Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09387, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09387
EGU General Assembly 2008

Analysis of past and future trends of extreme temperature indices for the Carpathian basin

J. Bartholy, R. Pongracz, GY. Gelybo and P. Szabo

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

Several extreme temperature indices are analyzed and compared for the Carpathian basin following the guidelines suggested by the joint WMO-CCl/CLIVAR Working Group on climate change detection. These climate extreme indices are determined on the basis of daily maximum, minimum and mean temperature values. The statistical trend analysis includes the evaluation of 13 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, etc. In order to analyze the past trends, daily meteorological observations are used to calculate the time series of extreme temperature indices for 13 selected stations for the 20th century. Because of the lack of century-long meteorological time series, the analysis focuses mainly on the second half of the 20th century. However, the analysis is extended for the entire century in case of some stations, where sufficient data was available. The results suggest that similarly to the global and continental trends, regional climate of the Carpathian basin got warmer during the second half of the 20th century, and especially in the last quarter. In case of the future trends (2071-2100), daily values of meteorological variables are obtained from the outputs of regional climate model (RCM) experiments of the swiss ETH institute, accomplished in the frame of the completed EU-project PRUDENCE (the horizontal resolution of the RCM is 50 km). Scenario A2 is used to compare temperature parameters, and the past and future trends of the extreme climate indices for the Carpathian basin.