

Annex C

Final Technical Report: LEQSF-EPS(2022)-RAP-40 Assessing NASA's Open Science Outlook for Environmental Justice and Resilience of the Louisiana Gulf Coast (OSO-LoGiC)

In this annex, you will find presentations give at **OSO-LoGiC workshop products:**

1. OSO-LoGic dedicated workshop with NASA program officers, academics and community members:
 - a. Invitation
 - b. Agenda
 - c. Attendance
 - d. Notes for the record
 - e. Presentation on NASA data for EJ
 - f. Presentation on EJ and open science literature in Louisiana



TULANE
UNIVERSITY



Assessing NASA's Open Science Outlook for Environmental Justice and Resilience of the Louisiana Gulf Coast – the OSO-LoGiC: Convening of Researchers and Community Representatives

(The Tulane River and Coastal Center | March 16th | 9:00 am – 5:00 pm)

NASA has declared 2023 the year of open science and has initiated a new program element focused on equity and environmental justice. Join us on March 16th at the Tulane River and Coastal center to discuss how open science can contribute to the resilience of the Louisiana Gulf Coast. Meeting capacity is limited so please RSVP early here: [RSVP](#)

Purpose for convening: identify opportunities for collaboration, collective problem solving and capacity development that can enhance use of NASA open science resources to address Environmental Justice community priorities.

Participants:

- 10-15 researchers interested in NASA open science initiatives
- 15-20 Environmental Justice and Climate Justice organization and community representatives
- 4-5 NASA program officers who are open science experts, NASA program officers & chief scientists that will share the range of NASA assets for temperature, precipitation, sea level, disaster, archeology, etc.

Format: Plenary and small group discussions

Session sequence:

- Introducing NASA initiatives for open science, equity, and environmental justice
- Stock taking of climate and environmental Justice open science in Louisiana
- Round table discussions (based on EJ community prioritization of issues)
 - Open engagement and partnering
 - Fair data access
 - Open evidence-based communication and publishing
- Reflection and consensus seeking on priorities for NASA open science engagement in Louisiana
- Option to earn credit towards a NASA open science badge

Request expense support:

Limited support available to offset attendance-related expenses. Please request [HERE](#)

Assessing NASA's Open Science Outlook for Environmental Justice and Resilience of the Louisiana Gulf Coast – the OSO-LoGiC: Convening of Researchers and Community Representatives

(The Tulane River and Coastal Center | March 16th | 9:00 am – 5:00 pm)

Dear participant,

We are looking forward to a rich exchange on Thursday at the OSO-LoGiC Convening of Researchers Representatives. We will be a relatively small group and everybody will have a chance to share their research and environmental justice activities. A NASA program officers will lead some sessions, but we will have ample time to share experience and discuss how open science may benefit a broader set of stakeholders in Louisiana.

Agenda:

9:00 am -10:30 am Introduction to NASA TOPS and one another's research and EJ activities
10:30 am -12:00 pm Open Science Puzzle
12:00 pm -1:30 pm Lunch at Chapter IV
2:00 pm - 3:30 pm Round table on EJ community prioritization of issues

**Optional – 3:30 pm - 5:30 pm Learn and earn credit for NASA open science badges*

Parking will be available at the Tulane River and Coastal Center
1370 Port of New Orleans Pl, New Orleans, LA 70130

Link to google maps:

<https://goo.gl/maps/aM2VXFQzQ7hMmkLG6>

Kind regards,

Nathan Morrow

For additional information, please contact Dr. Nathan Morrow | nmorrow@tulane.edu | 646-858-6413







OSO-Logic convening
March 16th 2023

Expectations:

- Funding
- Successful results
- What EJ data sets exist
- Power and data
- Data hubs are to be centralized or decentralized

Common Ground Matrix:

Open Science:

Data to analyze:

Economic activity

Migration

Disaster resilience

Poverty alleviation

Exposures

Open science for diversity, equity and inclusion

Greater collaboration, participation, integration of ways of knowing

Data more available and digestible for use in research
(atmospheric data)

Open geospatial data sets

At community scale

Reducing boundaries to data and information

Preserving data to improve access

Data literacy and advocacy

Data for environmental permitting decisions

Public literacy and investment

Data quality and knowledge of secondary data uses and limits

Data sets for population based analysis

Transdisciplinary research

Open science linking scales

Environmental issue:

Equity and environmental justice

Community based participation – research – EJ CBOs

Data and EJ literacy to support EJ decisions

Climate and land loss and sea level rise

Climate adaptation

Displacement

Climate change

SLR

Air quality

Climate crisis

Economic and environmental exposures = new vulnerabilities

Environmental justice is social justice

Air quality and pollution related health outcomes

Health effects of industrial pollution

Assisting over burened communities with environmental, health and permitting data

Coastal erosion

Land loss

Health impacts of toxic exposure

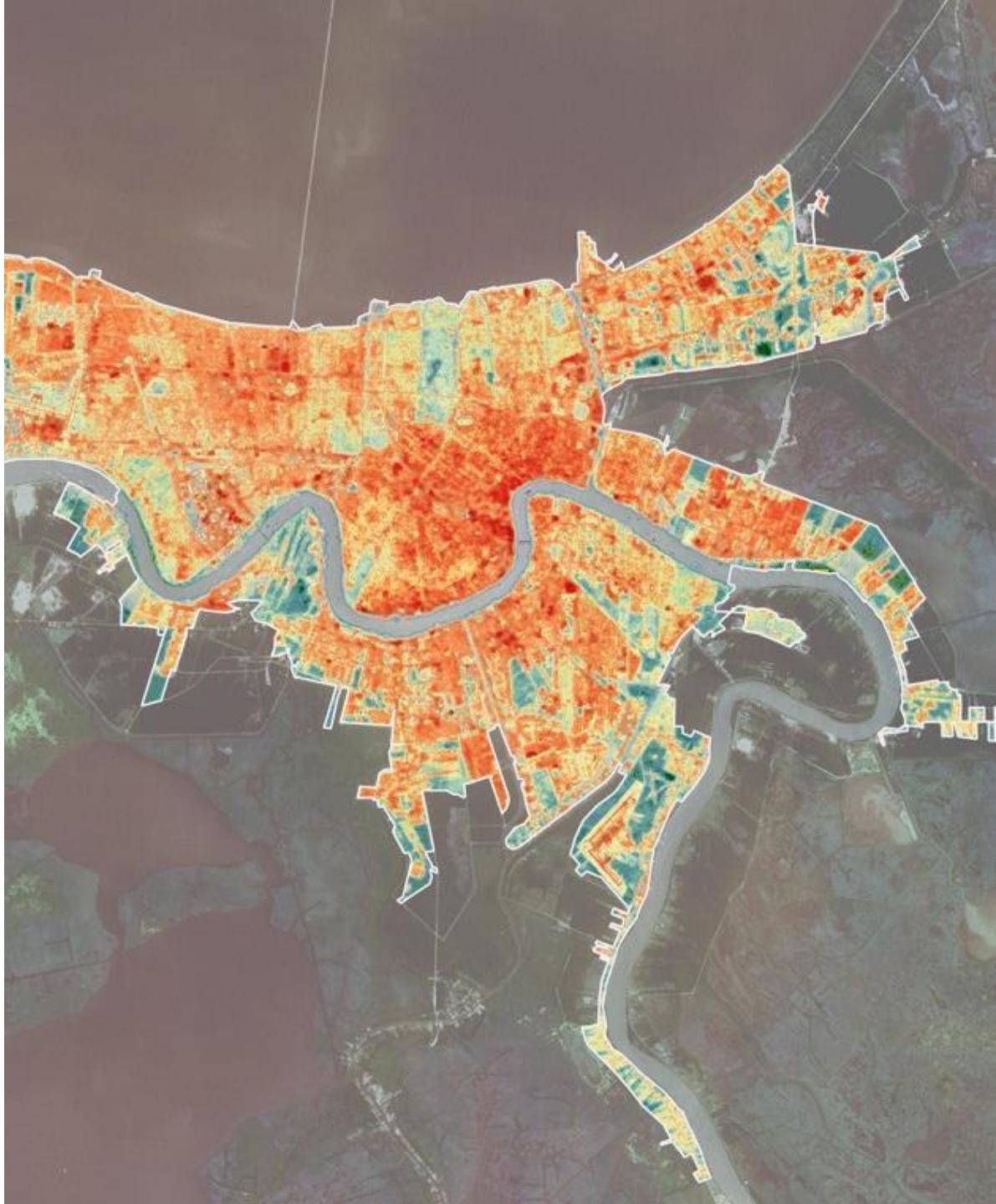
Linking regional and international economic data to inequitable impacts on local communities

Earth Observations for Environmental Justice

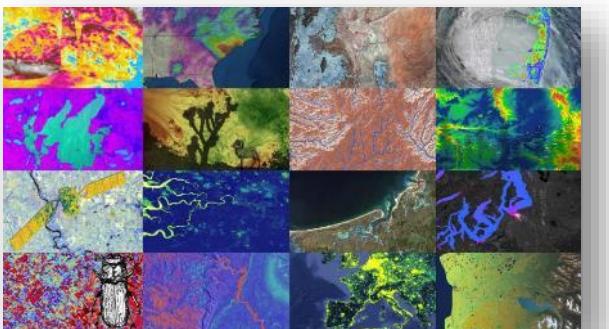
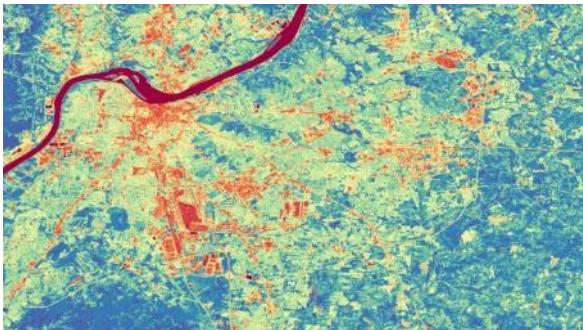
An Introduction & Resource Guide



