

# Assessing Climate Impacts on Unsheltered Populations Requires Strong Partnerships

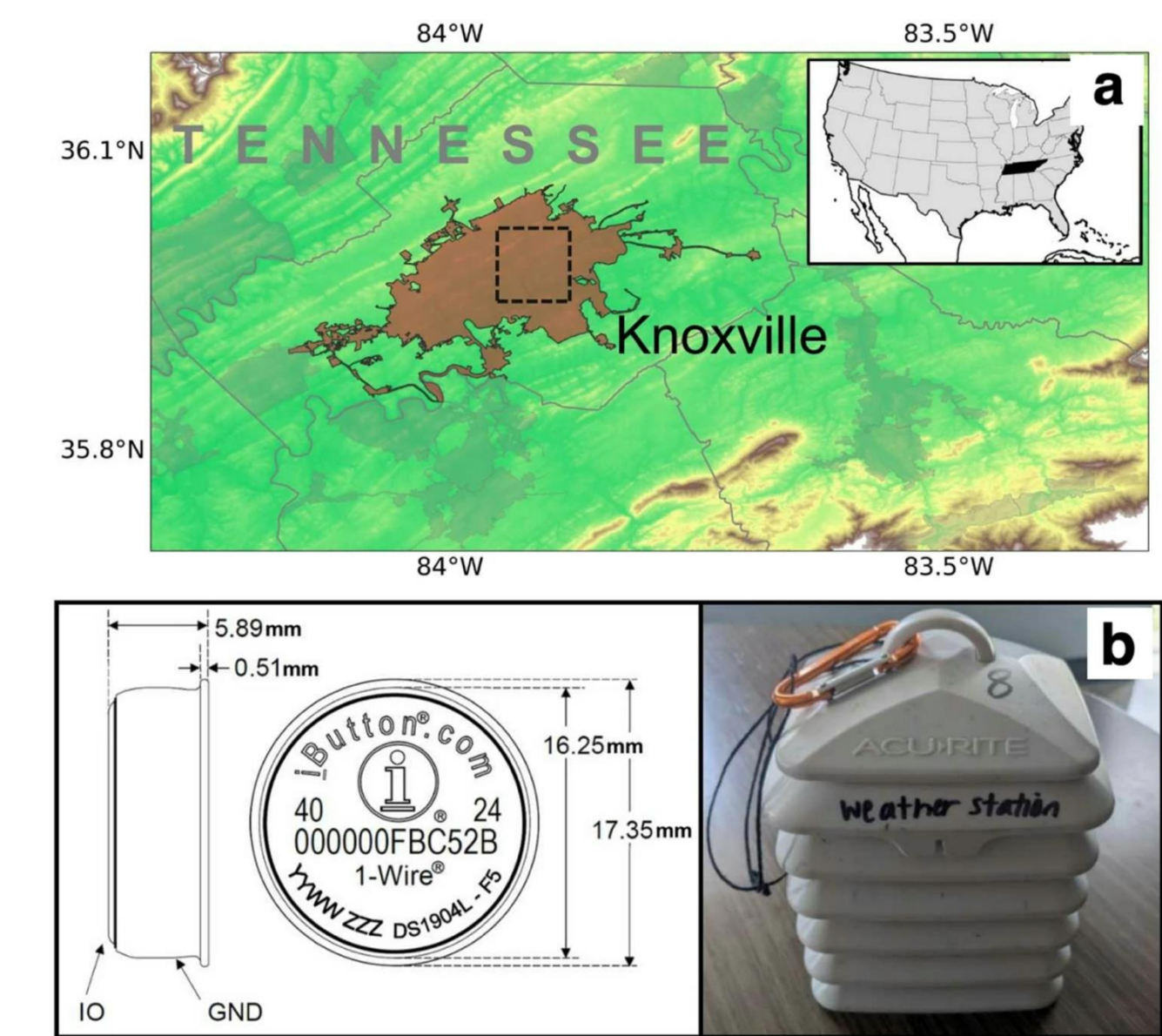
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## Our study

Our team sought to quantify **thermal exposure of people who live in tents**, focusing on when they are in the tents overnight.

