

Shifts of seasons at the European mid latitudes: Relations to the North Atlantic Oscillations and impacts on the occurrence of extreme temperature events

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Long-term daily near-surface air temperature series from several European locations are processed in order to obtain reliable estimates of instantaneous phases of the annual cycle as an objective measure of timing of seasons. The recent changes of the latter do not depart from the range of natural phase fluctuations observed in the historical temperature records. Significant, geographically dependent correlations of the phase fluctuations with the North Atlantic Oscillation index have been observed. The effects of the phase fluctuations on the variability of extreme temperature events (e.g. heat and cold waves, frosts in spring) are demonstrated. The study is supported by the Czech Science Foundation under project no. 205/06/1535.