EMS Annual Meeting Abstracts
Vol. 15, EMS2018-563-1, 2018

Urban climate of Zagreb (Croatia) – its characteristics and changes (Tromp Foundation Travel Award)

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According to IPCC climate projections, southern Europe, and therefore Croatia as well, is found to be one of the climate „hot spots“ regarding global warming. Urban areas are especially vulnerable because local climate is influenced with climate variability and change, but is also substantially affected with urbanization and related changes in land cover. Zagreb is a mid-sized european city located along the Sava river, at the southern slopes of the Medvednica mountain, which makes climate of the city diversified. In accordance with global warming, temperature trend in Zagreb is positive. Decrease in number of cold days together with increase in number of warm days and warm nights are also found. To encompass local differences, characteristics and changes of urban climate of Zagreb will be analysed using meteorological measurements at several types of stations (urban, sub-urban, airport and mountain station) which are part of Meteorological and Hydrological Service of Croatia network. Temporal changes, as well as seasonal and diurnal characteristics of different meteorological parameters, such as air temperature, relative humidity and wind speed and direction, will be explored. Also, changes in number of days with temperature above or below certain threshold will be analysed, as well as number of days with fog. Due to the thermal difference between Medvednica mountain and city, local up- and down-slope circulation develops. Effect of local circulation on the air temperature and vice-versa will be examined. Rapid urbanization and climate change also affect human health and wellbeing. Therefore, the impact of urban environment on residents will be estimated by analysing thermal comfort. For this purpose, physiologically equivalent temperature will be determined using RayMan model for summer and winter seasons.