EARTH SCIENCE
APPLIED SCIENCES



AGENDA & INTRODUCTIONS



Agenda

- Intro to NASA's Earth Science Division
- NASA EEJ Efforts
- ARSET & DEVELOP
- Environmental Justice Project Examples
- Remote Sensing Fundamentals
- Resources

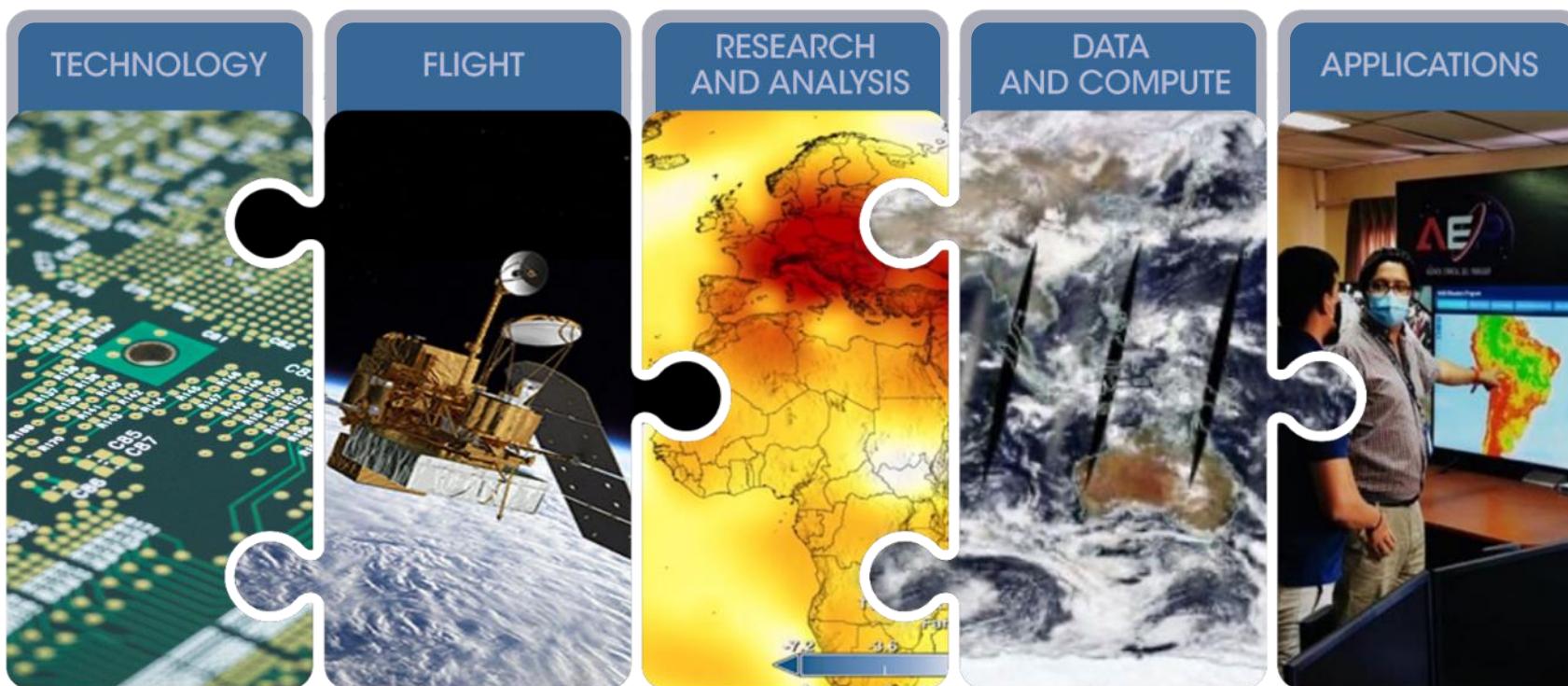
An Introduction To NASA Earth Science



INTRODUCTION: EARTH SCIENCE DIVISION

Earth Science Division

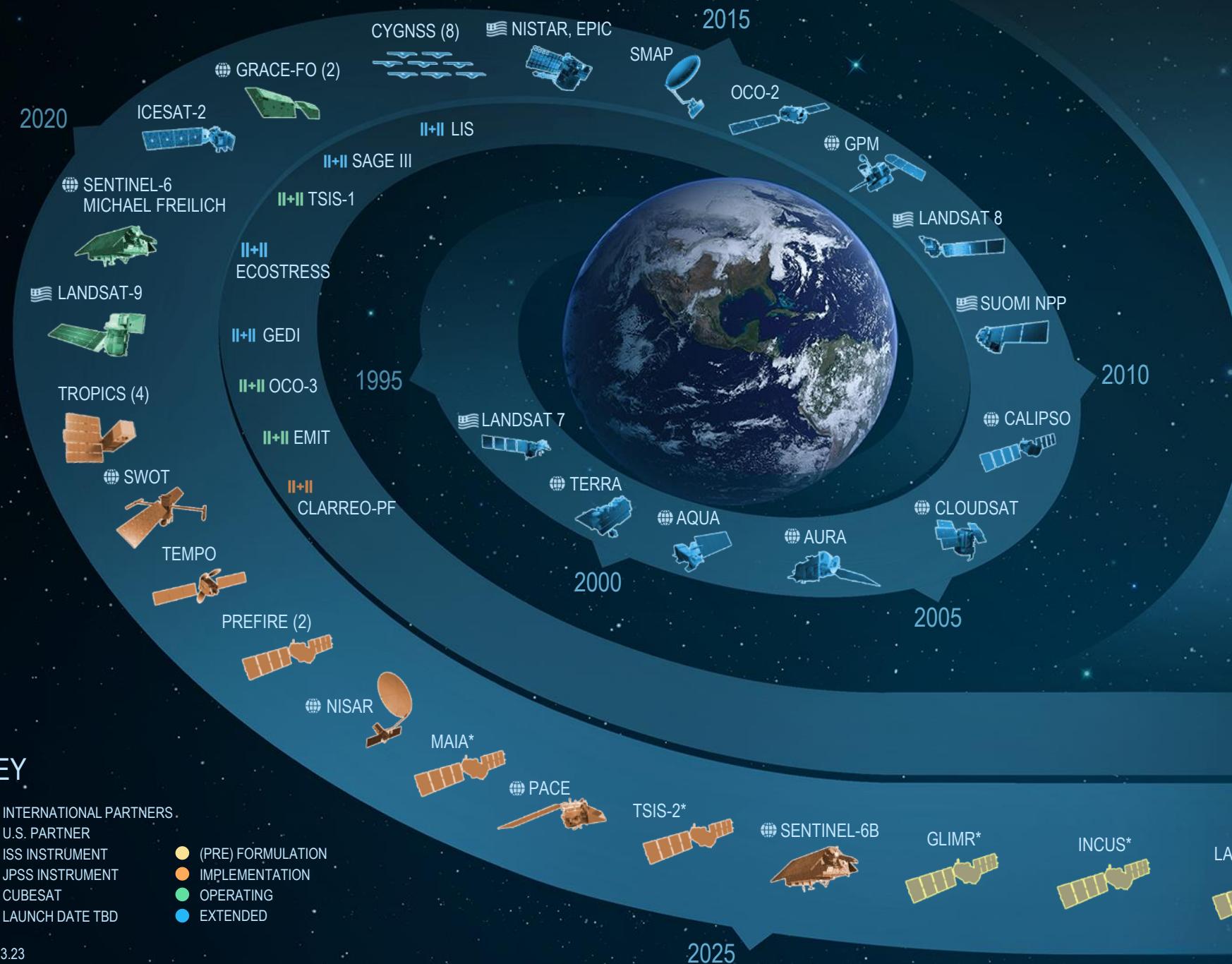
Using the global vantage point of space, ESD builds fundamental, scientific knowledge about Earth and how it is changing. ESD advances understanding of Earth as an integrated system and develops and tests applications that deliver direct societal benefit. It has five lines of business:





National Aeronautics and
Space Administration

EARTH FLEET



INVEST/CUBESATS

- CIRIS 2023
- NACHOS 2022
- CTIM 2022
- NACHOS-2 2022
- MURI-FD 2022
- SNOOPI* 2023
- HYTI* 2023

JPSS INSTRUMENTS

- OMPS-LIMB 2022
- LIBERA 2027
- OMPS-LIMB 2027
- OMPS-LIMB 2032

ISS INSTRUMENTS

MISSIONS

INTRODUCTION: APPLIED SCIENCES PROGRAM

Harnessing Earth observations to find solutions to Earth's greatest challenges.

The **Applied Sciences Program** helps people across the world use NASA data to solve big problems right here on Earth.

- Provides support and funding to help inform better decisions about our environment, food, water, health & safety
- Enables early and ongoing involvement of users throughout the lifecycle of Earth science satellite and instrument missions
- Supports improved abilities for users to ideate applications
- Three lines of business: **mission engagement, thematic applications, and capacity building**



INTRODUCTION: CAPACITY BUILDING PROGRAM

Making Earth Data Accessible to All

The **Capacity Building Program** provides individuals and institutions with workforce development, training activities, and collaborative projects as a means to strengthen understanding of Earth observations and expand their use around the world.

We work with everyone at every level — from first-time users to long-time professional users of Earth science data. We work to promote open data access and coordinate capacity building activities focused on users needs.

