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Comparison of cold and heat related mortality in Vienna

Andreas Matzarakis (1), Lion Schöpfer (1), Ernest Rudel (2), and Elisabeth Koch (2)

(1) University of Freiburg, Freiburg, Germany (matzarak@uni-freiburg.de), (2) Central Institute of Meteorology and Geodynamics, Vienna

The relationship between heat/cold stress and mortality in the federal state of Vienna (Austria) was analyzed from 1970 to 2007. Long-term trends of mortality data and short-term adaptation to heat stress were considered by two complex approaches. The evaluation is based on the human biometeorological parameter, physiologically equivalent temperature. The data were analyzed in terms of daily resolution of the meteorological and mortality data for single and consecutive days for mean expected mortality. The effects were analyzed I terms of thermal comfort and strain classes and percentiles (5 and 95). There is a clear mortality increase for the extreme classes and frequencies. The shape (J, U, L) of this effect is depending on the time delay in days. For cold related mortality is the quantification with percentiles better than with thermal perception classes and more relevant with thermal indices than air temperature. The heat related mortality is the differences and effects lower and not so clear.
Heat has a faster effect than cold but with higher intensity and stronger decrease. For heat significance has been found up to sixth day. For cold three time intervals have been found to be significant between day 3 to 7, 9 and 10 and 13 and 14. In addition, for consecutive days, it has been found for heat a delay of two days and for cold a delay for the first 12 days. It was also found that the first heat wave in the year is more effective than the last one. The intensity of heat waves in more important up to the seventh day. For cold waves is the time effect about 25 days.
The results revealed a significant impact of heat stress on the human health, with a significantly higher sensitivity on women compared to men. Additionally, higher risks of deaths due to cardi-ovascular and respiratory diseases were found. During the long period of 38 years, some significant decreases of the sensitivity were found, especially in the medium heat stress levels. This could indicate active processes of long-term adaptation to the increasing heat stress.