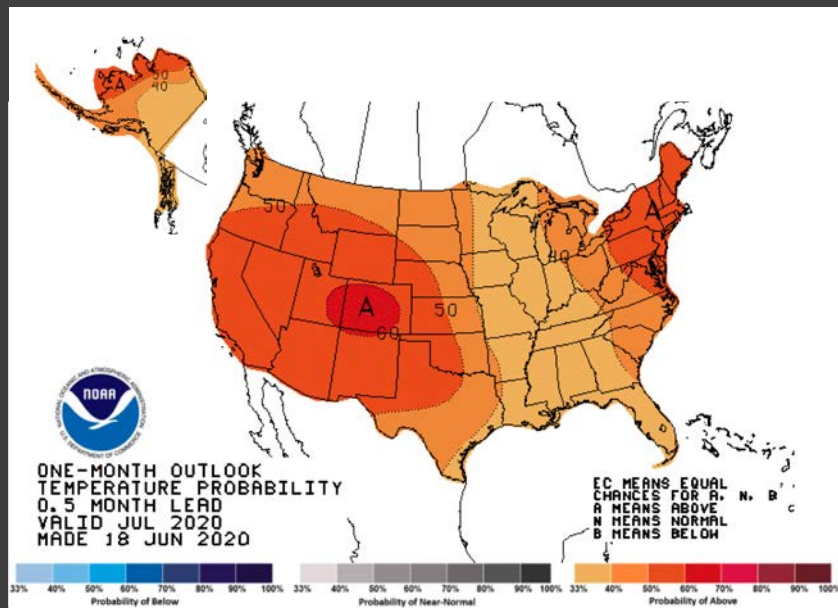
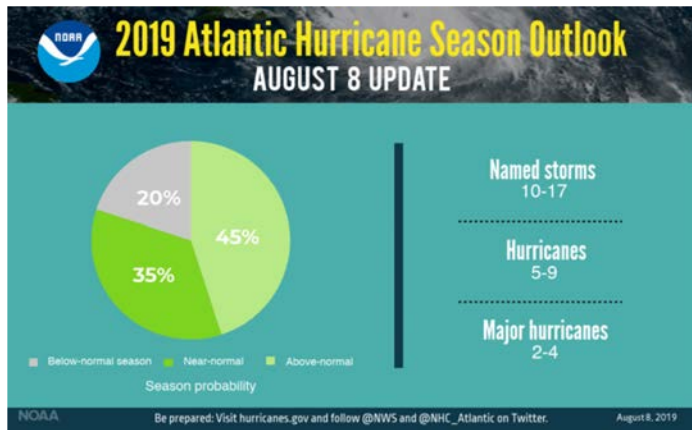


An aerial, high-angle photograph of a city street canyon. The image shows several tall, multi-story buildings with many windows, creating a dense urban environment. The streets are visible, with cars and traffic lights. The lighting is warm, suggesting late afternoon or early morning, with long shadows and a golden glow. The overall composition is a top-down view looking into the street.

NIHHIS-CAPA 2020 Urban Heat Island Mapping Campaigns

⚙ Hunter Jones – Climate and Health Project Manager, NOAA Climate Program Office (UCAR Affiliate)

