Personalized Heat Exposure Monitoring Using Sensor Cloud Based Framework

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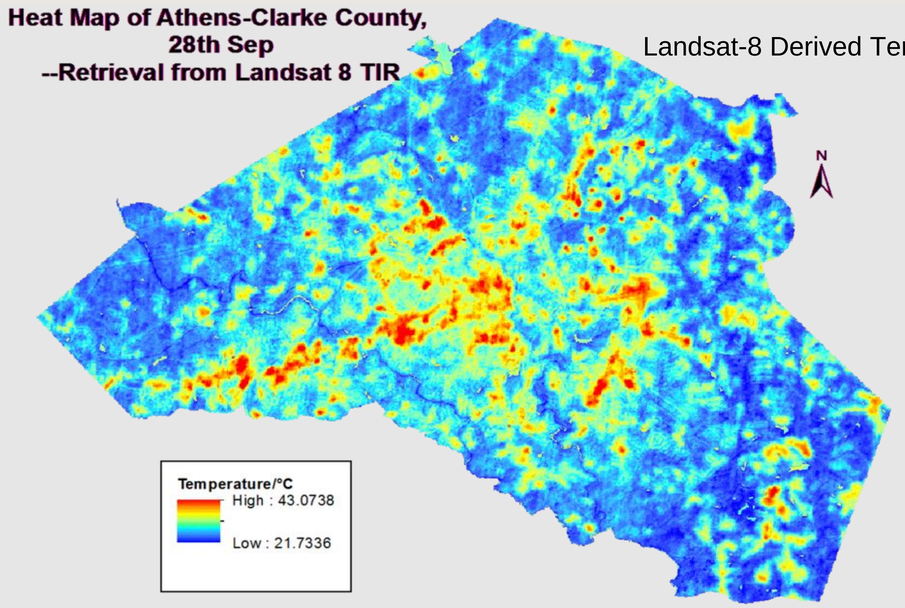
Introduction

An urban heat island (UHI) is an area within a urban setting that is significantly warmer than its surrounding areas. Driven by climate change, extreme heat events are increasingly posing a major health hazard to many urban communities in U.S. and around the world. Most of the existing UHI studies have inherent limitations on two fronts: the spatiotemporal granularities are mostly satellite driven and too coarse; the ability to track the actual heat exposure of individuals is lacking. This project will analyze how smart and pervasive devices including human and vehicle-borne sensors can be harnessed to effectively map and identify urban heat islands (UHIs), and mitigate UHI associated risks on various communities.

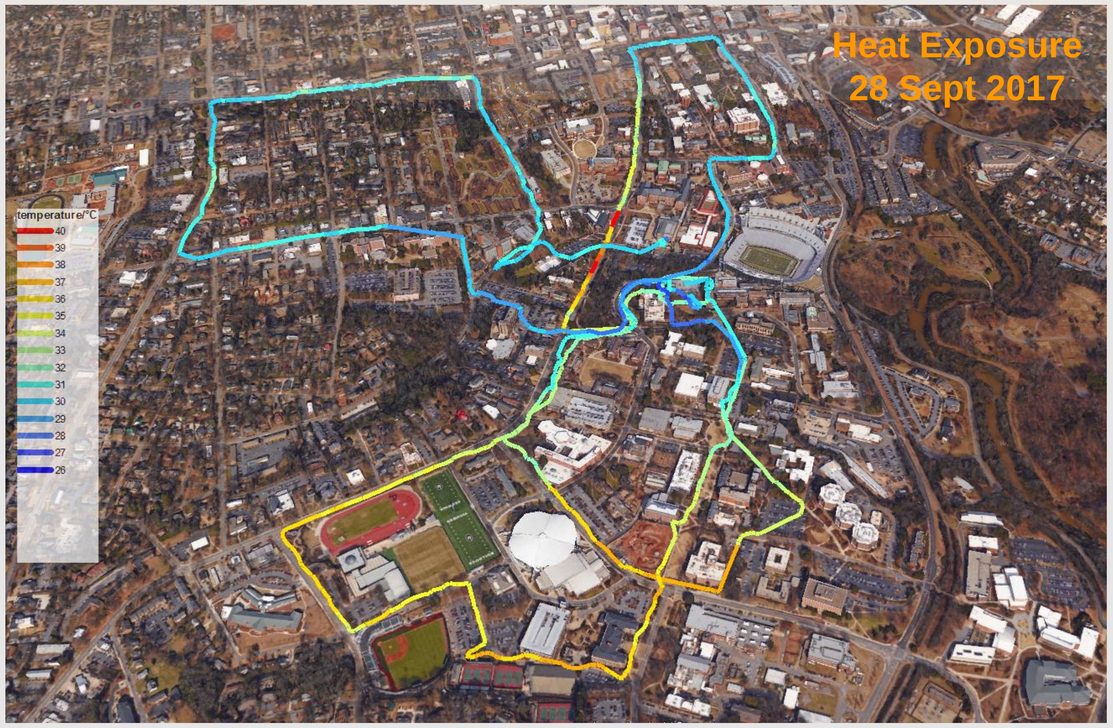
Our New Approach:

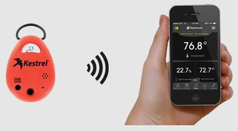
- Use Kestrel sensors integrated with mobile application to measure the actual heat exposure
- Accurate GPS measurements
- Real-time data analysis on server to study the spatio-temporal dynamics within known UHIs

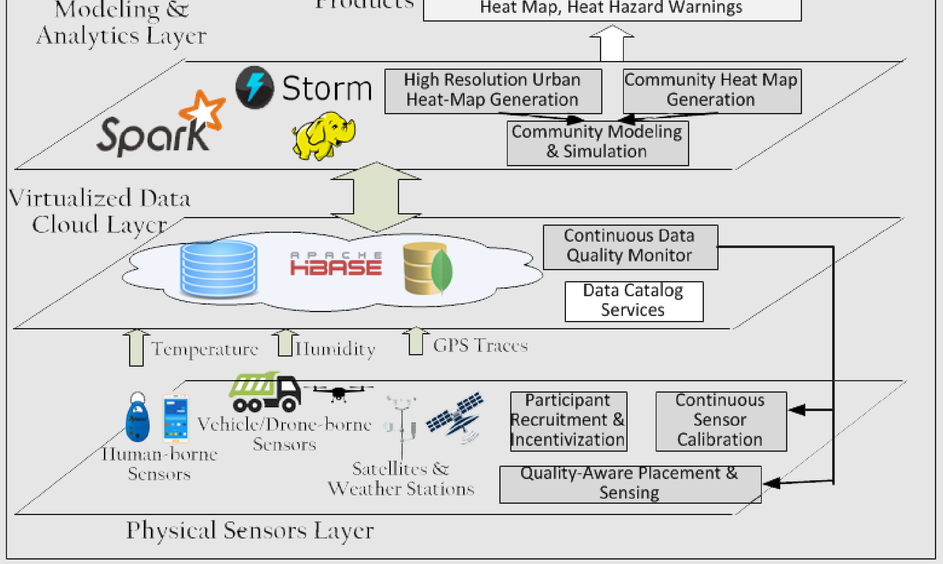


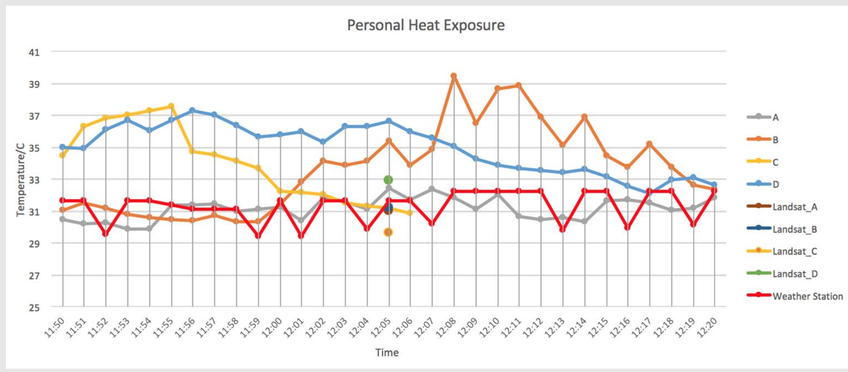
Landsat-8 Derived Temperature Map

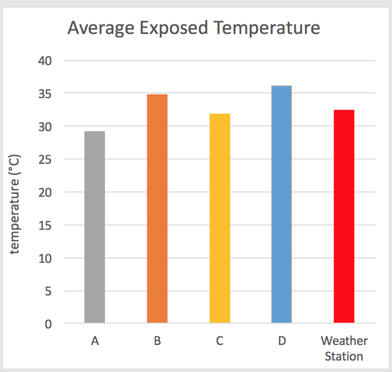
Heat Exposure Data from Human-borne Sensors











Acknowledgements

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