Asheville Urban Development II



Mapping Urban Heat to Support Cooling Initiatives and Climate Resilience Planning in the Greater Asheville Area

Project Synopsis

Urban heat islands are urbanized areas that are hotter than their rural counterparts. With climate change, this phenomenon is exacerbated. Features of urban landscapes such as dark pavement and sparse vegetation lead to low albedo and reduced evapotranspiration, causing temperatures to skyrocket. In partnership with the City of Asheville and Asheville GreenWorks, this project identified urban heat island hot spots by juxtaposing land surface temperature, albedo, evapotranspiration, and social vulnerability data to identify locations in Asheville most in need of heat mitigation measures.

Objectives

- Identify heat hot spots, socially vulnerable, and heat-vulnerable areas
- Assess spatial cooling capacity
- **Support** cooling initiatives and climate-resilient urban planning

Results



• Evaluate the feasibility of remote sensing to inform heat mitigation

Methodology





5 km 5 km Low Low Figure 2 • Urban Heat Figure 3 • Social Vulnerability NC Asheville Asheville High High Cooling Capacity Low High Heat 5 km 5 km Vulnerability Low

Figure 4 • Heat Vulnerability

Figure 5 • Adaptive Capacity

Conclusions



Asheville North Carolina Bodies of Water NORTH CAROLINA

Figure 1 • Asheville, NC

Study Area

Base Map Credit: State of NC, U.S. Census

Team Members





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- Asheville's urban heat island was characterized by a radial pattern of decreasing urban heat from downtown to more rural areas.
- Socially vulnerable communities were disproportionately located in urban heat hotspots, indicating environmental injustices.
- Implementing cooling measures in hotspots can mitigate urban heat effects.
- > The analysis emphasized the need for targeted interventions to reduce heat impacts, address environmental injustices, and enhance urban climate resilience.
- These data will inform the City of Asheville and Asheville GreenWorks' heat mitigation strategies including strategic tree planting, cooling pavements and green or white roofs installation.

Project Partners

- Asheville GreenWorks
- City of Asheville, Sustainability Department

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