

## Jersey City, NJ and the Urban Heat Island Effect (UHI)

Date: 2/9/2021

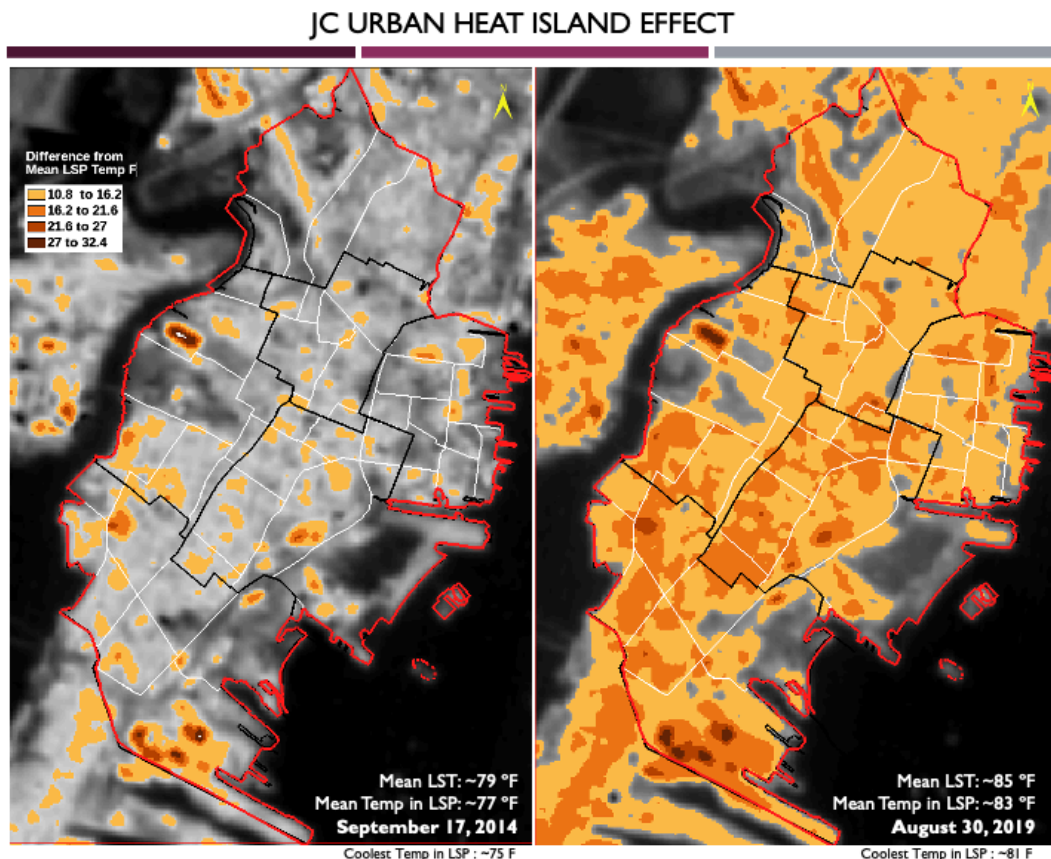
Prepared by: Rosy George / Sustainable JC, GIS Specialist

### What is the UHI effect and why is it important:

The UHI effect describes the phenomenon where urbanized areas experience significantly warmer temperatures (i.e. higher day time temperatures and less nighttime cooling) compared to surrounding less urbanized/rural areas. This effect is caused mainly due to modifications in land cover, typically an increase in built-up cover/ impervious surfaces and loss of tree cover, as a result of urban development.

While direct heat-related health impacts are among the most immediate concerns, the UHI effect also contributes to higher energy consumption and deteriorating air and water quality. However, the distribution of this risk is uneven as studies have shown that not everyone exposed to the same extreme heat conditions is affected similarly: vulnerable populations (elderly, mobility-impaired, low-income) are often disproportionately impacted.

Understanding what specific factors contribute to the UHI effect is important for planning mitigating strategies. To this effect, the UHI research study **1) identifies the spatial distribution of heat islands across Jersey City** and **2) tries to determine its correlation to land cover changes and urban morphology of the city.**





## **Jersey City, NJ and the Urban Heat Island Effect (UHI)**

Date: 2/9/2021

Prepared by: Rosy George / Sustainable JC, GIS Specialist

The results of the analysis done using Landsat8 OLI and TIRS sensor data (NASA/USGS) indicate that the mean land surface temperature across Jersey City increased by ~ 6.3°F (~3.5°C) during the study period between 2014 and 2019. The data shows that while specific areas in the Greenville Yards and Marion neighborhoods are hotspots for the UHI effect, the UHI has grown to impact neighborhoods across the city. Some areas show an increase in land surface temperatures ranging between ~ 16°F to 21°F compared to the mean land surface temperature in Liberty State Park during the study period. Greenville and Bergen Lafayette appear to be most impacted neighborhoods.

Tree cover appears to have a mitigating effect on the UHI, and the type of built cover appears to impact the severity of the UHI effect.