

Localizing urban heat island at microclimate scale

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URBS 428



Research Question

How do local buildings and urban features represent exhaustively for Urban Heat Island intensity at the microclimate scale?

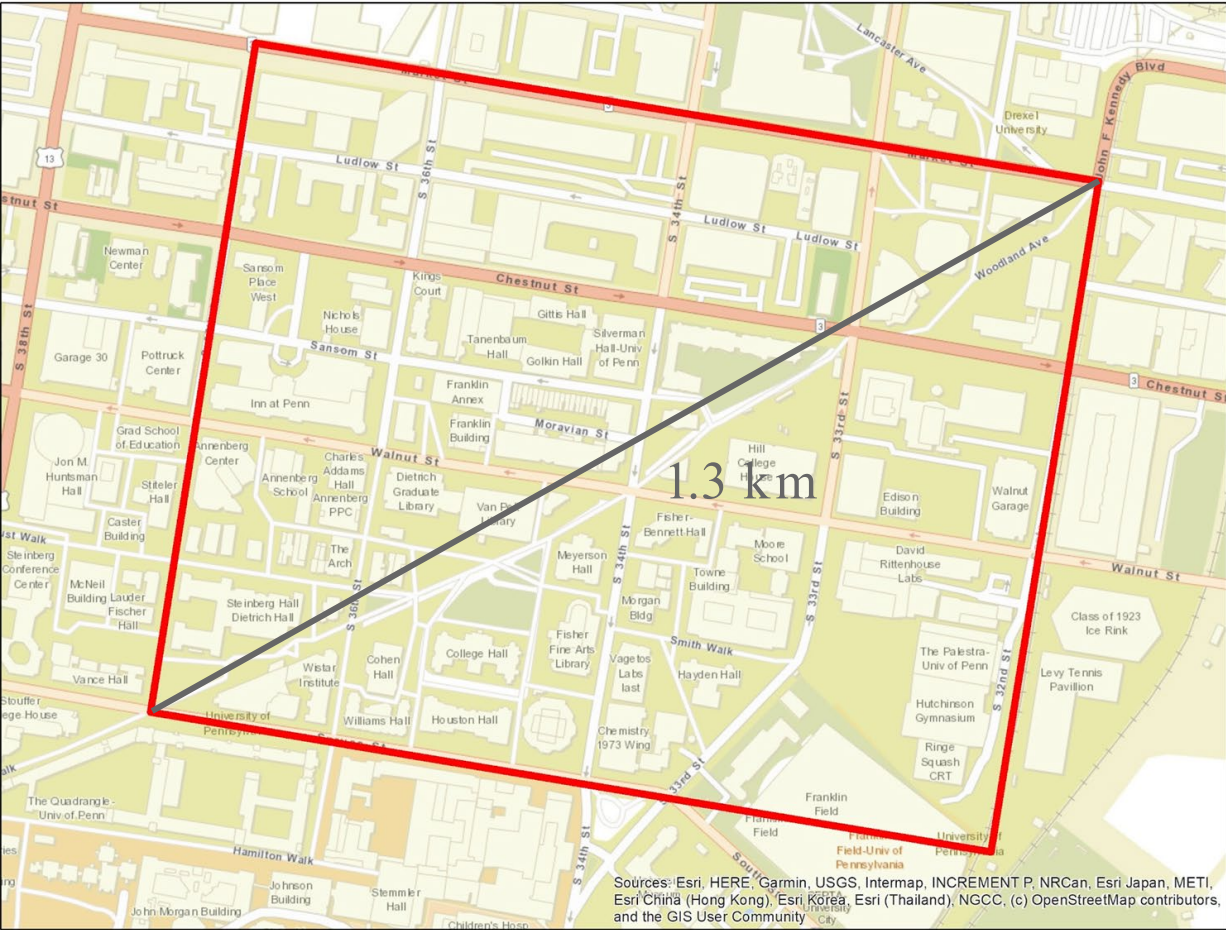
Urban Heat Island



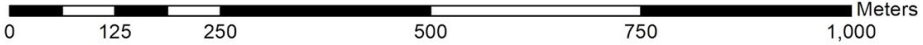
Urban Pollution Island



Study Region



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



HOBO RX3000 weather station (Meyerson)



EPA Meteorological Data (PHL Airport)