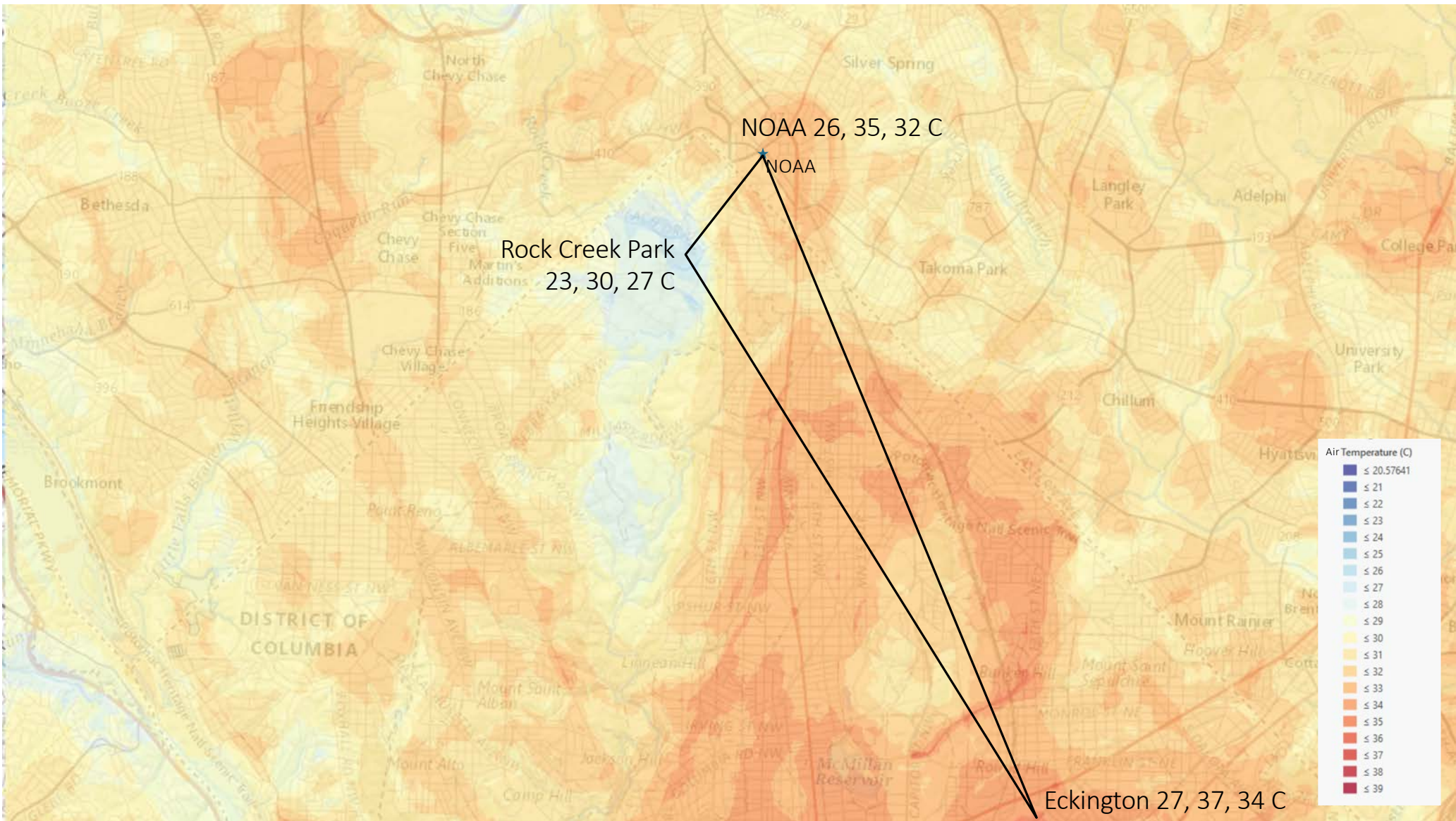
⚙ Juli Trtanj, Vivek Shandas, David Herring, Thea Kindschuh, Joey Williams, Tom DiLiberto



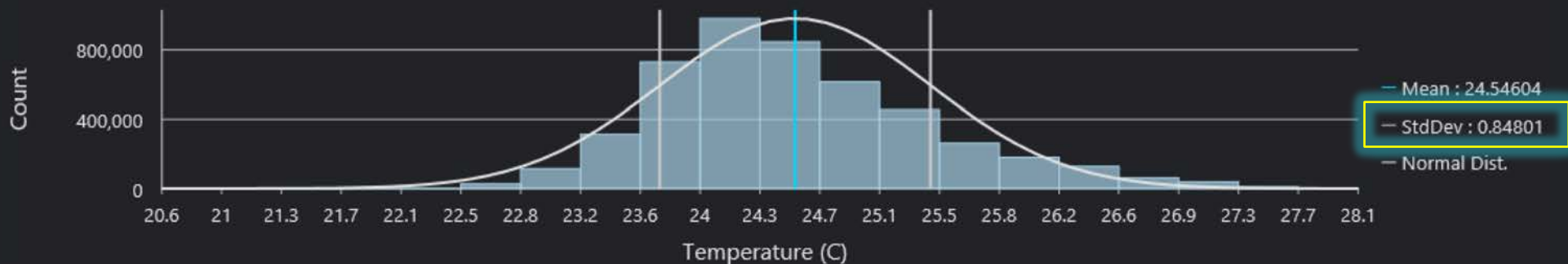
CHMO

An activity of the USGCRP

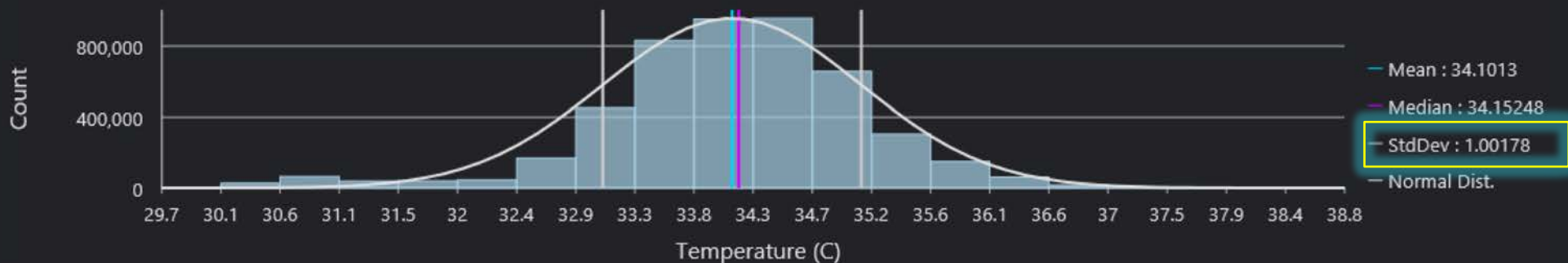
The Climate and Health Monitor and Outlook was created to consolidate, develop, and provide a suite of useful climate-based health-relevant information to decision makers on a seasonal-sub-seasonal (S2S) time scale with the intent that earlier actions can be taken to reduce overall climate-sensitive disease risks that have the potential to impact US persons at home and abroad.



