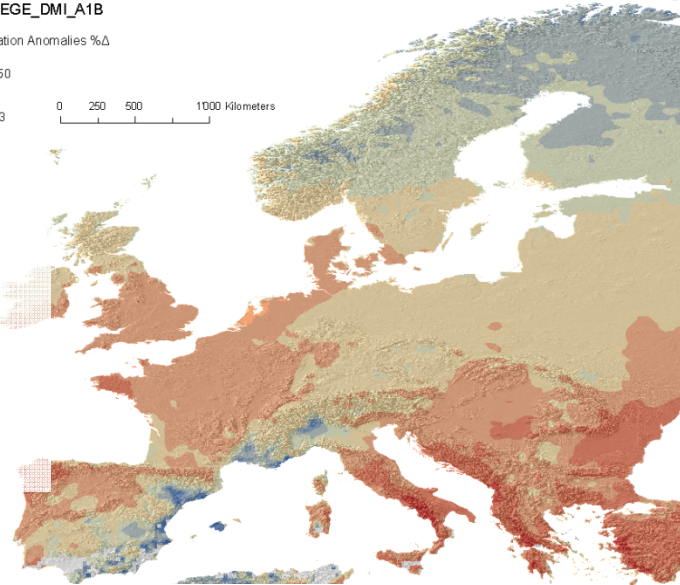
Summer
Precipitation
2071-2100 to
1961-1990,
A1B

