



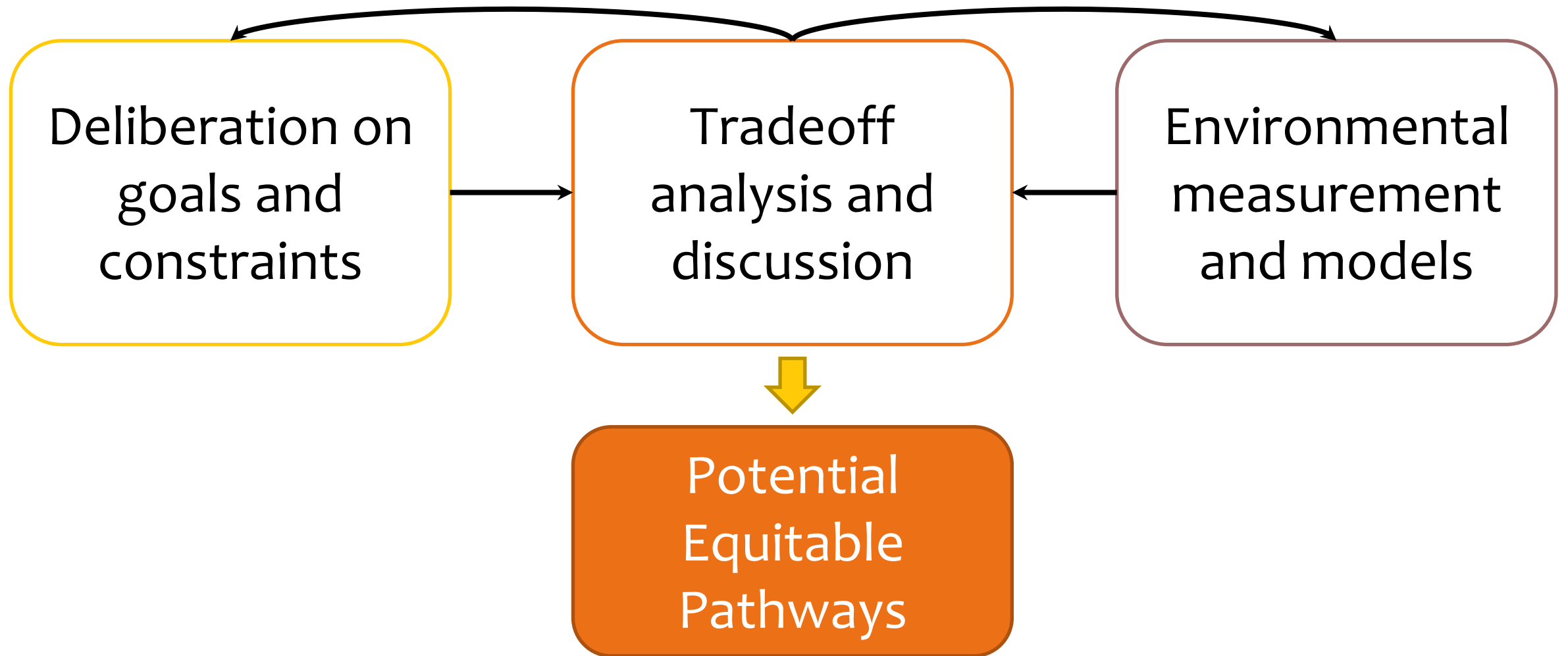
**THE BALTIMORE SOCIAL-
ENVIRONMENTAL COLLABORATIVE**

The BSEC Mission

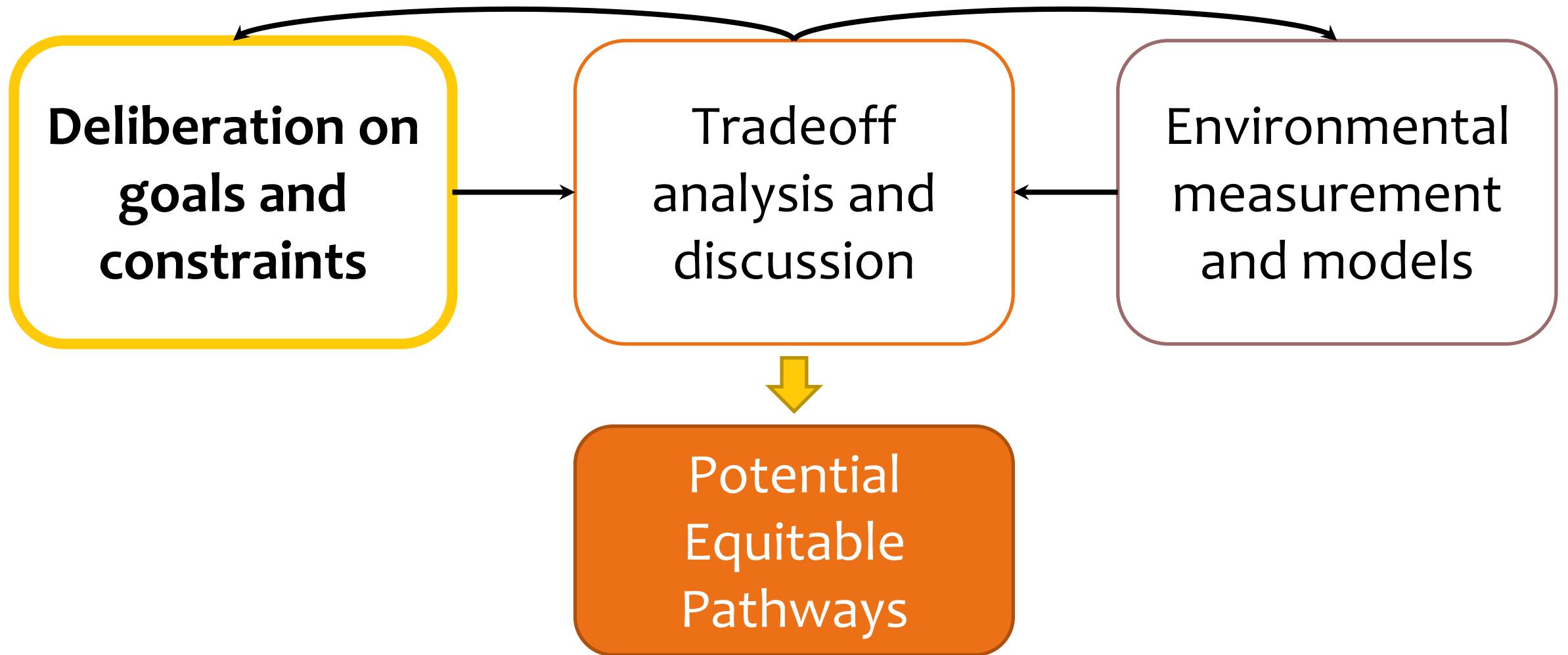
The **Baltimore Social Environmental Collaborative** will produce the urban climate science needed to inform community-guided *potential equitable pathways* for climate action



The BSEC Process



The BSEC Process



Deliberation



Baltimore Social-Environmental Collaborative Urban Integrated Field Lab
<https://21cc.jhu.edu/research/bsec>