We recruited **10 individuals** each in the **summer and winter**. Individuals were **interviewed**, and hosted **weather stations containing iButtons inside and outside of tents** for 10 days during **normal (not extreme) conditions**.

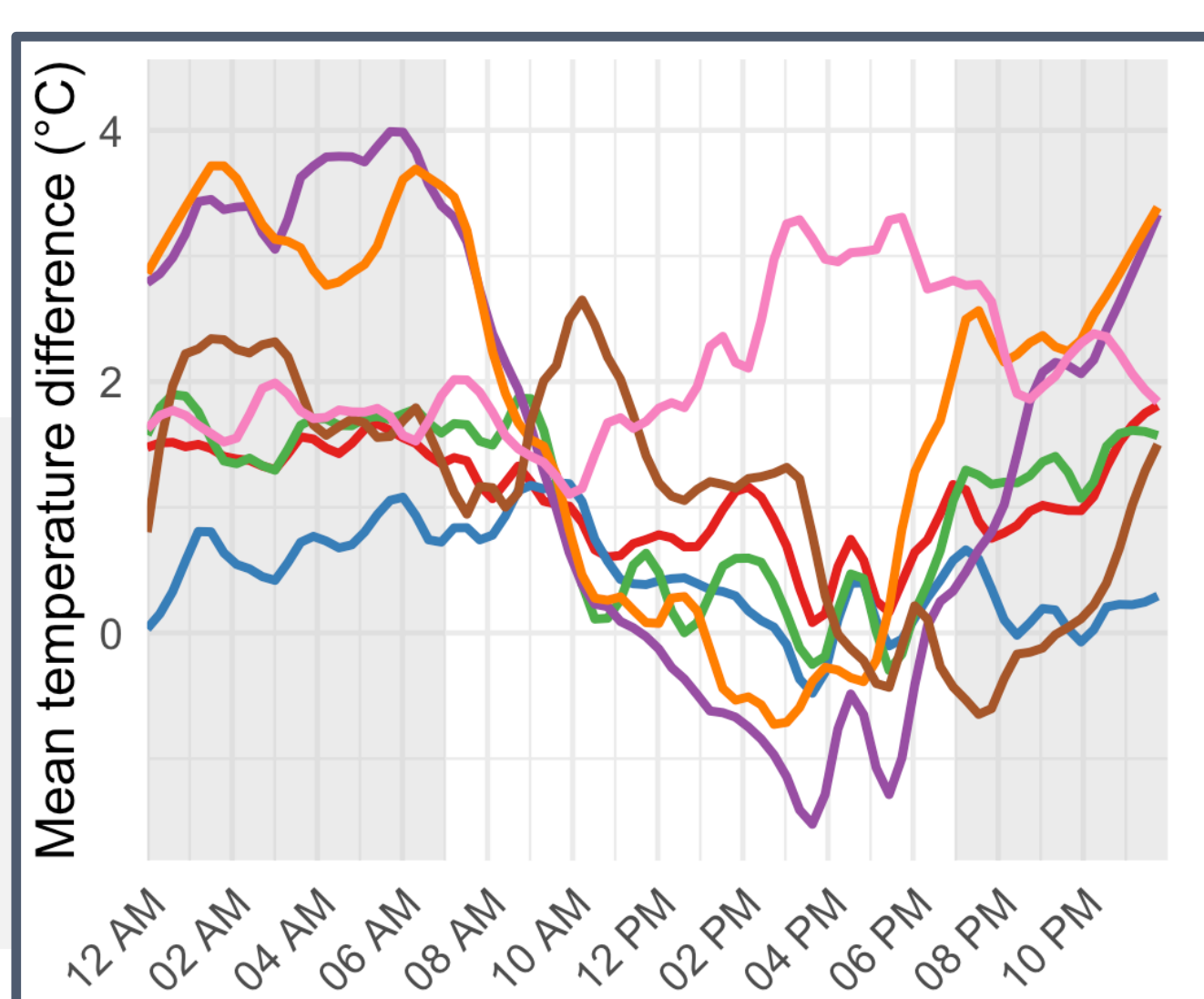
We aimed to answer the following questions:



Study area, iButton details, and weather station.

