EXTREME HEAT RISK TEAM

Helping cities become resilient to future climate and health impacts.

The 4th National Climate Assessment projects that U.S. heat waves will become more frequent and more intense. For the 83% of Americans who live in cities, the experience of extreme heat can vary across neighborhoods by as much as 20°F.

Temperature differences between neighborhoods mean some are more vulnerable than others to premature deaths, economic damages, energy demand, emissions of criteria pollutants, and other heat-related impacts. The **Extreme Heat Risk Team**, the research component of the National Integrated Heat Health Information System (NIHHIS), partners with the National League of Cities, EPA, and the U.S. Forest Service, to empower communities to monitor, understand, and respond to their own local heat exposures.

Cities are adapting to increasingly hot climates and mitigating extreme heat, but they need more climate information to produce the most effective, efficient solutions tailored to their needs.

Cities are implementing green roofs, cool roofs and pavements, sunshades, tree planting programs, spray parks, and new codes, policies, and programs to incentivize heat-resilient development.

Volunteers Suzanne Simpson from Bayou Land Conservancy and Erin Valley Donato from the Houston Zoo collected heat data in August 2020 in the Houston area to help produce Urban Heat Island maps for the community. Credit: Bayou Land Conservancy and H3AT.org

Cities are implementing heat solutions like the green roof seen in this image, but they need more tools and resources to inform their decisions and identify optimal mitigation strategies. Credit: Arlington County, VA/available through a Creative Commons license

What can we do for cities?

Heat maps & data	Community engagement	Funding for research	Decision support services

NOAA and partners are running urban heat island field campaigns to measure and map urban heat in the summer. The Extreme Heat Risk Team wants to help cities even more, by turning them into Urban Climate Laboratories.

In an ideal future, cities would host dense observing systems for monitoring temperature, particulate matter, and other urban climate and health variables. These systems would feed a large, continuous stream of data to urban residents and governments, and support scientific studies to inform equitable and resilient policies to protect people from extreme heat and other urban climate hazards.

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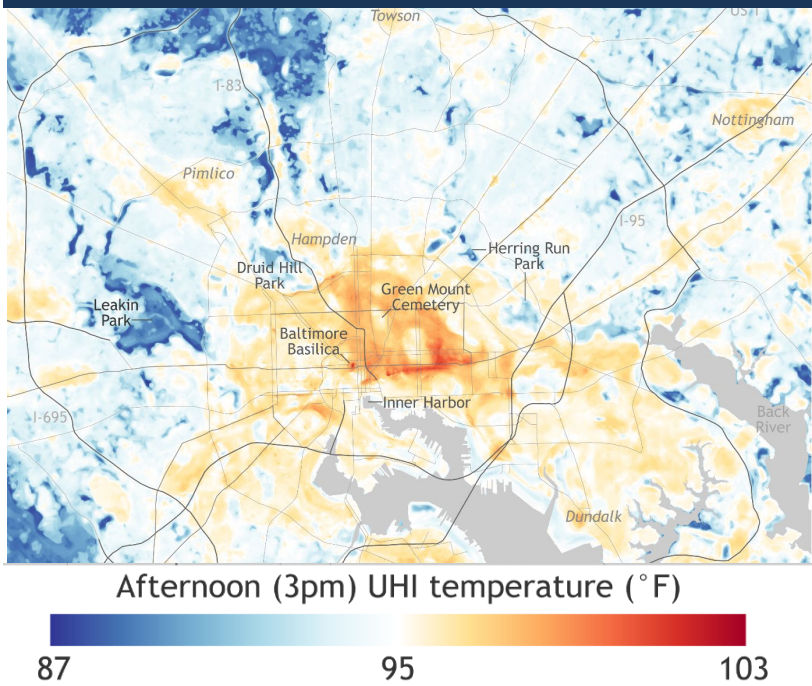
> *While the impacts of extreme heat to cities and their systems are becoming more widely recognized, urban planners, emergency managers, and public health officials currently have a very limited set of tools to inform their decision-making. A more robust and widespread set of climate tools for nighttime temperatures, outdoor thermal comfort, and projections for the likelihood and intensity of future heatwaves, paired with assistance in interpreting the information, would help cities better prioritize the actions they are taking to increase their heat resilience.*

— Ladd Keith, Assistant Professor in Planning, University of Arizona

Baltimore, MD | Urban Heat Island Effect | August 2018



This map shows the hottest and coolest places in Baltimore, Maryland from the city's urban heat island campaign on Aug. 29, 2018. Temperature data are colored in shades of blue (coolest half of the day's temperature range) to red (warmest half). Credit: NOAA climate.gov, Portland State SUPR Lab

EXTREME HEAT RISK:

20-30
More days per year with a maximum temperature over 90°F by mid-century under a higher emissions scenario (RCP 8.5)[1]

9,300
More deaths per year from extreme temperatures under a higher emissions scenario by the end of the century[1]

$160 billion
In lost wages by 2090 due to reduced labor hours from extreme temperatures under a higher emissions scenario[1]

~90%
Of the U.S. population expected to live in urban areas, which experience much greater temperatures than rural areas, by 2050[2]

1. NCA 2018; 2. http://css.umich.edu/factsheets/us-cities-factsheet

Volunteers from 2C Mississippi, Jackson State University, and the University of Mississippi Medical Center ready for their first morning drive to collect temperature data in Jackson, Mississippi during their August 2020 urban heat mapping campaign. Credit: Photo courtesy of 2C Mississippi

The Extreme Heat Risk Team's next step is exploring how municipalities can host cooperative community science urban climate laboratories.

The Extreme Heat Risk Team is planning a webinar series and workshop to take place in the fall of 2021 that will explore how cities are already applying urban heat island information. Also, the Team plans an in-person workshop the following spring to explore research questions and observational needs for supporting collaborative urban climate research. In the long term, the Team aspires to collaborate with scientists involved in the AEROMMA field campaign, set to take place in New York City in 2023, complementing NOAA's "big science" aircraft field campaign with on-the-ground mobile transects and monitoring.

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