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Long-term fluctuations of hailstorms in South Moravia, Czech Republic: synthesis of different data sources

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Hailstorms belong to natural phenomena causing great material damage in present time, similarly as it was in the past. In Moravia (eastern part of the Czech Republic), systematic meteorological observations started generally in the latter half of the 19th century. Therefore, in order to create long-term series of hailstorms, it is necessary to search for other sources of information. Different types of documentary evidence are used in historical climatology, such as annals, chronicles, diaries, private letters, newspapers etc. Besides them, institutional documentary evidence of economic and administrative character (e.g. taxation records) has particular importance. This study aims to create a long-term series of hailstorms in South Moravia using various types of documentary evidence (such as taxation records, family archives, chronicles and newspapers which are the most important) and systematic meteorological observations in the station network. Although available hailstorm data cover the 1541–2014 period, incomplete documentary evidence allows reasonable analysis of fluctuations in hailstorm frequency only since the 1770s. The series compiled from documentary data and systematic meteorological observations is used to identify periods of lower and higher hailstorm frequency. Existing data may be used also for the study of spatial hailstorm variability. Basic uncertainties of compiled hailstorm series are discussed. Despite some bias in hailstorm data, South-Moravian hailstorm series significantly extends our knowledge about this phenomenon in the south-eastern part of the Czech Republic.

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