Project: **1309**

Project title: **CLMcom - PoolData**

Principal investigator: **Christian Steger**

Report period: **2024-05-01 to 2026-04-30**

Report Project CLMcom - PoolData

The Climate Limited-area Modelling Community (CLM Community, www.clm-community.eu) is an open international network of scientists working in the area of regional climate modelling and climate change. The members of the CLM Community develop the regional climate models COSMO-CLM and ICON-CLM (community models) together, apply the models for a wide range of applications and collaborate in scientific projects.

The community models are used on many different HPC systems all over the world, but the HPC system at DKRZ has always been the most important place for common activities of the community members (e.g. test and evaluation of new model versions and setups, climate simulations for CORDEX, data exchange).

In 2022, we established this project (pd1309) as overarching project for the CLM Community activities at DKRZ. We unified all previously existing /pool/data projects of the CLM Community here, in order to simplify the search for and access to the data, optimize the storage requirements and considerably reduce the administrative overhead. The unification of the different projects the community had before 2022 turned out to be a very good and helpful step. The data can now be found and accessed much easier and the storage requirements are optimized, because different copies of the same data aren't kept in different projects anymore.

From July 2024 to June 2026 we have 576 TB on /work (currently 481 TB used), 1671 TB in the archive (currently 349 TB used) and 200 TB in the long term archive (0 TB used). The storage was used for e.g. ERA boundary conditions, results of reference simulations and input data (boundary conditions) for the downscaling of CMIP6 simulations with COSMO-CLM and ICON-CLM. The necessary input data of the global models is reformatted to the input format of the regional models. This data must be available in /pool/data, because it must be accessible across projects and was and will be used by many member intuitions of the CLM Community for the downscaling of CMIP6 simulations. The BMBF funded projects NUKLEUS (1187, 1203) and UDAG (1364) are only two examples for projects that use the data of the CLMcom – PoolData project extensively. As long as the CMIP6 downscaling is ongoing (next few years), these datasets must be available on disk to simplify the access and avoid delays in the production of the simulations. Once the CMIP6 downscaling is completed, it is sufficient to keep a copy of the data in the archive.

In summary, the central disc space for sharing data that is used by many groups in the CLM Community is and will be absolutely essential for the collaboration of the member institutions. In the last two years, the largest part of the disc space was used for providing boundary conditions from ERA5 and CMIP6 GCMs, but also for sharing input and reference data for other community activities like CORDEX FPS Convections and FPS LUCAS and the COPAT2 initiative for optimizing the set-ups of COSMO-CLM 6.0 and ICON-CLM.

There many publications by CLM Community members that benefit indirectly from the resources provided in this project (e.g., through data provision or use of well tested model configurations). A full list of publications from the CLM Community is available on the community webpage: https://www.clm-community.eu/publications/

Publications from the last two years that are directly related to the resources of this project are the following:

- Geyer, B., Campanale, A., Churiulin, E., Feldmann, H., Goergen, K., Hagemann, S., Ho-Hagemann, H. T. M., Karadan, M. M., Keuler, K., Khain, P., Lawand, D., Ludwig, P.,

Maurer, V., Petrov, S., Poll, S., Purr, C., Russo, E., Schubert-Frisius, M., Schulz, J.-P., Singh, S., Steger, C., Truhetz, H., and Will, A.: Optimisation of ICON-CLM for the EURO-CORDEX domain: developments, sensitivities, tuning, EGUsphere [preprint], https://doi.org/10.5194/egusphere-2025-4726, 2026.

- Petrov, S., Will, A., and Geyer, B.: Linear Meta-Model optimization for regional climate models (LiMMo version 1.0), Geosci. Model Dev., 18, 6177–6194, https://doi.org/10.5194/gmd-18-6177-2025, 2025.
- Russo, E., B. Geyer, P. Petrik, K. Keuler, M. Adinol, H. Feldmann, K. Goergen, A. Kerkweg, P. Khain, P. Ludwig, M. Mertens, P. Pothapakula, M. Raffa, B. Rockel, J.-P. Schulz, M. Sulis, H.T.M. Ho-Hagemann, H. Truhetz, L. Uzan, U. Voggenberger, C. Steger: (2024): CLM Community WG EVAL, COordinated Parameter Testing project 2 (COPAT2): COSMO-CLM 6.0 clm1 recommended model configuration. *COSMO Technical Reports*, No. **51**, https://doi.org/10.5676/DWD_pub/nwv/cosmo-tr_51, 2024.