Deliberation

Extreme Heat

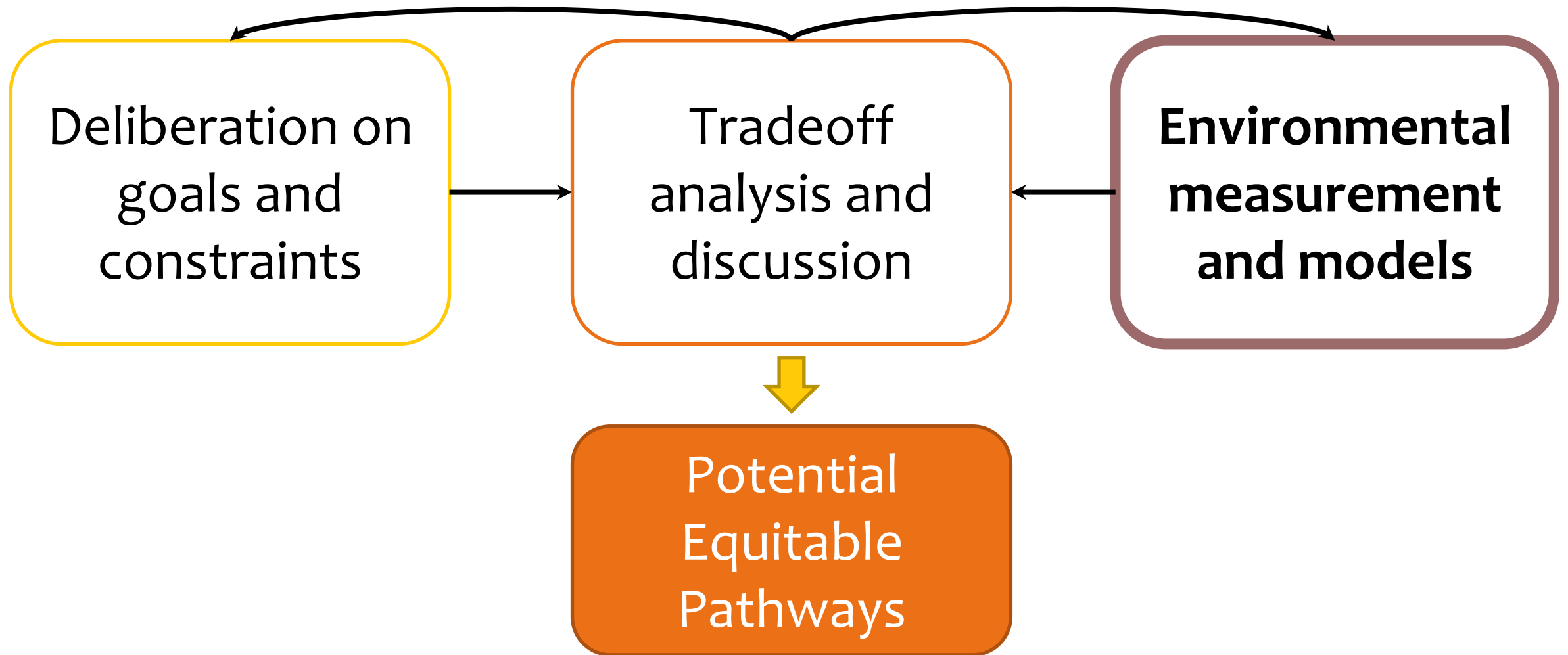
Indoor/Outdoor
Air Pollution

Urban Flooding

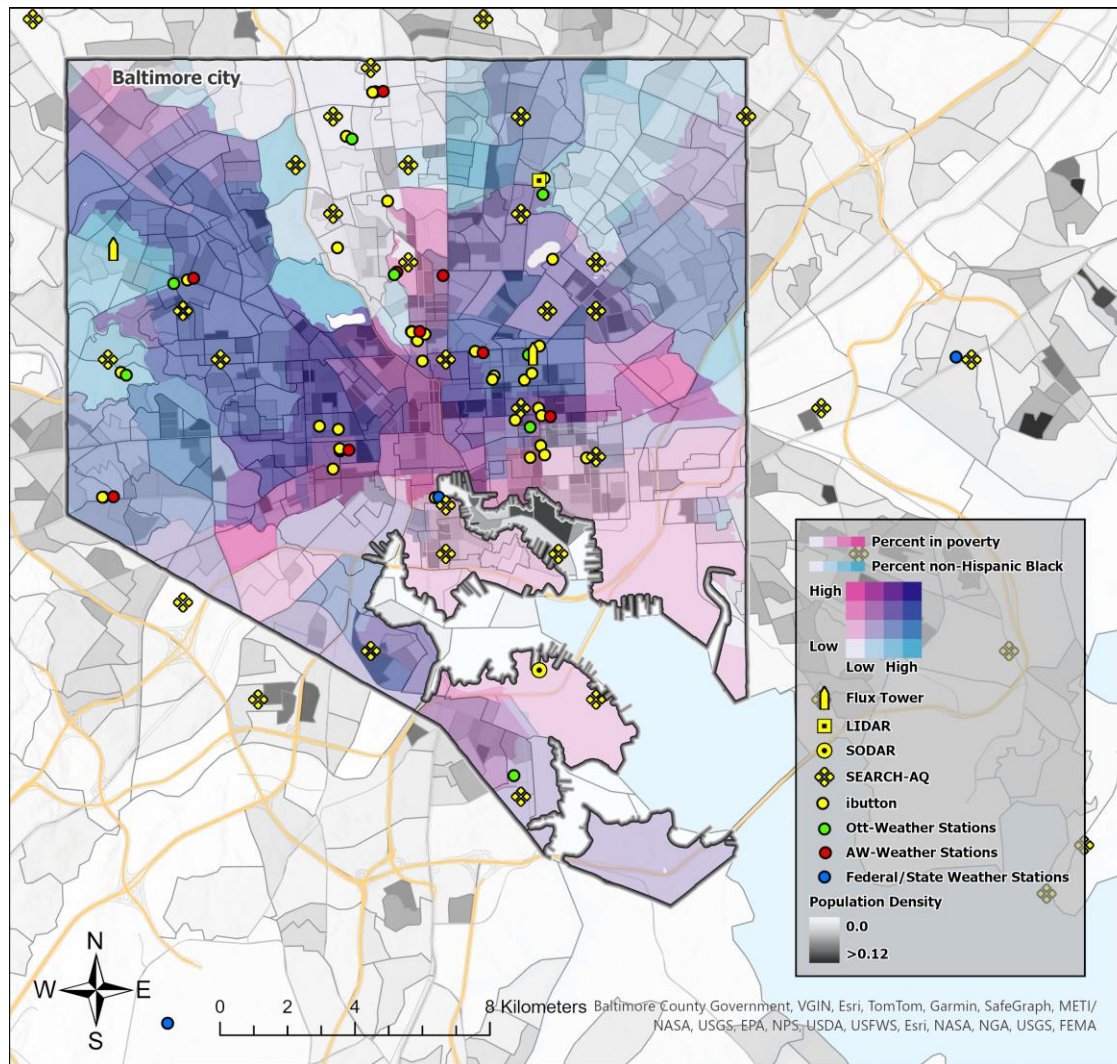
Decarbonization



The BSEC Process

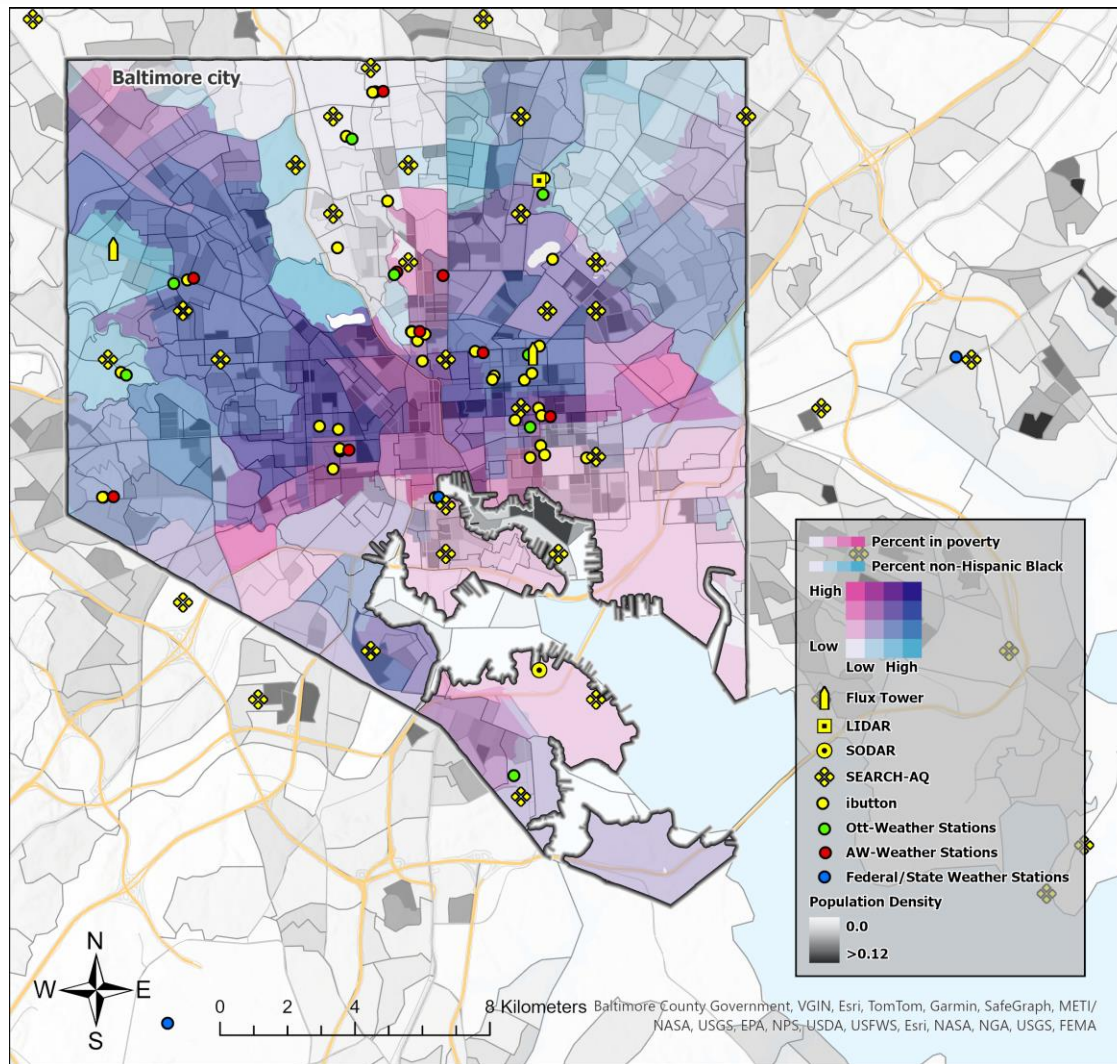


Environmental Measurement and Models



Baltimore Social-Environmental Collaborative Urban Integrated Field Lab
<https://21cc.jhu.edu/research/bsec>

