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1 Long-term variability of thunderstorm occurrence in Poland in the light of synoptic situations

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Recently, many papers have been written concerning climate change. The researches show that in Europe and also in Poland the number of intense and severe weather events have increased. For this reason a lot of authors attempt to explain the cause of such variability. The occurrence of thunderstorms is also rated among severe weather phenomena. Therefore, the paper attempts to assess the impact of synoptic conditions on long-term variability of number of days with thunderstorm in Poland. The analysis was based on meteorological observation series from 5 synoptic stations (Szczecin, Koszalin, Poznań, WrocŁ aw and Kraków) situated in different geographical regions in Poland for the period 1885-2000. The calendar of synoptic situations elaborated by Tadeusz Niedźwiedź was used in order to characterise synoptic situations accompanied by thunderstorms. The analysis was carried out on the basis of atmospheric circulation types, direction of the air mass advection, types of the air masses and atmospheric fronts.

The correlation between long-term variability of number of days with thunderstorms and long-term variability of types of atmospheric circulation, types of the air masses and atmospheric fronts were analysed in the first part of the study. The periods of clearly higher or lower values of number of days with thunderstorm were determined for each stations in the next part of analysis and then correlation between the mentioned periods and synoptic conditions were studied. During the analysis the synoptic

conditions most conducive to forming thunderstorm independently on geographical regions were determined as well as conditions when the thunderstorm occurrence is most diverse. Local conditions determining spatial differentiation of thunderstorm occurrence in Poland were also taken into consideration.