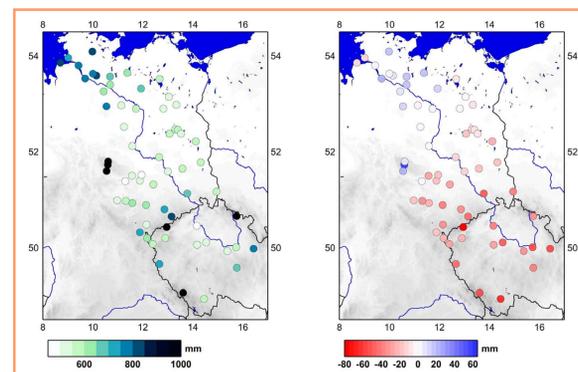
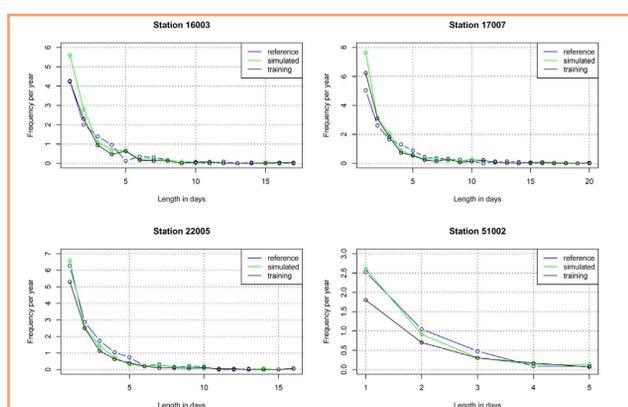


THE REGIONAL CLIMATE MODEL STAR II (2)

DURATIONS OF SUMMER DAYS

For the four representative stations, these plots show frequencies (per year) of lengths of uninterrupted series of summer days ($T_{\max} > 25\text{ }^{\circ}\text{C}$). The curves are calculated from the training data 1951-1980, the observed data 1981-2003 and our scenario for 1981-2003. Simulated and observed durations agree very well.

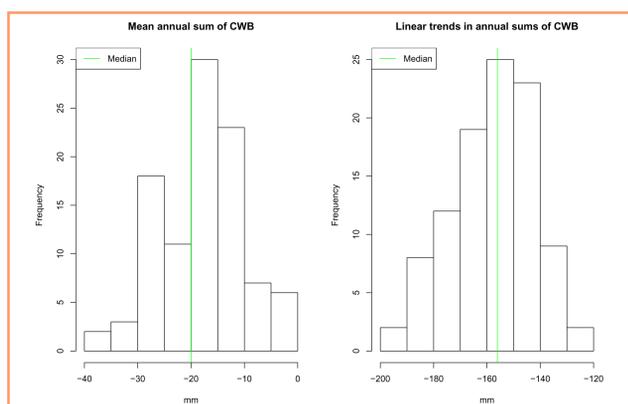


Mean annual precipitation sum („median“ scenario)

Left: mean annual sums for 1951-2003. **Right:** the differences to the means for 2004-2055. Statistically, these differences are not significant, however, they show pronounced spatial patterns: While the north is becoming wetter, the south in general gets drier.

A SCENARIO FOR THE ELBE RIVER CATCHMENT

For the future scenarios, the same data set as for the validation was taken. Temperature trends were calculated from an A1B-SRES-Scenario run of ECHAM5 for 2004-2055. The trends for the four representative stations range from 1.9 to 2.2 K.



Mean annual sums of water balances

The histograms are calculated for the climatological water balance $CW\ B = Prec - ET$, derived from 100 scenarios. The histogram for the means indicates a slightly negative CW B.

The trend histogram shows for all scenarios a decreasing trend, corresponding to a drier climate.

CONCLUSIONS AND OUTLOOK

We present a new model for the construction of climate scenarios which uses measured daily meteorological data and a linear trend in temperatures. A combinatorial approach gives very convincing results for a validation experiment, both regarding means and rather complex statistical properties like persistence.

A set of scenarios constructed for 2004-2005 for the Elbe River catchment indicates a drier climate, which is caused not only by precipitation developments but by the complex interplay between several meteorological variables. As the amount of disposable water in this region is rather close to its lower bounds for a number of fields such as forestry and partly agriculture, this tendency gives reason for great concern.

REFERENCE

Orlowsky, B., Gerstengarbe, F.-W., Werner, P. C. (2008): A resampling scheme for regional climate simulations and its performance compared to a dynamical RCM. *Theor. Appl. Climatol.* 92, No. 3-4, 209-223, DOI: 10.1007/s00704-007-0352-y