



Acronym	NoBoCo
Full Title	Nowcasting Boreal Conifer Forests in Changing Climate
Partner(s)	University of Helsinki, Finland
Grant Theme	Pilots of long-term climate impact forest monitoring sites: Providing temporally resolved ecosystem-level information on the effects of climatic drivers on forest structure and function in near real-time
Start Date	April 2025
Duration	18 months
Description	The NoBoCo project aims to set a network of pilot plots to nowcast the dynamic responses of Scots pine and Norway spruce, the two main conifer species in the European boreal region, to environmental stressors, with a focus on potential drought, heat and frost damage. Furthermore, it seeks to enhance the understanding of how individual tree responses contribute to broader forest structure and biomass in the boreal conifer forest. The research utilizes N12-T-WP point dendrometers equipped with the DecentLab LoRaWan system for real-time measurements, following the Swiss TreeNet design. Trees are selected from three supersites and four supporting sites in two biogeographic regions: the Finnish Southern Boreal and Northern Boreal Forest regions, ensuring representation of both species in mixed and monospecific plots. Environmental data, including soil water potential, water content, soil and air temperature, and humidity are continuously measured and integrated into the TreeNet data servers. Data processing follows the workflow of the Swiss TreeNet to derive dendrometer data derivatives such as growth and tree water deficit. Further manual assessment and cleaning is conducted to assess potential frost damage. Tree biomass of the studied plot is assessed allometrically and using terrestrial laser scanning. Hyperspectral imaging from unmanned aerial vehicles facilitates the scaling from tree to ecosystems. The study also integrates eddy-covariance systems to quantify the impact of tree response to stress to gas exchange between forest plots and the atmosphere. This network of sites will thus contribute to nowcast boreal forest response to the environmental stressors.



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