



Climate Change alternatives for Central Europe

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A set of dynamical and statistical downscaling experiments has been added to the Euro-CORDEX ensemble by the German research project ReKliEs-De (Regional Climate change Ensemble simulations for Germany). 15 different regional climate simulations of the scenarios RCP2.6 and RCP8.5, executed each with the same combination of global and regional climate models, are now available to demonstrate alternative future climate developments for Central Europe. 24 climate indices have been analyzed in ReKliEs-De to quantify the differences in mean and extreme climate quantities between the two scenarios in consideration of the bandwidth of climate change signals due to the deviating model performances. The analysis concentrates on Germany and the major river catchments draining into Germany. It shows that mean warming and warm extremes will increase in both scenarios, but in RCP2.6 the warming will be 3 to 4 times less than in RCP8.5. Cold extremes decline in both scenarios, but in RCP2.6 only half or even less strong than in RCP8.5. Seasonal rainfall changes (positive as well as negative) are more pronounced in RCP8.5 than in RCP2.6 and rainfall extremes (both, number of extreme events and rainfall amount per event) increase in RCP8.5 up to 4 times stronger than in RCP2.6. The results clearly document that the “climate protection scenario” RCP2.6 offers much more moderate and acceptable climate changes for Central Europe but requires a substantial and immediate reduction of global greenhouse gas emissions.