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Temporal evolution of extreme temperature events in the Czech Republic: A comparison among seasons

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Recently, a lot of attention has been paid to future climate changes, possible shifts in weather extremity and resulting increased risk in many sectors. The changes in characteristics of minimum and maximum air temperature are usually studied with focus on warm and cold parts of the year. However, according to new climate change scenarios for the Czech Republic the expected increase of air temperature in transitional seasons is comparable or higher than in summer and winter seasons. In present contribution, we focus on extreme and abnormally cold and warm air temperature events during the period 1961-2010 in the Czech Republic for each season separately. We compare the temporal evolution of frequency of occurrence and changes in events characteristics during the period of 1961-2010 among seasons. The data of maximum (Tmax) and minimum (Tmin) temperature are used for detection of extreme air temperature events, the standardized data of Tmax and Tmin with removed annual cycle are used for detection of abnormally air temperature events. The extreme and abnormally cold and warm air temperature events are detected using the Weather Extremity Index (WEI) combining return periods and the extent of affected area. The generalized extreme value (GEV) parameters are used to estimate return periods of standardized and non-standardized data. The work has been supported by the grant P209/11/1990 funded by the Czech Science Foundation.