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Analysis of trend and variability of temperature extremes in Central Europe over the 40-year period (1972-2011)

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The objective of this work is to examine variations and trends of the selected temperature indices in Central Europe over the last 40 years. Dataset used for the analysis was obtained GSOD/NOAA archive. Trend analysis will be undertaken for the whole 40-year period (1972-2011) and for two time windows: 1972-2001 and 2001-2011. The calculated indices are based on daily maximum, minimum and mean temperatures from 30 synoptic stations in Central Europe.

To examine the temperature variability the difference between the highest daily maximum and the lowest daily minimum temperature during the year will be calculated and the standard deviation of the daily mean will be analyzed.

The cold extremes will be identified based on a number of frost days (minimum temperature below 0° C) and very cold days (maximum temperature below -10° C) while the warm spells will be defined in term of a number of hot days (with maximum above 25° C) and very hot days (with maximum above 30° C).

Cold wave and heat wave duration indexes will be calculated for each year as the maximum number of consecutive days of an event. Most prolonged events will be analyzed in terms of synoptic conditions.