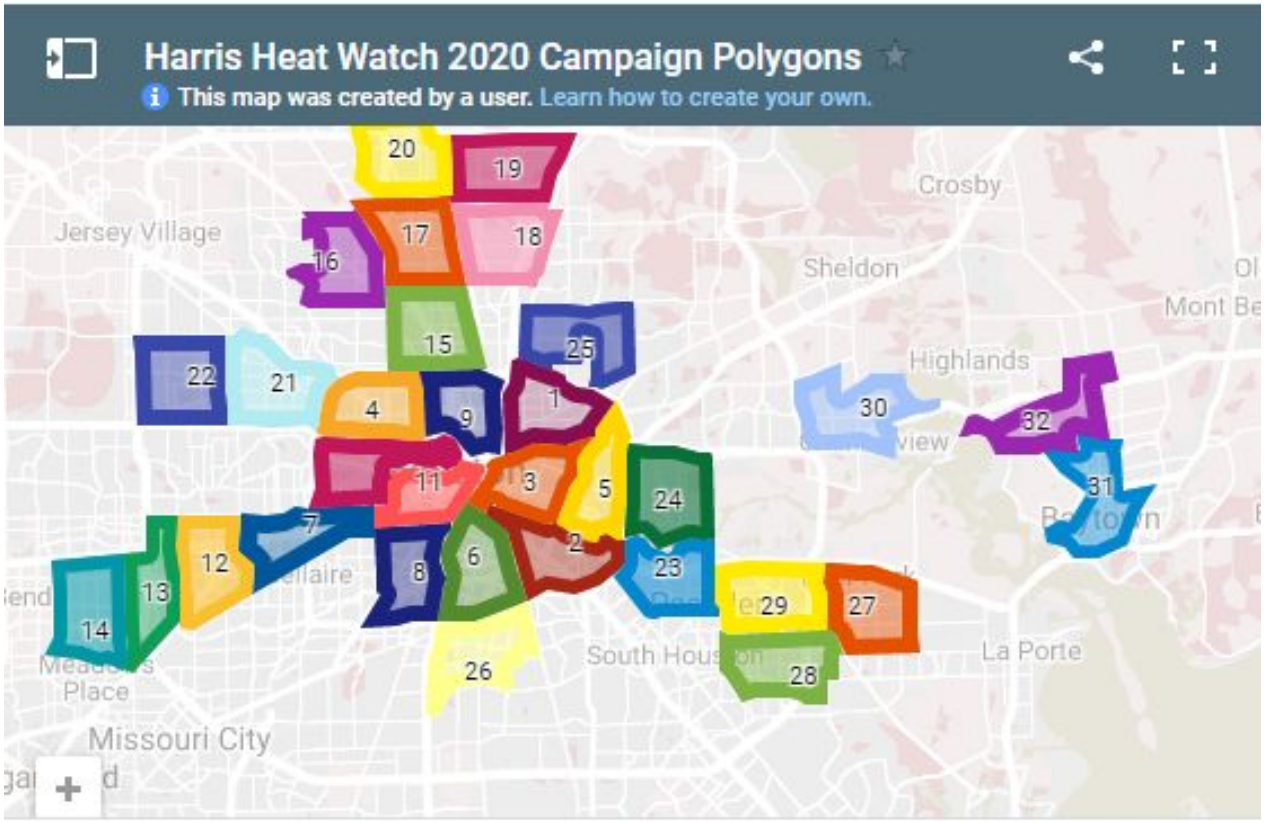

Themes from the Urban Heat Watch 2020 Campaign

On August 7, 2020, 85 community science volunteers measured Harris County's hottest and coolest places during a one-day heat mapping campaign.

The Houston Harris Heat Action Team (H3AT) will use the temperature and humidity data collected by community volunteers to develop temperature maps of the region at three different times of day (6-7 a.m., 3-4 p.m., and 7-8 p.m). These maps will help the City of Houston, Harris County, and its partners design projects and policies that address heat-related health issues across the region.

Learn more at the H3AT Website https://www.h3at.org/home_1

Activity: Where is it hot?	**Time required:** +/- 1 hour
Objective: Students will explore the urban heat island effect through measurement, mapping, and data comparison. They will seek solutions from different community partners.	**TEKS Science** 3rd - 5th grade: 1 - 4, 8, 9 6th grade: 1 - 4, 12 7th grade: 1 - 4, 8 8th grade: 1 - 4, 11
Materials: thermometer, iPad or mapping paper/pencils Google Expeditions https://arvr.google.com/tourcreator/ ArcGIS StoryMaps https://storymaps.arcgis.com/ NPR Urban Heat Island Video https://youtu.be/Y-bVwPRy_no Grist Urban Heat Island Video https://youtu.be/4bqqbYCfYYs	**TEKS Social Studies** 3rd grade: 3, 4 4th & 5th grade: 6, 8 6th grade: 3, 4, 5, 6, 18 7th grade: 8, 9, 19 8th grade: 11

Procedures:

1. Students use a weather app (like WeatherBug) on an electronic device to identify the outside temperature. Students then predict whether or not all areas outside are the same temperature as the reported number. They predict where it will be

hottest and coldest outside. Teachers may suggest places, like: direct sun, shade, a few inches and/or a foot underground, on top of the car/roof, etc.

2. Students use a common thermometer to measure the temperature of various locations outside (based on their predictions).
    a. Extension: Collect data in charts, and create a graph for comparison.
    b. Extension: Create a physical map of the temperature locations/data points, or create a virtual experience using Google Expeditions or Arc GIS StoryMaps.
3. Students predict why there is a discrepancy in their own data. Students then compare their notes with the data/map on the H3AT website.
    a. Extension: compare data from different regions. For example, Houston (urban) vs. Galveston (coastal effects of the ocean) vs. El Paso (desert) vs. Sealy (less concrete) vs. Conroe (Tree Canopy).
4. Students investigate the urban heat island effect using NPR and Grist videos as a starting point. Discuss the importance of community science volunteers to the project.
    a. Extension: investigate effects of increased temperature on human body systems & homeostasis.
5. Students identify different layers of a community, such as: individuals, a home/family, a school, a school district, a local government, a community organization, a state government, a national government. Students make suggestions of ways our community can reduce the temperature (and reduce urban heat islands) from different community partners. Students identify ways to take suggestions and make them a reality. Incorporate ideas into their mapping projects.
    a. Extension: Predict what happens to Houston's population if it gets hotter? How does a city government/community do things to encourage people to stay and/or solve the problem?