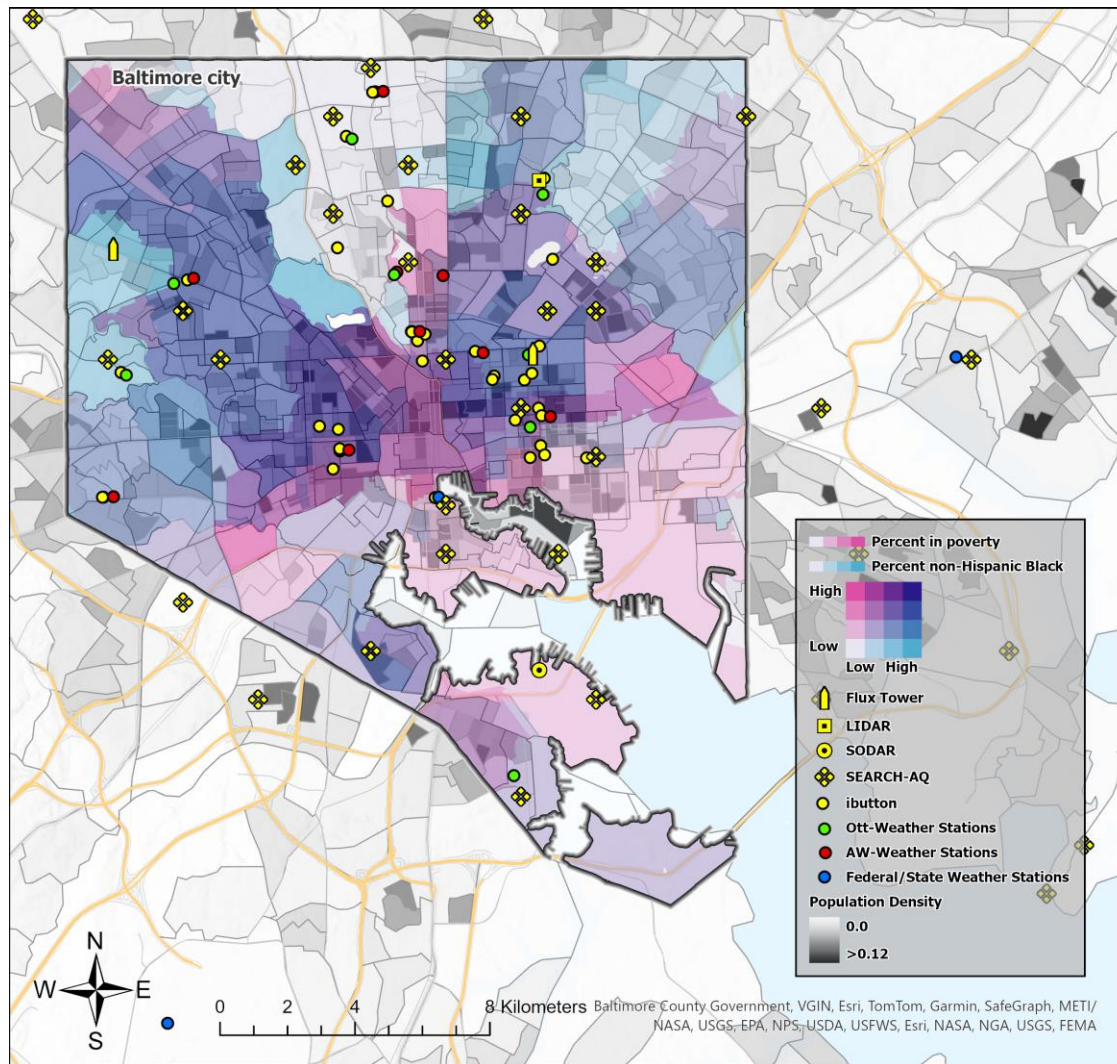
Environmental Measurement and Models



Science area themes

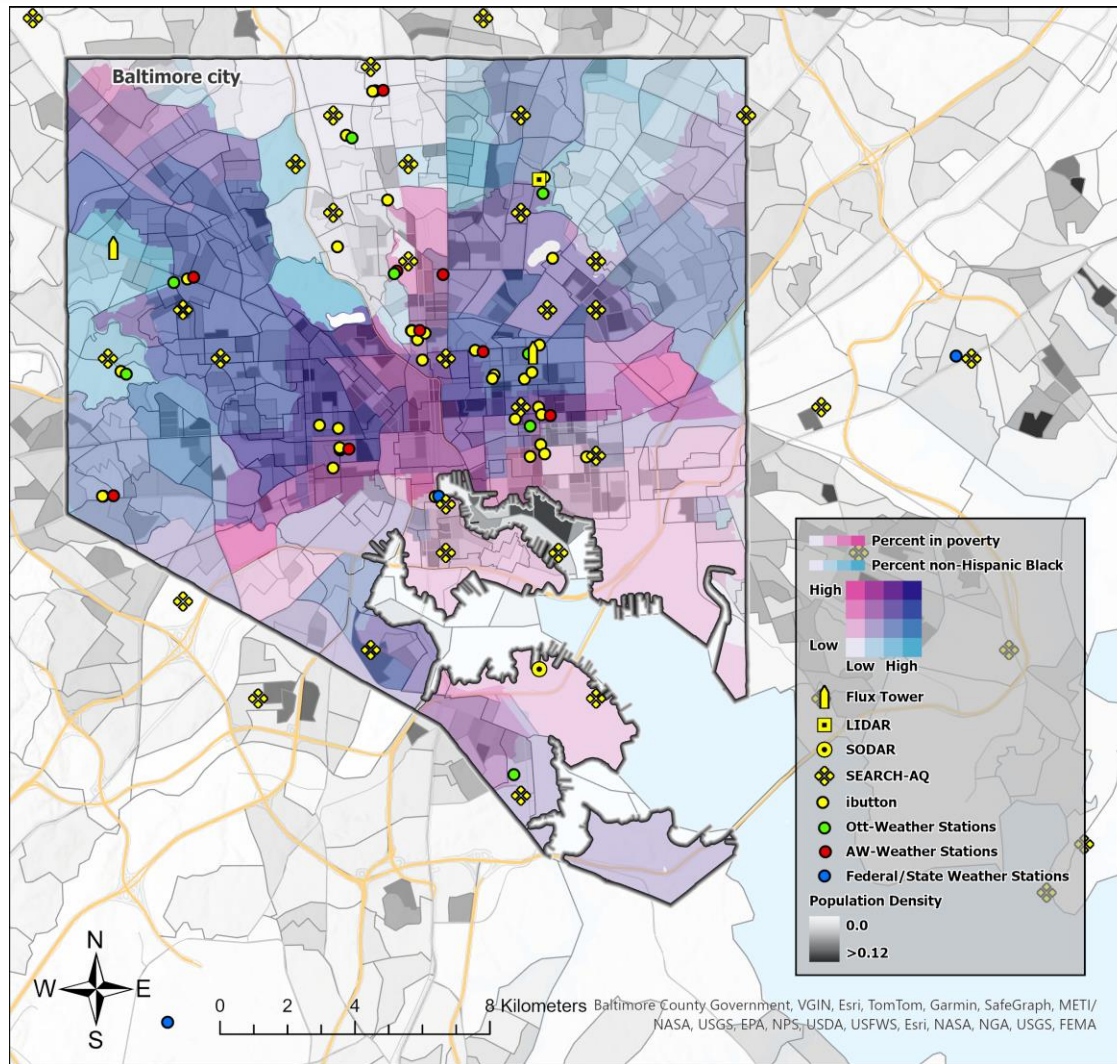
- Air Quality
- Atmospheric Dynamics
- Buildings & Energy
- Decision Science
- Greenhouse Gases
- Health
- Transportation
- Vegetation & Soils
- Water & Water Quality

Environmental Measurement and Models



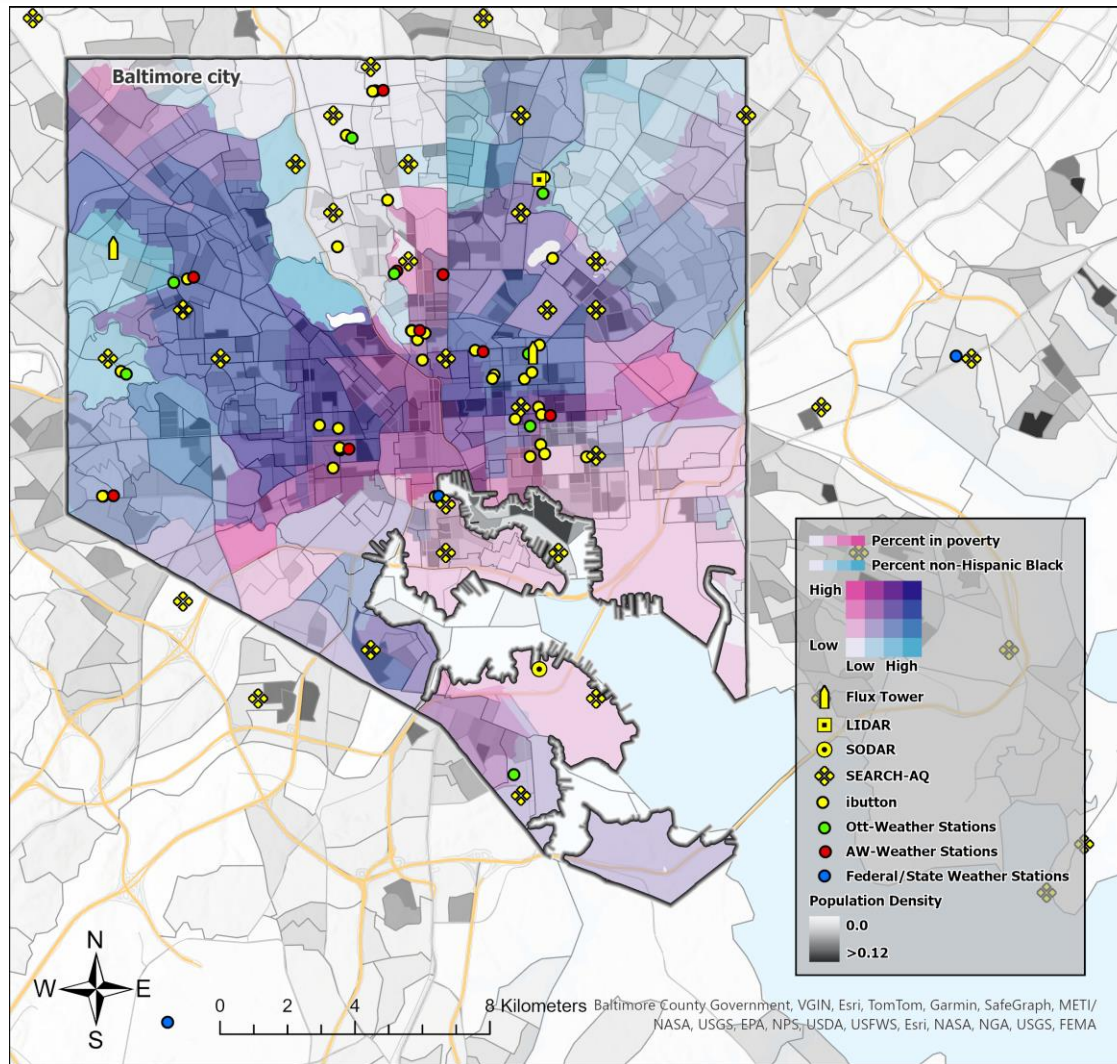
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Environmental Measurement and Models



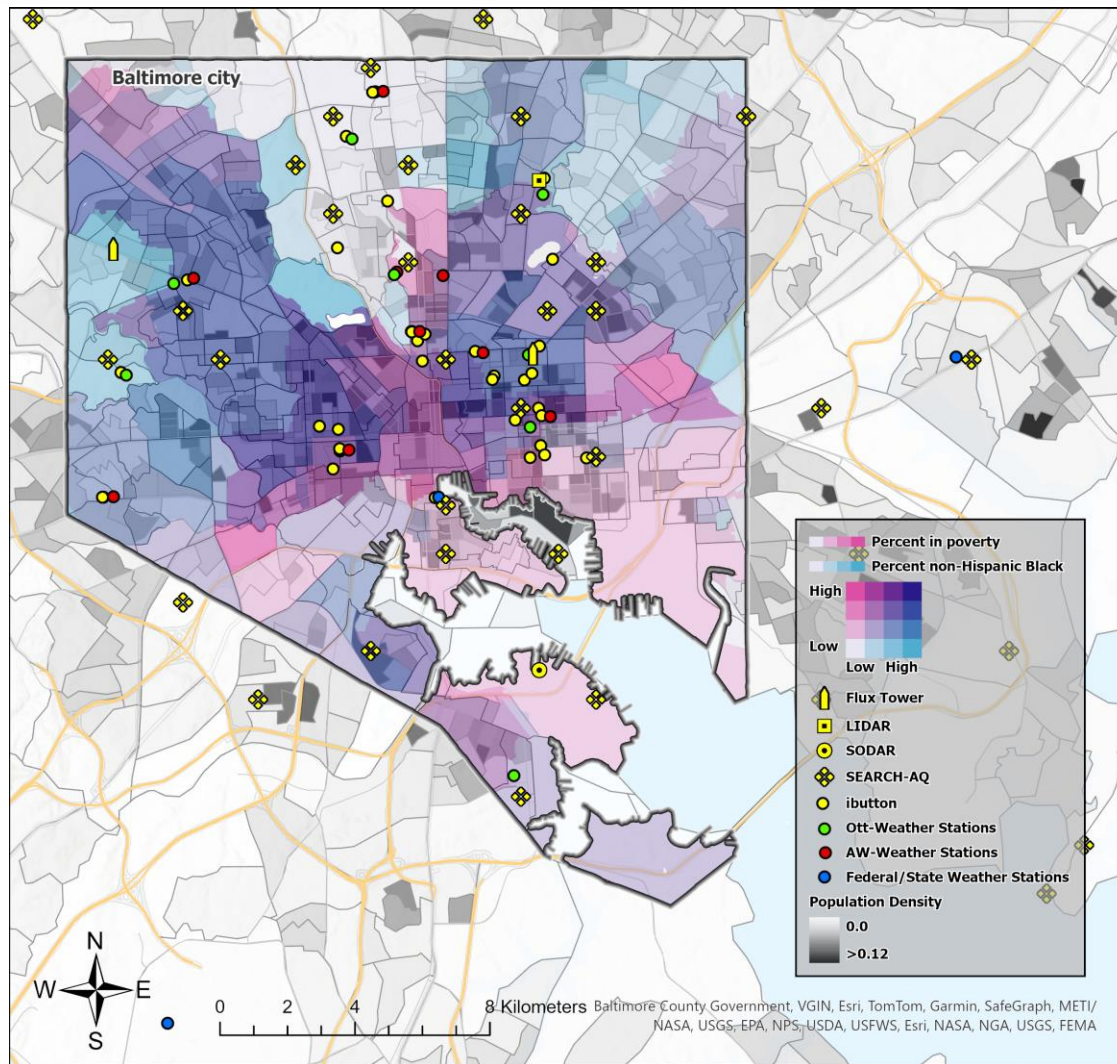
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Environmental Measurement and Models



