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# Water as a coolant of the city

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Rapid urbanization during the last century showed the necessity for understanding urban climate. Since already half of the world population lives in cities – and this number is predicted to increase in coming years and decades – making big urban areas comfortable places gains interest of the general public and policy makers, as well as scientists. It is well known fact that urban climate differs significantly from the climate of rural areas. This is caused by several factors such as lack of evaporation, anthropogenic heat, specific geometry of street canyons, etc. Magnitude of the effect of each of these factors is a widely discussed topic throughout the literature. One of the most important factors is a lack of evaporation and consequent change in the energy balance compared to rural areas. This research aims to reveal the effect of water in the city on the temperature and comfort of inhabitants. We hypothesize that water works as a cooling liquid of cities and the lack of it is the main reason for formation of so called urban heat island. We focus on two major ways water can be stored in cities; in a form of open water areas, and in plants and green areas in general. Open water buffers the temperature extremes in its surroundings, but also has a warming effect at night due to its higher heat capacity compared to buildings and pavements. Trees are then providing shading and transpirate significant amount of water. On the other hand, shading effect alone, as provided by for example mash, can increase the temperature in the area simply because it prevents ventilation. Human comfort is however not determined only by temperature; for example higher air humidity is known to lower comfort of inhabitants and therefore mitigate the cooling effect of evaporation. Understanding properly the different effects of urban climate, and the particular aspects that can influence it, is important for optimal urban design that provides pleasant living environment.