



Long-term trends in strong winds in the Czech Republic

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Wind measurements (speeds and gusts) on meteorological stations are biased by different factors complicating to develop homogeneous long-term series. Statistical analysis of wind gusts in 1961–1990 is presented. Strong winds are divided on windstorms related to large horizontal pressure gradients and strong winds connected with convection (squall, tornado, downburst). Using PCA of mean sea level pressure field types of winter windstorms are analysed for the 20th century. Long-term series of strong winds from the 16th century are produced using information from documentary evidence (narrative sources, visual daily weather observations, newspapers etc.). Trends in strong winds are analysed with respect to circulation characteristics (NAOI, CEZI) and winter temperatures in Central Europe. Climatology of tornadoes is presented with respect to their seasonality, spatial distribution, impacts and intensity according to Fujita scale. Higher frequency of strong winds appears in the late 16th and in the early 17th centuries. It corresponds with the common deterioration of the Central European climate. On the other hand, the lower number of recorded events during the 1940s and 1950s is connected with the quality of data excerpted mostly from newspapers for this period. Documentary evidence allows identify the most disastrous historical windstorms and provides valuable information on impacts to nature and society. In such a way information of historical climatology complement data from the instrumental period and help to define the role of anthropogenic factor in present global climate change.