



Circulation-related conditioning of extreme thermal resources in the vegetative period and the active growth of plants in Poland (1951-2006)

E. Zmudzka

University of Warsaw, Faculty of Geography and Regional Studies, Department of Climatology, Krakowskie Przedmieście 26/28, 00-927 Warsaw, Poland (elwiraz@uw.edu.pl)

This paper deals with the problem of contemporary changes of thermal resources in the vegetative period in Poland. Thermal resources were specified using the sums of surpluses of mean daily air temperature values above the threshold 5°C (growing season) i 10°C (the active growth of plants period) - so called effective sums of temperatures. The main investigation target is to define the structure of circulation patterns over Poland in the years of the extreme thermal resources during the growing season and the active growth of plants period. For the extreme adopted those seasons in which the total effective sums were equal to or above the percentile 90%, or were not greater than specified by the 10% percentile. The research was based on the daily data from years 1951-2006 from ten stations of the Institute of Meteorology and Water Management, situated at less than 300 m a.s.l., and on the calendar of circulation patterns in Poland developed by T. Lityński. There were also used spatially averaged data series. The range of changes and long-term trends and fluctuations of thermal resources were established. The smallest sums of effective temperatures in the growing season occurred in different regions of Poland and during different periods while extremely high ones appeared in the most parts of our country and were concentrated in the turn of 20th and 21st centuries. The results show a significant increase in thermal resources and the spatial differentiation of this process rate in the area of Poland. The significance evaluation of differences between the frequency of particular circulation types in the years of the anomalous small/high accumulated effective temperature and in all the years of the investigated period was done. The significant importance of the atmospheric circulation in forming the extreme thermal resources in the vegetative period in Poland was indicated.