Four elements:

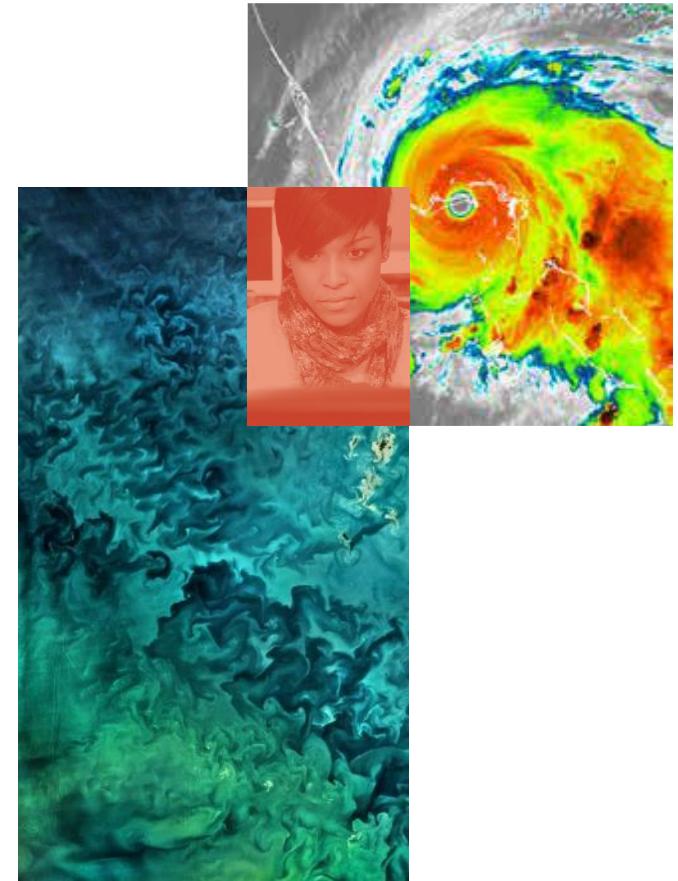
ARSET

DEVELOP

SERVIR

Community Action

Indigenous Peoples Initiative, Prizes & Challenges, and
Equity & Environmental Justice



INTRODUCTION: CAPACITY BUILDING PROGRAM

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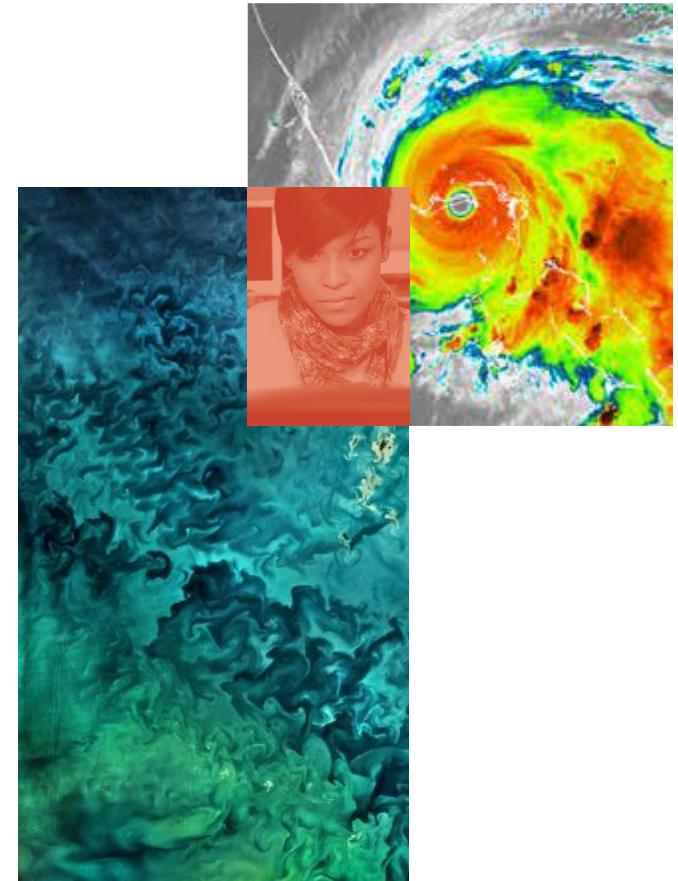
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Indigenous Peoples Initiative, Prizes & Challenges, and
Equity & Environmental Justice



NASA's Equity & Environmental Justice

Communities around the world are facing environmental challenges, including poor air and water quality, sea level rise, extreme heat, and more. Marginalized communities, particularly in the poorest and most vulnerable areas, bear the burden of these challenges. The EEJ program is committed to ensuring that the investment the nation has made in NASA satellites and science benefits people across the U.S. and helps them make informed decisions about the very real challenges they face in their communities.

EEJ Efforts & EJ-related Activities:

- 39 ROSES A.49 projects
- 1 FINESST project
- 1 AIST project
- *A subset of Indigenous Peoples Initiative activities*
- *A subset of DEVELOP projects*

EEJ Program Team:

- **Program Manager:** Owen Hooks
- **Associates:** Shobhana Gupta, Emma Yates, Sabrina Delgado Arias, Lauren Childs-Gleason, and Nikki Tulley
- **Interns:** Gina Knox, Emily Loker, Izellah Sanchez, Cari Reinert, and Nati Phan
- **CBP Support:** Sydney Neugebauer

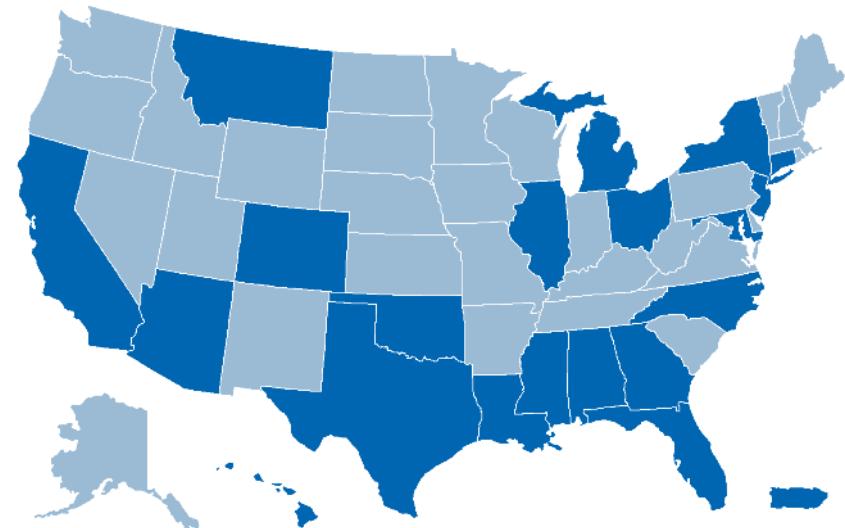
ROSES A.49 Solicitation Purpose & Objectives

Purpose: Advance progress on EEJ domestically through better understanding of community needs and increased use of Earth science, geospatial, and socioeconomic information.

Objectives:

- Advance EEJ and those that work to promote it, enabling uses of Earth science information in its support.
- Advance NASA ESD's understanding of issues faced by EJ and underserved communities, preferred engagement approaches, organizations supporting them, and effective ways for ESD to contribute.
- Advance integration of Earth science, geospatial, and socioeconomic information.
- Expand the community of practice who use Earth science to advance environmental justice issues and inform future strategies.

Geographic Reach of 39 Projects Selected



Direct community impact
Indirect community impact

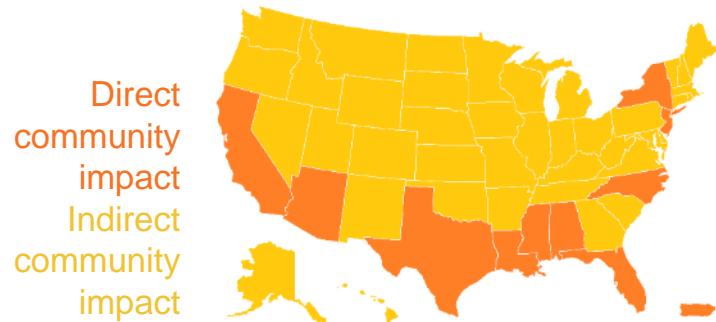
INTRODUCTION: EEJ

Landscape Analyses

Studies that use participatory data collection and assessment processes to increase NASA's understanding of the EEJ "landscape". Projects support characterization of EJ communities, environmental issues they face, their familiarity/use of EO, and opportunities for working with them to support planning and investment decisions.

Length: 6-9 months

10 Landscape Analyses

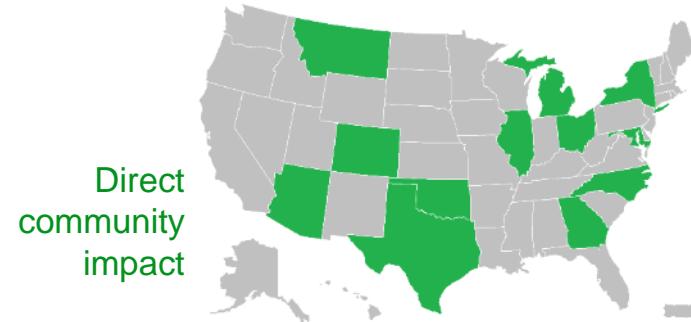


Community-based Feasibility Studies

Short-term projects that explore and test ways to address environmental issues facing EJ and underserved communities with the help of Earth science and geospatial information. Address community needs by co-designing with community organizations projects tailored to community needs and test and validate use of EO for local decision making.

Length: 12-18 months

13 Feasibility Studies

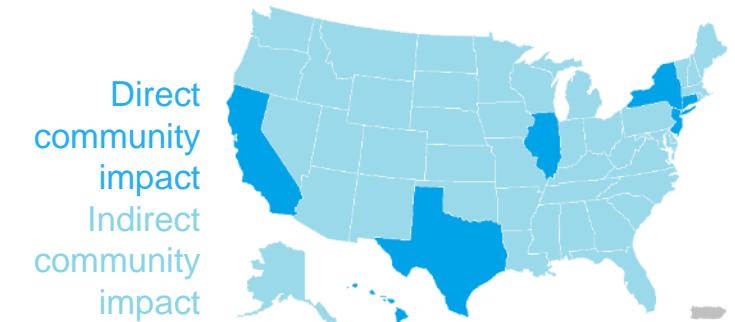


Data Integration Projects

Projects that develop, test, and demonstrate sustained use of integrated Earth science, geospatial, and socioeconomic data, tools, and/or applications to support EJ communities with novel insights into community-level management. Culminate in GIS-enabled products or tools for public dissemination to support EEJ communities.