Data: Weather



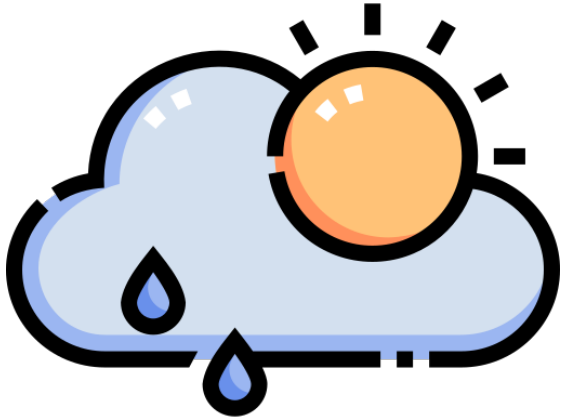
- Air temperature
- Relative humidity
- Wind speed
- Gust speed
- Dew point temperature
- Solar radiation
- PM 2.5

Data: Urban Morphology



- Vegetation coverage
- Tree coverage
- Glazing ratio
- Building height
- Site coverage ratio
- Albedo
- Emissivity of the building surface

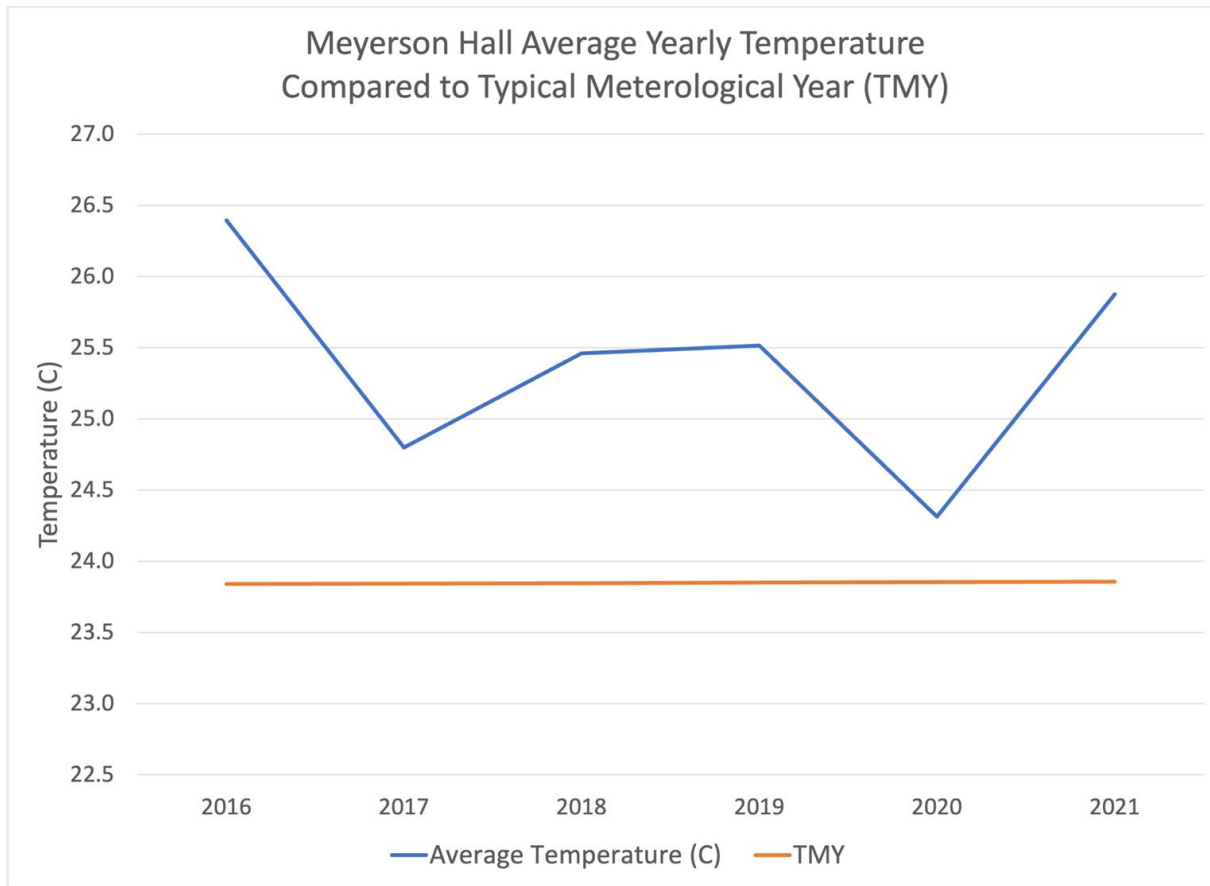
Data Analysis



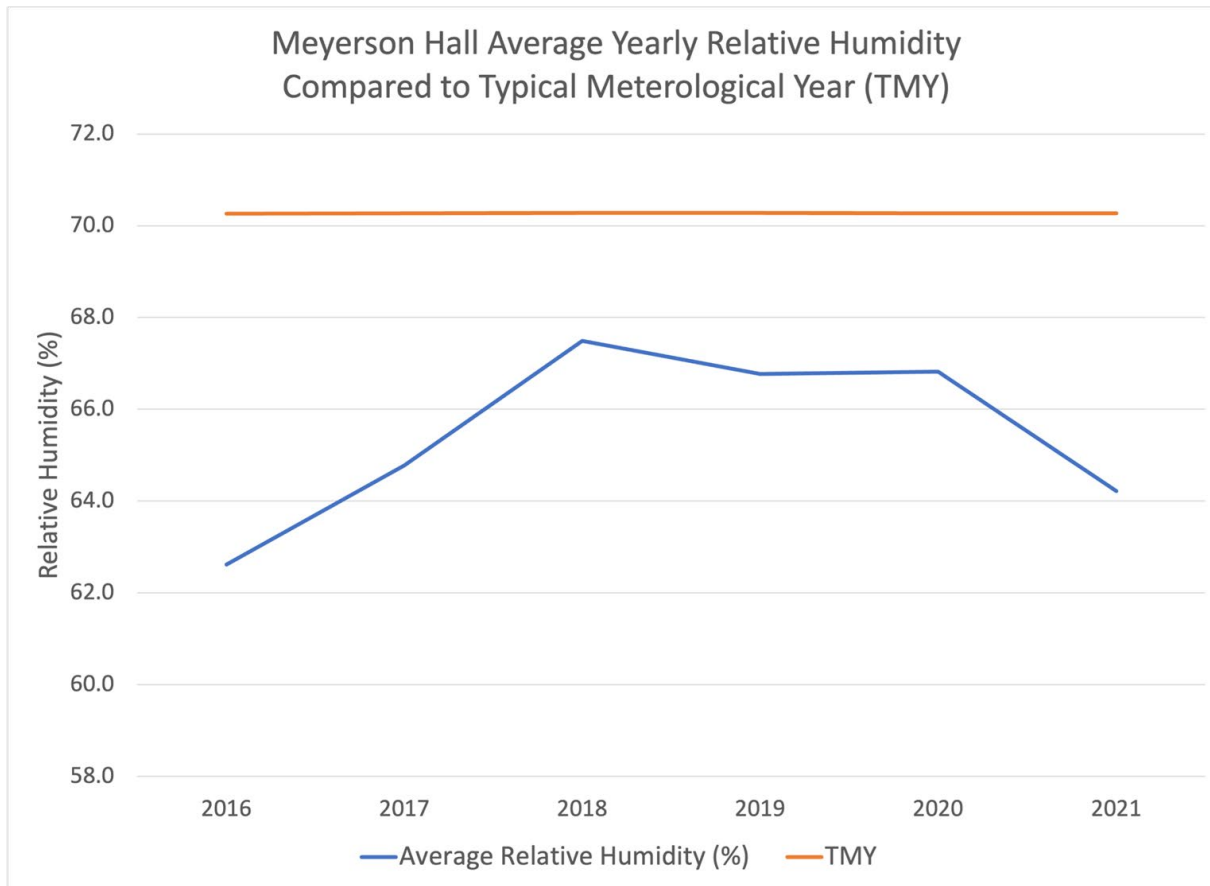
Findings: Urban Morphology



- Building descriptions
- Building material
- Building height
- Tree coverage
- Land coverage