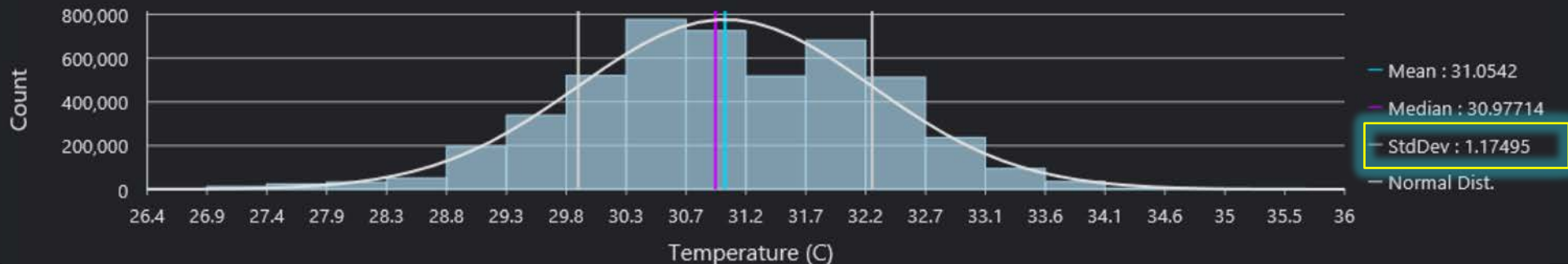
Distribution of Morning (6am) temperatures in DC



Distribution of Afternoon (1pm) temperatures in DC

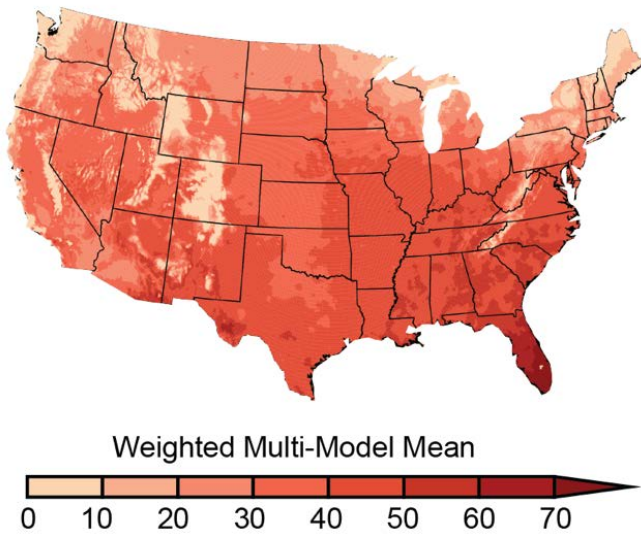


Distribution of Evening (7pm) temperatures in DC



It's hot. It's getting hotter. Extreme heat kills.

Projected Change in Number of Days Above 90°F
Mid 21st Century, Higher Scenario (RCP8.5)

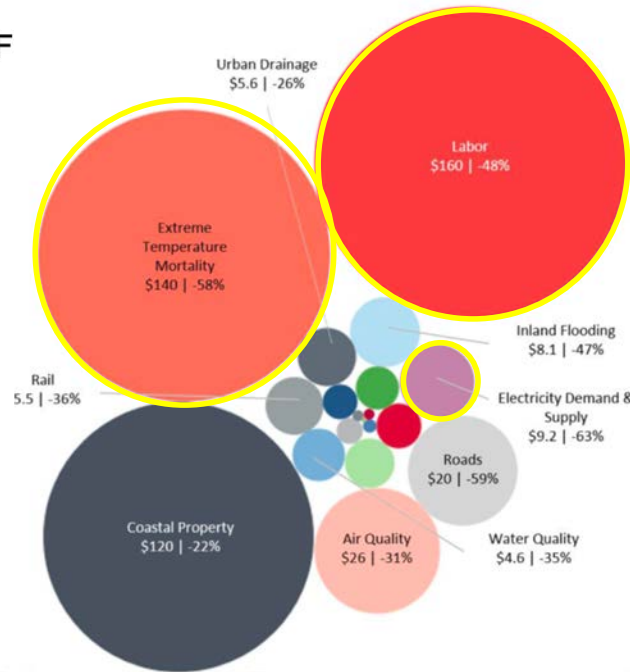


NCA4 CSSR

~20–30 more days per year with a maximum over 90°F (32°C) in most areas by mid-century under RCP8.5