Length: 12-24 months

16 Data Integration Projects





Data Integration
Projects

Feasibility
Studies

Landscape
Analyses

3	9	10	0	7	4	2	1	1	6	1
0	8	6	1	4	4	1	2	1	5	3
1	6	4	0	3	1	2	3	1	1	3

INTRODUCTION: EEJ

Thematic Topics Addressed

- 22 Heat projects, topics:** Extreme Heat, Urban Heat Islands, Climate Hazards
- 14 Ecological Conservation, topics:** Urban greenspace, Green infrastructure, Urban Forestry, Tree canopy coverage
- 13 Air Quality projects, topics:** Air pollution, Wildfire Smoke
- 10 Disasters projects, topics:** Urban flooding, Green infrastructure solutions, Stormwater management
- 5 Wildfires projects, topics:** Fire management, Fire risk & exposure
- 4 Water projects, topics:** Water pollution, Stormwater management, Precipitation monitoring, Green infrastructure solutions
- 4 Agriculture projects, topics:** Crop health, Food insecurity, Urban ag, Ag burning

INTRODUCTION: ARSET

Applied Remote Sensing Training Program (ARSET)

ARSET offers trainings for beginners and advanced practitioners alike. Trainings cover a range of datasets, web portals, and analysis tools and their application for multiple thematic areas. Since 2009, the program has reached over 95,000 participants from 180 countries and more than 17,000 organizations worldwide.

Offers: Online Trainings (Self-paced and live webinars) & In-Person Trainings

All materials are archived on the website: <https://appliedsciences.nasa.gov/arset>

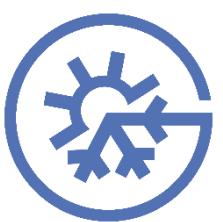
Thematic Areas:



Ecological
Conservation



Water
Resources



Climate &
Resilience



Health &
Air Quality



Disasters



Wildland
Fires



Agriculture

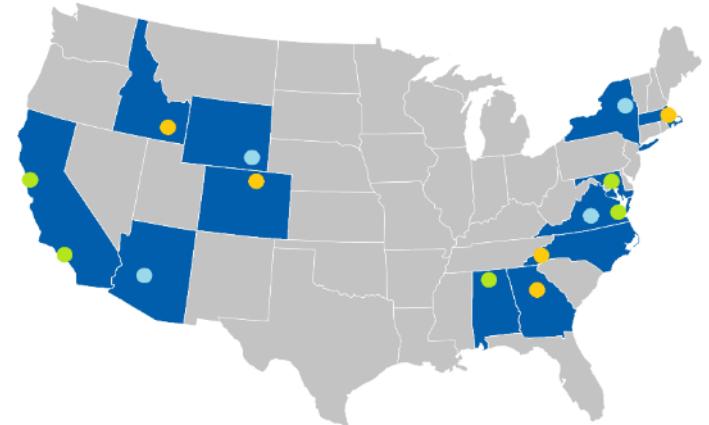


ARSET Trainings of Interest

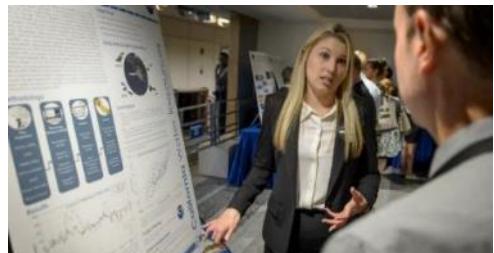
- **Floods:** Monitoring & Modeling Floods using Earth Observations
- **Urban Heat:** Satellite Remote Sensing for Urban Heat Islands
- **Urban Heat:** Satellite Remote Sensing for Measuring Urban Heat Islands and Constructing Heat Vulnerability Indices
- **Disaster Risk:** Earth Observations for Disaster Risk Assessment & Resilience
- **Wildfires:** Satellite Observations and Tools for Fire Risk, Detection, and Analysis
- **Air Quality:** High Resolution NO₂ Monitoring From Space with TROPOMI
- **Data Integration:** Introduction to Population Grids and their Integration with Remote Sensing Data for Sustainable Development and Disaster Management

INTRODUCTION: DEVELOP

DEVELOP bridges the gap between NASA Earth Science and society by building skills to use satellite data in participants and partners.



- Dual capacity building program that empowers participants and partner organizations to use Earth observation data to inform environmental decision-making
- 10-week feasibility studies centered on organizations' decision-making interests
- Interdisciplinary project teams access and apply satellite data under the guidance of NASA and partner science advisors
- Workforce development program for individuals 18+, open to students and non-students, all majors and backgrounds



Project Characteristics

50+ DEVELOP projects take place each year – at their core they share these characteristics:

- Assess the feasibility of using NASA and other Earth observation data for to address community concerns relating to decision-making for real-world environmental issues
- Co-developed with partner organizations who can benefit from using NASA Earth observations to enhance decision making by providing decision support tools
- Conducted in 10-week terms (spring, summer, and fall) by small teams with diverse backgrounds and create a consistent set of deliverables
- Research is conducted under the guidance of Science Advisors from NASA & partner organizations
- Align with at least one of the ten thematic application areas:



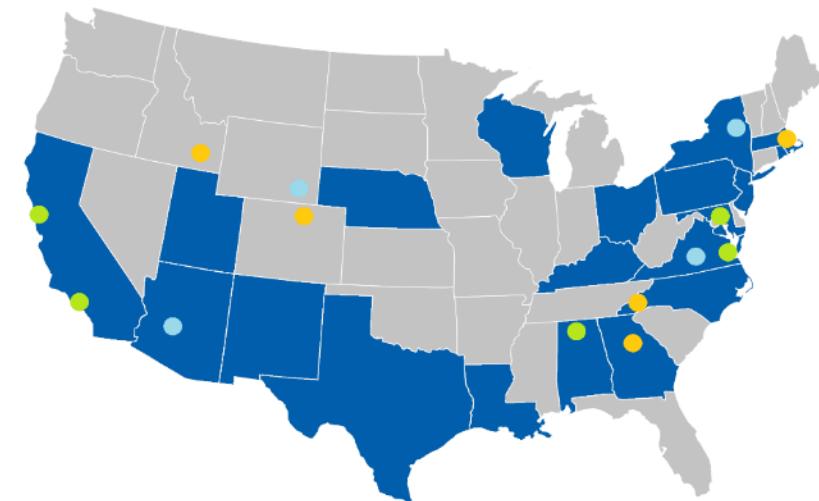
DEVELOP's EJ Projects

The program has conducted dozens of projects working with non-profits and local governments to identify how Earth observations and socioeconomic data can be combined to better understand the inequities and injustices that some communities face and support informed decision making and action to address them.

Project themes: extreme heat & urban heat island effects, urban tree canopy coverage, urban flooding, and landslide risk

The projects have worked in over 20 states and counting, with partners such as:

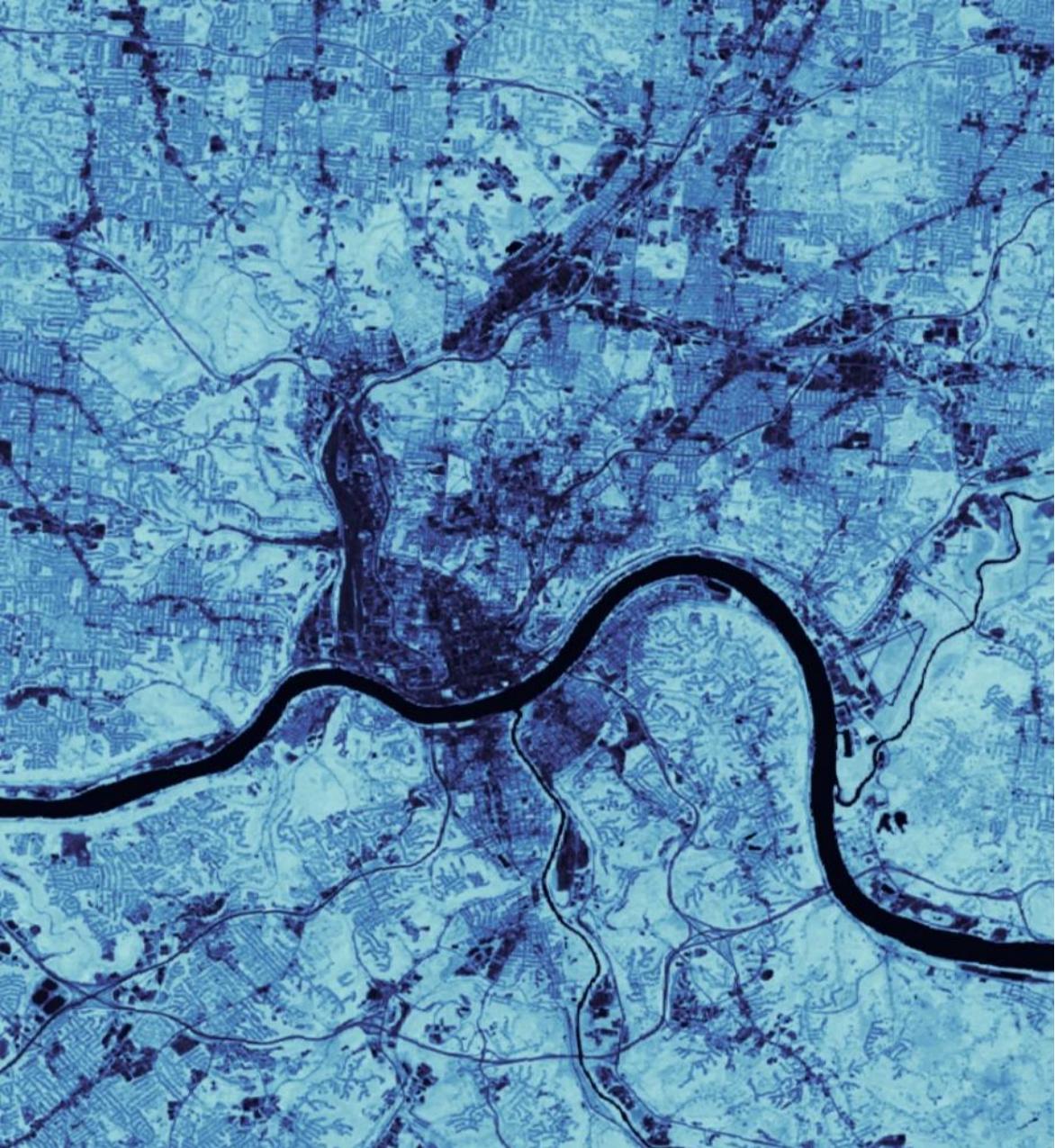
- Groundwork USA & its network of trusts around the U.S.
- City of Austin, Office of Sustainability
- Philadelphia Department of Public Health
- City of New York, Mayor's Office of Resiliency
- AGU's Thriving Earth Exchange
- Louisiana Public Health Institute
- Charles River Watershed Association
- Transportation Alternatives (NYC)