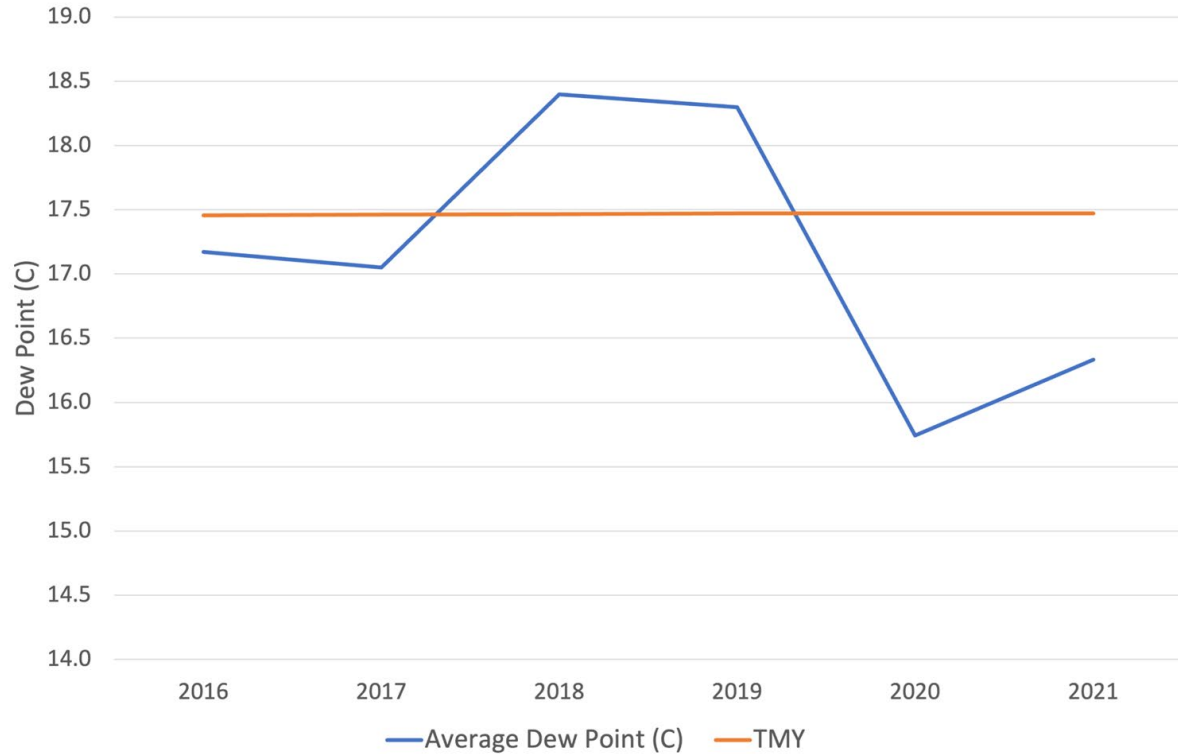


Findings: Temperature



Findings: Relative Humidity

Meyerson Hall Average Yearly Dew Point
Compared to Typical Meterological Year (TMY)

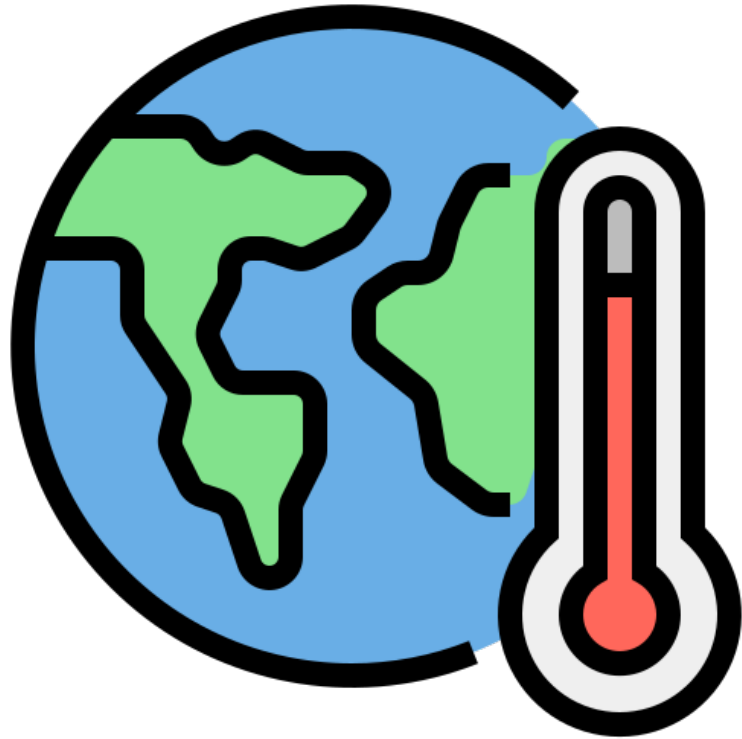


Findings: Dew Point

Next Steps



Significance



Thank you!

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