



## **Estimation of rainfall variability and rainfall extremes from regional climate modeling**

**S. Bachner**, A. Kapala and C. Simmer

Meteorological Institute, University of Bonn, Germany (s.bachner@uni-bonn.de / Fax: +49 (0)228 735188)

Regional climate models (RCM) are increasingly used to provide rainfall distributions in space and time for the past and for the future. Besides mean values, also information on statistics like e.g. precipitation frequency and intensity is important. Of utmost importance are, however, extreme values because of their dominant role in impact studies and flood risk management. Thus the variability in occurrence and amount of extreme precipitation simulated with RCMs has to be examined thoroughly prior to their use in this context. Our study aims at the investigation of the potential of a specific RCM to reproduce observed statistical properties of precipitation, especially regarding extreme events.

We use the regional climate model CLM for dynamical downscaling of coarser fields. In order to compare the model results with observations we use the ERA40 reanalysis fields as initial and lateral boundary conditions. We are interested especially in summer precipitation and compare different seasonal simulations with daily station data from the German Weather Service (DWD). This is a necessary step before we can use the model with confidence to downscale climate change scenario runs.

We find large differences between model and observations with different biases depending on whether we examine wet or dry summer conditions: in dry years the model seems to overestimate extremes, while in wet years there is a tendency to underestimate extremes. The opposite behaviour is observed for the frequency of rainy days. We also examine the structure of frequency distributions, the biases of which also exhibit large regional variations.