3 DEVELOP Project Examples:

1. Cincinnati & Covington Urban Development
2. Kansas City Disasters II
3. Milwaukee Urban Development II





DEVELOP



National Aeronautics and
Space Administration



Cincinnati & Covington

Urban Development II

Assessing Flooding and
Landslide Susceptibility along
the Ohio-Kentucky Border

Paxton LaJoie, Edward Cronin, John Perrotti, Erin Shives, &
Sophie Webster

Massachusetts – Boston | Summer 2021



Project Overview

Study Area

- Cincinnati, OH & Northern Covington, KY

Study Period

- 2004 – 2021

Partner Organizations

- Groundwork USA
- Groundwork Ohio River Valley

Community Concerns

- Damage of floods and landslides to community health and safety
- Loss of local infrastructure
- Costly repairs

Earth Observations:

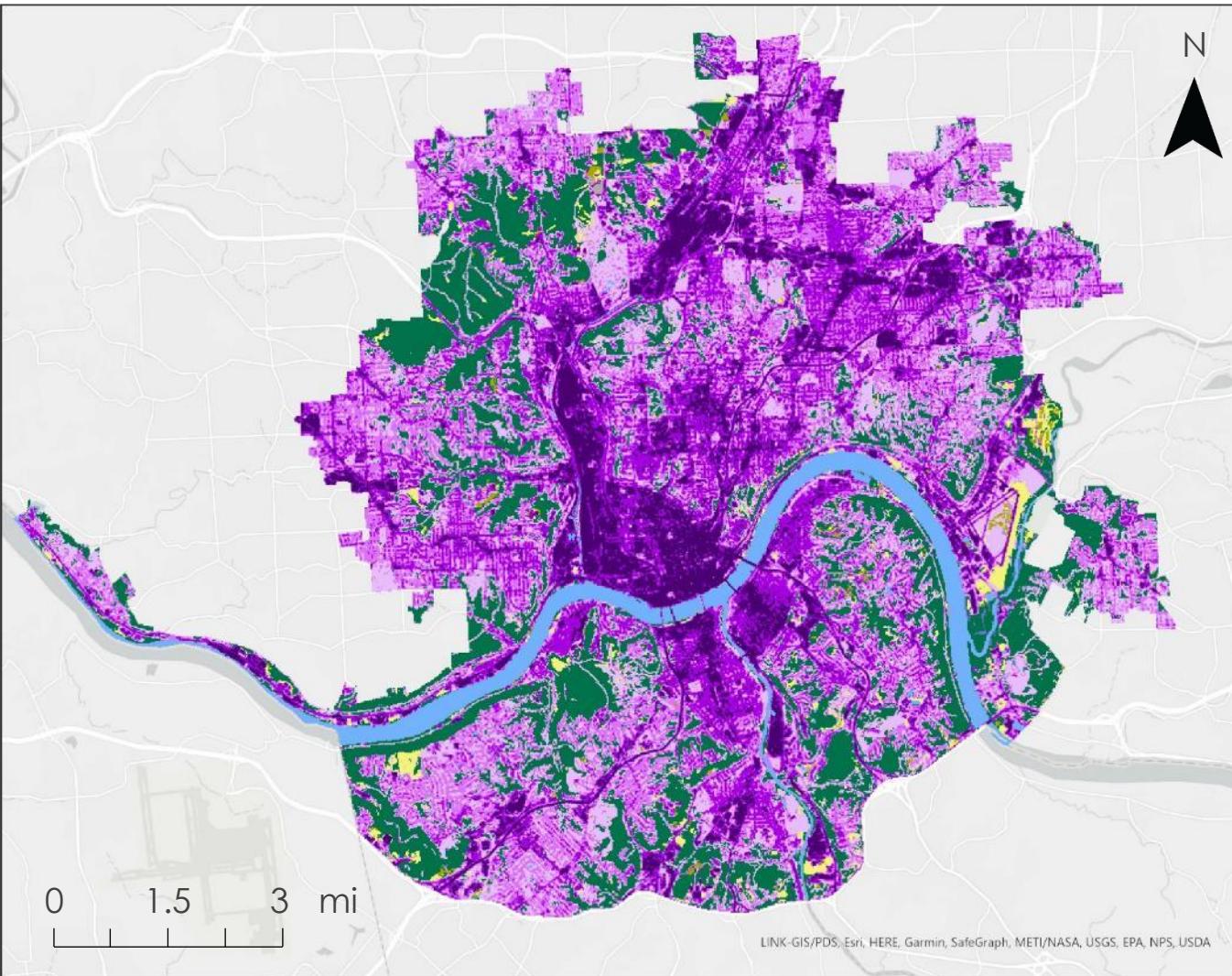
- Landsat 8 OLI/TIRS
- GPM IMERG



Project Objectives

- Map stormwater runoff, runoff retention, and potential damage cost
- Map landslide susceptibility and exposure
- Create a standard operating procedure for future analysis

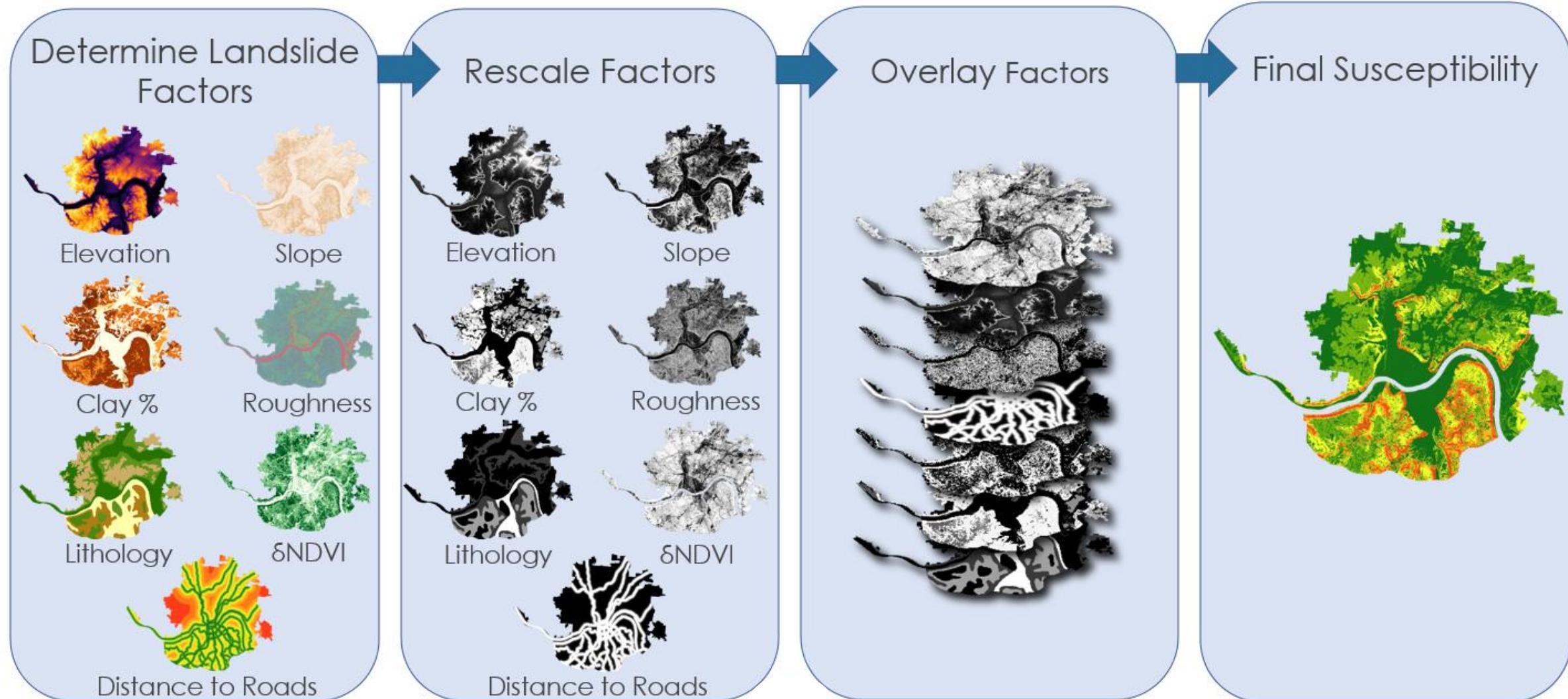
Land Use Land Cover



- Developed, Open Space < 20% impervious surface
- Developed, Low 20 – 49% impervious surface
- Developed, Medium 50 – 79% impervious surface
- Developed, High 80 – 100% impervious surface
- Open Water
- Wetlands
- Forest
- Shrub & Grassland
- Agriculture Fields
- Barren Land

