



User-relevant indices derived from high resolution simulations in the Alpine Region

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High resolution regional climate simulations are expected to reproduce well the mean and extreme precipitation especially over mountainous regions due to the improved representation of orography. In this study, we investigated several indicators for climate extremes based on precipitation in the Alpine Region from an ensemble of regional climate simulations in varying resolutions from 50 km to a very high resolution of 3 km. User-relevant indices such as total precipitation, number of rain days, consecutive wet days, heavy to extreme precipitation thresholds and amounts, were calculated from the COSMO-CLM, WRF, and REMO simulations conducted within the frameworks of the WCRP EURO-CORDEX Initiative, as well as of the Austrian-funded NHCM2 and HighEnd:Extremes Projects. The three RCMS used were driven by the ERA-INTERIM Reanalysis for the 1990-2008 period. The derived indices were then evaluated using observational datasets at 50-, 25-, and 5 km resolutions with a special focus on the Greater Alpine Region.

The evaluation of the model performance in terms of the observed and simulated indices in different resolutions will be presented. Preliminary results indicate that as we increase the spatial resolutions, simulated indices such as the extreme precipitation thresholds tend to have higher values than the observed indices especially over the Alps. In addition, the simulations at very high resolution exhibit similar mean values compared to the observed, however, one model tends to reproduce higher precipitation rates over the Alps. The underlying reasons for model differences will also be investigated.