



Changing seasonality of extreme daily precipitation over land in global and regional models

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Daily extreme precipitation is rapidly increasing with global warming, 3 times faster than the mean. These changes in extreme precipitation are known to be regionally and seasonally heterogeneous. In this work, we investigate whether these seasonal changes are also enough to significantly alter when in the year extreme daily precipitation (RX1day) occurs. Using results from 18 CMIP5 models, we compare the seasonality of RX1day over land during 3 time periods (late 19th, late 20th and late 21st century in the RCP8.5 scenario). We show that global warming tends to delay the day of RX1day, up to several months, especially at higher latitudes of the Northern Hemisphere. CMIP5 results are also compared to regional CORDEX simulations for several regions of interest, confirming the robustness of these results and highlighting regional differences. In addition, we perform custom simulations with the Community Earth System Model (CESM), downscaled with the Weather Research and Forecasting (WRF) model, in order to better understand the processes behind these changes.