EMS Annual Meeting Abstracts
Vol. 15, EMS2018-693, 2018

Quantification and assessment of heat waves in Novi Sad, Northern Serbia

Biljana Basarin (1), Tin Lukic (1), and Andreas Matzarakis (2)

(1) University of Novi Sad , Faculty of Science, Department of Geography, tourism and hotel management, Serbia (biljana.basarin@gmail.com), (2) Research Center Human Biometeorology, Deutscher Wetterdienst, Freiburg, Germany

Physiologically equivalent temperature (PET) has been applied to the analysis of heat waves and human thermal conditions in Novi Sad, Serbia. A series of daily minimum and maximum air temperature, relative humidity, wind, and cloud cover was used to calculate PET for the investigated period 1949–2016. The heat wave analysis was carried out on days with PET values exceeding defined thresholds. Trend analysis has revealed the presence of increasing trend in summer PET anomalies, number of days above defined threshold, number of heat waves, and average duration of heat waves per year since 1981. The highest number of heat waves during summer was registered in the last two decades, but also in the first decade of the investigated period. Using the hourly values of PET for years with the most intense heat waves, 2007, 2012 and 2015, it was possible to obtain the highest PET values during the day and analyze the diurnal PET range. The intensity of the events is shown by the extremely high values of PET that indicate dangerous levels of thermal stress on people Also, synoptic situation during those intensive heat waves was investigated in order to find a dynamic pattern of air mass circulation.The pattern that were found could be used for mitigation strategies. These strategies are of vital importance and are needed for developing plans and actions for the protection of human life especially in urban areas. In addition, further analyses, based on daily data from regional models, are required in order to describe future climate conditions and provide information about extreme events.