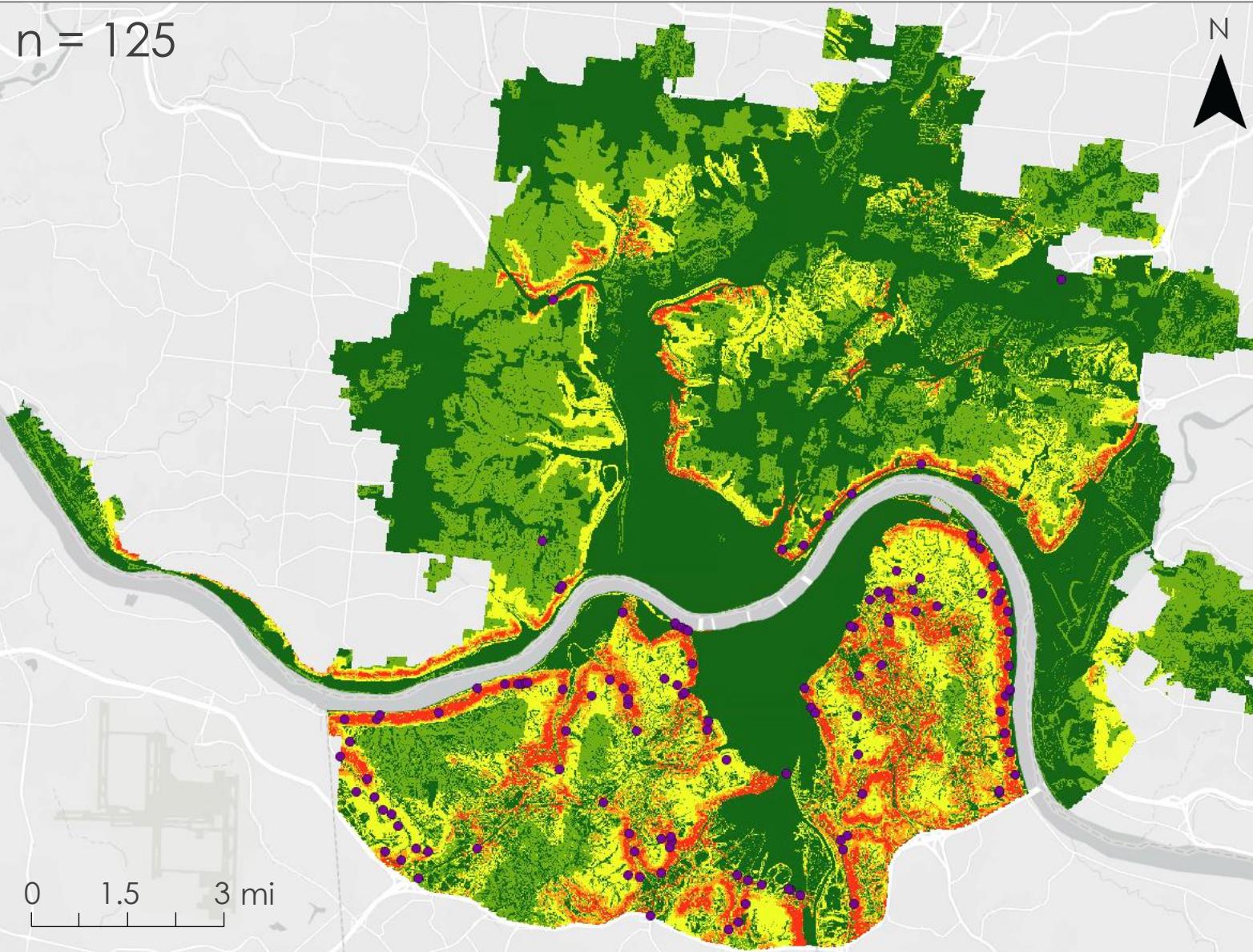


Methodology: Landslide Susceptibility Mapping



Validation: Landslide Occurrence

n = 125



- Very High Susceptibility: 95-100%
- High Susceptibility: 90-95%
- Moderate Susceptibility: 75-90%
- Low Susceptibility: 50-75%
- Very Low Susceptibility: 0-50%
- Landslide Occurrence

