



COPAT – towards a recommended model version of COSMO-CLM

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The regional climate model COSMO-CLM is a community model (www.clm-community.com). In close collaboration with the COSMO-consortium the model is further developed by the community members for climate applications. One of the tasks of the community is to give a recommendation on the model version and to evaluate the models performance.

The COPAT (Coordinated Parameter Testing) is a voluntary community effort to allow different institutions to carry out model simulations systematically by different institutions in order to test new model options and to find a satisfactory model setup for hydrostatic climate simulations over Europe. We will present the COPAT method used to achieve the latest recommended model version of COSMO-CLM (COSMO5.0_clm6).

The simulations cover the EURO-CORDEX domain at two spatial resolutions 0.44° and 0.11° . They used ERAinterim forcing data for the time period of 1979-2000. Interpolated forcing data has been prepared once to ensure that all participating groups used identical forcing. The evaluation of each individual run has been performed for the time period 1981-2000 by using ETOOL and ETOOL-VIS. These tools have been developed within the community to evaluate standard COSMO-CLM output in comparison to observations provided by EOBS and CRU.

COPAT was structured in three phases. In Phase 1 all participating institutions performed a reference run on their individual computing platforms and tested the influence of single model options on the results afterwards. Derived from the results of Phase 1 the most promising options were used in combinations in the second phase (Phase 2). These first two phases of COPAT consist of more than 100 simulations with a spatial resolution of 0.44° . Based on the best setup identified in Phase 2 a calibration of eight tuning parameters has been carried out following Bellprat et al. (2012) in Phase 3. A final simulation with the calibrated parameters has been set up at a higher resolution of 0.11° . The results were compared to previous model versions. The new model version led to the same or better results and therefore had been defined as the new recommended model version of the community.

Reference

Bellprat, O., S. Kotlarski, D. Lüthi, and C. Schär (2012), Objective calibration of regional climate models, *J. Geophys. Res.*, 117, D23115, doi:10.1029/2012JD018262.