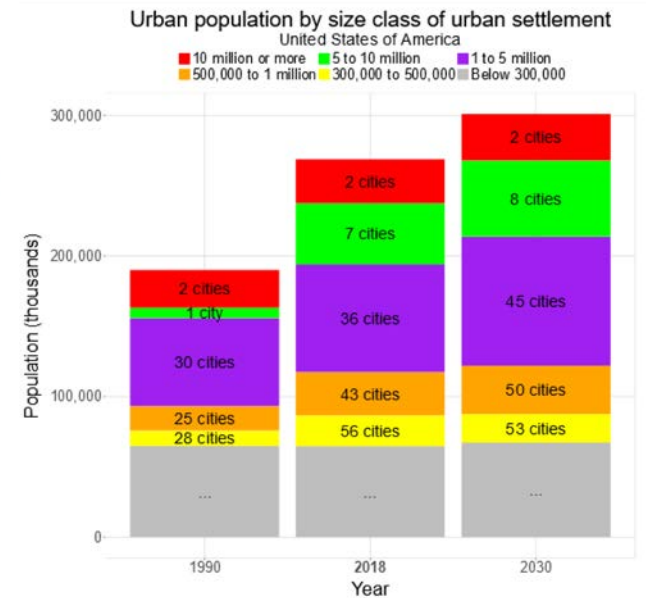


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EPA CIRA II

U.S net average increase of **9,300 premature deaths** per year under RCP8.5 by 2090 in 49 modeled cities. **\$140bn** annual in **economic damages**



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UNDP

by 2050 **68%** of people will live in **cities**, up from about 55% at present

The National Integrated Heat Health Information System (NIHHIS)

- NOAA and CDC launched the National Integrated Heat Health Information System (NIHHIS) in June of 2015 to address heat risk across timescales.
- NIHHIS quickly grew to include representation from several agencies (right) in an **interagency working group**. The group launched the [NIHHIS portal](#) and began harmonizing information and guidance.
- NIHHIS has also launched **local pilots** to understand local decision-making context and information needs, and to improve the transition of research to action.

Ongoing activities include:

- Prototyping new integrated climate-health products,
- ‘Decision calendar’ exercises to understand multi-disciplinary needs in the Northeast,
- National projects to spread awareness and create useful and usable data as Urban Heat Island campaigns.



FEMA



NIHHIS operates according to a common framework of core questions under the following thematic areas: capacity & partnership, heat-health parameters & outcomes, data and forecast products, communication, intervention effectiveness

NIHHIS will facilitate an integrated approach to providing a suite of decision support services to reduce heat related illness and death



NIHHS-Esri Extreme Heat Vulnerability Map Tool

Future Heat Events and Social Vulnerability | NOAA Future Heat Events | CDC's Social Vulnerability Index 2014



Heat Events Year Total days with temperatures over 95° Display

Estimates (2014) Population: 152,879,561 Daytime Population: 151,227,797 Housing Units: 63,427,009 Households: 55,328,605

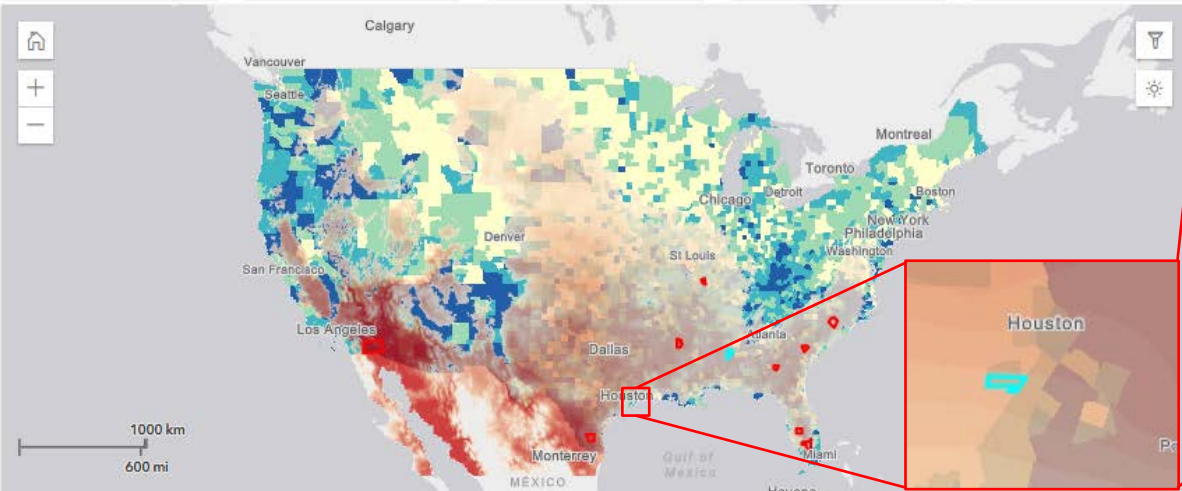
- Overall Score
- Socioeconomic Status
- Household Composition & Disability
- Minority Status & Language
- Housing & Transportation