HIRHAM_ARPEGE_DMI_A1B

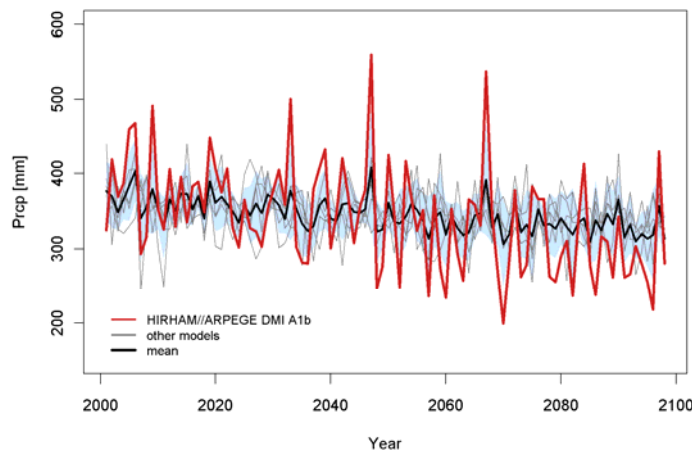
Summer Precipitation Anomalies %Δ



0 250 500 1000 Kilometers

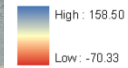


Average Summer Precipitation

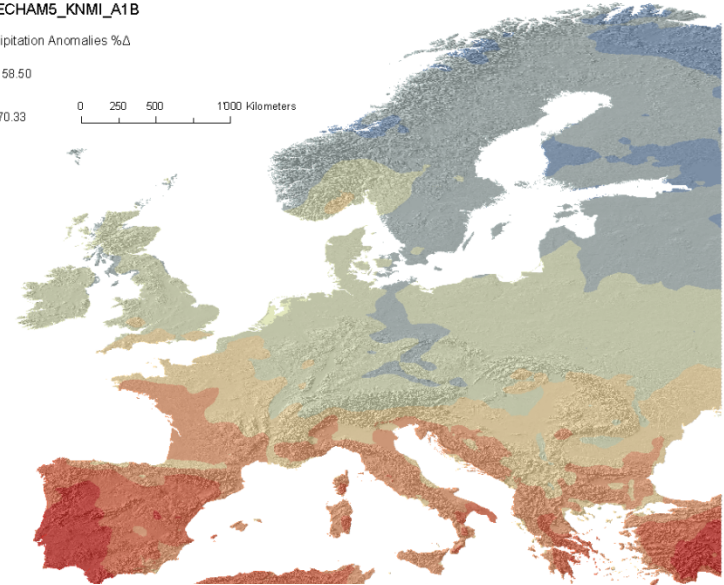


RACMO2_ECHAM5_KNMI_A1B

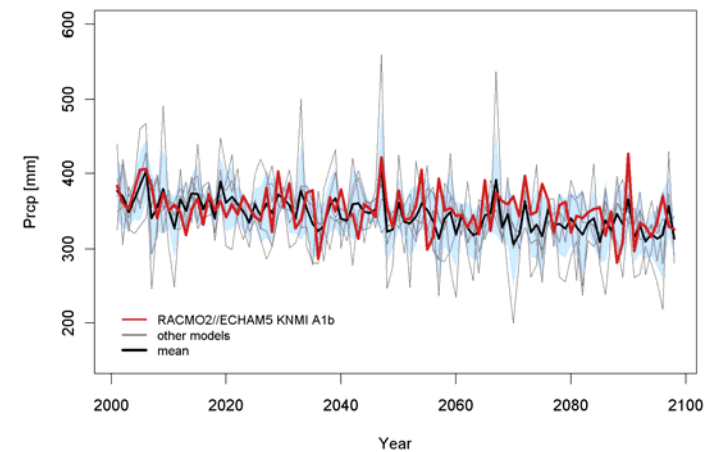
Summer Precipitation Anomalies %Δ



