



Heat wave risks in Romanian urban areas

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Heat wave frequency, intensity and persistence are changing under climate change conditions and so are the related vulnerabilities and associated risks. Urban areas have additional thermal stress due to effects of urban heat island (UHI) on large populations living in a human-transformed space. On the other hand, temperature is a climate variable which is relatively well predicted and climate services and products focusing on thermal extremes could have socio-economic value. Arad is in the top ten towns in Romania with largest contribution to gross domestic product (GDP) with a population of around 150000 inhabitants. The goal of our study is to use climate and socio-economic data to assess heat wave risks under urban heat island (UHI) conditions for Arad and to contribute to shaping a dedicated a climate service associated with these risks. We build hazard and impact maps for heat waves in Arad using in situ data from the meteorological station (1973-2012), daytime and nighttime land surface temperature (LST) from Aqua MODIS products (2002-2010), estimations of population density (2012) and number of paramedic interventions in Arad districts (2009-2012). Based on risk maps and seasonal temperature predictions we assess the costs/benefits ratio of using climate information regarding heat waves in urban health sector. The case study of Arad is used to develop a methodology for a climate service related to heat waves in Romanian urban areas.