

Project: **1149**

Project title: **CCLM2ESGF (COSMO-CLM/ICON-CLM to be published on ESGF)**

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

This project provides the storage for the EURO-CORDEX data that is produced by the CLM Community and published in the ESGF (Earth System Grid Federation). The EURO-CORDEX simulations and their provision via the Earth System Grid Federation (ESGF) are very important because these datasets form the basis for climate services, climate adaptation and policy consultancy in Germany and many other European countries.

Some years ago, DKRZ suggested that the CLM Community should establish a project (this project) to provide the necessary storage for data published via ESGF. This project was established in 2019 and is extended every year as necessary.

This procedure is not ideal from our point of view, because there is a risk that insufficient storage will be granted or that previously granted storage will not be extended. This would mean that datasets that have already been published would have to be withdrawn from the ESGF. A better approach would be that DKRZ provides storage directly from own resources for data published in ESGF (e.g. /pool/data storage as for CMIP and CORDEX-CMIP5), but unfortunately this is not possible (personal communication with DKRZ in September 2025).

Therefore, it is of great importance that sufficient storage is allocated to this project and that it is extended for as long as the data must remain in the ESGF (for several years).

The downscaling of the CMIP6 simulations for EURO-CORDEX using ICON-CLM and COSMO-CLM is ongoing. While most of the ICON-CLM simulations are produced within the UDAG project (bb1364, 'Updating the data basis for adaptation to climate change in Germany'), other CLM Community member institutions from across Europe also contribute using COSMO-CLM and ICON-CLM. Some groups will use model configurations that include ocean models or other components of the Earth system. Simulation production is coordinated within the CLM Community.

Most of the planned EUR-12 simulations with ICON-CLM have already been produced and standardised (CMOR). The production of the remaining EUR-12 and MEU-3 (domain covering Germany, Austria and Switzerland with a resolution of 3 km) is ongoing. Sixteen of the EUR-12 simulations have already been transferred to the project's /work storage (1149, see list below).

In addition, some MEU-3 test data and some test data from coupled COSMO-CLM and ICON-CLM configuration is stored there at the moment. This data will be replaced as soon as the final standardized data sets of these simulations are available.

Of the 736 TB of storage currently available in the project, 693 TB are already in use (status October 2025). The data will be published in the ESGF as soon as the ESGF is ready to accept CORDEX-CMIP6 data. The ESGF development for CORDEX-CMIP6 data is delayed, but it should be possible to publish CORDEX-CMIP6 data sets at the end of 2025 or at the beginning of 2026 (personal communication with Grigory Nikulin (SMHI) and Martin Schupfner (DKRZ) in October 2025). The production, standardization and publication of further simulations is planned for 2025 and 2026.

List of standardized (CMOR) final data sets that are already stored under this project:

1. CORDEX-CMIP6/DD/EUR-12/CLMcom-BTU/CNRM-ESM2-1/historical/r1i1p1f2/ICON-CLM-202407-1-1/v1-r1:
2. CORDEX-CMIP6/DD/EUR-12/CLMcom-BTU/CNRM-ESM2-1/ssp126/r1i1p1f2/ICON-CLM-202407-1-1/v1-r1
3. CORDEX-CMIP6/DD/EUR-12/CLMcom-BTU/CNRM-ESM2-1/ssp370/r1i1p1f2/ICON-CLM-202407-1-1/v1-r1
4. CORDEX-CMIP6/DD/EUR-12/CLMcom-DWD/MPI-ESM1-2-HR/historical/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
5. CORDEX-CMIP6/DD/EUR-12/CLMcom-DWD/MPI-ESM1-2-HR/ssp126/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
6. CORDEX-CMIP6/DD/EUR-12/CLMcom-DWD/MPI-ESM1-2-HR/ssp245/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
7. CORDEX-CMIP6/DD/EUR-12/CLMcom-DWD/MPI-ESM1-2-HR/ssp370/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
8. CORDEX-CMIP6/DD/EUR-12/CLMcom-DWD/MPI-ESM1-2-HR/ssp585/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
9. CORDEX-CMIP6/DD/EUR-12/CLMcom-GERICS/EC-Earth3-Veg/ssp126/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
10. CORDEX-CMIP6/DD/EUR-12/CLMcom-GERICS/EC-Earth3-Veg/ssp370/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
11. CORDEX-CMIP6/DD/EUR-12/CLMcom-Hereon/EC-Earth3-Veg/historical/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
12. CORDEX-CMIP6/DD/EUR-12/CLMcom-Hereon/ERA5/evaluation/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
13. CORDEX-CMIP6/DD/EUR-12/CLMcom-Hereon/ERA5/evaluation/r1i1p1f1/ICON-CLM-202407-1-1/v1-r2
14. CORDEX-CMIP6/DD/EUR-12/CLMcom-KIT/MIROC6/historical/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
15. CORDEX-CMIP6/DD/EUR-12/CLMcom-KIT/MIROC6/ssp126/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1
16. CORDEX-CMIP6/DD/EUR-12/CLMcom-KIT/MIROC6/ssp370/r1i1p1f1/ICON-CLM-202407-1-1/v1-r1