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Taxation records as a source of information for historical climatology and hydrology: the case study for south-eastern Moravia, Czech Republic

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The taxation system in Moravia allowed farmers to request tax relief if their crop yields had been negatively affected by hydrometeorological extremes. Firstly, the owners of land or individual farmers sent basic information about what had taken place, together with a detailed description of the damage, to the state executive (regional offices). After this, commissioners appointed by the regional administrator were obliged to inspect the places affected personally (in situ) and make records. Finally, the state executive made its decision as to whether to allow or reject the tax relief requested. The whole process is reflected in various surviving archival documents which contain information about the type of extreme event and the date of its occurrence, while the impact on crops may often be derived. Results related to use of such records for the study of hydrometeorological extremes and their impacts are presented for ten estates located in south-eastern Moravia (Czech Republic) for the period A.D. 1751–1900. A total of 175 extreme events resulting in some kind of damage was documented with the highest concentration between 1811 and 1860 (75% of all events). The nature of events leading to damage (of a possible 272 types) include hailstorm (26%), torrential rain (22%), flood (21%), followed by thunderstorm, flash flood, late frost and windstorm. Hydrometeorological extremes in the 1816–1855 period are compared with those occurring during the recent 1961–2000 period. Uncertainties related to taxation records, such as their temporal and spatial incompleteness, the limits of the period of outside agricultural work (i.e. mainly May–August) and the purpose for which they were originally collected (primarily tax alleviation, i.e. information about hydrometeorological extremes was of secondary importance) are discussed with respect to results obtained. Taxation records constitute an important source of data for historical climatology and historical hydrology with a great potential to be used in many European countries.