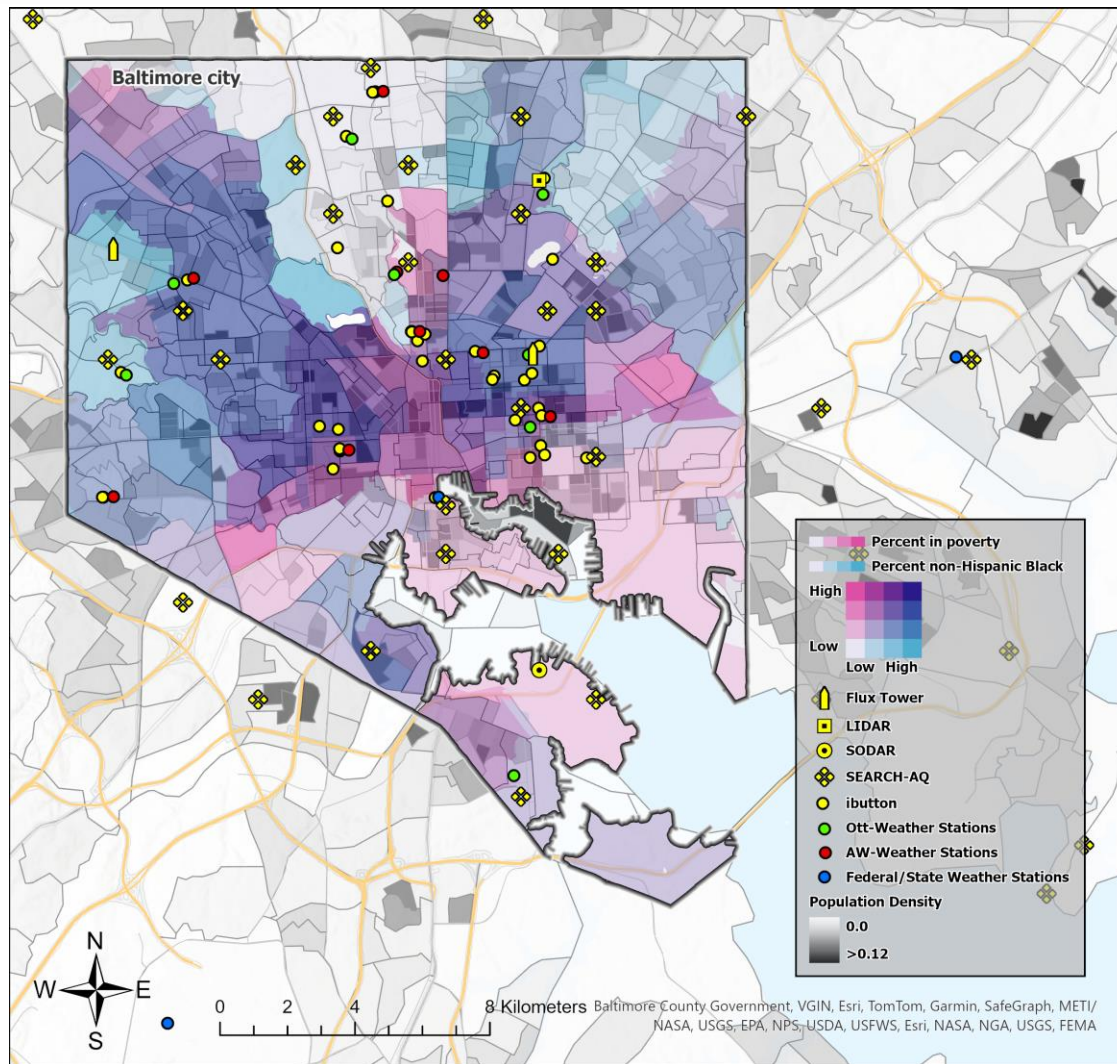
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Environmental Measurement and Models



Baltimore Social-Environmental Collaborative Urban Integrated Field Lab
<https://21cc.jhu.edu/research/bsec>

Environmental Measurement and Models



- Weather stations
- Mobile temperature (car and vehicle)
- Low-cost heat sensors
- Air quality supersite
- Mobile air quality (van and backpack)
- In-stream water quality
- Stormwater supersites
- Doppler LiDAR
- SODAR
- Flux towers
- Soil moisture and temperature sensors
- Ecophysiological measurements
- Soil metals
- Indoor air quality and temperature
- Thermal and visible drone imagery
- Vehicle-mounted LiDAR survey
- GHG Chamber measurements
- Electronic medical records
- Utility household-level energy use data
- The Baltimore Area Survey
- BNIA social and demographic indicators
- Coming soon: the ARM Mobile Facility!
- Things I'm forgetting to list, and TBD measurement systems to respond to community needs for new science

BSEC AQ Supersite: current capabilities

Scanning mobility particle sizer (size / volume distributions) running for ~5 months

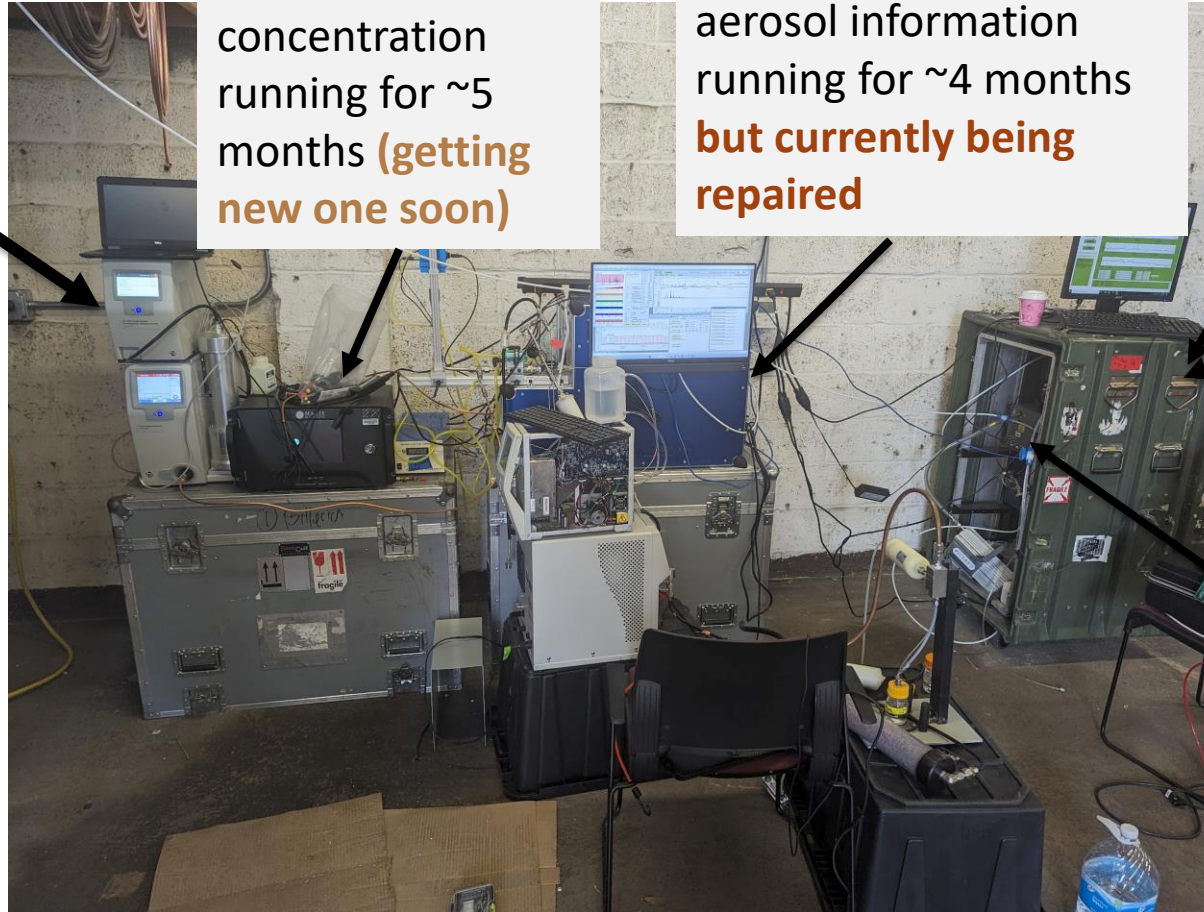
PM Black/brown carbon mass concentration running for ~5 months **(getting new one soon)**

Aerosol mass concentration, composition, organic aerosol information running for ~4 months **but currently being repaired**

Ozone been running off & on for ~3 months **(getting new one soon)**

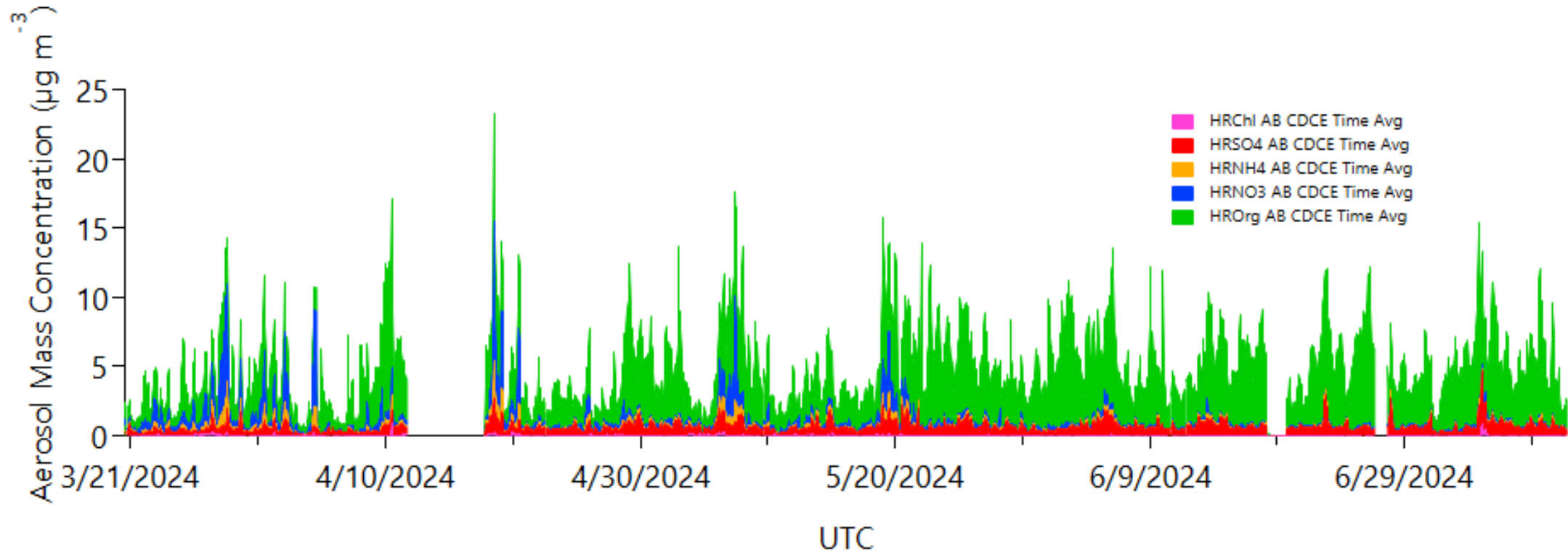
Getting a reliable nitric oxide & nitrogen dioxide instrument soon

Methane, carbon monoxide, carbon dioxide running for ~4 months **but currently being repaired**



