



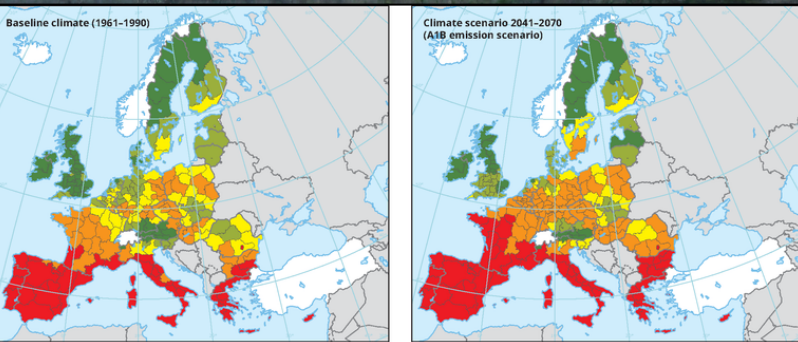
Floor Vodde, *PhD*

European Forests:  
 Hostspots of Biodiversity  
 - 9 September 2020 -  
 Virtual Conference

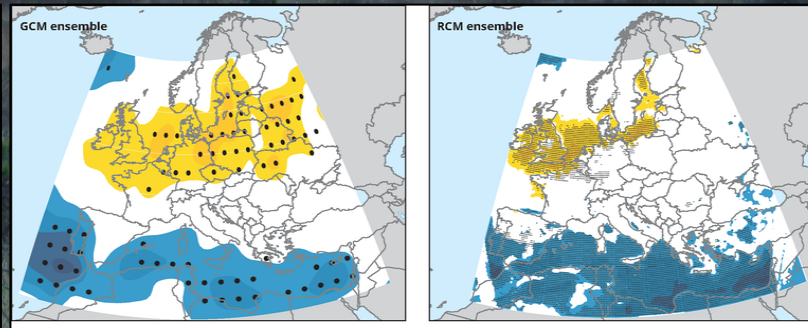
Natural Disturbance Dynamics  
 Analysis for Forest Ecosystem  
 Management

A joint North European Research  
Network on Nordic-Baltic forests and  
 forestry

Both networks sponsored by:



Forest fire risk in Europe  
 Very high High Medium Low Very low Not assessed Outside coverage  
 2017 © European Environment Agency (EEA)



Projected changes in extreme wind speed based on GCM (left) and RCM (right) ensembles  
 Magnitude of change (m/s)  
 -1.0 -0.75 -0.5 -0.25 0.25 0.5 0.75 1.0  
 • Statistical significance above 0.95  
 2012 © European Environment Agency (EEA)

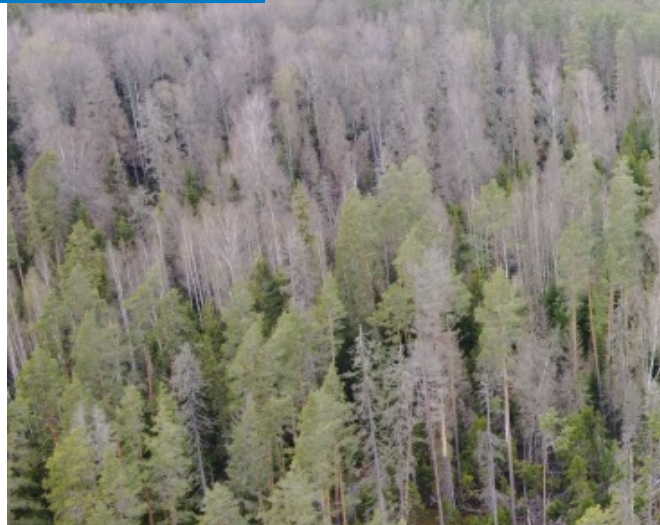


# Karula National Park



More recent infestation

Bog area (naturally low vegetation)



Expansion



Storm area (2016)

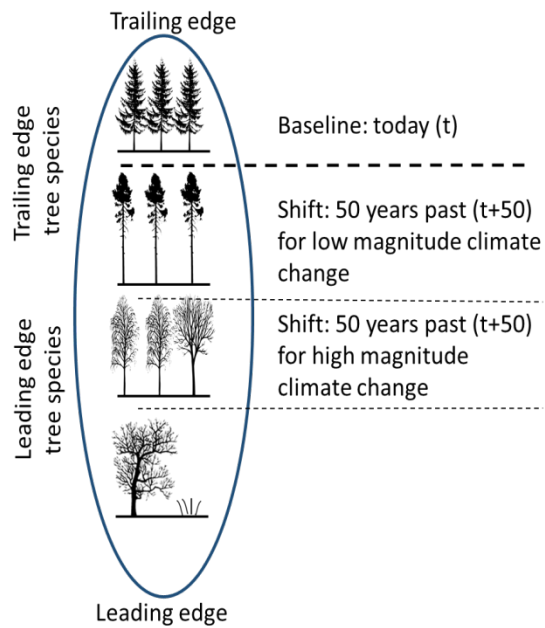
Photo credits: Kristjan Ait © April 2020

