

Climate indices calculations on homogenized daily data series

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Extreme events can be identified in different ways. One of them is using internationally agreed predefined indices that is day count exceeding a fixed threshold, percentile threshold, heat wave duration, etc. Such indices are defined in international projects on climate extremes. Climate indices calculations require at least daily resolution of homogeneous time series, without inhomogeneities, like stations move to other locations, changes in observation practice. In many cases the characteristics of the estimated linear trends are unambiguously unlike on the original and homogenized time series. It is a frequent occurrence that the sign of the slope imply decreasing or increasing on the data with artificial breaks, while the fitted trend to homogenized data imply adverse character.

The European Climate Assessment project defined more than thirty climate indices to detect changes in climate extremes. The ECA indices and some other special own developed temperature and precipitation indices are realized at Climate Database of the Hungarian Meteorological Service. The long time daily maximum, minimum and daily mean temperature data series and daily precipitation sums were analyzed at 15 Hungarian meteorological stations in the case of temperature, and 37 stations in the case of precipitation. The period we examined is 1901-2005. The climate indices calculation processes are tested on the original observations and homogenized daily data also in the case of temperature. In the case of precipitation a complementation process were performed to fill the gaps through missing data. The homogenization and complementation of daily data series was worked out by method MASH (Multiple Analysis of Series for Homogenization; *Szentimrey*). In this paper we report the experiences of comparison the climate indices calculation results based on original and complemented and homogenized data. We present the preliminary result of climate indices calculations on gridded (interpolated) daily data also. Gridding of homogenized daily data series is carried out by method MISH (Meteorological Interpolation based on Surface Homogenized Data Basis; *Szentimrey, Bihari*).