Census Tract 4107.02, Harris County, Texas

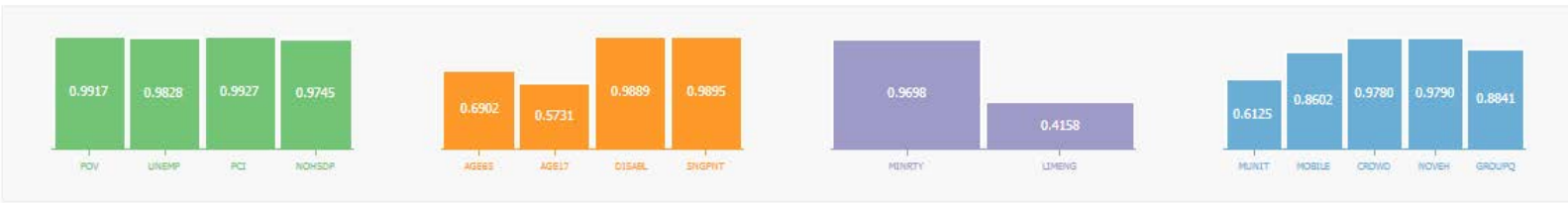
No heat events to compare during these years at this location

Population	2,737
Daytime Population	5,440
Housing Units	1,739
Households	1,541

Overall Vulnerability Score: 0.452



Esri, Garmin, FAO, NOAA, EPA | CDC/ATSDR/Division of Toxicology and Human Health Sciences/Geospatial Research, Analysis & Services Program | Powered by Esri



combines CDC Social Vulnerability Index with Heat Projections at census tract scale

Cities are need better information on urban heat in order to target actions.

The New York Times

New York City Triathlon Canceled This Year, but Will Still Be in July in 2020

The decision to cancel it came a day after Mayor de Blasio urged race directors not to hold the event on Sunday, when temperatures in the high 90s are expected.

By Danielle Allentuck

July 18, 2019




A wide-angle photograph showing a large group of triathletes swimming in the water during a triathlon. The water is choppy, and the city skyline is visible in the background under a hazy sky.

The Guardian

Re-greening: can Louisville plant its way out of a heat emergency?

Josh Wood · Last modified on Mon 3 Feb 2020 07:45 EST

The Kentucky city is the fastest-warming urban heat island in the US – and as its temperature has risen, its tree cover has plummeted




A photograph showing a city skyline across a river, with a bridge in the foreground. The foreground is filled with trees, some of which are bare, suggesting a lack of tree cover.

A 2015 study found that Louisville lost 54,000 trees a year between 2004 and 2012. Photograph: Roya Oshrieh/Alamy

CITYLAB

The Problem With 'Cool Pavements': They Make People Hot

A tool to help solve the problem of urban heat islands could have an unwelcome side effect, new research in L.A. finds.



A photograph showing workers in high-visibility vests and hard hats applying a substance (CoolSeal) to a street in Pacoima, Los Angeles. A white pickup truck is parked nearby.

Workers apply CoolSeal to a street in Pacoima in June. Los Angeles Bureau of Street Services