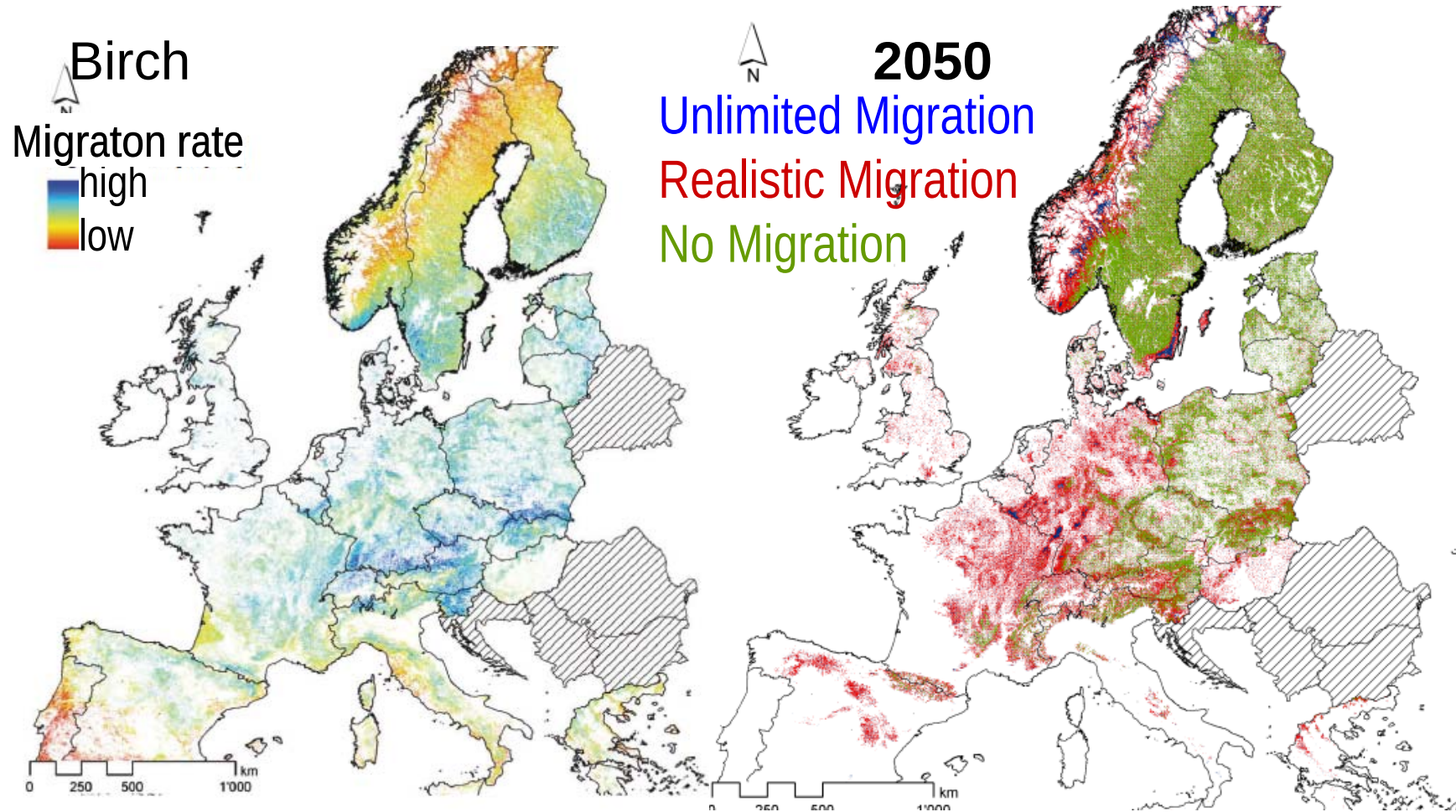
0 250 500 1000 Kilometers



Average Summer Precipitation

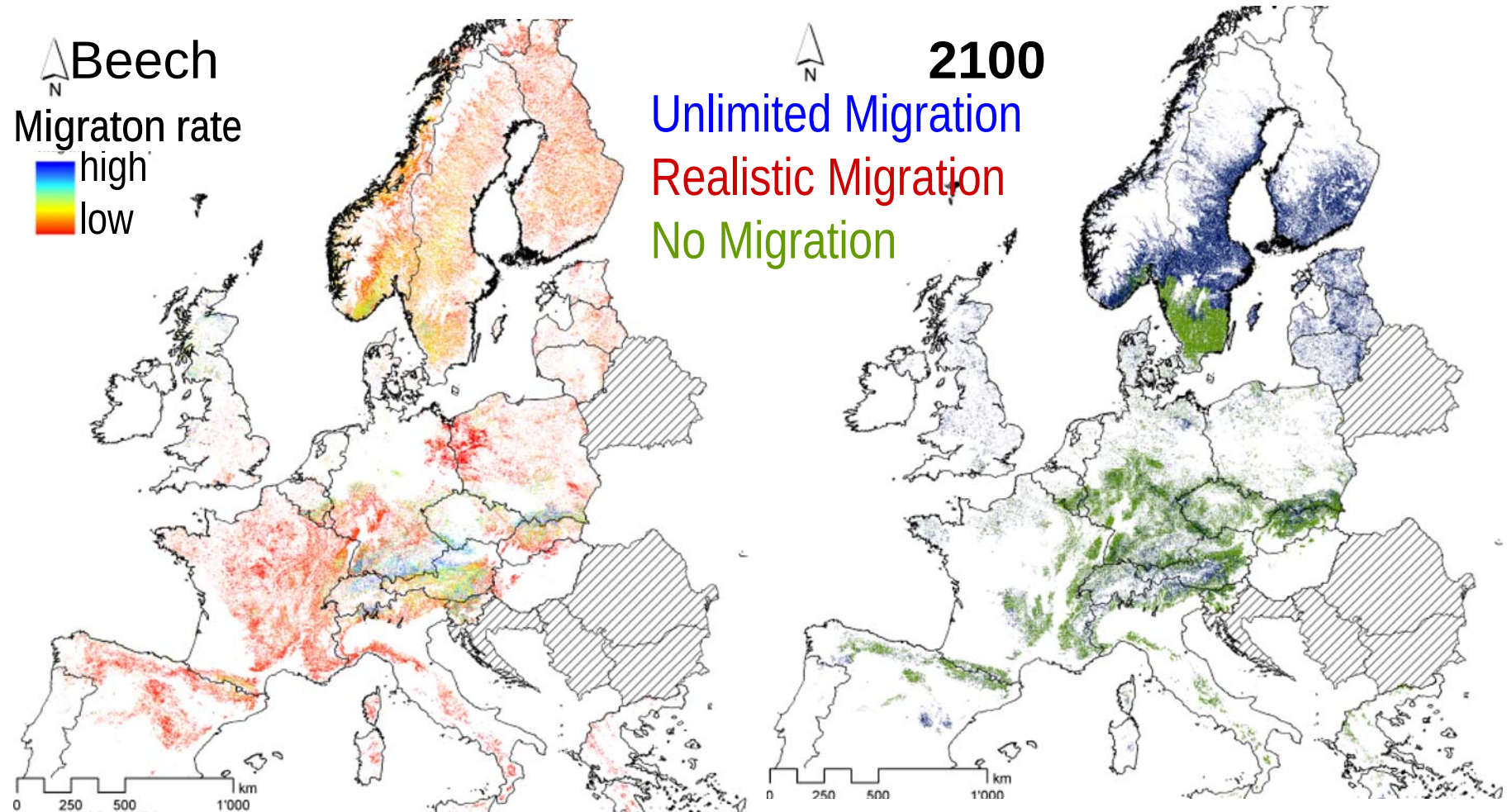


Community structure - Biome shifts



Meier et al. 2012

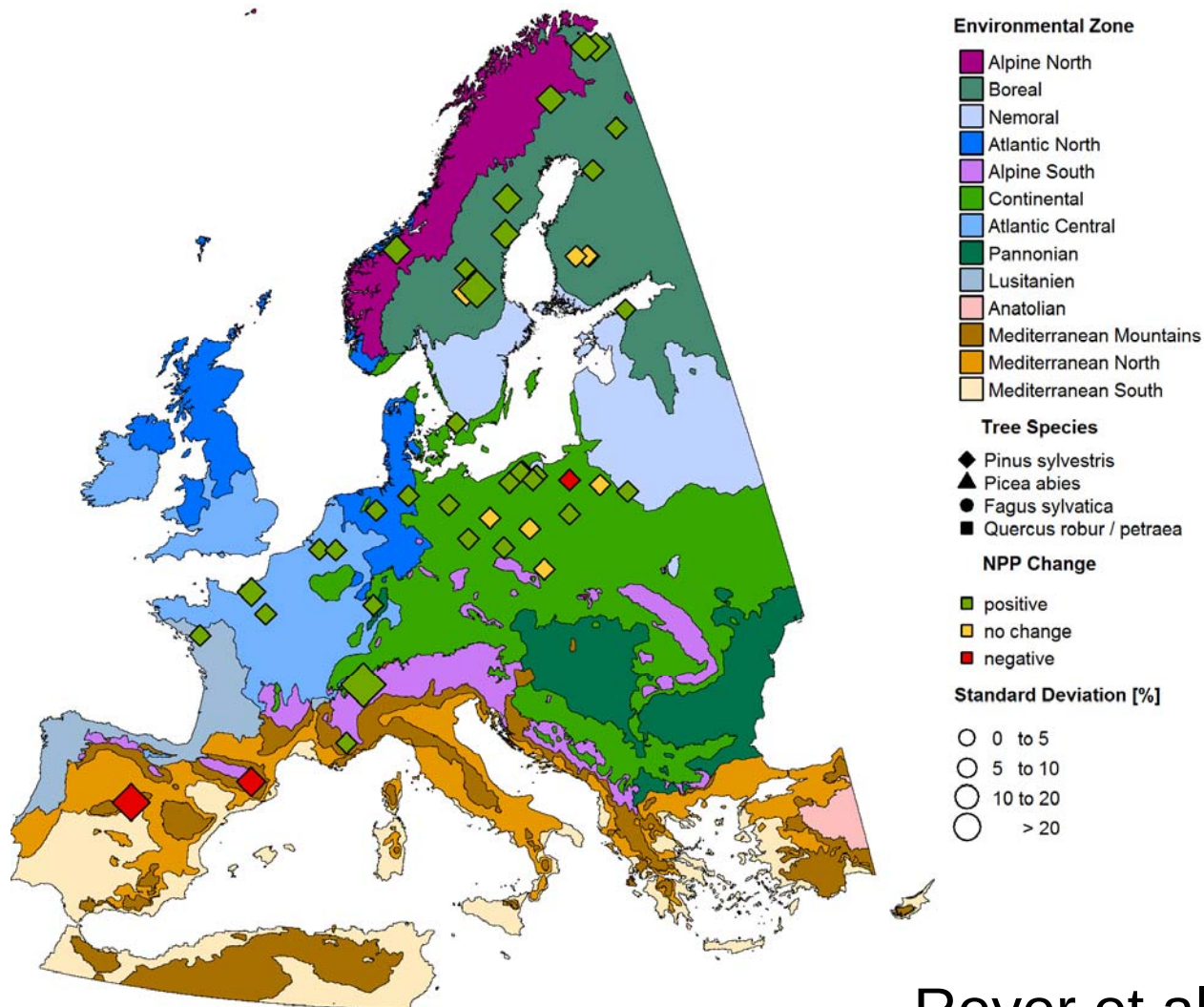
Community structure - Biome shifts



Meier et al. 2012

