**Project: 946**

**Project title**: NHCM-2

**Long title:** The Non-Hydrostatic Climate Modelling, Part II Towards Convection-Resolving Climate Simulations in the Alpine Region

**Project leader:** Andreas Haensler

**Report period:** 01.01.2018 – 31.12.2018

The main objectives of the project NHCM-2 were:

- to investigate the ability of state-of-the-art non-hydrostatic RCMs operating at convection permitting scales (≤3 km grid spacing) to capture important climate processes in the European Alpine region on regional (meso-β) scales and
- to derive model configurations for the next generation of long-term climate simulations (i.e. convection-permitting scale) in the Alpine region using the regional climate models COSMO-CLM, WRF and REMO-nh.

GERICS has the task to conduct and analyze all REMO-nh simulations for the common multi-model analysis and to contribute to further multi-model analyses. The next phase of the NHCM-2 was to continue long-term climate change simulations to further investigating the occurrence of future climate precipitation extremes over the Alpine region. This was done within the framework of the "The Future of Extreme Precipitation Events in the Alpine Region under High End Climate Change Conditions" (Highend:Extremes) , which was funded by the Austrian Ministry for Transport, Innovation and Technology in the frame of the Climate and Energy Fund. The Highend:Extremes Project is still an ongoing project between WEGC and GERICS due to project delays in the different challenges both institutes encountered in simulating very high resolution simulations with REMO-nh and WRF. At the end of the project, GERICS tasked to evaluate indices such as heavy to extreme precipitation events over the Greater Alpine Region from the available simulations.

Within the reporting period, we requested only resources for storage as we have finished the three test cases for the CORDEX Flagship Pilot Studies (FPS) on convective phenomena at high resolution over Europe and the Mediterranean, wherein the NHCM2 project partners participated. The three case studies were analysed on different convective events and Figure 1 shows the result of REMO-nh-derived total precipitation of one event. We also submitted this data to project partners and we are currently working on further intercomparison studies and analysis.

During this allocation period, we would like to keep the project data for one more year to be able to perform this model intercomparison and analysis of our results with the other models.

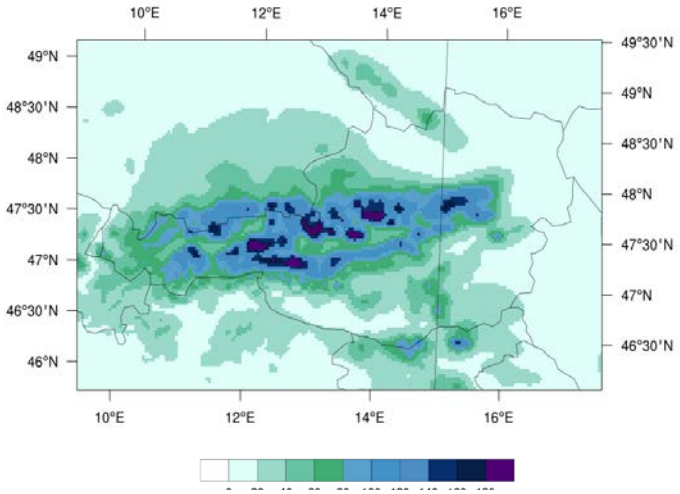


**Figure 1: Precipitation sum of a heavy precipitatio ive event in Austria during June 2006.**