

Circulation conditions of days with thunderstorm in Poland in the period 1971-2008

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ABSTRACT

The atmospheric circulation, observed on a synoptic scale, and atmospheric processes with a mesoscale coverage, are responsible for the occurrence of thunderstorm phenomena (Barnes and Newton 1986, Schaefer and all 1986). The said circulation processes, determining the transport of humidity and heat, also influence the intensity and duration of storm phenomena. Numerous authors occupied with thunderstorm activity have noted the strong connections of this activity with specific synoptic situations (Bielec-Bąkowska 2003, Brazdil 1998, Changnon 1998, Changnon and Changnon 2001, Kolendowicz 2006, Walker 1992). In the present study, we have performed an analysis of synoptic situations in the period 1971-2008 as a background of thunderstorm activity in Poland. The paper is

based on the data pertaining to the occurrence of days with thunderstorm in 46 Polish synoptic stations within the IMGW (The Institute of Meteorology and Water Management) network in the years 1971-2008 (Fig.1). The analysis of lower synoptic maps for the researched period 1971-2008 made it possible to isolate seven types of synoptic situations characteristic of days with thunderstorms on the area of Poland. There were calculated in the study the probability of an occurrence of days with thunderstorms under the selected synoptic situations in each year of the period 1971-2008 in mean station fort the entire area of the country. The analyse of frequency of each synoptic situation and frequency of days with thunderstorm in distinguished situation during the period 1971-2008 were performed.



FIG. 1 Location of weather stations

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