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ГОРОДСКОЙ ОСТРОВ ТЕПЛА

URBAN HEAT ISLAND

АННОТАЦИЯ: Целью данной статьи является изучение проблемы изменения климата под влиянием Городского Острова Тепла. Большое внимание уделяется проблемам его образования в связи с ростом человеческой активности. В статье также рассмотрены возможные пути решения данной проблемы.

ABSTRACT: The purpose of this paper is to research the problem of Earth's climate change under the influence of the Urban Heat Island. Much attention is given to the formation of the Urban Heat Island associated with increasing human activity. Possible solutions to this problem are discussed in the paper.

КЛЮЧЕВЫЕ СЛОВА: Городской Остров Тепла, глобальное потепление, изменение климата, человеческая активность.

KEY WORDS: Urban Heat Island, global warming, climate change, human activity.

Urban Heat Island is an urban area where the surface, sub-surface or air temperatures are higher than the corresponding temperatures in surrounding rural areas. Urban Heat Island intensity is defined as the difference between the highest air temperatures recorded in the urban canopy and the lowest recorded in the surrounding rural areas.

This paper is to provide an overview of the Urban Heat Island. Firstly, we introduce profile of the concept, and explain methods to assess urban heat island intensity. Secondly, we also want to make clear that Urban Heat Island and Global Warming are interconnected.

Fig.1. Profile of the Concept

Urban Heat Island – is a city or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities.

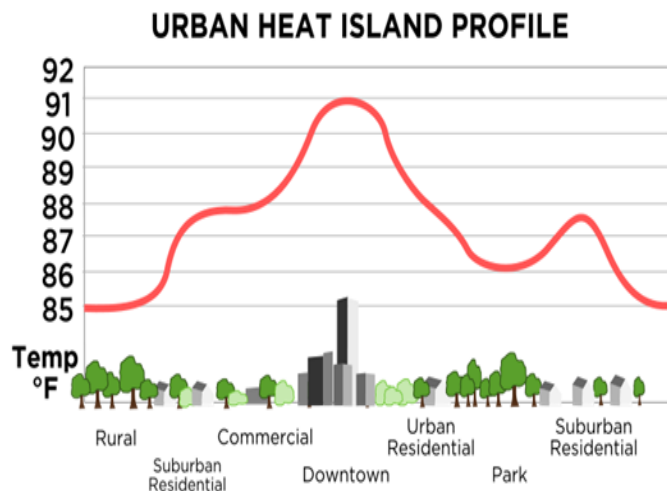
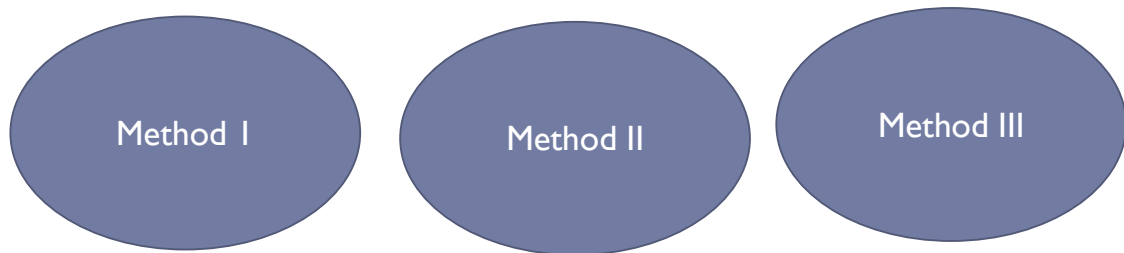


Figure 1 depicts the definition that is applied in many different ways in different case-studies, due to differences in methods used in the collection of the data and/or differences in the selected thermal parameter. Methods are used to assess the urban heat island intensity; they may differ from each other.

Fig.2. Methods to assess UHI Intensity



Three methods in Fig.2 are described then.

The first Method is comparing data from different “urban” and “rural” meteorological stations (or groups of stations).

The second Method is comparing the data produced by meteorological stations with the data resulting from the reanalysis carried out by the National Center for Environmental Prediction–National Center for Atmospheric Research (USA).

The third Method is using of indirect criteria by other authors (Parker, 2004 and Oke, 1987).

Perhaps due to differences in the used methods, the research can partly lead to different conclusions. However, there are no questions about the impact of urban heat island on global warming.

The increase in temperature of cities does not have a direct impact upon global warming as urban areas cover less than 1% of the world’s land surface and the impact on global climate is negligible. Furthermore, the energy released by human activities is only 0,1-0,25 that received on the Earth from the Sun.

However, cities are the most important source of greenhouse gases. They are also a major source of airborne particulate material. As a result, increasing concentration of pollutants in the atmosphere has a negative impact on the climate as a whole and an indirect impact on global warming.

Due to the wide variety of methods to assess urban heat island intensity the results of various studies cannot be easily compared.

Despite this, our research shows that very simple actions can lead to very significant positive results. One of the reasons why cities became much hotter is that they have dry microclimate. Cities have the lack of moist green spaces and have a huge waterproof surface, have a drainage system that quickly removes moisture. In this way, all solar energy goes into heating the atmosphere instead of to evaporate the water, creating cool. Therefore, one way to reduce the intensity of the urban heat island is landing of trees and shrubs in the cities and ensuring them water, which will not only make the city more beautiful, but also greatly cool the surrounding area.

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