Ecosystem function - Forest productivity changes

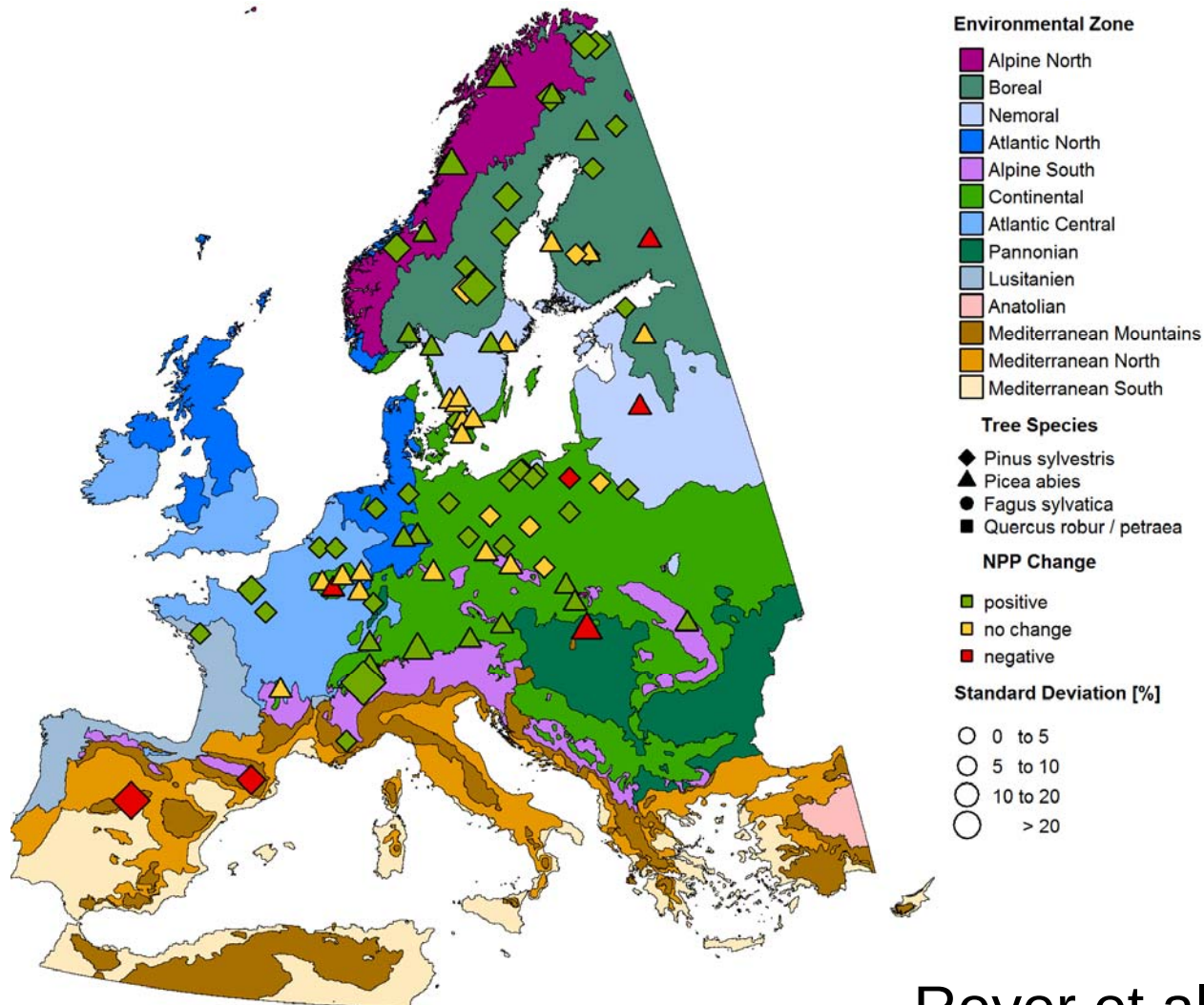
Pine



Reyer et al. in preparation

Ecosystem function - Forest productivity changes

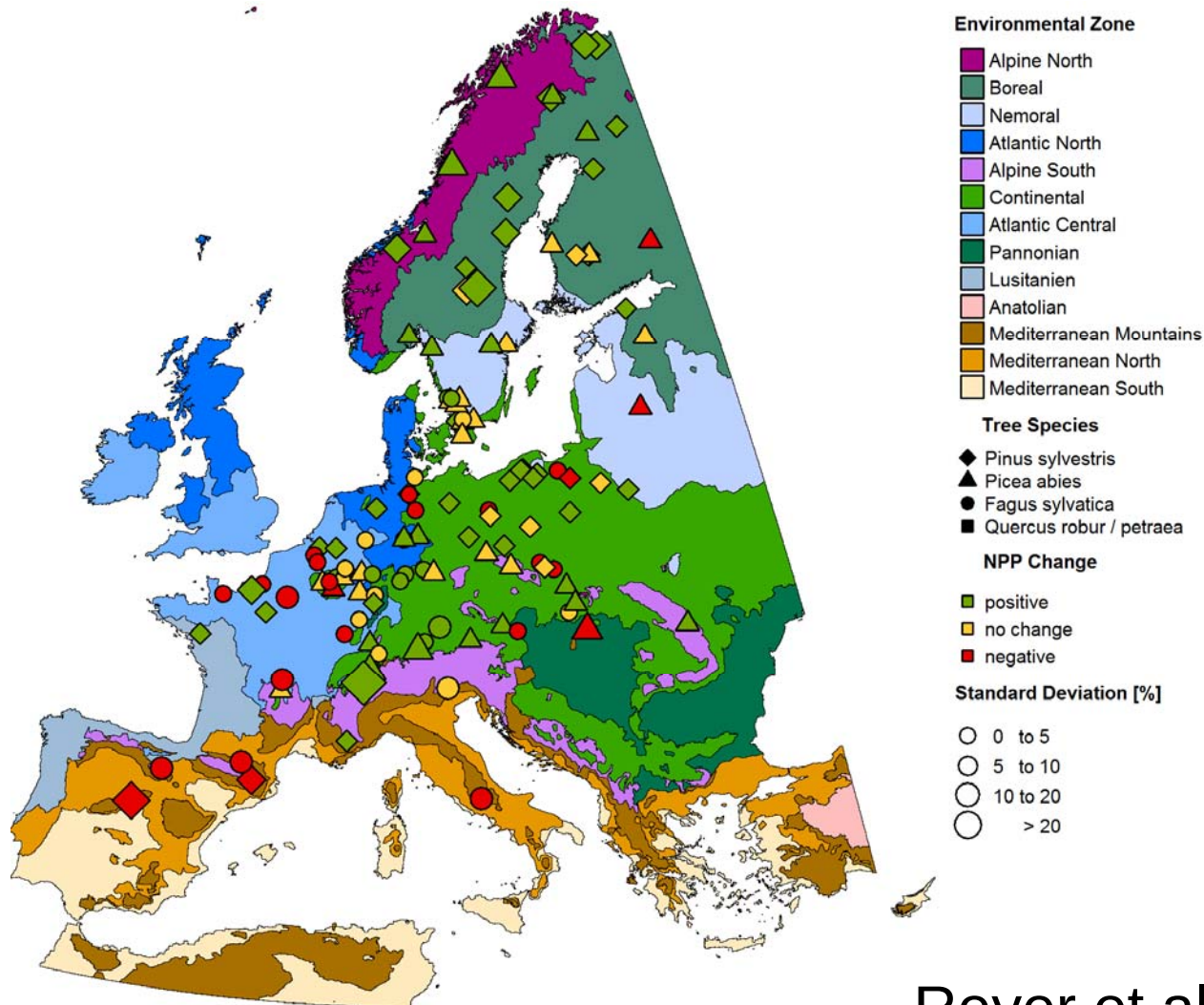
Spruce



Reyer et al. in preparation

Ecosystem function - Forest productivity changes

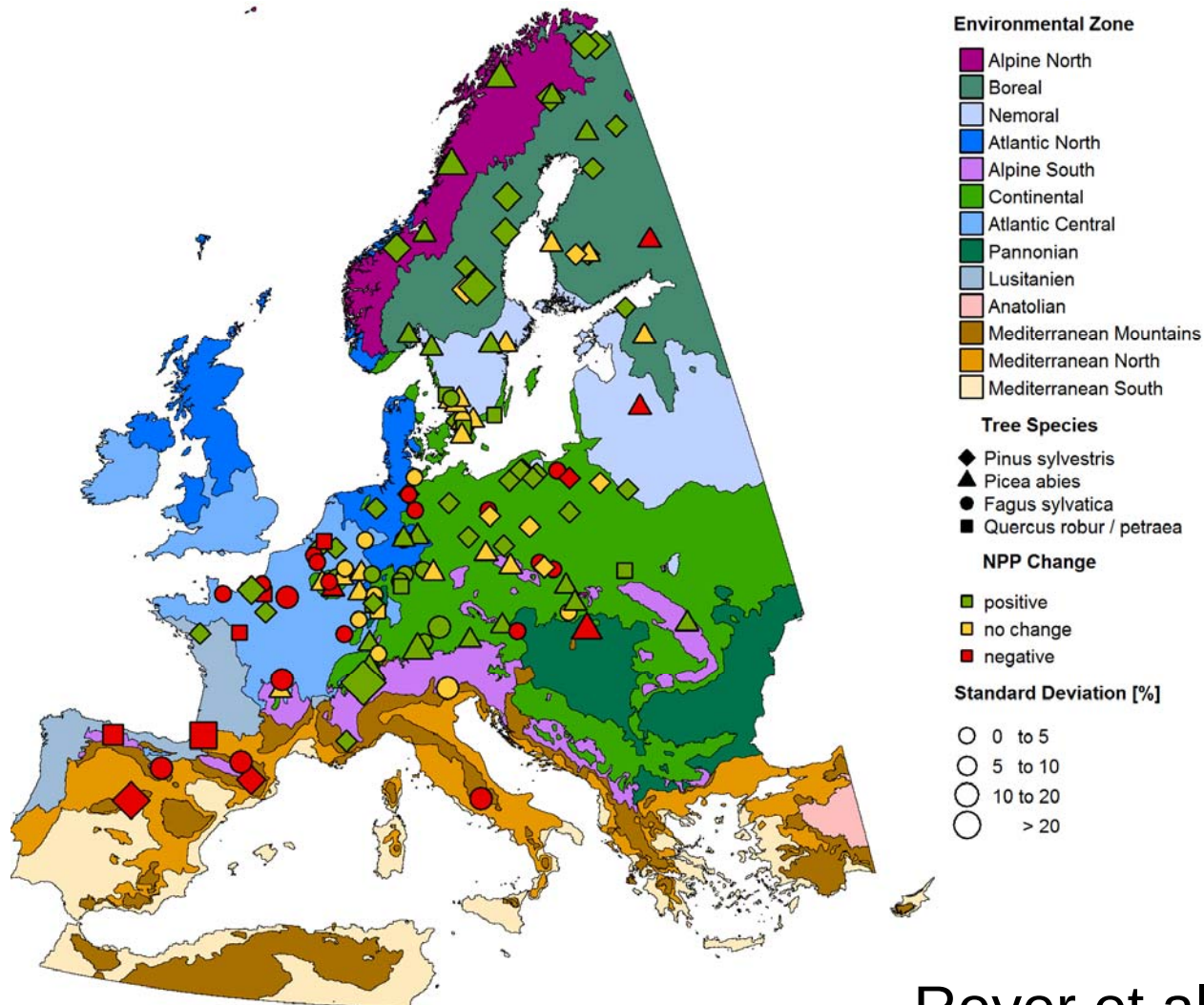
