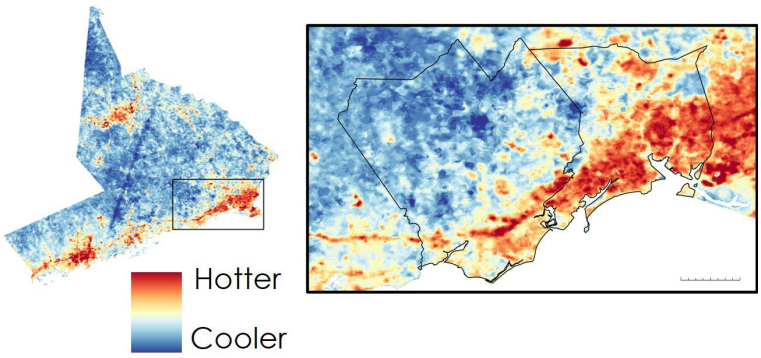
National Aeronautics and Space Administration

DEVELOP

Bridgeport Urban Development

Leveraging NASA Earth Observations and Sociodemographic Data to Assess Urban Heat Vulnerability and Inform Cool Corridors in Bridgeport, Connecticut

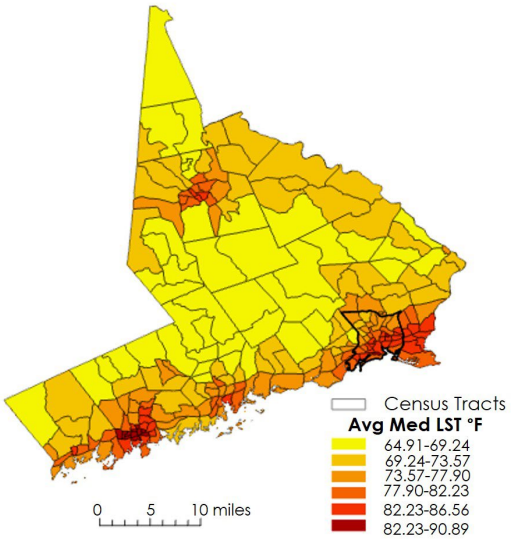
Urban areas typically experience higher levels of heat due to higher presence of impervious surfaces and less vegetation. Bridgeport, CT is a city with a long industrial history and is surrounded by affluent suburbs with more greenspace access. Bridgeport residents are exposed to extreme heat at a higher rate, prompting our partner Groundwork Bridgeport to place cooling interventions where they are needed most. This project utilized NASA Earth Observations to capture the median temperature of Fairfield County from 2013-2023 for June-September.



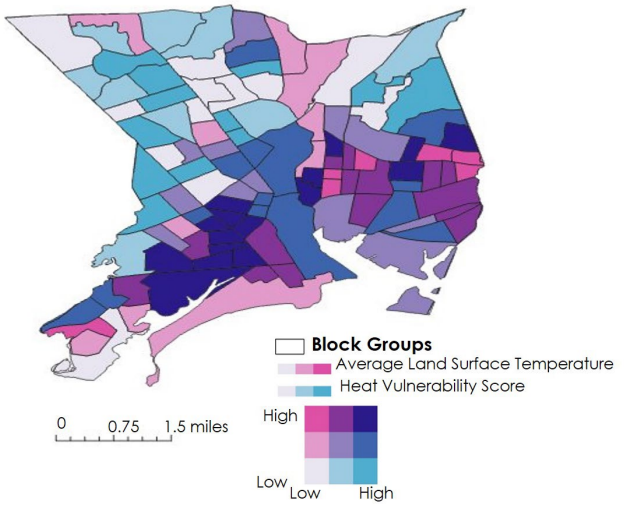
URBAN HEAT HARMS

- Extreme heat can cause health issues like respiratory challenges and heat-related illnesses.
- Hotter temperatures lead to more energy use, causing more money spent on energy and stressing power grids.
- We found that the city of Bridgeport is up to 10.4°F hotter than Fairfield.

Average Median Land Surface Temperature per Census Tract for Fairfield County



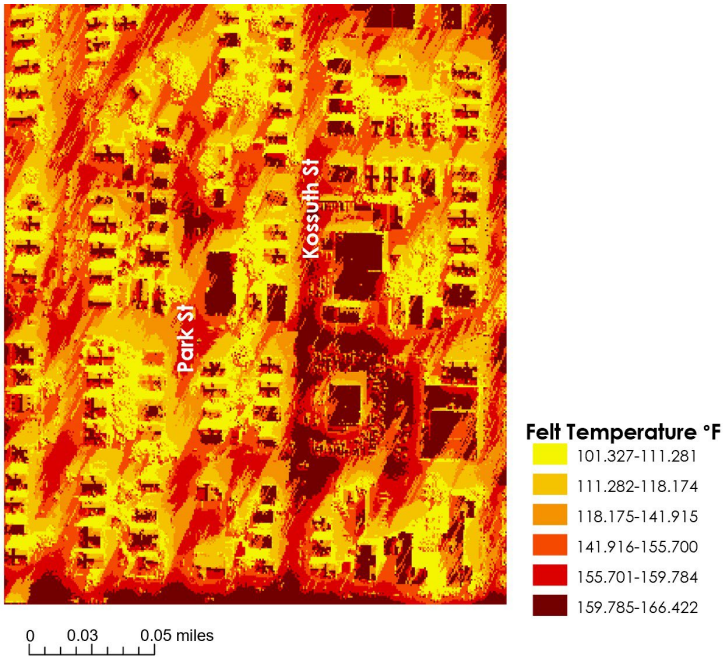
Heat Vulnerability and Land Surface Temperature



The team analyzed sociodemographic data to identify where Bridgeport residents were most vulnerable to heat. We found that in the East End, Block groups 091200735001, 091200739003, and 091200739004 were in the upper third of where temperatures are the hottest and where residents may be most harmed by the extreme heat.

Project Findings

The maps of temperature and heat vulnerability in Bridgeport were used to identify the three most vulnerable areas in the East Side. Using Geographic Information Systems technology, the outdoor thermal comfort of these areas was modeled and visualized. One depiction is shown on the right. This model will allow Groundwork Bridgeport to understand how temperature is felt on the ground by showing the hottest sections of city blocks. This information will inform Groundwork Bridgeport as they identify the areas best suited for their cooling interventions. Groundwork Bridgeport is now in the planning phase where they will choose the cooling intervention best for each site (i.e. tree planting or shade structure). Soon, these interventions will help East Side residents stay cool!



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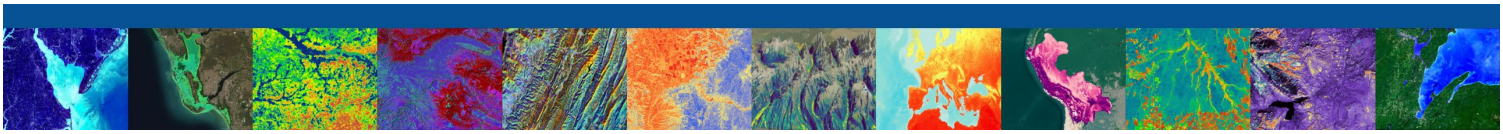

DEVELOP NATIONAL PROGRAM

Operating under NASA Earth Action, DEVELOP conducts feasibility studies that bridge the gap between Earth science information and society. DEVELOP works with communities and organizations to address environmental and policy concerns through 10-week projects that help both participants and partners learn more about using NASA Earth observations.

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NP-2024-04-033-LaRC

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