



Comparing the new homogenized E-OBS for temperature with high resolution PRIMAVERA climate simulations.

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The European Climate and Data Assessment collects daily temperature measurement from more than 5000 station in 68 countries in Europe, Middle East and Mediterranean countries. Artificial interventions, such relocations, replacements of instrumentation or changes in the surroundings alter temperature measurements and introduce inhomogeneities in the time series. Such issues affect the reliability of climatological analyses and of the development of gridded datasets. For this reason a homogenization procedure has been developed. The size of the dataset and the high amount of lacking metadata require this procedure to be completely automatic. The homogenization, composed by break detection and adjustment calculation, is based on a quantile matching approach. The application of these methods, coupled with a blending procedure which gathers data related to neighbouring stations, produced a homogeneous set of long temperature records, which is used as the basis for a new run of high-resolution gridded temperature data in the E-OBS dataset. The new homogenized E-OBS present less outliers, lower uncertainty and higher spatial consistency of the trends on most widely used Climate Impact Indices reflecting extreme climatic conditions. Climatologies of these indices, geographical distribution, variability and trends in the indices are compared against simulated European climate in the high-resolution global climate models which have been developed in the frame of the PRIMAVERA Project. An assessment is made to ensure the fidelity with which models reproduce trends and variability in extreme (thermal) climatic conditions. This work will allow to perform a validation of the climate models developed within PRIMAVERA..