## Do tents affect overnight thermal exposure?

### Summer Results

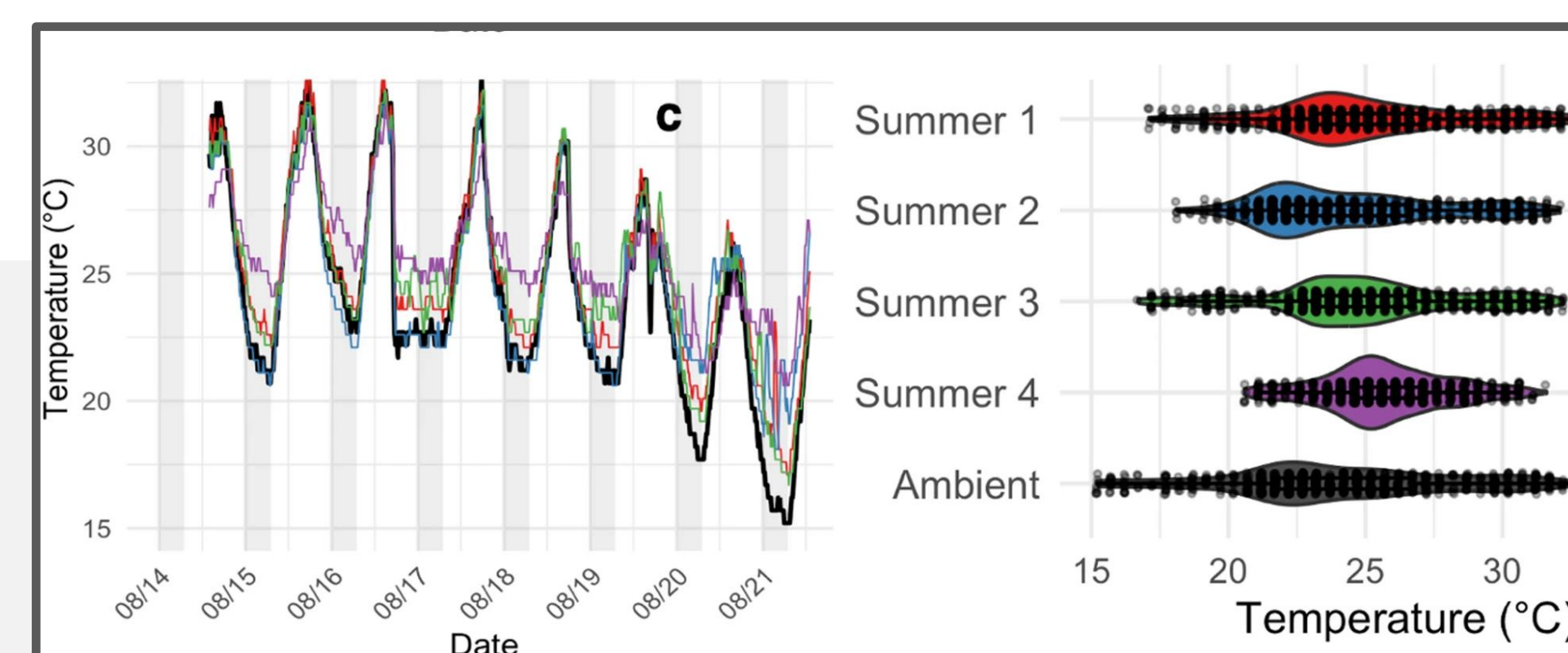


Temperatures were significantly higher in tents overnight ( $p < 0.05$ )—winter (3–17 °C) much more than summer (1–3 °C).

Changes to tent/environment	Behavioral modifications
<ul style="list-style-type: none"> <li>Open the windows/rain fly</li> <li>Build canopy over tent</li> <li>Move tent to where there is shade</li> <li>Move tent closer to water access</li> </ul>	<ul style="list-style-type: none"> <li>Inactivity</li> <li>Do not use tent during the heat of the day</li> <li>Stay hydrated</li> <li>Try to keep ice</li> <li>Wear less clothing</li> <li>Find shade to sit under</li> </ul>

More successful coping techniques in winter, though they require the accumulation of resources and knowledge.

