



The trends and variability of climate extremes in Latvia

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In particular study the long-term variability of extreme climate event indicators was investigated. The analysis are based on time series of ten meteorological stations for the period 1923 to 2012. Mean variables as well as extremes both on seasonal/monthly time scales were used. The indices follow the definitions recommended by the CCI/CLIVAR/JCOMM Expert Team on Climate Change Detection and Indices with a primary focus on extreme events. The trend analysis was conducted using the non-parametric Mann-Kendall test. The seasons have been categorized as extreme if minimum, maximum temperature or sum of precipitation exceeded 90th percentile or was lower than 10th percentile for the period 1961-1990. The threshold for the very extreme seasons are values above 95th percentile or below 5th percentile. The study indicated that in the last decades more frequently observed extremes are hot days and nights, days with heavy precipitations, but extremely cold days are observed in a smaller quantity. The changes for the extreme precipitation are linked with increase of their frequency and intensity. At the same time these tendencies differ territorially due to local factor influence on the precipitation distribution. The significant decrease of extremely cold summers and springs and increase of extremely hot summers has been found for the particular study. The precipitation changes are typical only for winter seasons, where significant increases of wetter seasons and correspondingly decreases of drier seasons were identified. Comparative analyses of daily maximum temperature distribution in the summer season for two periods (1901-1930 and 1981-2010) indicated decreases of number of days below twenty degrees and significant increase in the number of days above twenty degrees. In its turn for the minimum daily temperature distribution changes noticed around zero degrees. In total the number of days with negative minimum daily temperature decreased, but the number of days with positive minimum temperature have increased.