

Statistical trend analysis of extreme temperature and precipitation indices for the Carpathian Basin

R. Pongracz and J. Bartholy

Dept. of Meteorology, Eotvos Lorand University, Budapest, Hungary (pita@elte.hu/Fax +36 1 372 2904)

Several climate extreme indices have been analysed and compared for the Carpathian Basin based on the guidelines suggested by the joint WMO-CCI/CLIVAR Working Group on climate change detection. These climate extreme indices are determined on the base of daily maximum, minimum and mean temperature observations and daily precipitation amounts. Because of the lack of century-long meteorological time series, the analysis has been accomplished mainly for the second half of the 20th century. However, the analysis has been extended for the entire century in case of some stations, where sufficient data was available. The statistical trend analysis includes the evaluation of 27 extreme indices, e.g., the numbers of severe cold days, winter days, frost days, cold days, warm days, summer days, hot days, extremely hot days, cold nights, warm nights, the intra-annual extreme temperature range, the heat wave duration, the growing season length, the number of wet days (using several threshold values defining extremes), the maximum number of consecutive dry days, the highest 1-day precipitation amount, the greatest 5-day rainfall total, the annual fraction due to extreme precipitation events, etc. The results suggest that similarly to the global and continental trends, regional temperature of Central/Eastern Europe got warmer during the second half of the 20th century. Furthermore, regional intensity and frequency of extreme precipitation increased, while the total precipitation decreased in the region and the mean climate became drier.