Beech



Reyer et al. in preparation

Ecosystem function - Forest productivity changes

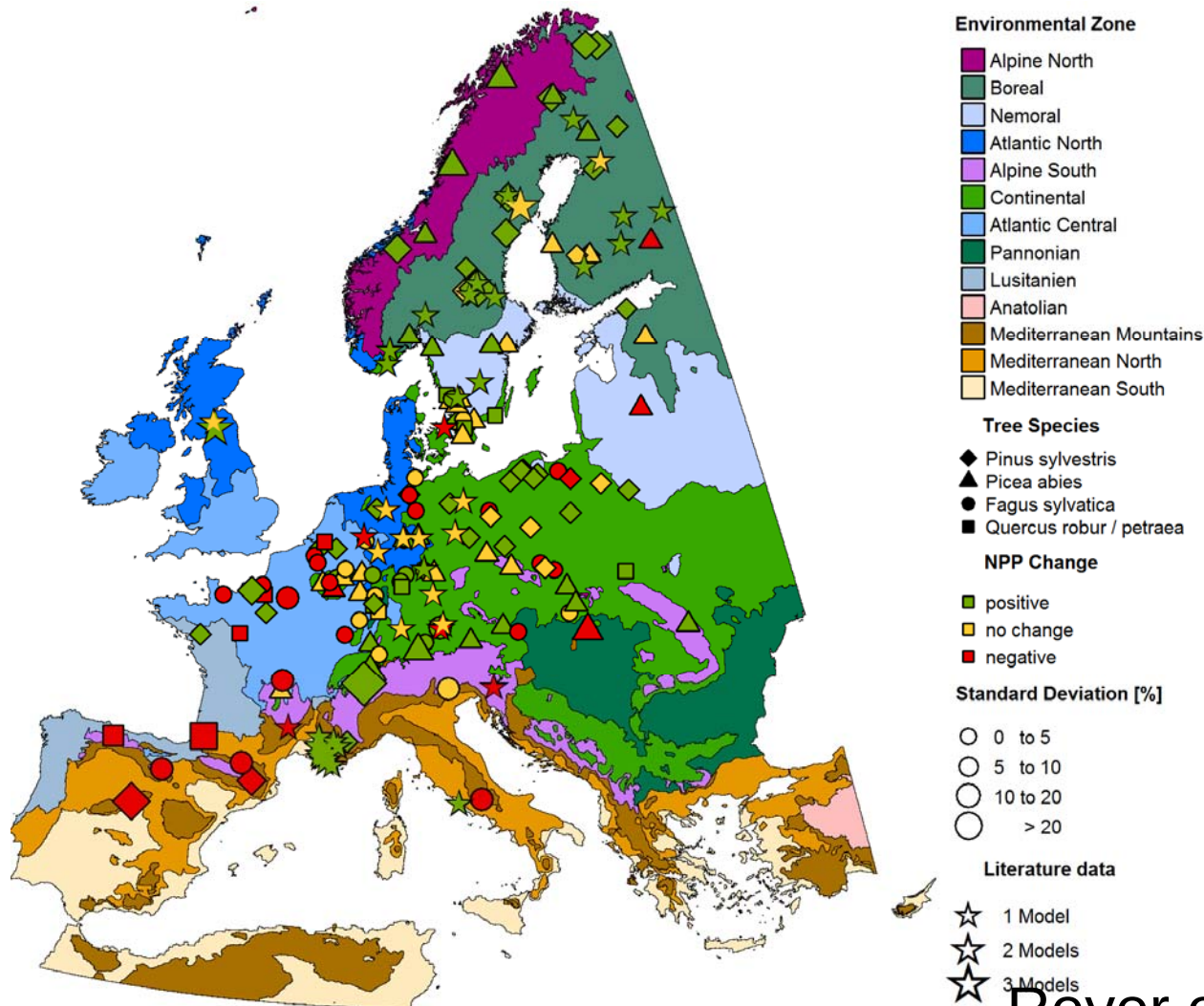
Oak



Reyer et al. in preparation

Ecosystem function - Forest productivity changes

Literature



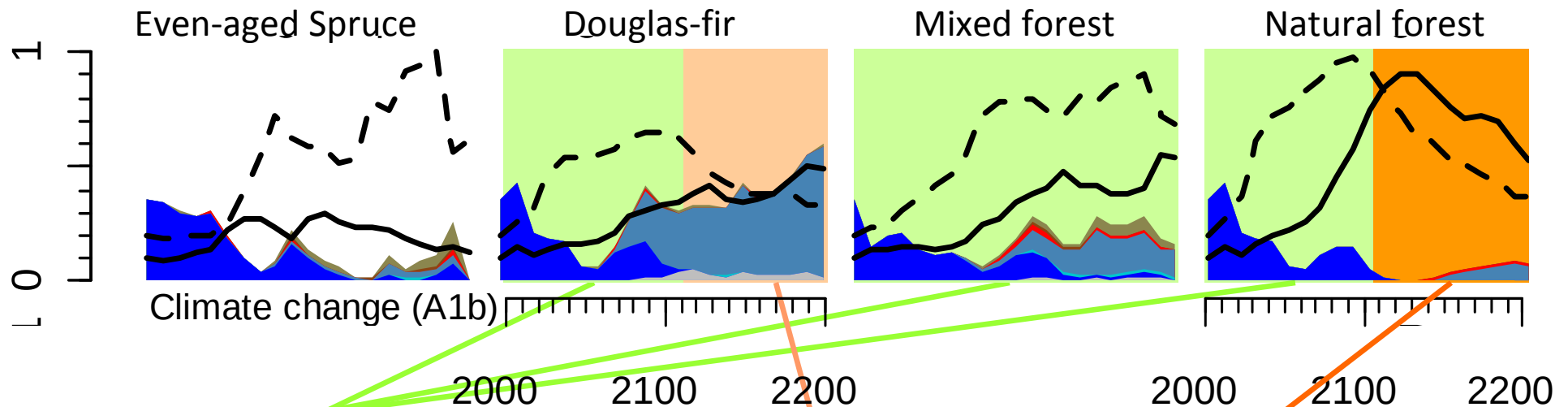
Reyer et al. in preparation

Forest Ecosystem Services: Synergies & trade-offs

