EMS Annual Meeting Abstracts
Vol. 15, EMS2018-670, 2018

Increased mortality during heat waves – not only an issue of large towns.

Dariusz Graczyk, Adam Choryński, and Iwona Pińskwar

Institute for Agricultural and Forest Environment of Polish Academy of Sciences, Department of Climate and Water Resources, Poznan, Poland (darekgraczyk@wp.pl)

Clear increase in the number of fatalities during heat waves in large towns is a subject of numerous researches around the world. There are few analyses that are dealing with the problem within small municipalities and rural areas. The urbanisation factor for Poland is about 61%, but 10 largest towns is inhabited with less than 20% of the country's population. The perception of extremely high air temperature periods by the decision-makers on the local level, especially in smaller towns and rural communes, comes down to almost exclusively to the problem of droughts and losses in agriculture, while omitting the issue of health risk. The research concerning two regions of Poland inhabited together with 7 million people are indicating that during the longest and most intense heat waves increased mortality also exists in smaller municipalities and rural areas. In the scale of the whole country there are two similar like in other regions of Europe, two disadvantageous phenomena: ageing population and increasing of frequency and duration of heat waves. Five longest and most intense heat waves that have occurred in Poland within the years 1990 – 2015 (1992, 1994, 2006, 2010, 2015) have been analysed. The researched waves were of different characteristics. A long lasting heat wave, which rarely exceeds the threshold of 35 has been confronted with shorter, but consisting of several sub waves of warm periods from years 1994 and 2015, when days with daily air temperature exceeding 35 occurred often. The increase in mortality has been analysed for towns of different population. Largest towns in the researched regions, with more than 500 thousands of inhabitants, towns with population between 25 and 150 thousands, municipalities with 10 to 25 thousands of population and towns below 10 thousands inhabitants including villages. Apart the complete number of fatalities in population, the subject of the research was mortality in the most vulnerable categories to heat waves: people aged 65 and more, those suffering of cardiovascular diseases. The results are presented for two time periods. The first covers periods of increased mortality during heat waves, the second includes period between the first day of a heat wave up to the 30th day after the heat wave ended. In authors opinion, the second, longer period shows the actual, more uninfluenced result of mortality increase related to a heat wave, eliminating the effects of shifted mortality, like lag or harvesting effect. For the selected heat waves with the highest increase in mortality, atmospheric conditions have been presented (maximum and minimum daily air temperatures) and indicators referring to their relation with air humidity.