

Two outstanding windstorms on 7 December 1868 and 26/27 October 1870 in the Czech Lands: course, extent, impacts

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Because of relatively short series of wind-speed measurements (starting in the Czech Lands during the first half of the 20th century), documentary evidence (chronicles and memories, economic and financial reports, newspapers, forestry journals etc.) represents an important source of information for the study of past outstanding windstorms. Two such windstorms on 7 December 1868 and 26/27 October 1870, most damaging windstorm of the 19th century, are presented with respect to their course, spatial extent and damaging impacts. Combining documentary data and systematic meteorological observations (wind force and direction) with information derived from an atmospheric reanalysis dataset allows the hurricane-force severity of both windstorm to be attributed to the passage of a cold front, during the day on 7 December 1868 or during the night on 26/27 October 1870. The occurrence time influenced human loss: at least 27 fatalities and 38 largely seriously injured in the first case compared to documented five fatalities and five injured in the second case. Severe damage to building and other structures as well as forest damage were documented for 237 places and 174 places (plus 28 city quarters in Prague) respectively. The 1868 windstorm damaged at least 8 million cubic metres of timber, which is arguably more than has been lost to any single similar event since in the Czech Lands. The 1870 windstorm totally devastated particularly many forested areas of the Šumava Mts. in south-west Bohemia. Because 1870 windstorm followed only shortly upon a previous event in 1868, the enormous quantity of windthrown wood in forests, which simply could not be fast-processed, contributed significantly to a subsequent bark-beetle infestation calamity in the 1870s. In certain forest stands, imprints of these aggregate effects appear to this day. The (Central) European scale of both windstorms is also well documented by meteorological and documentary data from other countries. (This work was supported by Czech Science Foundation, project no. 15-11805S "Windstorms in the Czech Lands during the past 500 years".)