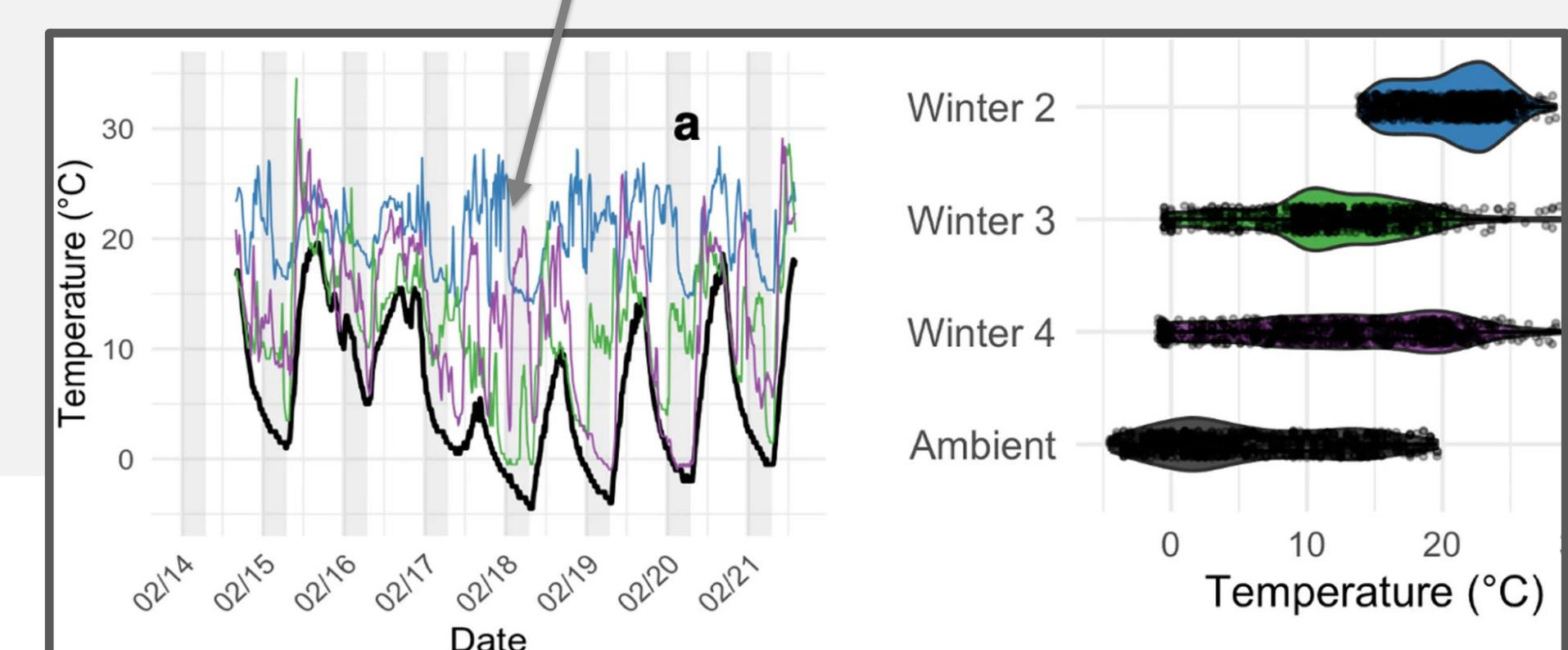
## What techniques are used to reduce exposure in tents and are they successful?



Participants had different levels of success in altering tent temperatures.

Winter tent temperatures fluctuated greatly, with the ultimate decision being to stay awake and burn materials or to get some sleep.

Seasons have unique and shared barriers



Comparison of temperatures in tents within single encampment.

