*Forecasting the weather
- ensemble techniques
in probabilistic weather prediction*

Correcting monthly precipitation in 8 regional climate models over Europe

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In the study we designed and validated method for statistical bias correction of the precipitation in regional climate models. Observed and simulated precipitation fields over Europe from ENSEMBLES project (van der Linden and Mitchell, 2009) were used.

Precipitation from 8 regional climate models were corrected and validated according to the observations. We used precipitation in monthly time step and hence the transfer function for every grid cell has been defined and validated using different periods for correction and validation of the method. Transfer functions was defined using precipitation data from period 1961-1990 and validation was performed using the same dataset, but in the period between 1991 and 2010. The assumption for using this method is, that both observed and modeled precipitation follow probability distribution function from same distribution family (e.g. gamma distribution function). Similar approach for correcting simuleted precipitation were used already by Sennikovs et al (2007) and Piani et al (2010) and others.

With the correction of the precipitation over the whole spectrum of distribution, not only mean, but also extremes values were improved. In order to assess extemes, we tested method by calculating percentages of European area under drought condition defined by 12 months standardised precipitation Index (SPI-12) (McKee, 1994). The agreement between observed and simulated values is significantly and consistently improved after bias correction. This implies the outputs of the models need to be corrected by bias prior use in the various impact models.