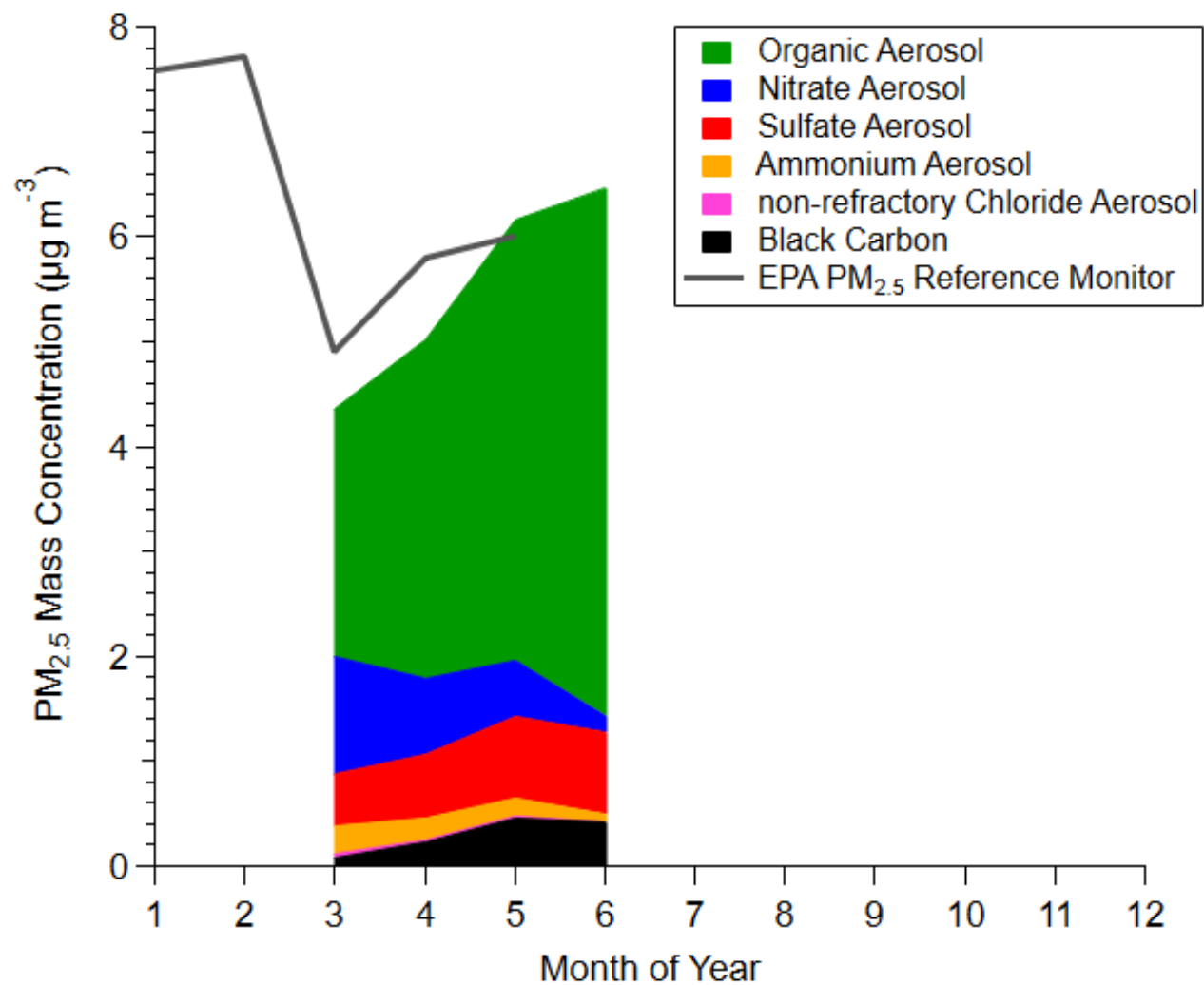
Instruments waiting on or being installed soon:
-Methane + ethane
-Unit mass PTR-MS (BVOCs, OVOCs, aromatics)
-Discussions w/ potential guest groups

Time series of mass concentration and composition measured at BSEC for nearly 4 months

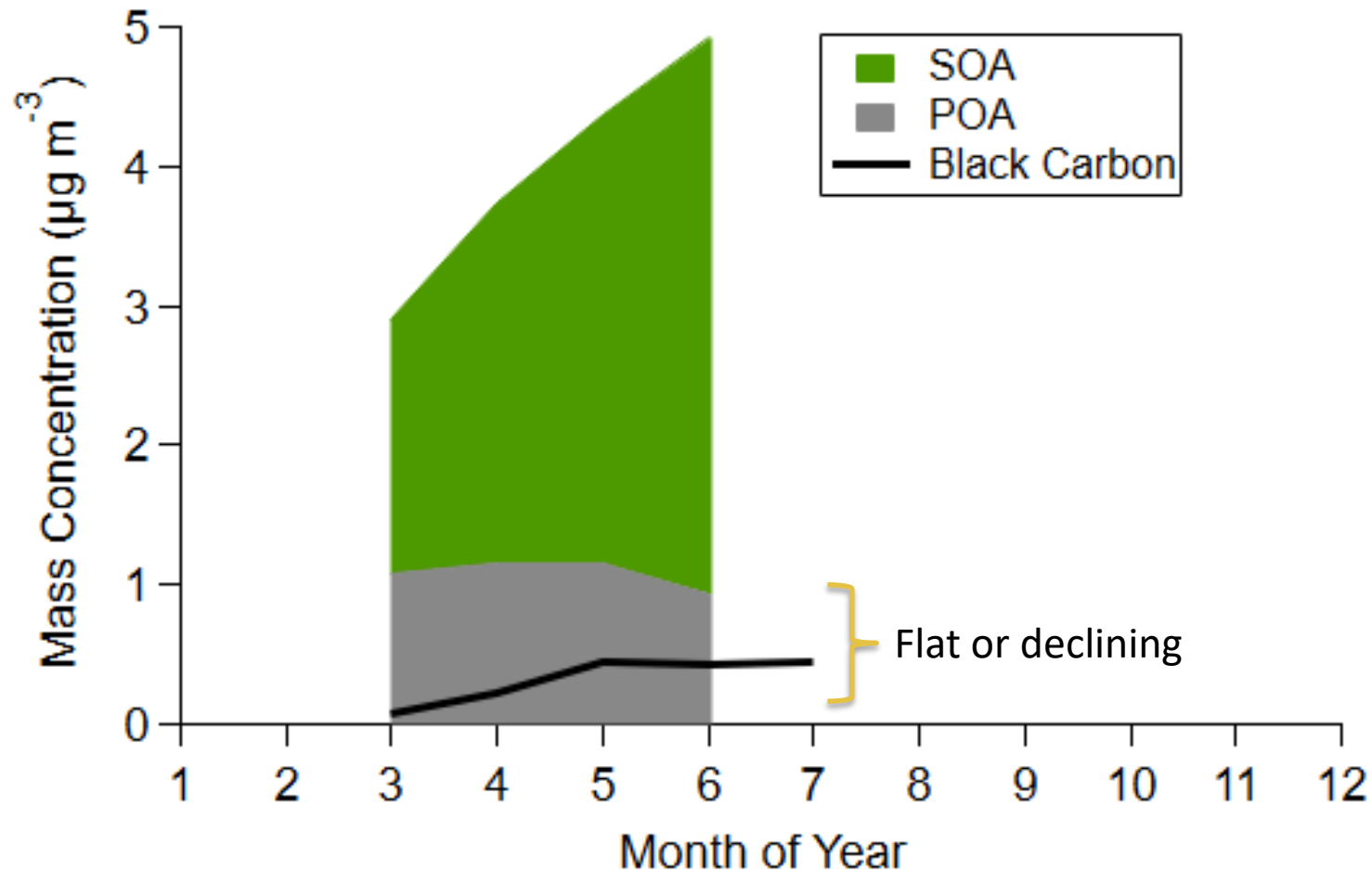


- Inorganic aerosol more important late winter/early spring & some specific cool/wet periods
- Organic becoming more important during summer because photochemistry and emission changes

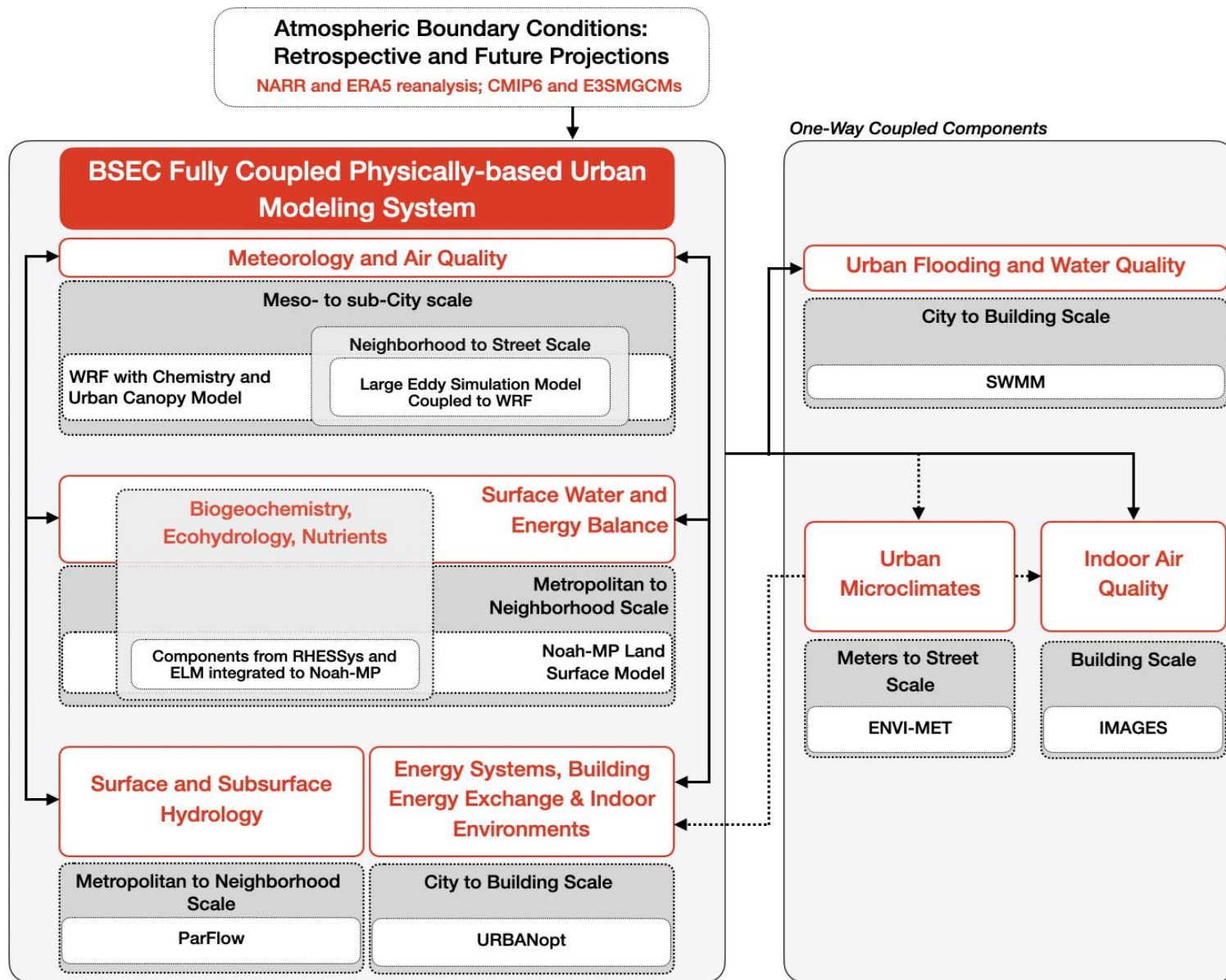
Monthly average mass concentration and composition shows changes with PM_{2.5}