Trees and Vegetation



Green Roofs



Cool Roofs



Cool Pavements



Smart Growth



Weatherization



Green Building Programs and Policies



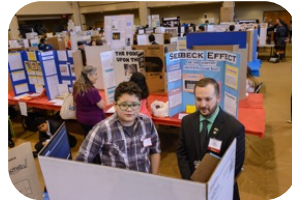
Sun Shades



Mobile Cooling Vans



Spray Parks



Communication and Education

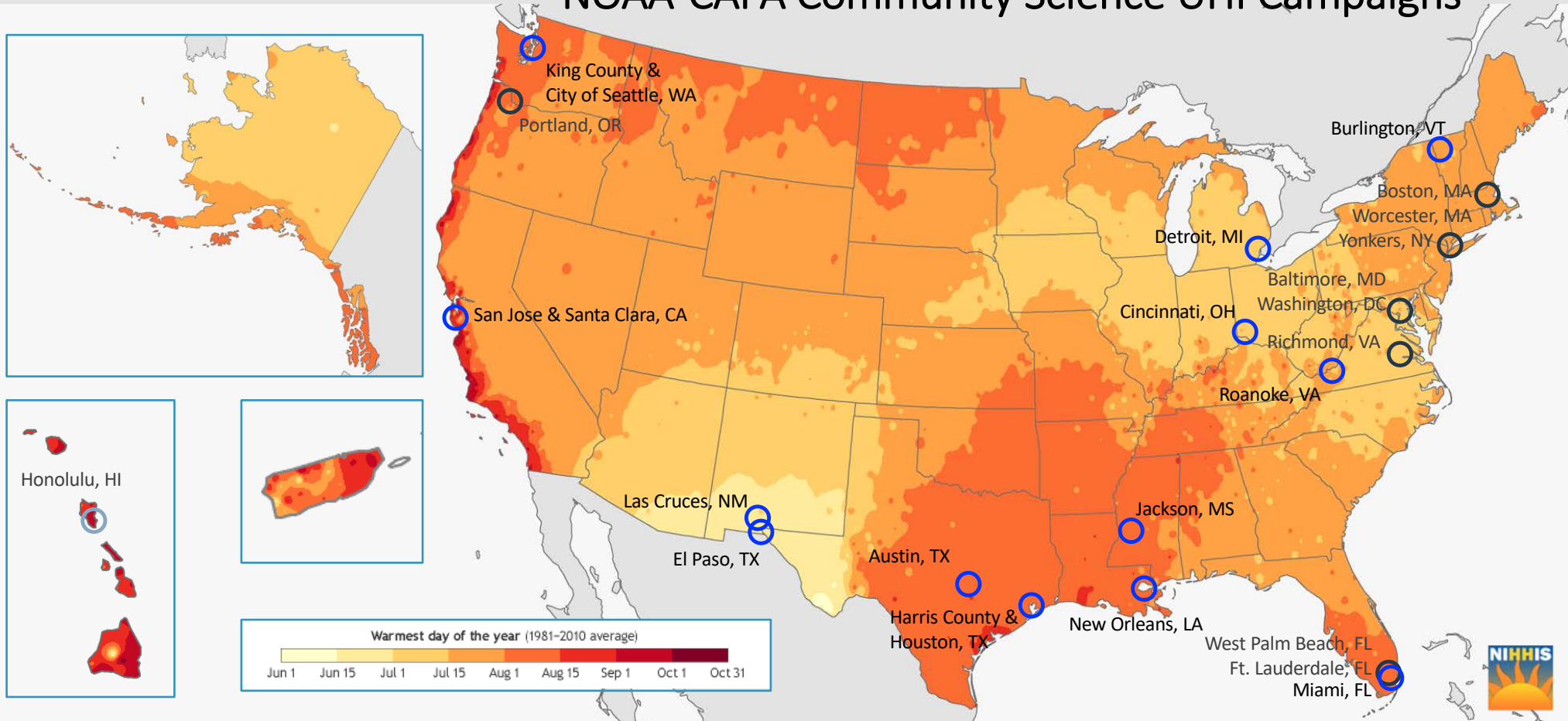


Energy Assistance Programs

Enabling Urban Solutions with Better Urban Heat Island Information

Many of the existing actions and interventions used to reduce the health impacts of extreme heat can be informed by detailed urban heat island information. They can be targeted to the hottest areas in the short-run, and cities can be better designed to prevent UHI's from developing in the long-run.

NOAA-CAPA Community Science UHI Campaigns



This map shows the locations of the previous Urban Heat Island mapping campaigns superimposed upon a map of the climatological (1981-2010) average hottest day of the year. Historical climate information as well as weather and climate predictions from NOAA are used to plan the campaigns in cities across the U.S.



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climate.gov



HEAT BEAT newsletter

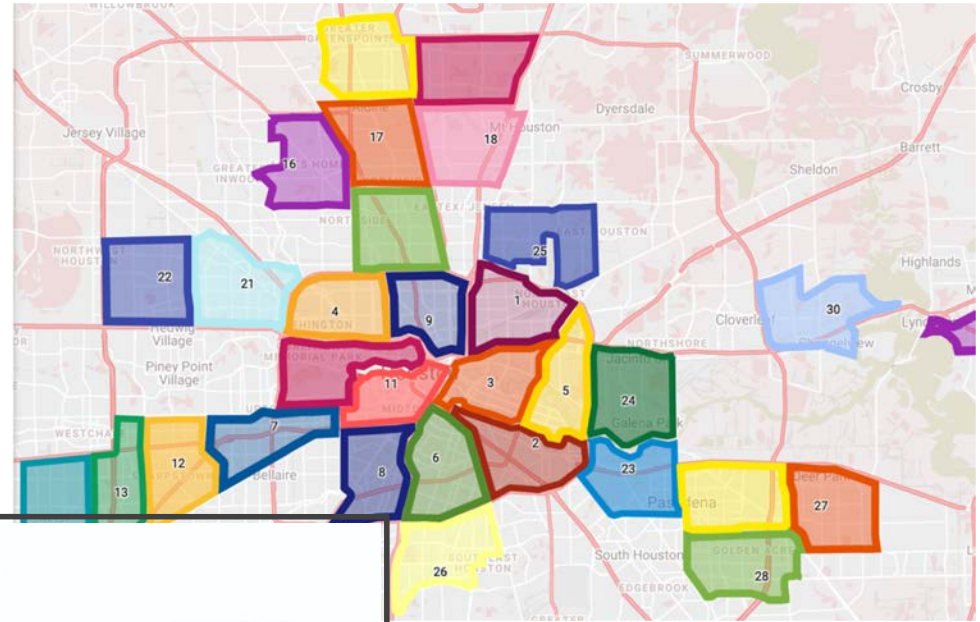
Timely information for people and communities who are working to address local concerns about heat health.