Harvested biomass & biodiversity

-- Shannon's H — Stand maturity index

Silver fir
 Douglas fir
 Oak
 Norway spruce
 European beech
 others



Biodiv.-timber synergy:

High light availability
through harvest



High tree diversity

Biodiv.-timber trade-off:

Promotion of productive
species



Low tree diversity

Biodiv.-timber trade-off:

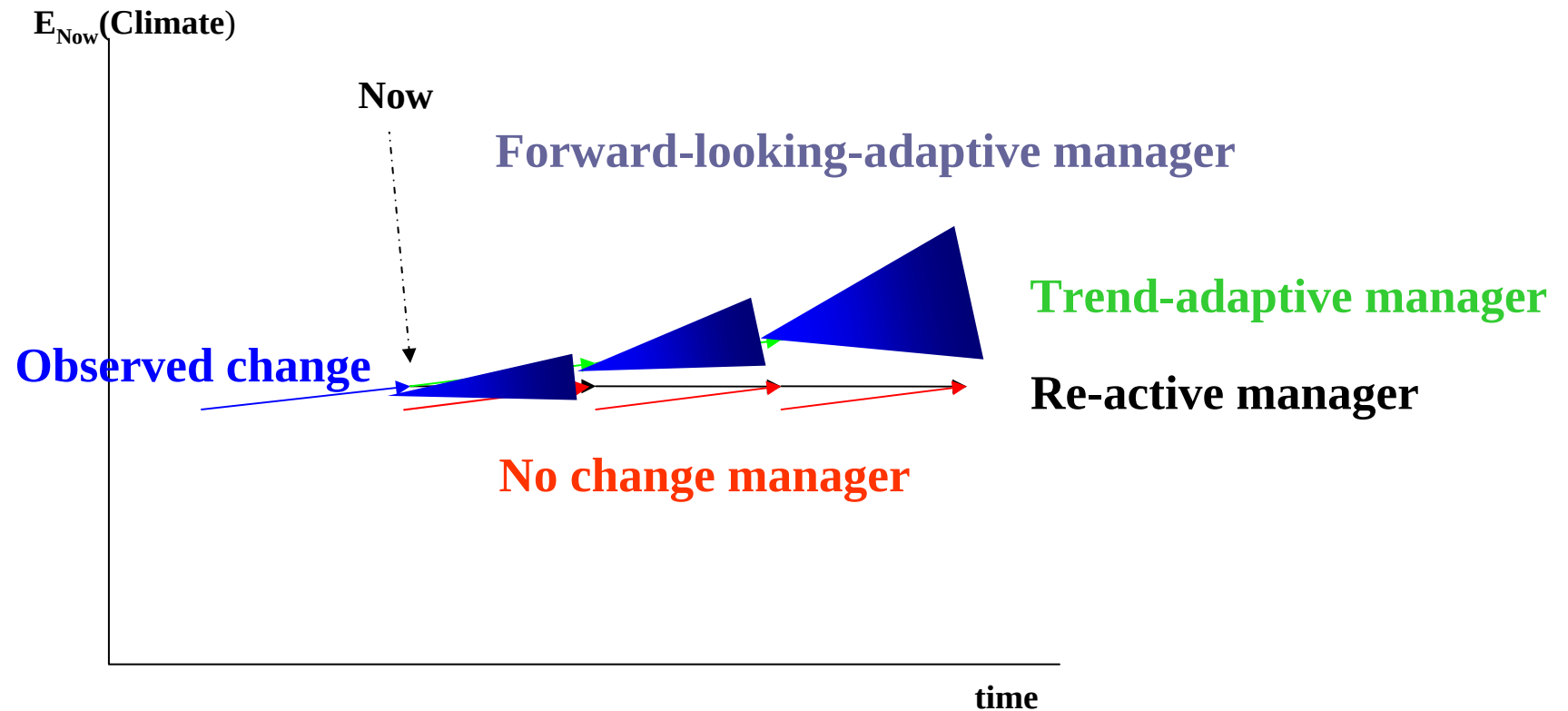
Harvest restrictions



Large trees, dead wood

Temperli et al. in preparation

Perception, Values & Human behaviour: Looking ahead in uncertain & dynamic times



Bredahl-Jacobsen et al. 2010

Implementation: Bayesian Simulation Concept (Yousefpour et al.)



