



Urban Heat Island phenomenon in extreme continental climate (Astana, Kazakhstan)

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Urban Heat Island (UHI) phenomenon is well known in scientific literature since first half of the 19th century [1]. By now a wide number of world capitals is described from climatological point of view, especially in mid-latitudes. In beginning of XXI century new studies focus on heat island of tropical cities.

However dynamics UHI in extreme continental climates is insufficiently investigated, due to the fact that there isn't large cities in Europe and Northern America within that climate type.

In this paper we investigate seasonal and diurnal dynamics UHI intensity for Astana, capital city of Kazakhstan (population larger than 835 000 within the city) including UHI intensity changes on different time scales. Now (since 1998) Astana is the second coldest capital city in the world after Ulaanbaatar, Mongolia [3]

For this study we use the UHI investigation technology, described in [2]. According to this paper, we selected three stations: one located into city in high and midrise buildings area (including extensive lowrise and high-energy industrial - LCZ classification) and two others located in rural site (sparsely built or open-set and lightweight lowrise according LCZ classification). Also these stations must be close by distance (less than 100 km) and altitude.

Therefore, first for Astana city were obtained numerical evaluations for UHI climate dynamics, UHI dependence of synoptic situations and total UHI climatology on monthly and daily averages.

References:

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