NOAA-funded 2020 Heat Campaign Cities Announced

Through a peer-review process, NOAA's Climate Program Office (CPO) selected thirteen community partners in cities across the U.S. to receive funding support to perform a community science urban

- Seattle, WA
- Miami, FL
- Detroit, MI
- Jackson, MS
- El Paso, TX
- Las Cruces, NM
- New Orleans, LA
- Cincinnati, OH
- Houston, TX
- Burlington, VT

2020 Campaigns



CAPA Heat Watch

Organizer Timeline



Urban Heat Island Data Table Mock-up

Needs to report for each city

	D1	D2	D3	D4	D5	D6	D7
Expected Temp	78	84	90	92	94	88	80
Daytime PoP	30	20	15	10	5	60	25
Avg. Sky Cover	55	50	40	20	45	80	60
90°F HIGH	0	8	55	65	85	35	0
95°F HIGH	0	0	10	25	40	0	0
100°F HIGH	0	0	0	0	5	0	0

Can we add return interval or avg. per year for each city for context?

NDFD source
wpc source
Chiclet Chart Style
Marginally favorable
Favorable
Very favorable
Thresholds needed! Visually easier to interpret



nihhs.cpo.noaa.gov



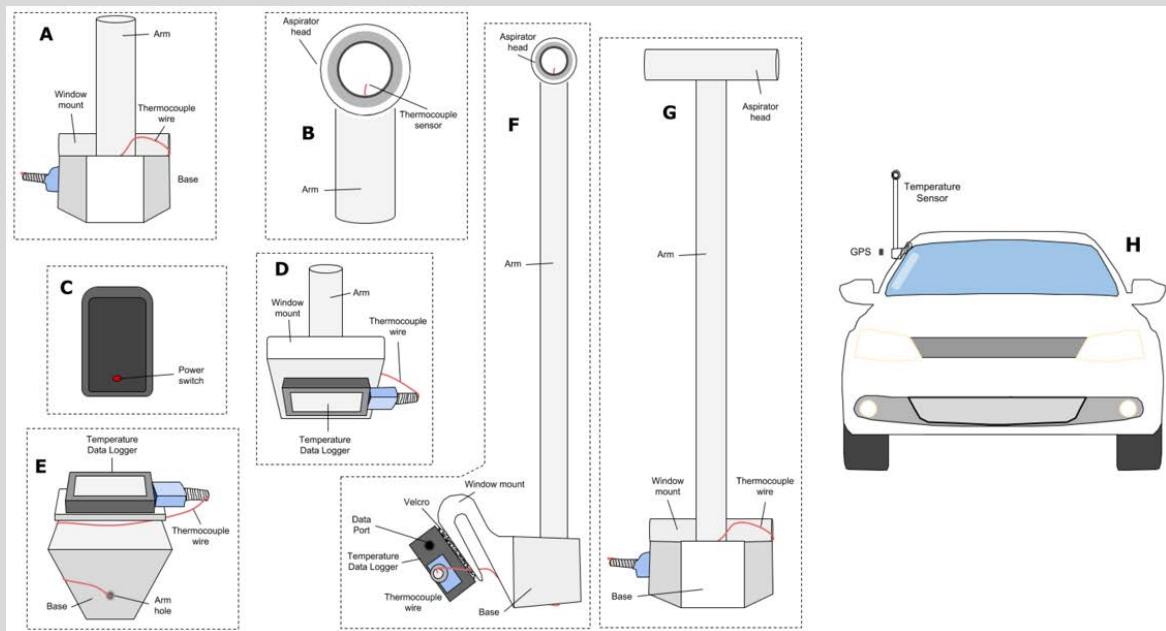


Figure 2 Rendering of Sensor Setup. (A) Front of base; (B) Aspirator detail; (C) GPS unit; (D) Back of base; (E) Bottom of base; (F) Profile of device; (G) Front of device; (H) Approximate scale of device and GPS unit (GPS unit kept inside of vehicle).

From Voelkel and Shandas 2017; adapted with permission from Makido et al., 2016.



Voelkel, J.; Shandas, V. Towards Systematic Prediction of Urban Heat Islands: Grounding Measurements, Assessing Modeling Techniques. *Climate* 2017, 5, 41.

