

Project: **1031**

Project title: **Kipp-Punkte im Klimasystem und ihre Konsequenzen für Zentralasien - CAHOL-Modelling**

Principal investigator: **Ingo Kirchner**

Report period: **2019-01-01 to 2019-12-31**

In the first quarter of the year 2019, part of the allocated resources have been used to support the results of the calibration conducted for the CORDEX Central Asia domain in the DKRZ project bb1071 ([CCLM CORDEX-CORE Central Asia](#)). The CORDEX-CORE Central Asia and the CAHOL domains partly cover the same regions: the optimal configuration found for one domain is plausibly valid for the other one. In this context, following the method of Bellprat et al. 2012, a set of 5-year long simulations at ~25 km spatial resolution have been performed, for the Central Asia domain, on a sub-set of 9 most sensitive model parameters, in order to find their optimal values. Part of the first 2019 quarter resources of the project BB1031 have contributed to the performance of these simulations.

The results of these simulations (Fig.1, obtained combining the results of the DKRZ projects bb1071 and bb1031) have been presented at the COSMO-CLM 2019 Assembly in Paestum, Italy, and will contribute to a paper in preparation for the scientific journal "Geoscientific Model Development".

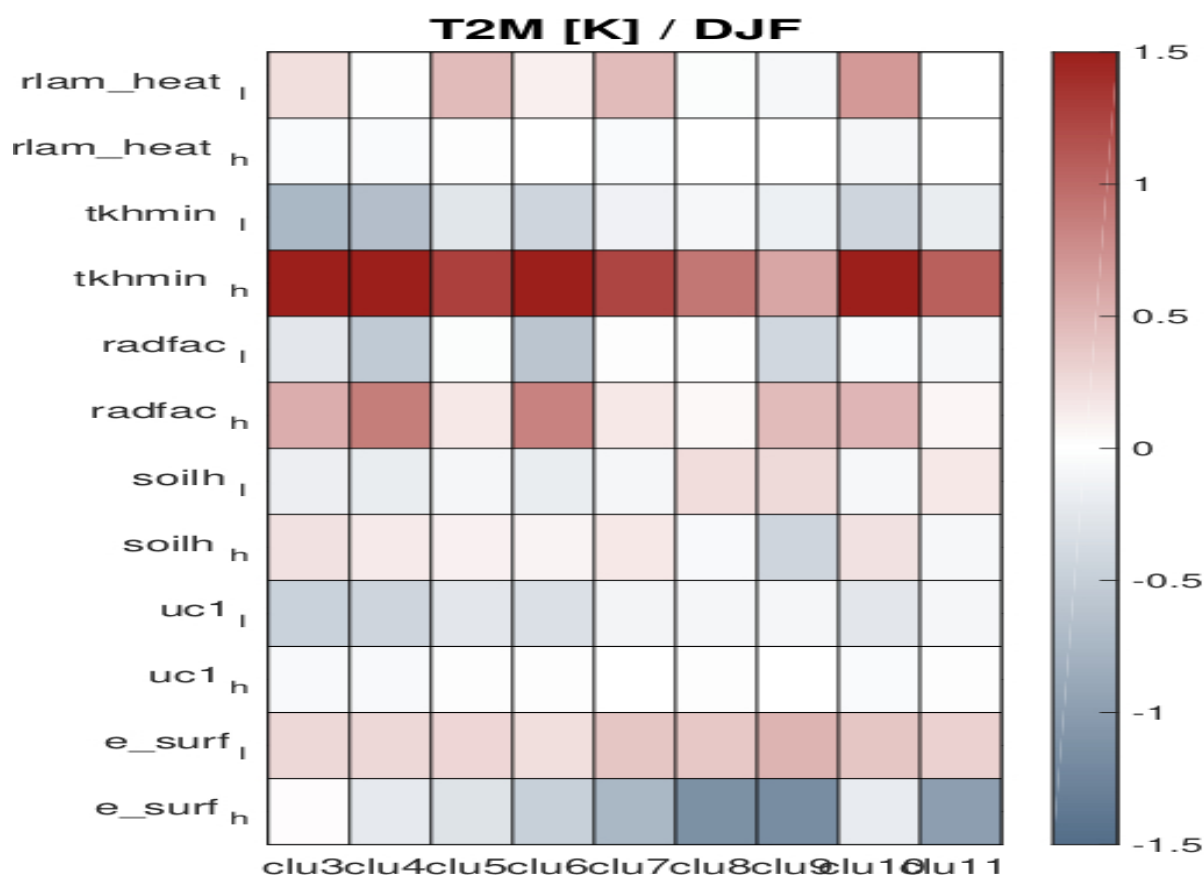


Figure 1: Sensitivity of Winter (DJF) 2-meter Temperature of the tested COSMO-CLM most sensitive parameters values for the CORDEX Central Asia domain over the period 2000-2004. The figure shows the changes with respect to the reference simulation for each parameter values and domain sub-region.

With the so calibrated COSMO-CLM downscaling experiments for the central Asia were performed. As boundary files the global simulations of MPIESM1 with T63L47 resolution was used (Holocene, DKRZ-Project mh0469). This simulation was forced with orbit changes, solar constant modifications and volcanoes. Only 100 years were picked out for downscaling.