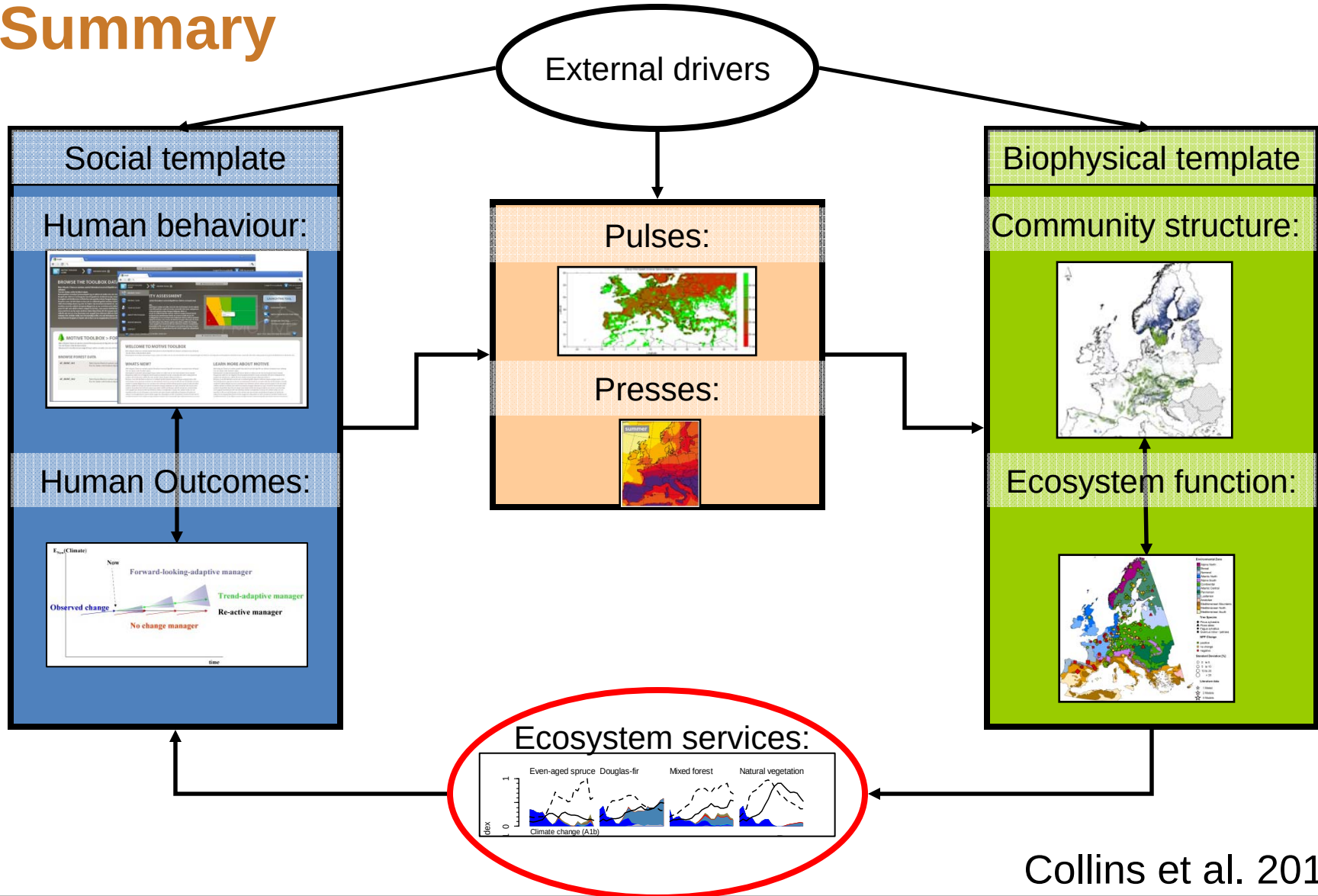
Adaptive Management Toolbox



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Summary



Collins et al. 2011



More Information

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Policy briefs & business cards on desk!



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Thank you



Forstliche Versuchs-
und Forschungsanstalt
Baden-Württemberg



SKOV & LANDSKAB

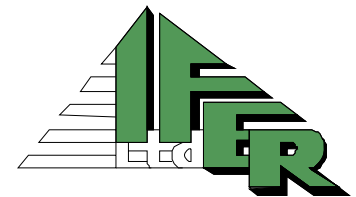


Hinc patriam sustinet

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Swiss Federal Institute of Technology Zurich



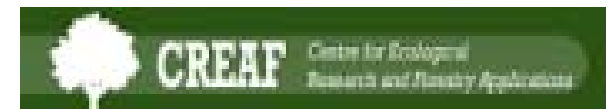
Forest Research



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