



Spatial patterns of links between temperature extremes and cardiovascular mortality and morbidity in the Czech Republic

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Both high and low temperature extremes are associated with significant effects on human health in the mid-latitudes, including Central Europe. The present study resumes previous research that examined differences in the impacts of temperature extremes between an urban and a rural region of the Czech Republic, by evaluating in detail spatial patterns of the effects of high and low temperature extremes on cardiovascular mortality and morbidity (hospital admissions). We make use of long-term data covering the 1994–2009 period, and examine effects on main groups of cardiovascular diseases (ischaemic heart diseases, cerebrovascular diseases). Using the Census 2001 databases, regions with urban and rural population and high and low socioeconomic status are identified, and differences in impacts of heat- and cold- stress on populations living in industrial and predominantly agricultural regions are examined. We apply Poisson regression and Generalized Additive Models (GAMs) to model relationships between air temperature, biometeorological indices (apparent temperature, physiologically equivalent temperature) and mortality, adjusted for environmental and socioeconomic confounders and/or modifiers. The results may help identify population most at risk and improve biometeorological warning systems as well as other measures preventing negative heat- and cold- stress effects on public health.