



Thunderstorm and hail occurrence in Kraków (1885-2018)

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The main aim of this study is to present results of the research on the occurrence of days with thunderstorm and hail in Kraków in the period 1885-2018. The paper also attempts to determine the impact of atmospheric circulation, types of air masses and atmospheric fronts on the occurrences of the studied phenomena. The analysis was based on daily meteorological observations from the Climatological Station of the Jagiellonian University in Kraków. In the research the types of synoptic situations and indices of atmospheric circulation by T. Niedźwiedź and index of North-Atlantic Oscillation (NAO) were also used.

The analysis revealed the both the annual number of days with thunderstorm, and number of days with thunderstorm occurring in the winter season has increased, especially during the last decades. It was noticed, however, that the changes were weaker than the increase occurring after 1950. The study identified no clear trend in the number of days with hails during the analysed period, but since the turn of the twentieth and twenty-first century, their number is lower than in the past. The analysis found that thunderstorm and hail events most often accompanied cyclonic situations and air mass advection from west and north sector and from south-east. The investigation also shows that about 60% cases of thunderstorm and hail days were connected with atmospheric fronts crossing over Kraków. The results obtained in the study reveal that changes in the atmospheric circulation of the northern Atlantic has a minor influence on the occurrence of thunderstorms and hail in this part of Poland.