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Climatological evaluation of drought on the territory of Bohemia and Moravia in the years 1875-2002

thesis

Abstract

The thesis arose with the support of the project „Long-term changes in the regime of occurrence of extreme drought in Czechia“.

The drought evaluation was based on 8 weather stations which were chosen according to the length of their measurement. They represent the climate of lower and central positions. Two main aims are followed: quantification of drought severity in calendar units (years, vegetation seasons - months April till September) and determining of most considerable dry spells.

Beside two new indices **DI** and **EvaDI** the drought severity was also quantified by **EDI** which is based on the concept of the effective precipitation method proposed by H. R. Buyn a D. A. Wilhite. We paid special attention to the weather station Prague-Klementinum for which we estimated values of daily potential evapotranspiration. We used these estimates together with daily precipitation values for calculation of three other new drought indices **EDI_{mod}**, **EDI₂** and **EvaDI₂**.

We determined the most considerable dry spells by using the effective precipitation method. We also tried to identify dry spells which occurred at the same time at all weather stations. At the weather station Prague-Klementinum we tested out the modified effective precipitation method. Beside daily precipitation our modification also counts with values of estimated daily potential evapotranspiration which are integrated into the process of calculating water resources.

Although there are a lot of differences between drought indices results of driest years or vegetation seasons, when we take into consideration precipitation together with air temperature we observe a statistically significant trend of the drought severity growth during the period 1875-2002 which reaches the maximum in the 1990s.