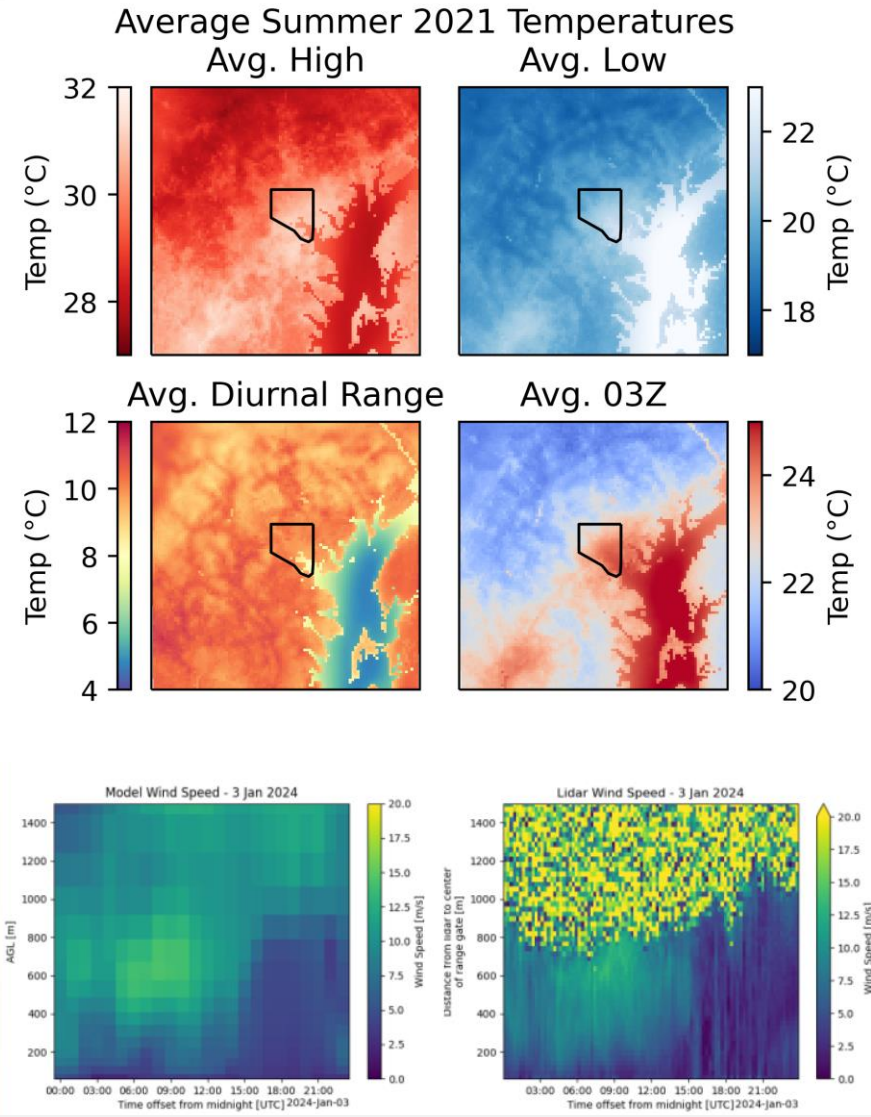
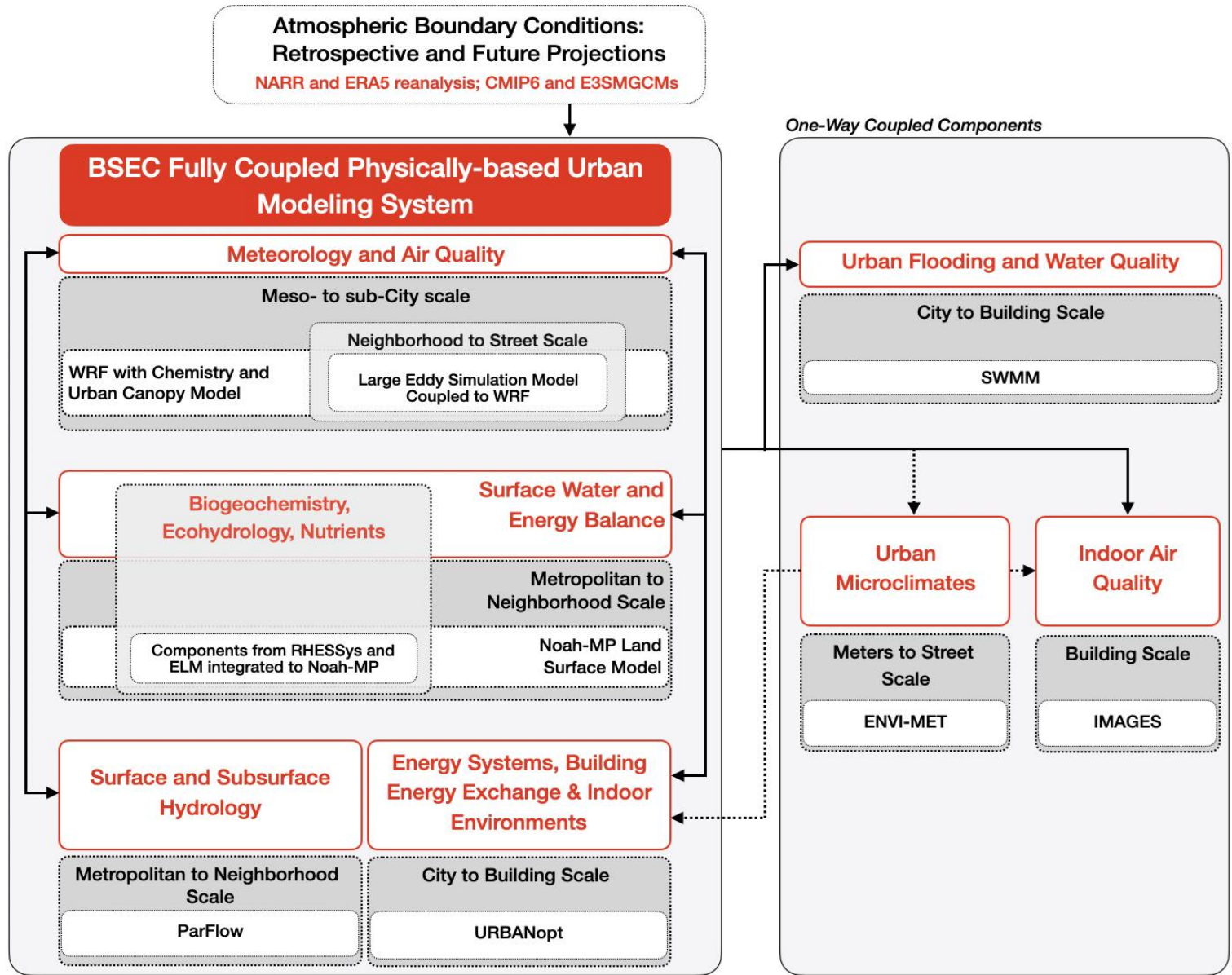
Changes in organic aerosol related to increasing secondary organic aerosol



