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Investigation of diurnal/nocturnal and seasonal effect of blue and green features on thermal exposure in Czech cities

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Increasing intensity, frequency, and duration of hot extremes has been one of the most pronounced aspects of climate change in Central Europe. At the same time cities and towns, where the majority of the population live, are affected by added urban heat load. Such circumstances require effective adaptation of the municipalities to heat extremes. On that account, the influence of blue and green features and various surfaces on thermal exposure, represented by MRT and physiological indices of Universal Thermal Climate Index (UTCI) and Physiological Equivalent Temperature (PET), has been investigated over a period of five years in a set of short-term measurement campaigns in several Czech cities. The results showed that trees in open public areas of Czech cities lead to a substantial decrease of thermal exposure during the daytime whereas it might slightly increase on-site thermal exposure during the night. Maintained turfs in open areas characteristically reduce thermal exposure only slightly, depending on grass height and density and soil properties. Similarly, the cooling or warming effect of blue elements differs with their character. The effect of fountains and misting systems in open areas of thermal exposure is usually hardly detectable; however, ground-based fountains moisturising the pavement seem efficient. Further results from a recently launched measurement winter season campaign are expected soon.