Landslide Exposure Mapping

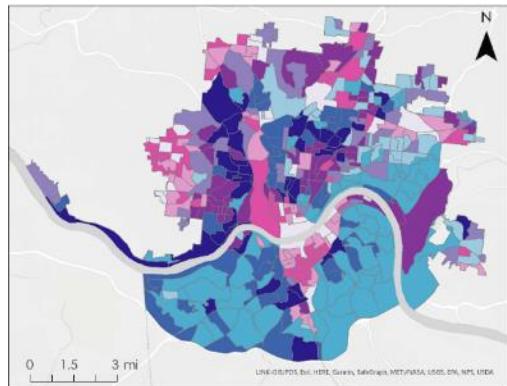
Landslide
Susceptibility



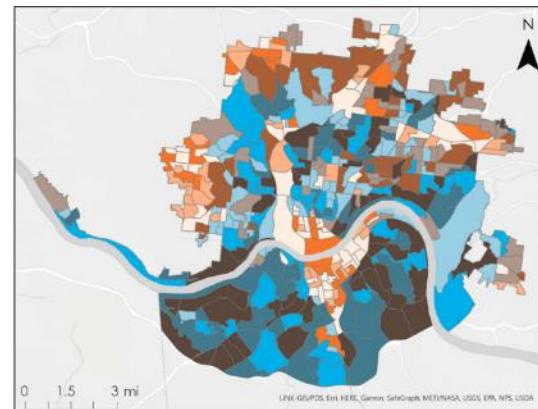
Socioeconomic
& Population
Factors



Landslide
Exposure Maps



Impoverished Population

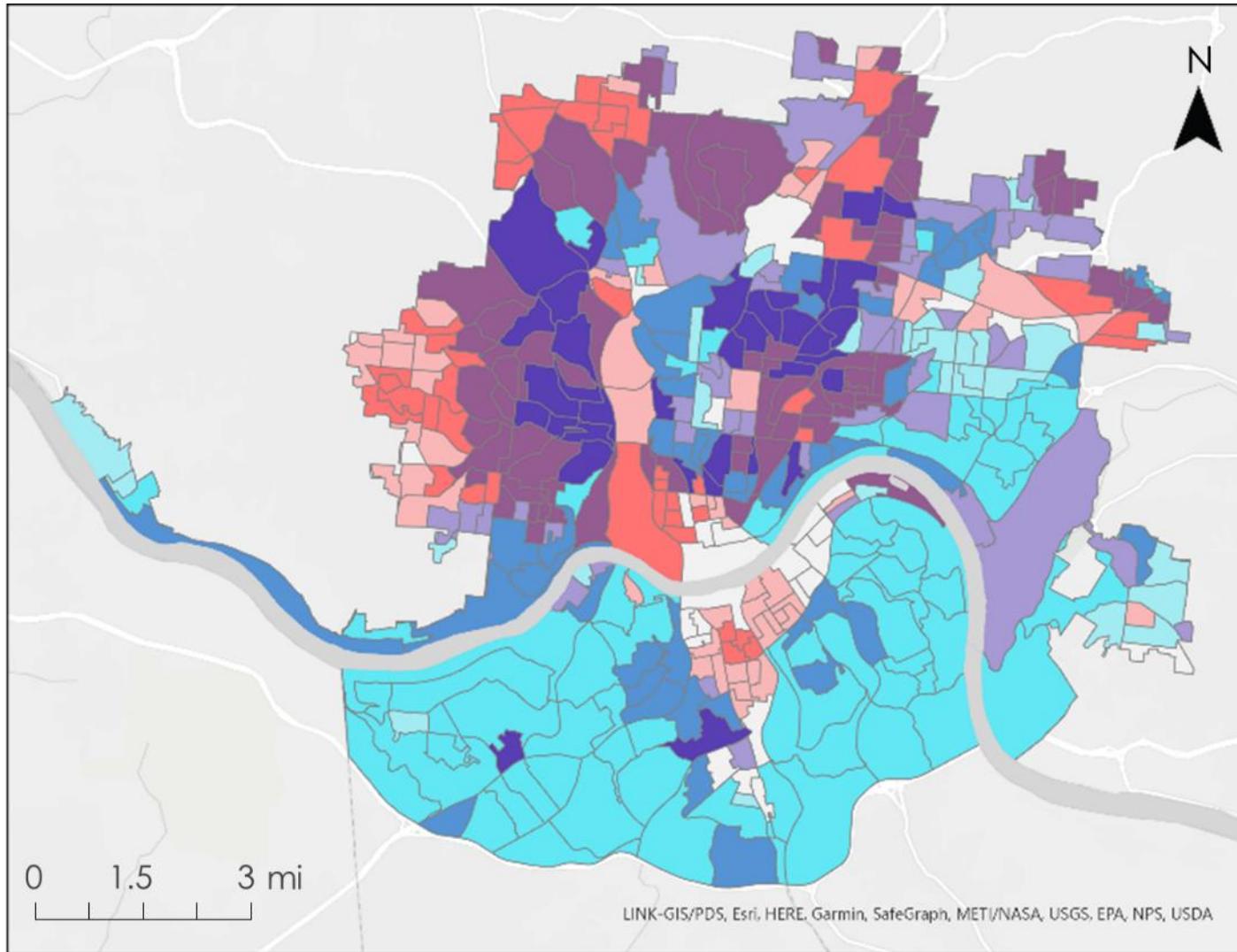


Elderly Population



African American

Combined Landslide Exposure Map



Landslide
Susceptibility

High

Low



Vulnerable
Groups
Population
Density



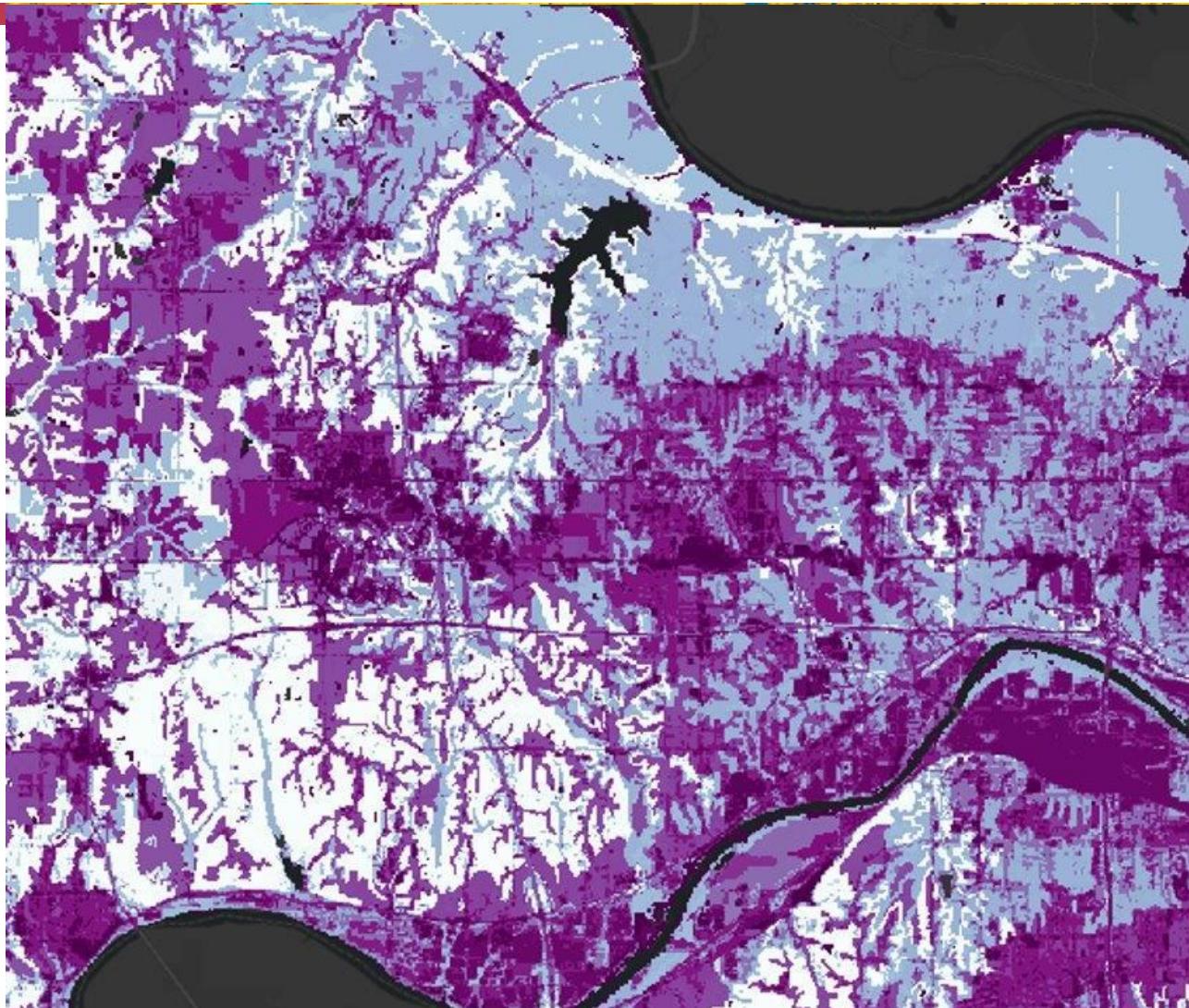
Kansas City

Disasters II

Analyzing Precipitation and Land Cover
Data to Refine the Assessment of Urban
Flood Vulnerability

Nora Carmody
Dain Kim
Kameron Lloyd
Ruby Nagelberg

National Aeronautics and
Space Administration



Project Overview

Study Area

- ▶ Wyandotte County, Kansas



Study Period

- ▶ January 2000 – December 2020

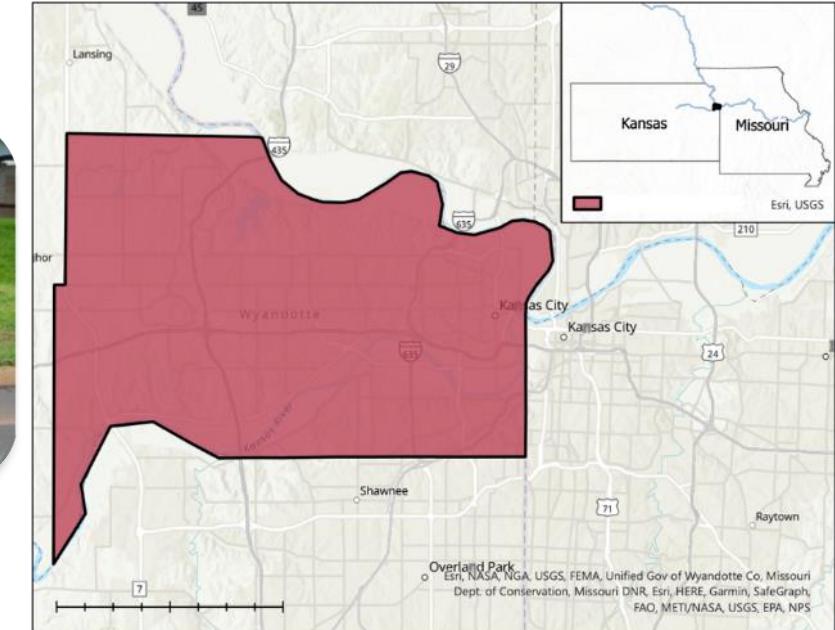
Partner Organizations

- ▶ Groundwork USA
- ▶ Groundwork Northeast Revitalization Group

Community Concerns

- ▶ Polluted runoff
- ▶ Combined Sewer Overflows (CSOs)
- ▶ Impervious surfaces in disinvested neighborhoods