The Field Campaign

The day prior:

Volunteers collect the gear and receive training on how to install it and operate it. They also get a science lesson on UHI.

The day of:

Volunteers run their assigned transect routes in the morning, afternoon, and evening.

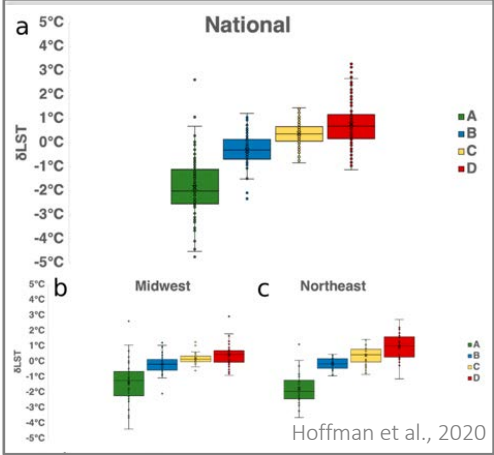
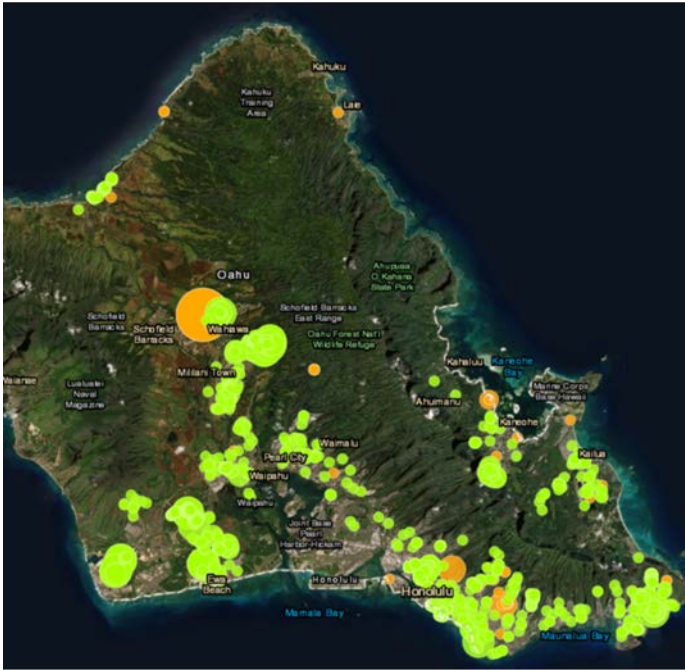
The sensors log the temperature and humidity every second, along with GPS location.

Later this year:

The CAPA Strategies team combines the transects & landcover data from Landsat via a machine learning (random forest) process to generate heat intensity surfaces.



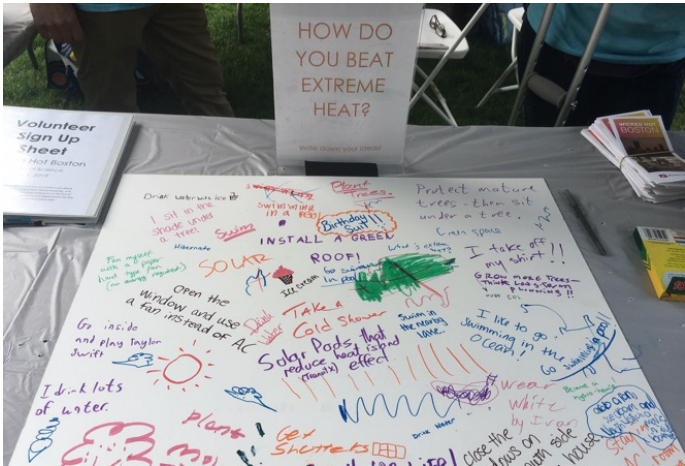
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Outcomes

Clockwise from upper-left:

- 10,000 Trees Honolulu
- Publication: The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas
- Throwing Shade in RVA @ the Richmond Science Museum
- Wicked Hot Boston



© Jeremy Hoffman



GLOBAL HEAT HEALTH
INFORMATION NETWORK

www.ghhin.org/learning-center/masterclasses

Masterclass:

Economic valuation of heat-health impacts and interventions

30 June 2020, 17:00-18:30 CEST

Speakers: Shubhayu Saha, US Centers for Disease Control and Prevention;
Vijay Limaye, Natural Resources Defense Council

Moderator: Roop Singh, Red Cross Red Crescent Climate Centre

www.ghhin.org/learning-center/masterclasses

Heat Health Masterclasses

2 June 2020

Setting operational thresholds for Heat Early Warning Systems

16 June 2020

Innovating in urban planning and governance for heat health

30 June 2020

Economic valuation of heat-health impacts and interventions

21 July 2020

Developing an effective Heat Health Action Plan (HHAP) for your city

