Project: **374**

Project title: **Evaluierung neuer Modellversionen des CLM**

Principal investigator: **Andreas Will**

Report period: **2025-11-01 to 2026-10-31**

The resources granted for 2026 have been 3 220 CPU and 9000 GPU Node hours (NH).

In 1.2026-10.2026 the CPU node hours granted are not sufficient for the evaluation simulations on 12 km grid planned for 2026 the AFC-12 and NAM-12 evaluation simulations have been postponed to 2027. The evaluation simulations on the 3 km grid have not been conducted yet due to time delay in test simulations planned to be conducted on other machines by other project partners. The MEU-3 and the CEU-3 evaluation simulation are planned to be started in 11.2026.

The 30y evaluation simulation of the optimised configuration in CEU-12 domain and the new model version icon_2025.10 was conducted using UDAG resources (bb1364). The results are presented at the CLM-Community Assembly 2026 and the publication of these results is in preparation.

The CPU resources have been used for further assessment of the evaluation model results CEU-12 and AFC-12.
The following key results are found:

1. The interpolation method of coarse grid boundary conditions (ERA5 and historical simulations) to fine grid boundary conditions (CEU-12) has a significant impact on the development of Medicanes over the Mediterranean sea. In particular the strength is overestimated and the propagation paths are much different if linear interpolation methods are used.
2. ICON-CLM shows a high sensitivity to the height of the upper boundary in mean sea level pressure and near surface temperature (2K). This is resulting in a more detailed analysis of the upper boundary condition in the near future.
3. First results show that the biases of CEU-12 sensitivity simulations over Europe are not similar to the biases of MEU-3 simulations over Mid-Europe for same parameter changes, in particular in the region south of the Alps. This is resulting in a more careful analysis of the biases

A first publication presenting the optimised configuration in CEU-12 domain is published (Geyer et al., 2026). The new method of configuration optimisation LiMMo is published in Petrov, Geyer and Will (2025). The publication presenting the impact of boundary conditions on the simulation results of CEU-12 simulations (Lawand et al.,2026) and of the MEU-3 optimised configuration (Will et al., 2026) are in preparation..