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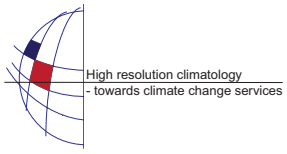

Temperature and precipitation extremes in climate model outputs over central Europe

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For human society, knowledge of extreme events is as important as knowledge of the mean state of climate. Changes to the magnitude, character and spatial distribution of extreme temperature and precipitation events may have serious environmental, social and economic implications. The present study evaluates the simulation of temperature and precipitation extremes (high quantiles of distributions of daily maximum air temperatures and daily precipitation amounts) over central Europe in an ensemble of regional climate model (RCM) simulations with the 25 km resolution, taken from the ENSEMBLES database. The statistics are compared for the recent climate simulations (1961-1990) against data gridded onto the models' grid from a high-density station network of daily observations, in order to identify main drawbacks of the RCMs in reproducing observed characteristics of extremes (including their spatial patterns). Climate change scenarios (under the SRES A1B forcing) are then evaluated for the mid-21st century (2020-49) and the late-21st century (2070-99) time slices, and the projected changes in extremes are compared with changes in mean temperature and precipitation characteristics. The agreement among models is better for temperature than precipitation extremes, and for the latter, in winter than summer. In summer, increases in high quantiles of precipitation are projected in spite of pronounced drying (declines in mean precipitation totals) in most RCMs.