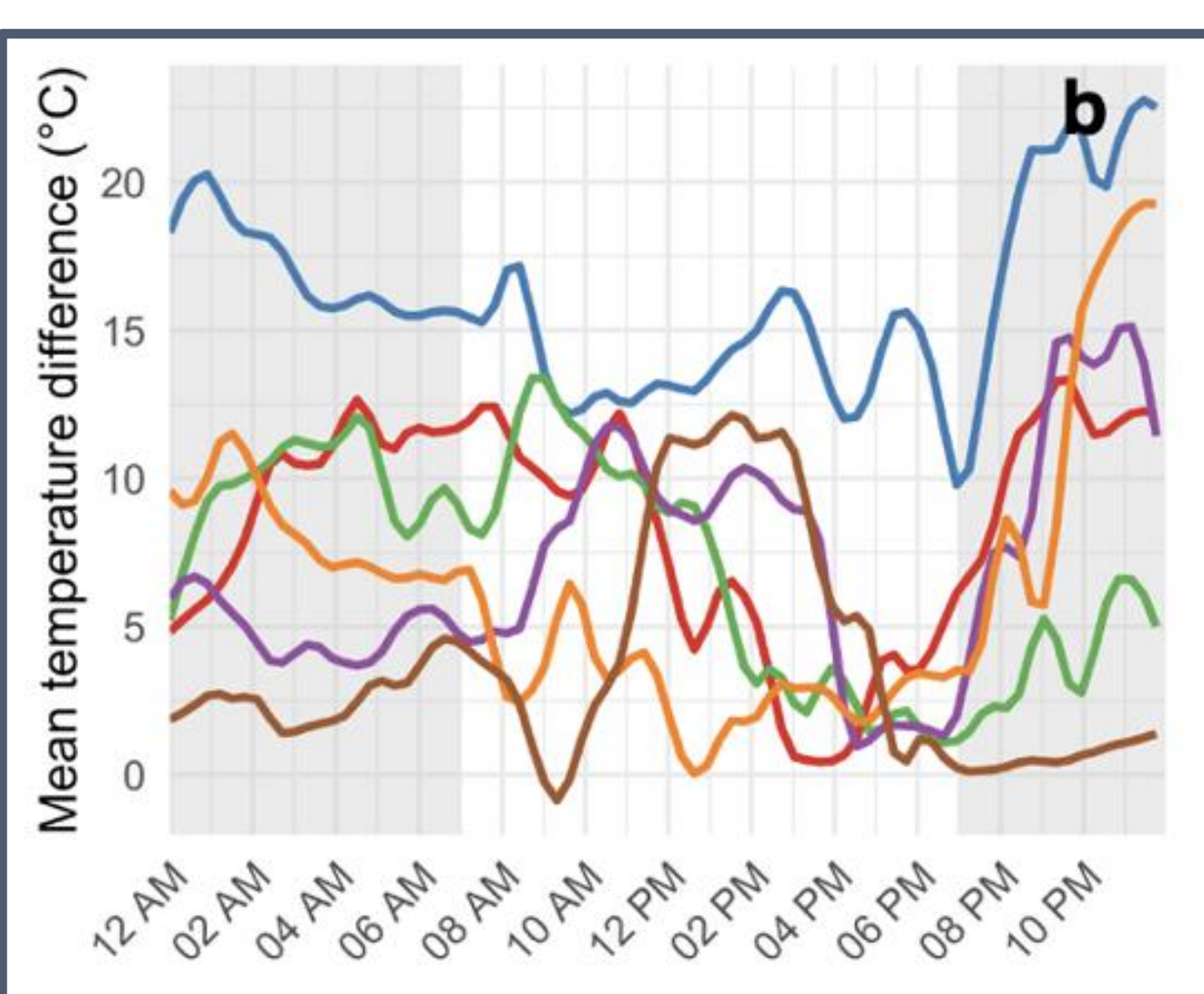
- ### Barriers to coping strategies
- Hard to access water legally
  - Have to stay out late waiting for tent to cool for the night
  - Bugs are bothersome during day when too hot to enter tent
  - Expensive to buy and maintain ice
  - Limited access to shade
  - Camping under trees is dangerous

- Too hard to move tent
- Tent placement is limited by police activity
- If you use a shelter, your items will be stolen while you are away

- Canopy does not seem to help trap heat
- Takes a while to learn how to stay warm
- Blankets and tent materials are not readily available
- Heating options burn too hot then quickly get cold
- Risk of fire or explosion due to heating mechanisms
- Have to stop using heating mechanisms to sleep
- Heating options work for smaller, not larger, tents

Barriers mentioned by participants.

