

Declining impacts of hot spells on mortality in the Czech Republic, 1986-2009: adaptation to climate change?

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The study examines temporal changes in mortality associated with spells of large positive temperature anomalies (hot spells) in the population of the Czech Republic (central Europe) over 1986-2009. Declining trends in the mortality impacts are found in summer as well as in spring and autumn, in spite of rising temperature trends. The findings remain unchanged if possible confounding effects of within-season acclimatization to heat and the mortality displacement effect are taken into account, and they are similar for all-cause mortality and mortality due to cardiovascular diseases. Recent positive socio-economic development, following the collapse of communism in central and eastern Europe in 1989, and better public awareness of heat-related risks are likely the primary causes of the declining vulnerability. The results suggest that climate change may have relatively little influence on heat-related deaths, since changes in other factors that affect vulnerability of the population are dominant instead of temperature trends. It is essential to better understand the observed non-stationarity of the temperature-mortality relationship and the role of adaptation and its limits, both physiological and technological, and to address associated uncertainties in studies dealing with climate change projections of temperature-related mortality.