



500-year April-September droughts in the Czech Lands based on documentary data and instrumental records

Ladislava Řezníčková (1,2), Rudolf Brázdil (1,2), Miroslav Trnka (2,3), Petr Dobrovolný (1,2), Oldřich Kotyza (4), Petr Štěpánek (2,5), Pavel Zahradníček (2,5), and Hubert Valášek (6)

(1) Department of Geography, Masaryk University, Brno, Czech Republic (ladkar@sci.muni.cz), (2) Global Change Research Centre AS CR, v. v. i., Brno, Czech Republic, (3) Department of Agrosystems and Bioclimatology, Mendel University, Brno, Czech Republic, (4) Regional Museum, Litoměřice, Czech Republic, (5) Czech Hydrometeorological Institute, Brno, Czech Republic, (6) Moravian Land Archives, Brno, Czech Republic

This paper analyses temporal and spatial variability of April–September (the vegetation period) droughts in the Czech Lands over the last 500 years. The study is based on different types of documentary data (e.g. chronicles, newspapers, economic sources, weather diaries) covering the pre-instrumental period AD 1501–1804 and on the systematic instrumental meteorological measurements afterwards. Historical-climatological database of the Czech Lands is used for the study of the duration and intensity of drought episodes based on the series of precipitation indices created from documentary data in a 7-degree scale from -3 (extremely dry) to +3 (extremely wet). For the instrumental period of 1805–2012 Palmer's Z-index and PDSI series for mean Czech temperature and precipitation series are used (they were calculated from homogeneous series of 10 and 14 stations respectively). Consequently the 500-year chronology of drought episodes derived from documentary and instrumental data is compiled and the temporal (frequency, seasonality and intensity) and spatial variability of droughts in the Czech Lands from AD 1501 is analysed. The most outstanding drought events are selected and analysed in detail also with respect to their human impacts. The results obtained for the Czech Lands are compared with drought episodes known in Central Europe from other studies and are evaluated with respect to climate variability in Central Europe during the last 500 years (this research is supported by projects InterDrought no. CZ.1.07/2.3.00/20.0248, and GA CR no. P209/11/0956).