



Temporal changes in heat-related mortality in selected population groups examined through the years-of-life-lost approach

Jan Kyselý (1,2), Aleš Urban (1), Hana Hanzlíková (1,3), Eva Plavcová (1), Petr Štěpánek (2,4)

(1) Institute of Atmospheric Physics CAS, Prague, Czech Republic (kysely@ufa.cas.cz, urban@ufa.cas.cz), (2) Global Change Research Institute CAS, Brno, Czech Republic, (3) Institute of Geophysics CAS, Prague, Czech Republic, (4) Czech Hydrometeorological Institute, Brno, Czech Republic

The study resumes previous research that found significant effects of hot spells on increased mortality in both urban and rural populations of the Czech Republic, and declining trends in the mortality effects in spite of rising temperatures. The latest results revealed, however, an abatement of the declining trends in recent years, caused not only by the higher frequency and severity of extreme heat waves but also by population ageing. The aim of this study is to better identify the influence of the population ageing on temporal changes in the heat vulnerability. For this purpose we employed the years-of-life-lost (YLL) approach considering the life expectancy at the time of each death and allowing for investigating differences in the general health condition in different parts of the population. Using an updated gridded meteorological database, we identified heat waves occurring during 1994–2017, and analyzed temporal changes in their effects on YLL due to premature deaths. The temporal changes attributable to heat were analyzed for the population as a whole and for selected groups stratified according to age, gender, health disorders (all causes, cardiovascular diseases, respiratory diseases), place of residence (urban vs. rural regions), education, and other characteristics at an individual level. Results of this study are important for better understanding of the health-risks associated with climate change in different parts of the population, and for implementation of effective adaptation measures.