Project: **1370**

Project title: **OptFor-EU: Optimising forest management decisions for a low-carbon, climate resilient future in Europe**

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Report period: **2024-07-01 to 2025-04-30**

Maximum of 2 pages including figures. 9 pt minimum font size.

Project overview

The European Horizon Project OptFor-EU “OPTimising FORest management decisions for a low-carbon, climate-resilient future in Europe” develops ready-to-use products, services and guidelines for the forest sector. OptFor-EU builds on state-of-the-art datasets, modelling and integrated solutions to develop a decision support system that provides appropriate climate adaptation and mitigation options to optimize forest ecosystem services and strengthen the resilience of forests and their capacity to mitigate climate change across Europe.

Model simulations will tackle the integration of European forests, including forest management practices, in a scalable modelling framework that extends from local case study areas to the European domain. Models will be enhanced to improve the representation of forest land cover and forest management practices across Europe, and simulations will be designed to improve understanding of the individual and combined impacts of forest management practices, socio-economic and climatic changes on forest processes and forest ecosystem services across Europe.

We will implement future forest management scenarios into regional earth system modelling and evaluate the simulated effects and feedbacks of land use changes and climate-resilient forest management measures in Europe under present and potential future climate conditions. The scenarios will be developed according to user priorities and the results will be tailored to forest stakeholders and support suitable climate adaptation and mitigation options for enhancing forest resilience and its capacities to mitigate climate change across Europe.

Within OptFor-EU, the simulations conducted with REMO2020-iMOVE are part of larger ensembles of regional climate model simulations conducted by the partners using regional climate models (e.g. MeteoRomania, RegCMv4.5).

Planned work, performed simulations, preliminary results

In the first phase of OptFor-EU, continent-wide simulations on 0.11° horizontal resolution for Europe following the CORDEX Flagship Pilot study LUCAS (Land Use Across Scales) Phase II experiment protocol were planned to be realized.

The LUCAS Phase II experiment protocol aims for the representation of realistic land use and land cover changes (LULCC) by implementing the LUCAS LUC dataset (Hoffmann et al., 2023). LUCAS LUC includes transient LULCC for different SSP scenarios and for the historical period 1950 - 2014 on high-resolution (0.11°). During this reporting period, we conducted the first set of reanalysis-driven, evaluation simulations with static and transient LULCC with the improved surface roughness length (Fig.1). These simulations serve as the base for the following GCM-driven simulations for the historical period as well as for the SSP126 scenario. The GCM-driven simulations for the historical period are running and are planned to be finished within this allocation period.

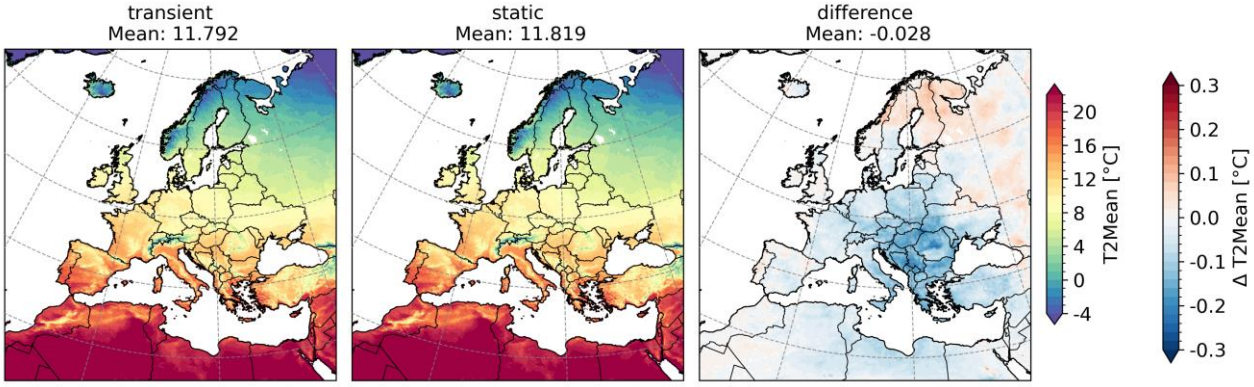

Fig.1: Simulations results as mean over 1981 – 2020 for the 2 m temperature (T2Mean) with a) transient LULCC, b) static LULCC, and c) as difference between the simulations results from the transient LULCC (a) and static LULCC (b).

Delays, deviations and new allocation of resources

During the reporting period, we conducted the reanalysis-driven simulations with static and transient LULCC according to our plan. After the evaluation of the simulation results, we started GCM-driven simulations for the historical period of 1950-2014. However, due to delays we have to shift our planned GCM-driven simulations for the future scenario to the next allocation period (see request form). Furthermore, we plan to conduct high-resolution simulations for two selected case study areas at convection-permitting scale integrating forest management. Therefore, we would like to request additional resources.