### Winter Results



Mean difference between tents and the ambient environment during normal conditions, with nighttime hours shaded in grey.

Changes to tent/environment	Behavioral modifications
<ul style="list-style-type: none"> <li>Use mylar blankets on top of tent</li> <li>Use plastic covers over tent</li> <li>Layers of blankets on the ground</li> </ul>	<ul style="list-style-type: none"> <li>Burn candles (“hobo candles” and “candle bombs”), hand sanitizer, and Sterno cans</li> <li>Bundle up; wear more clothing layers, use sleeping bag</li> <li>Use hand warmers</li> <li>Take drugs</li> </ul>

Strategies mentioned by participants.

## Partnerships: This project and beyond

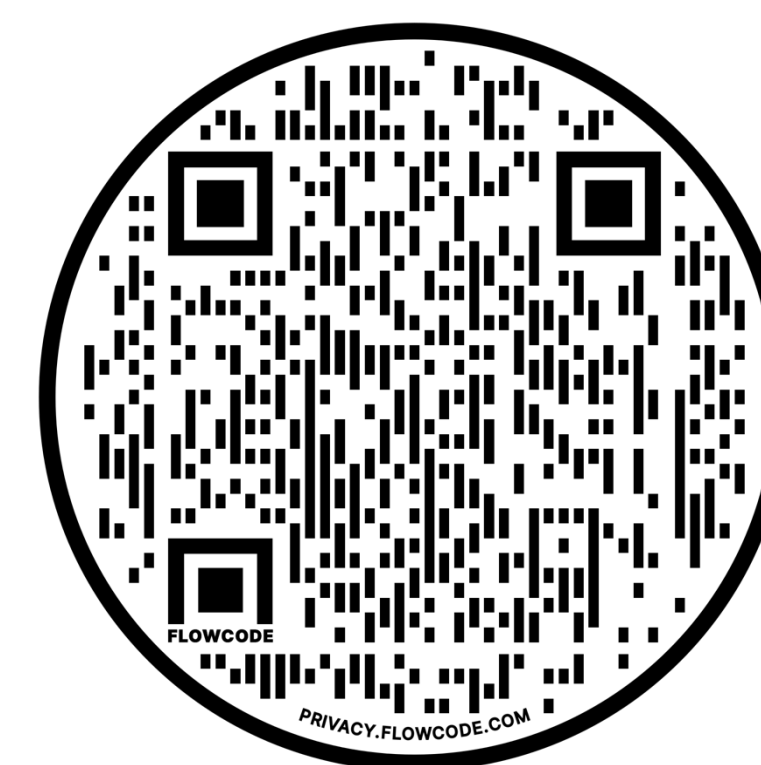
The study of vulnerable and transient populations requires partners with trusted relationships with the community and individuals. Our partners at **Volunteer Ministry Center (VMC)** made this work possible by:

- Working with law enforcement to temporarily pause camp sweeps
- Identifying potential participants
- Bringing participants to us for interviews
- Assisting in gaining access to tents to install and collect weather stations

Why were they willing to help? So that their community can **be seen**, gain **temporary relief from the paused sweeps**, and be provided **gift cards** for participation.

Global partnerships are being built to demonstrate climate change impacts to unsheltered communities. (See **Global Climate Change–Homelessness Network**.)

## Publication on this work:



tiny.utk.edu/tents

## Implications

Tents help reduce exposure to winter cold, but tent dwellers struggle to protect their hard-earned resources.

Policing of homelessness creates additional barriers during inclement weather and adds to the precarity of unsheltered individuals.

Shelters are not an option during extreme weather for those who need to keep their resources to protect themselves during typical conditions.