

Future scenarios of climate mean and variability over the Alpine Region at high resolution

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In the framework of the Austrian project Research for Climate Protection: Model Run Evaluation (reclip;more, see <http://systemsresearch.ac.at/projects/climate/>), conducted by five Austrian research institutions, dynamical and statistical methods for downscaling results of global climate models (GCMs) to high resolution are evaluated, advanced, and finally applied to create climate scenarios for the Alpine region. The resulting scenarios are unique by covering the entire greater Alpine region in unprecedented fine resolution and are, besides their general aim to adequately describe climate and climate change in this orographically complex area, particularly targeted to provide suitable input for climate impact research.

The paper focuses on results of two recently finished climate scenarios for the 2040s (2041-2050). These scenarios have been created by means of dynamical downscaling GCM (ECHAM5) simulations with two different meso-scale models (the European model ALADIN and the PSU/NCAR model MM5) to a horizontal grid resolution of about 10 km.

Complementing model evaluations presented by A. Beck et al. in a different paper, this presentation focuses on the analysis of climate change signals in the scenarios (2040s compared to 1980s). Preliminary results already demonstrated the role of the Alps as a transition zone of climate change, particularly for precipitation. Enabled by the high spatial resolution of the datasets, the analysis will therefore be conducted separately for several sub-regions enclosing the greater Alpine region showing very different sensitivity of precipitation to climate change. Changes in mean as well as in variability (moderate extremes) will be presented.