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Characteristics of inhomogeneities in temperature data derived from an application of daily homogenization methods to Austrian time series

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The demand for climate extreme studies is getting more and more important. As a consequence reliable data of (at least) daily resolution are required. The examination of the data according to inhomogeneities is indispensable for these questions.
The main objective of the "homogenization of daily data" is to remove inhomogeneities not only in mean (e.g. temperature) data, but to account for inhomogeneities in higher order moments as well, thus that inhomogeneities that affect climate extremes are removed.
Within the last years several methods for the homogenization of daily (temperature) time series have been developed (e.g. Della-Marta and Wanner, 2006; Mestre et al., submitted; Vincent et al., 2002; Trewin and Trevitt, 1996). However, a general comparison of their advantages and disadvantages has not been performed yet.
Based on the experience of the homogenization of Austrian daily temperature data, the benefit of such methods is discussed. The method used for the homogenization of the Austrian data is a combination of the methods Mestre et al. (submitted) and Vincent et al. (2002).
The results show that temperature dependent adjustments are beneficial for a minor fraction of inhomogeneities only: Either inhomogeneities affect just the temperature mean or the data availability it too sparse for adjusting higher order moments. However, these methods can be valuable in specific cases and they are even more helpful for the assessment of the time series reliability with respect to climate extremes.