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Thermal seasons in Poland – the present and the future, based on HadRM3-PRECIS results

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The geographical location and surface features are the two most important factors determining the climate of Poland. The transitional, maritime-continental nature of the Polish climate causes relatively large day-to-day and year-to-year variability in the weather patterns. Nevertheless, each year six thermal seasons can be distinguished, defined according to mean temperature.

Typically, thermal spring arrives slowly in April, bringing mainly sunny days after a period of alternating winter-like and spring-like conditions in thermal early spring. Thermal summer, lasting from June to August, brings highest precipitation. However, during summer, showers alternate with dry sunny weather if southern winds prevail. Thermal autumn is generally sunny and warm before a period of rainy, colder weather in November which marks transition into winter (thermal early winter). Thermal winter, which may last one to three months, brings snowstorms but relatively low total precipitation.

The projections of climate change for Poland foresee overall growth in temperature in coming years, with precipitation decrease in summer (this finding is model-dependent) and increase in winter. This influences distribution and characteristics of thermal seasons. In this study, daily temperature and precipitation data from the Hadley Centre HadRM3-PRECIS regional model simulations (for SRES A2 scenario in three model experiments) in Poland were used to study thermal seasons in the periods of 1961-1990 and 2071-2100. Such characteristics of thermal seasons, as season duration or date of onset were analyzed. Changes in the mean monthly temperature and precipitation were also analyzed using statistical tests.