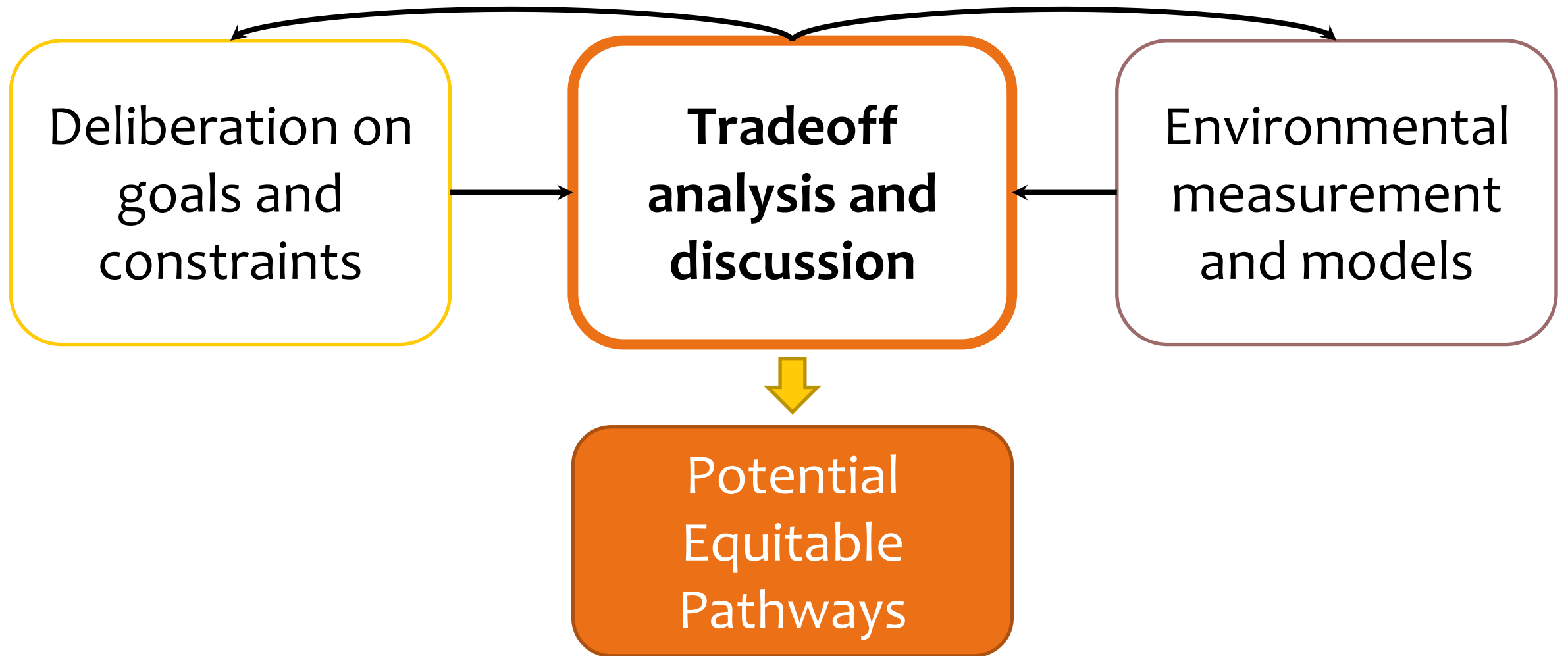
Modeling Framework



Modeling Framework



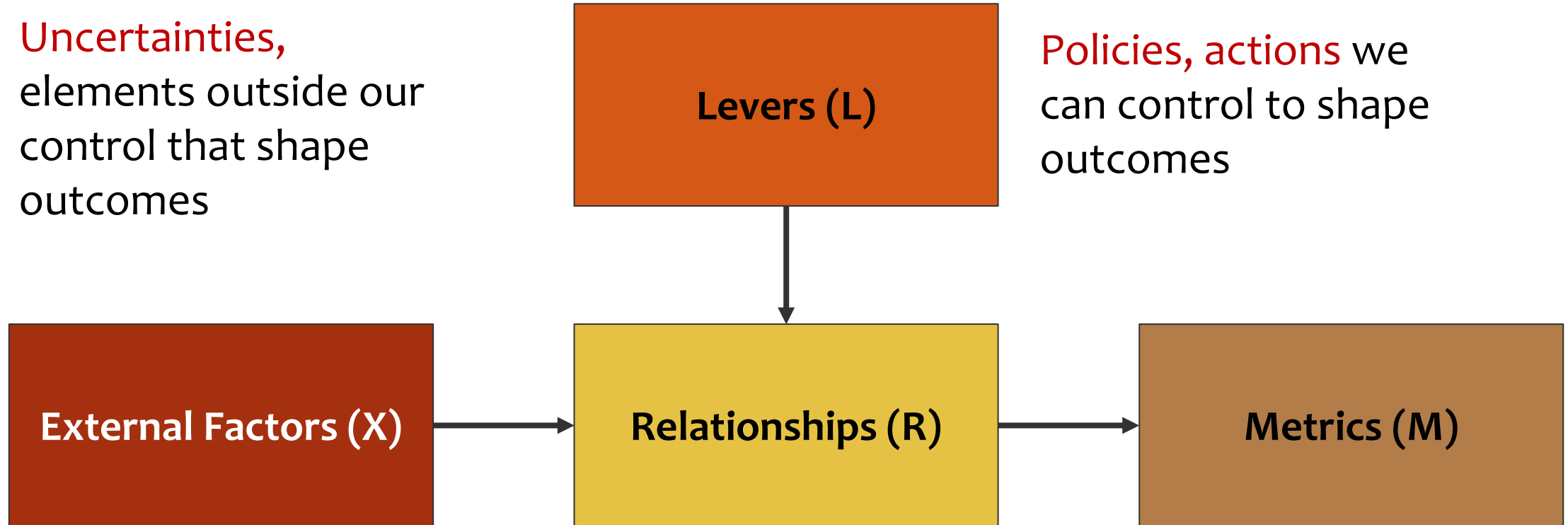
The BSEC Process



Structuring a Multicriteria Problem

Uncertainties,
elements outside our
control that shape
outcomes

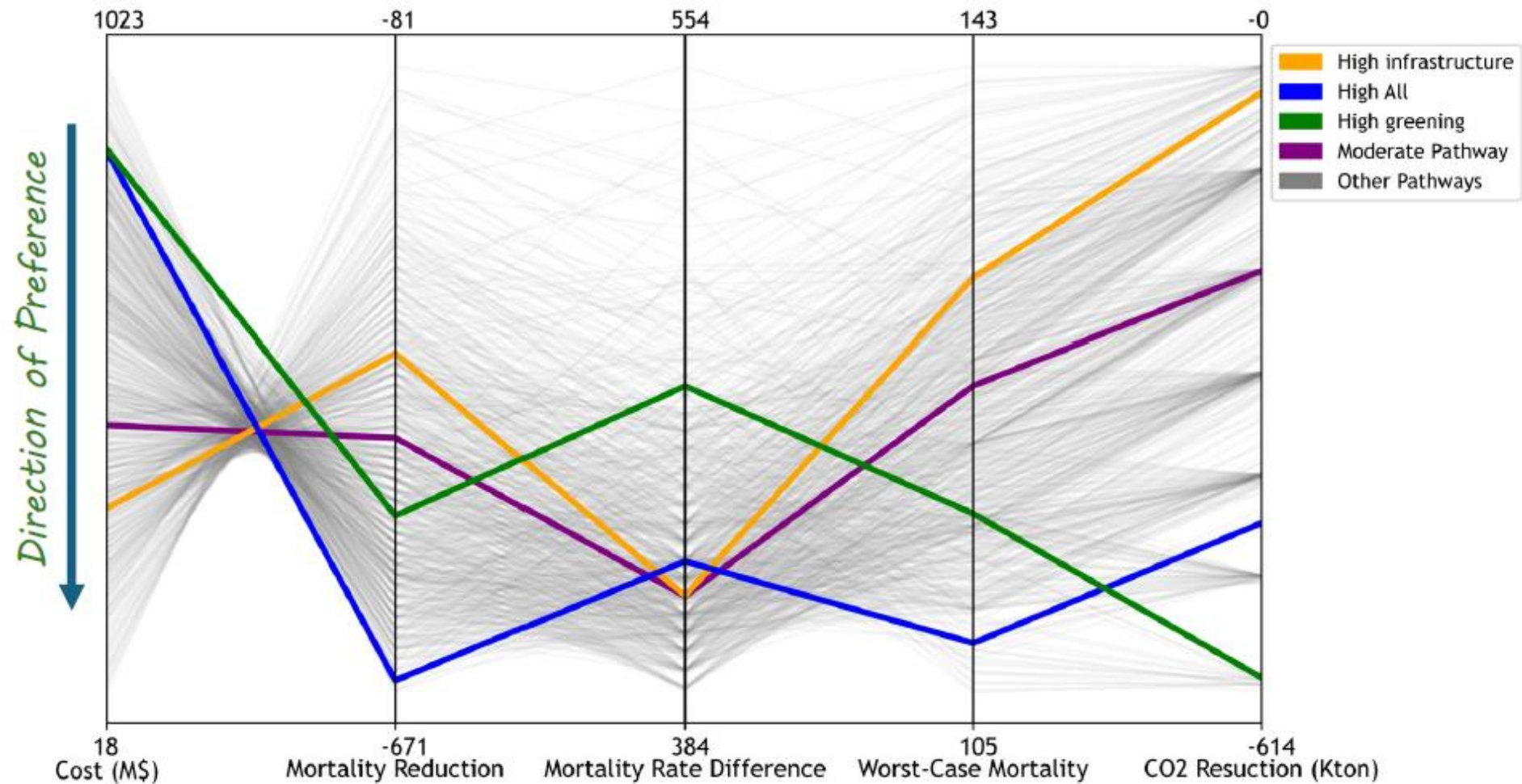
Policies, actions we
can control to shape
outcomes



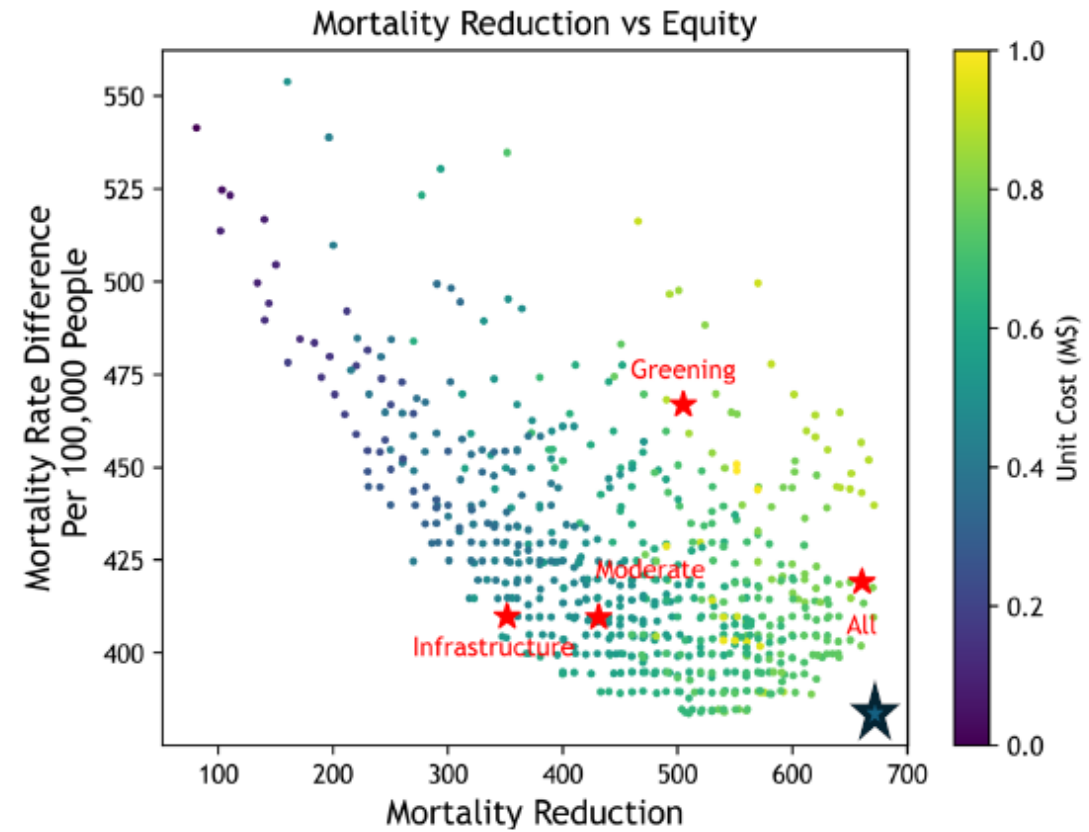
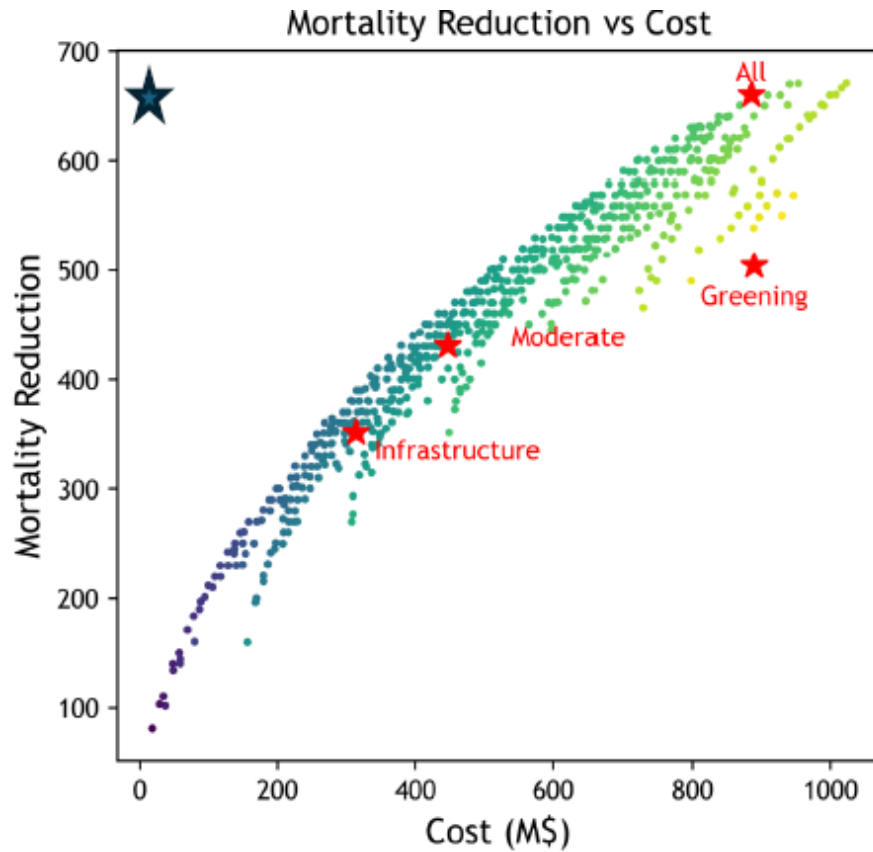
Models that map X's, L's, and
M's to each other

