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Trends and extremes in observed temperature series: different seasonal and geographical behaviours

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A detailed non parametric statistical analysis of the evolutions of the daily mean and variance of seasonal temperature in Europe revealed a rather strong link between the trends in mean and variance. In winter, variance generally decreases when mean increases whereas in summer variance increases when mean increases. Besides, the evolution in extremes seems to be mainly explained by these mean and variance evolutions in summer, but not as systematically in winter. The aim of the study is thus to further characterize the different behaviours regarding these links in order to look for physical explanations. For example, the role of the very cold or very warm episodes on temperature mean and variability for different locations will be studied. According to the found relevance of these episodes, other sources of temperature variability could be analysed, such as the large scale atmospheric circulation. The study is conducted from the ECA&D project observed series and the ERA40 reanalysis. Comparisons with climate model simulation results could be a further step.