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High resolution climate hindcasts and scenarios for the Alpine Region

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The project Research for Climate Protection: Model Run Evaluation (reclip:more), conducted by five Austrian research institutions, is designed to evaluate and advance methods for downscaling coarse global climate scenarios to high resolution for use in hydrological and climate impact studies in the Alpine Region and, based on these experiences, to create high resolution scenarios. This presentation will give a brief overview of the project which applies dynamical, statistical, and diagnostic techniques for downscaling to the meso-gamma scale and below (10 km to 200 m). Moreover, the dynamical downscaling activities within reclip:more and their results will be described in more detail. For dynamical downscaling, two meso-scale models (the PSU/NCAR model MM5 and the European model ALADIN) are applied to reach a horizontal grid spacing of 10 km. Climate hindcasts of the year 1999 forced by lateral boundary conditions (LBCs) from the ERA-40 re-analysis are used in sensitivity experiments and for model evaluation. Simulations of the decade 1981 - 1990 additionally serve as high-resolution analysis of present climate conditions for use in hydrological and climate impact studies. Results from these hindcasts will be presented and evaluated with particular focus on hydrological parameters and the comparative performance of MM5 (climate simulations) and ALADIN (reinitialized simulations). Furthermore, preliminary results from currently ongoing future scenario simulations (period 2041 - 2050) forced by LBCs from a general circulation model (ECHAM5, T106) will be presented.