Seidl et al. (+24) 2020 Globally consistent climate sensitivity of natural disturbances across boreal and temperate forest ecosystems, *Ecography* 967-978. <https://doi.org/10.1111/ecog.04995>

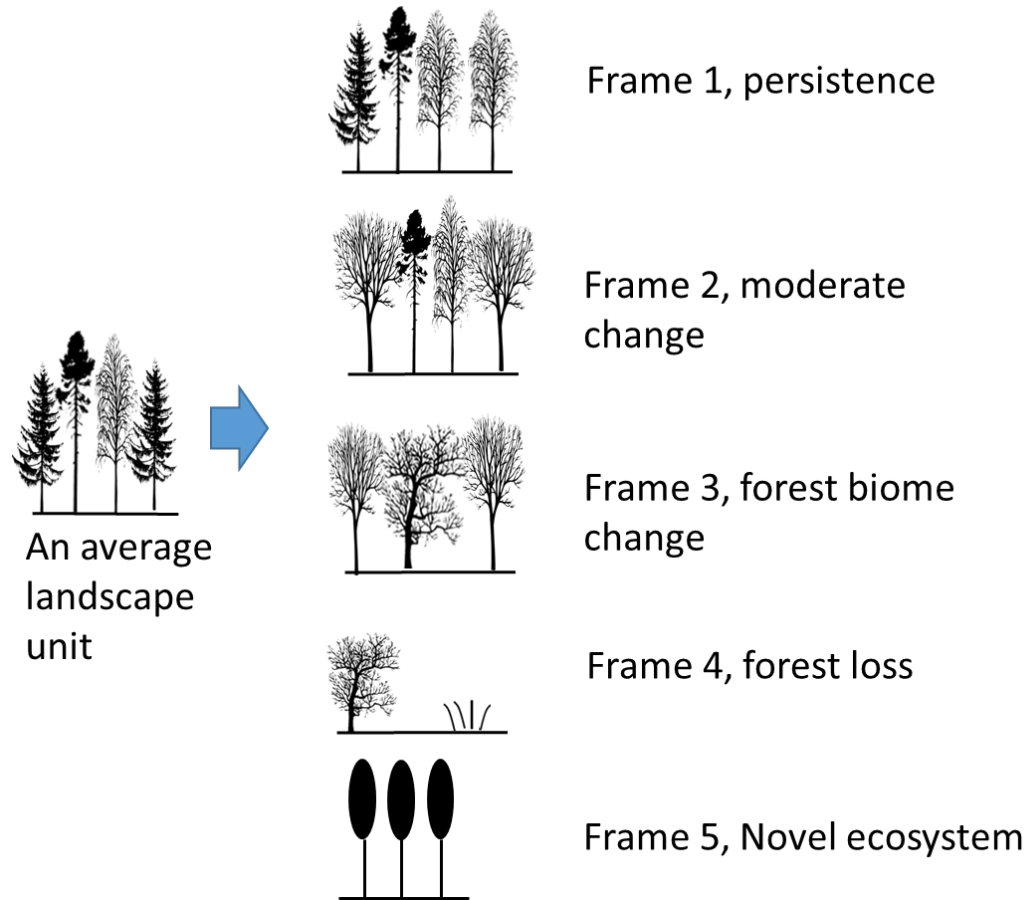
Frelich, Jögiste, Stanturf, Jansons, Vodde 2020 Are secondary forests ready for climate change? It depends on magnitude of climate change, landscape diversity and ecosystem legacies, *Forests* 11, 965. <https://doi.org/10.3390/f11090965>



Spruce trees damaged by *Ips typographus*



**Figure x.** Leading edge and trailing edge in “motion”. Leading edges of the range for tree species, forest types or biomes are defined as edges towards a cooler climate, while warming temperatures bring new communities with different biome characteristics. The figure represents a 50-year time step.



**Figure 3.** The frames of change in stand types and species composition—a trailing edge southern boreal forest example with leading temperate deciduous forest and oak savanna just to the south.

Frame 1, persistence, the same tree species composition is sustained, perhaps with some minor shifts in relative abundance. Frame 2, moderate change, there are substantial changes in relative abundance of dominant tree species. Frame 3, forest biome change, major turnover of species composition, e.g., transition from boreal to temperate species. Frame 4, forest loss, change from forest to non-forest biome (e.g., savanna or grassland). Frame 5, novel ecosystems are established using exotic tree species suited to the new climate.