Goals and outcomes
we care about

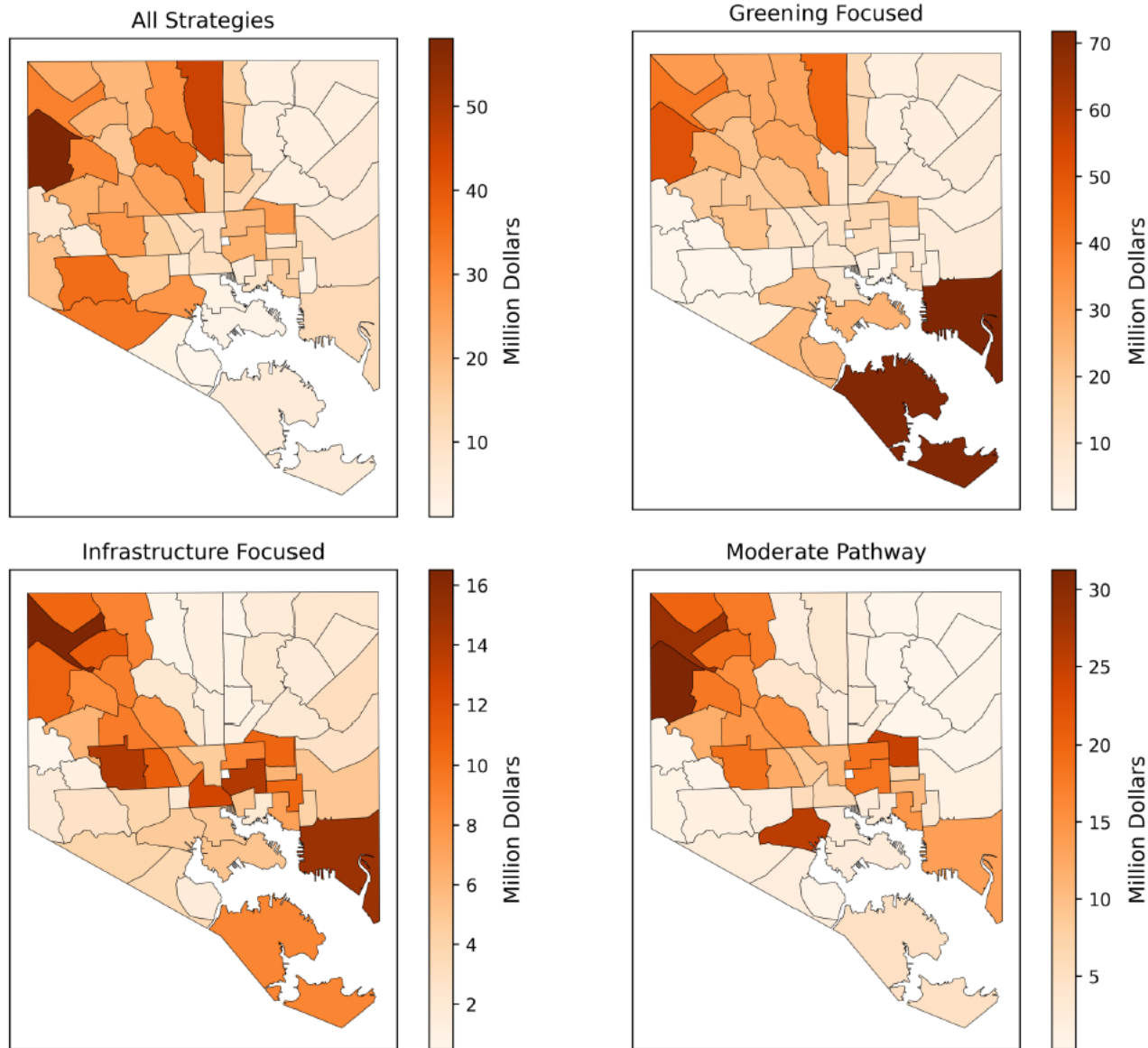
Extreme Heat Mitigation



Extreme Heat Mitigation

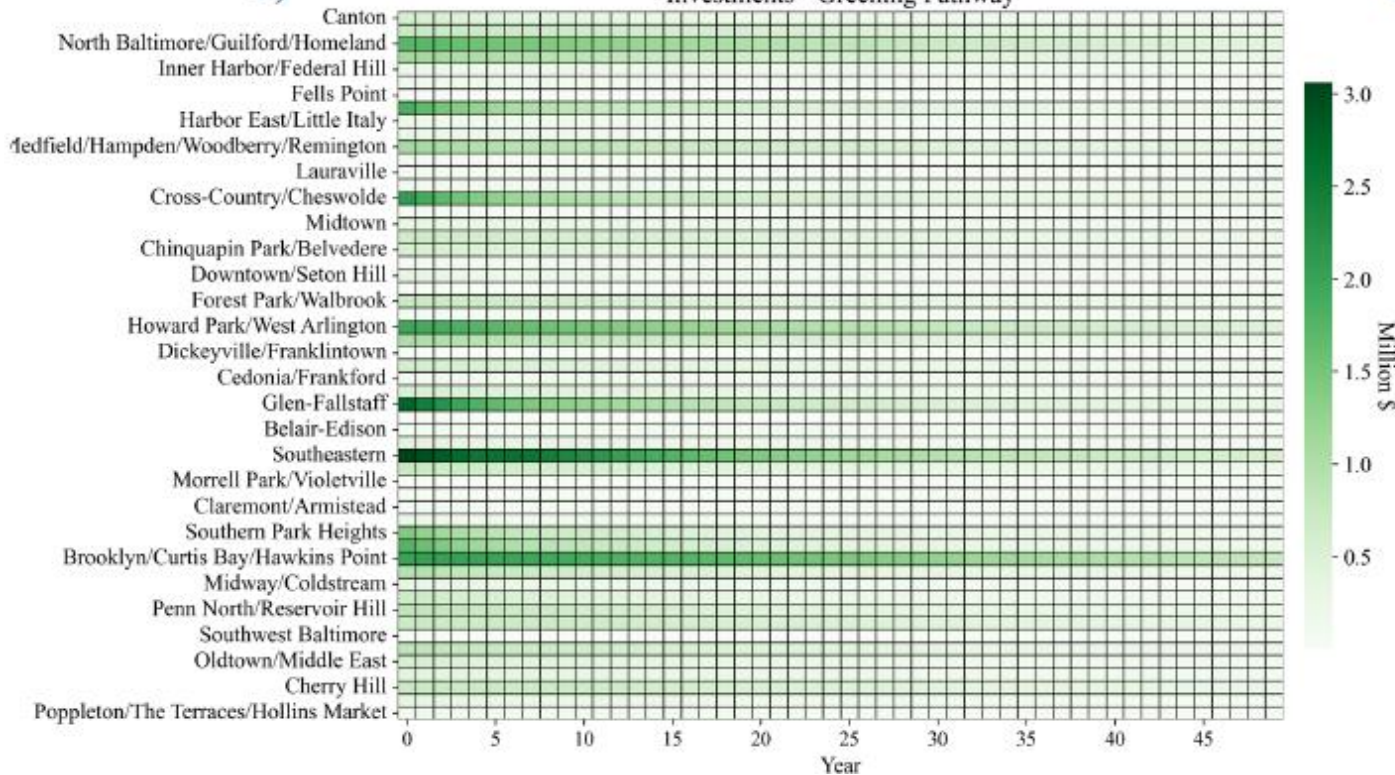


Extreme Heat Mitigation

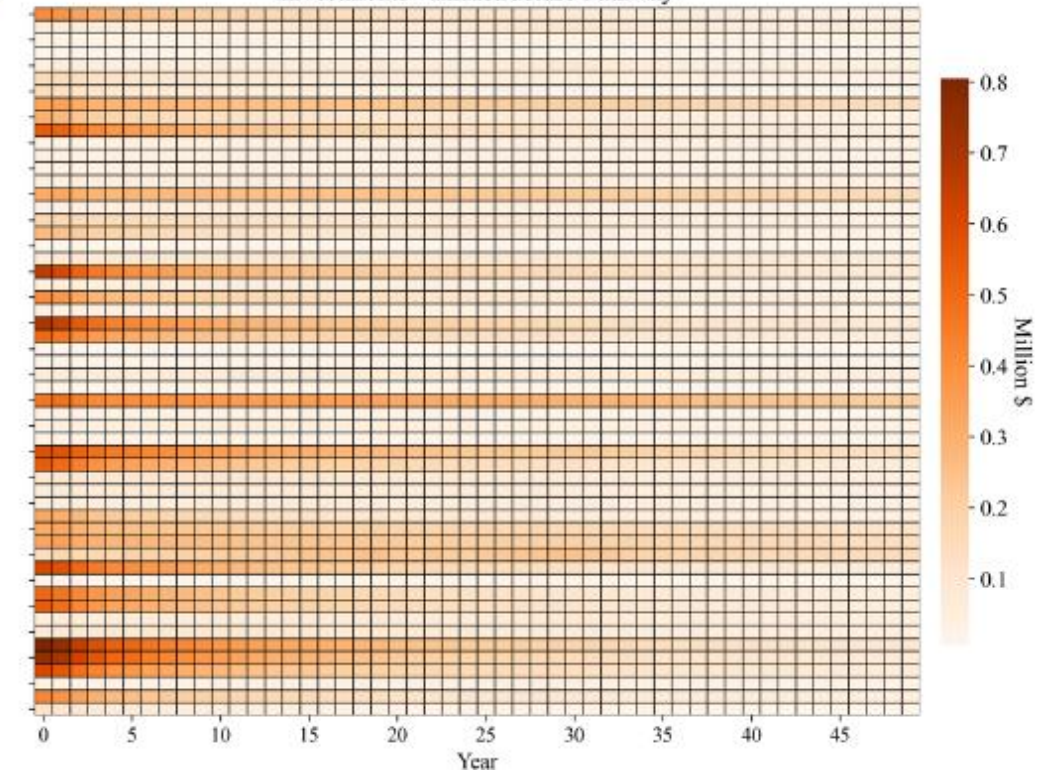


Extreme Heat Mitigation

a) Investments - Greening Pathway



b) Investments - Infrastructure Pathway





Coming Up!



Annual Meeting

**Community Engagement
Focused Updates and Panel
Discussions**

 <https://21cc.jhu.edu/bsec/>

-  Understand how Baltimore experiences climate change, with a focus on partnering with Baltimore communities.
-  Collaborate with communities to identify climate adaptation strategies that meet residents' needs, who may have insights that are novel to the researchers.

MEETING DETAILS

- Saturday, November 16, 2024
- 11am - 5pm
- Lovely Lane United Methodist Church
- 2200 Saint Paul St.

RSVP BY NOVEMBER 11TH



CONTACT US FOR MORE INFORMATION

Community Engagement Coordinator
khalia.young@morgan.edu



Thank you

