



Analyzing and monitoring of data quality by parallel measurements from German climate reference stations

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The quality of climate data is essential for a trustable analysis. Monitoring meteorological data can be done by several methods. One idea is using parallel measurements from climate reference stations in Germany and analyzing the differences between different measurement systems like manual and automatic observations or different kind of automatic sensors. With these parallel measurements large differences can indicate defects in the used instruments. Parallel measurements are available since 2008 for the meteorological parameters air temperature and daily extreme temperatures, relative humidity, pressure, sunshine duration, precipitation, and soil temperature in five different depths. The manual observations were used as reference and were compared to the automatic sensors which offer the chance of detecting features or errors in the data. This knowledge can be used to optimize the quality of the data and measurement conditions. Also, parallel measurements can be used for breakpoint detection. With a combination of metadata information and statistical methods breakpoints in the difference time series of automatic and manual measurements can be detected which are caused by instrumental defects. The breakpoint detection is done by R functions (for examples 'uniseq' and SNHT Trend Test) and can detect breaks and trends in the difference time series if the series are normally distributed. In this presentation we want to show examples of the statistical analysis of parallel measurements for several meteorological parameters.