Resilient Connecticut 2.0 Synthesis Report Appendix G

Heat Sensor Project Fact Sheet

CIRCA
Connecticut Institute for Resilience and Climate Adaptation

Identifying Heat Index Variability for a More Resilient Connecticut

Fieldwork application for Resilient Connecticut

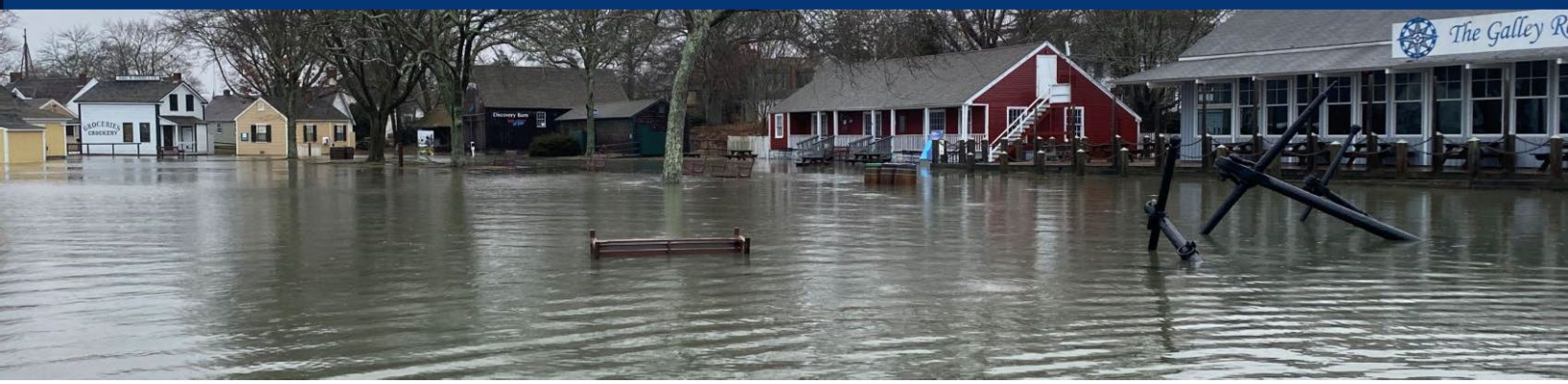
What is "Heat Index?"

"Identifying Heat Index Variability" focuses on understanding the dynamics of heat index and its variability, particularly in urban environments. The heat index, often referred to as the "feels-like" temperature, is a measure that combines air temperature and relative humidity to represent how hot it feels to the human body. Urban areas experience what is known as the urban heat island effect, where surfaces such as buildings and roads absorb and retain heat, causing temperatures to rise higher than surrounding rural areas. This phenomenon exacerbates the impacts of extreme heat, posing significant risks to human health and well-being, particularly in areas like Connecticut, where residents may be less acclimatized to heat. The project is crucial as extreme heat and cold are leading contributors to climate vulnerability in the United States, with urban heat islands amplifying these risks. By mapping and identifying vulnerable areas to extreme climate conditions and analyzing the relationship between heat variability, land cover, and environmental justice, CIRCA aims to provide insights for better preparedness and mitigation strategies. The research will utilize data from heat sensors and satellite measurements to model temperature variations and their implications for heat vulnerability in the region, ultimately contributing to informed decision-making and resilience-building efforts.

What is the purpose of deploying heat sensors?

The project deploys heat sensors to map and identify vulnerable areas to heat and extreme climate conditions while assessing the contribution of heat changes to vulnerability. Sensor locations are meticulously selected using various criteria, including local climate zones delineated by Steven and Oke (2011) and Fragomeni et al. (2011), as well as utilizing the World Urban Database (WUDAPT). Additionally, factors such as the Heat - Climate Change Vulnerability Index and CT Environmental Justice Screening Tool are considered, alongside input from city planners and engineers. Deployed with non-invasive hose clamps and tapes, these sensors are strategically placed on poles and trees for optimal coverage, powered by batteries supplemented with solar panels. They transmit data via cell service, recording temperature, relative humidity, and dew point temperature every 10 minutes daily from May through October. Temperature sensors (S-THC-M002) are from HOBO Onset, are connected to MicroRX2100 recording stations and protected by solar radiation shields. Similar initiatives have been conducted in The City of New Haven (2020-2021), the City of Danbury (2022), and Norwalk (2022-2023). For more information, please visit Resilient Connecticut.

Image: City of Norwalk heat sensor applications 2022



What is Resilient Connecticut?

The Connecticut Institute for Resilience and Climate Adaptation (CIRCA) initiated the *Resilient Connecticut* project in 2018 working with state agencies, Councils of Governments (COGs), and municipalities. This project originally focused on communities impacted by Superstorm Sandy and was later expanded to cover more regions of Connecticut. Activities included science-based risk assessments, community outreach, and pilot project development for addressing flooding and extreme heat events. Products include map viewers, policy recommendations, academic research, and identification of areas for focusing community resilience. The goal of this work is to help decision-makers prepare for sea level rise and changes in flooding, precipitation, and heat; and to advance planning for more resilient communities relative to housing, transportation, and infrastructure. Refer to https://resilientconnecticut.uconn.edu/ for more information. Fourteen pilot projects have been launched in Danbury, Norwalk, Ansonia, Fairfield, Stratford, Fair Haven, Branford, Portland, East Haddam, Jewett City, Mystic, East Hartford, Piper/Webster Brook, and the Yantic River. Developing community resilience hubs has been identified as a recommended action across several of these projects.

What is CIRCA?

CIRCA is a multi-disciplinary, center of excellence that brings together experts in the natural sciences, engineering, economics, political science, planning, finance, and law to provide practical solutions to problems arising as a result of a changing climate. The Institute helps vulnerable communities in Connecticut and throughout the Northeast better adapt to changes in climate through assessment and planning to support community infrastructure while protecting valuable ecosystems and the services they offer to human society (food, clean air and water, and energy). CIRCA combines the world-class research capabilities of UConn and the progressive policies and practical regulatory experience of the Connecticut Department of Energy and Environmental Protection (CTDEEP) to translate sound scientific research to actions that can ensure the resilience and sustainability of both the built and natural environments of the coast and watersheds of Connecticut.