



Trends of atmospheric circulation during singular hot days in Europe

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The influence of climate change on mid-latitudes atmospheric circulation is still very uncertain. Because of the large internal variability, it is difficult to extract any significant signal regarding the evolution of the circulation. Here we propose a methodology to calculate dynamical trends tailored to the circulation of specific days by computing the evolution of the distances between the circulation of the day of interest and the other days of the time series. We compute these dynamical trends for two case studies of the hottest days recorded in two different European regions (corresponding to the heatwaves of summer 2003 and 2010). We use the NCEP reanalysis dataset, an ensemble of CMIP5 models, and a large ensemble of a single model (CESM), in order to account for different sources of uncertainty. While we find a positive trend for most models for 2003, we cannot conclude for 2010 since the models disagree on the trend estimates.