Project: **721**

Project title: **COSMO/CLM Training**

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Report period: **2024-11-01 to 2025-10-31**

The Numerical Model Training Course 2025 for the ICON model took place at the DWD headquarter in Offenbach from 12-16 May 2025. The training was organized by DWD in collaboration with the COSMO partner weather services and the CLM Community.

The application areas of the ICON model range from numerical weather prediction (NWP) and regional climate simulations (CLM - Climate Limited Area Model) to the prediction of trace substance dispersion with ICON-ART. Therefore, national meteorological services, universities and research institutions are among the ICON users and the target groups of the training course. Each morning, lectures on the physical basics of the ICON model, data output of the DWD and technical details of ICON (incl. the community interface ComIn) were scheduled. In the afternoon, practical exercises allowed participants to learn how to run ICON simulations.

The practical exercises were split into two parts this year, because the NWP for academia part was organized as natESM course in Hamburg later in the year. The remaining two parts of the training were tailored to the needs of the different groups of participants. Regional climate simulations (CLM) for universities and research institutions and NWP for national weather services (MetServices). The CLM course was performed on the HPC Levante at the German Climate Computing Center (DKRZ), while the MetService course was run on ECMWF's ATOS system. We want to thank DKRZ and ECMWF for the resources and their support.

The CLM part of the course introduced ICON-CLM and the Starter Package for ICON-CLM Experiments (SPICE). SPICE is a runtime environment for performing regional climate simulations with ICON-CLM which was developed within the CLM Community. Participants learned how to install and configure SPICE and how to use it to run simulations. In special exercises the participants learned which steps are necessary to perform a simulation for a different time period, a different area and with different boundary conditions. Furthermore, it was explained how to create a simulation with convection permitting resolution. Boundary data were provided by a previously created experiment with coarser resolution. Analysing the results with the evaluation tool EvaSuite included in SPICE has been explained as well as the use of the community interface and the Zonda web interface for generation of grids and external parameters that became available just before the course.

We would like to thank the DKRZ support team for fast solutions to problems and the very kind support.