

Heat related mortality in Croatia – the criteria for the forecast

K. Zaninovic (1) and A. Matzarakis (2)

(1) Meteorological and Hydrological Service of Croatia, Zagreb, Croatia (zaninovic@cirus.dhz.hr), (2) Meteorological Institute, University of Freiburg, Freiburg, Germany

Heat waves adversely affect human health, and early warning can reduce the risk and protect the population. The aim of this paper is to determine the criteria for heat loads which are associated with an increase in mortality. Four locations have been selected with the intention to investigate the impact of heat waves in different climatic regions of Croatia: continental climate of lowland Croatia (Osijek), continental climate with mild maritime influence (Zagreb), climate of the northern (Rijeka) and middle Adriatic (Split). The relationship between heat stress and mortality was analyzed for the period 1983-2008.

The human biometeorological evaluation of thermal environment is based on physiologically equivalent temperature PET in the warmest part of a day at 2 p.m. The relations between mortality and meteorological parameters on the same day and between accumulated three- and five-day mortality deviations and three- and five-day mean PET values at 2 p.m. for the previous three or five days were analyzed. That could clarify how the prolonged heat stress affects the increase in mortality. The results confirm the hypothesis of the adaptation of inhabitants to the local climate. The lowest mortality rate occurs for PET between 25.5°C and 31.5°C. The heat cut points for increased mortality vary between 36°C at the coast to 38°C in the continental part. The differences appear due to the refreshing influence of the sea during the day. Percentiles of temperature threshold for increased mortality range between 91-95%. The assumption is that the same relationship (93%) can be used for estimation of heat cut points for other locations.