



Acronym	WestWard
Full Title	Monitoring Climate Extreme Impacts on Whole Forest Stands in Near Real-Time: A Remote Sensing and Dendrometer Pilot in Central-West Europe
Partner(s)	Technical University of Munich, Germany (<i>coordinator</i>) Greifswald University, Germany Bayerische Landesanstalt für Wald und Forstwirtschaft, Germany Landesforst Mecklenburg-Vorpommern, Germany
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 extraordinary dry periods between 2018 and 2022 highlight the fact that European forests face increasingly dry and warm conditions, affecting their growth and vitality. Combining near real-time ecophysiological ground truth with satellite-borne remote sensing allows for identifying early-warning indicators of tree stress to support informed forest management. WestWARD aims to establish a unique pilot network of whole-forest stand monitoring sites across Central-West Europe to assess the impact of climate and climate extremes using a tree-centred approach with state-of-the-art dendrometers. We focus on measures of tree water storage and growth to assess climate impacts on phenology, drought stress, and intra-annual biomass production. WestWARD's objectives are to: • upgrade existing monitoring networks with fixed-plot designs, • translate dendrometer signals recorded at the stand level to remote sensing signals, • quantify climatic impacts on tree phenology, drought stress, and productivity across a maritime-continental climatic gradient spanning four long-term monitoring plots. WestWARD deploys novel methods and software including AI and a large swath of dendrometers which allows for sub-hourly stand-level monitoring of ecophysiological important parameters with 80+ dendrometers per site. Four super-sites will be installed across a continentality and moisture gradient in Germany, from Sub-alpine to Continental climates, in addition to benchmarking activities at TreeNet (Switzerland) and WALD-Puls (Germany) sites, thereby providing the critical missing link between tree and stand-level monitoring. WestWARD will be a decisive step towards our ambitions to monitor European forest status in near-real time and pave the way for generating public awareness and supporting management and conservation actions.



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