Earth Observations: GPM IMERG

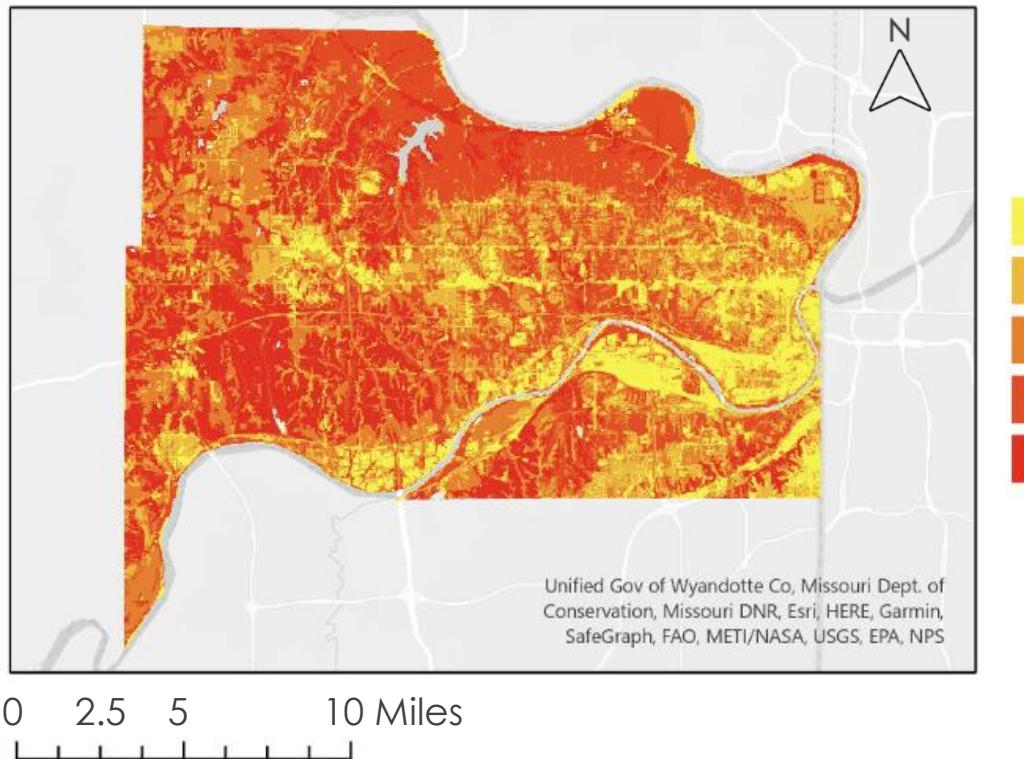


Project Objectives

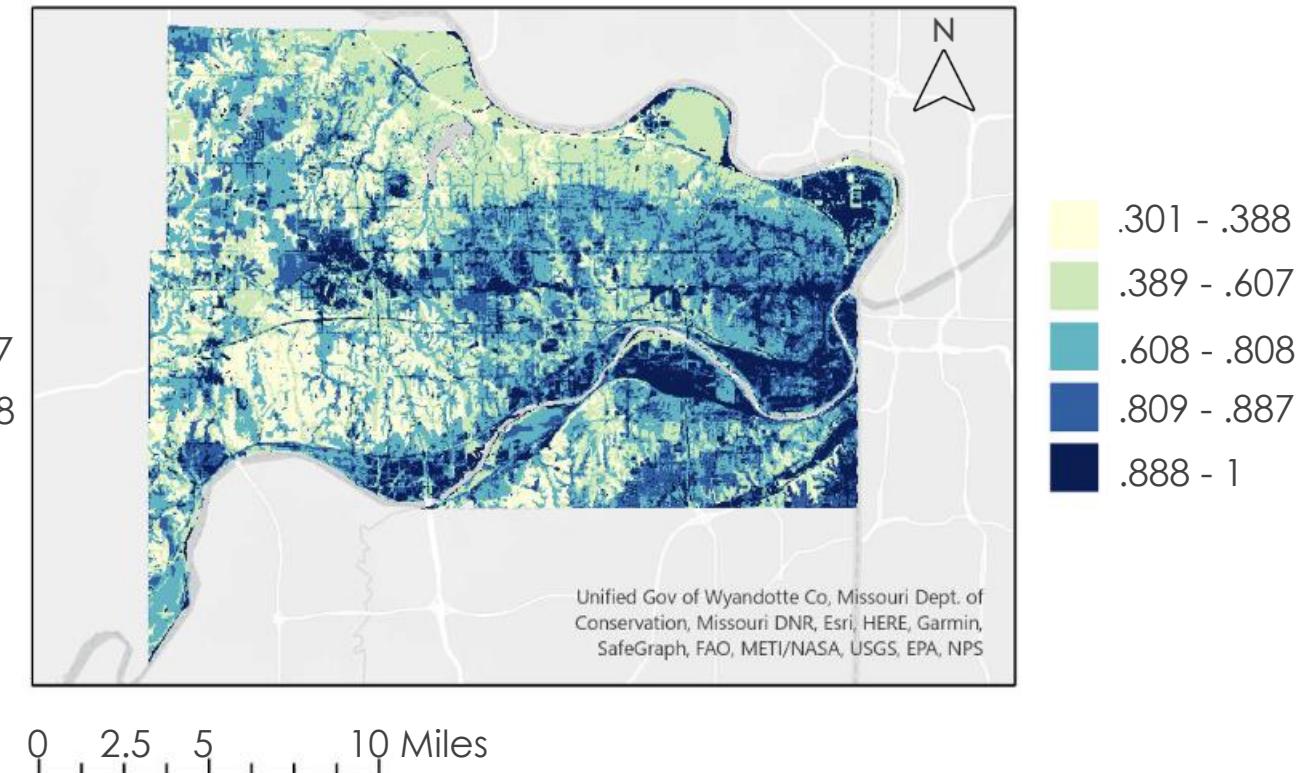
- ▶ Identify areas with low rates of stormwater retention
- ▶ Examine inequitable distribution of ecosystem services affecting water quality
- ▶ Explore implications of land cover variance on socio-economically vulnerable populations
- ▶ Identify points of intervention for green infrastructure projects

RESULTS: InVEST Outputs - Retention/Runoff

2020 Retention Ratios



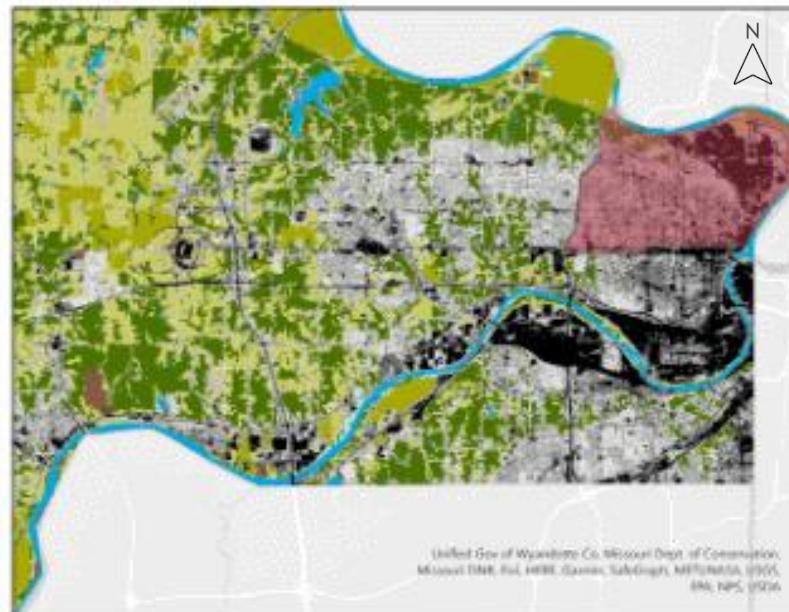
2020 Runoff Ratios



RESULTS: Land Cover Change

Land Cover Classification

2001

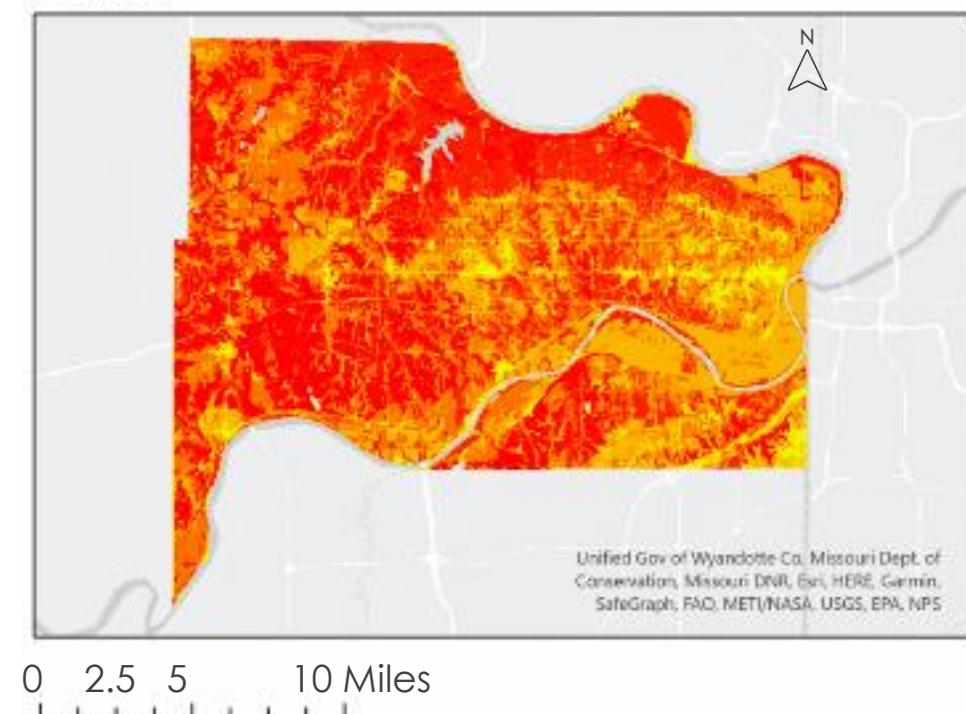


- Open water
- Developed open land
- Developed low intensity
- Developed medium intensity
- Developed high intensity
- Barren land
- Wooded
- Grassland
- Pasture
- Cultivated crops
- Wetlands

0 2.5 5 10 Miles

Retention Ratios

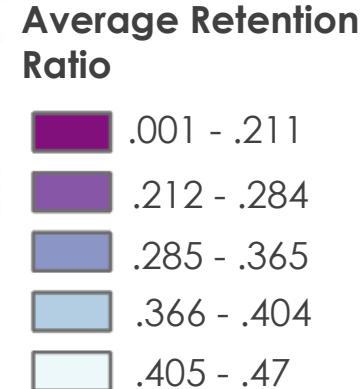
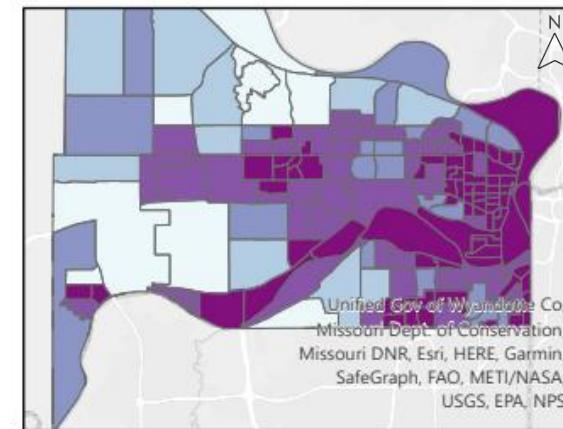
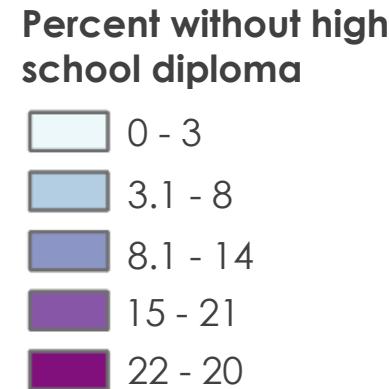
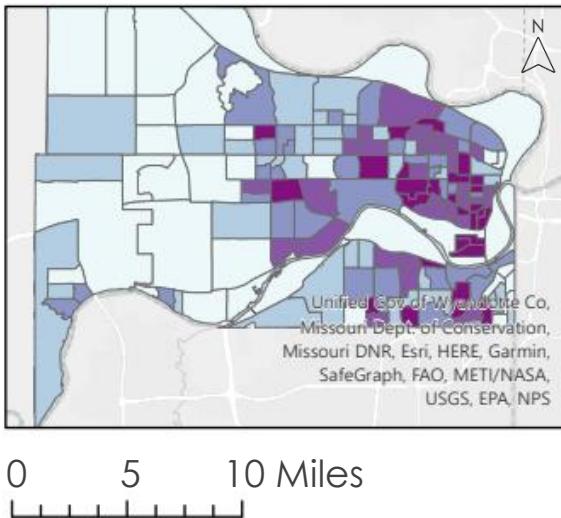
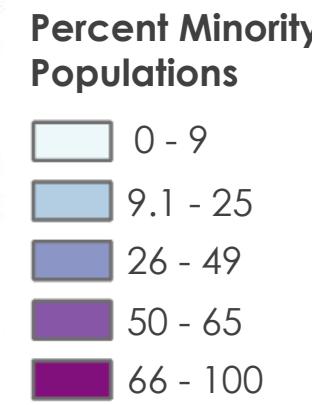
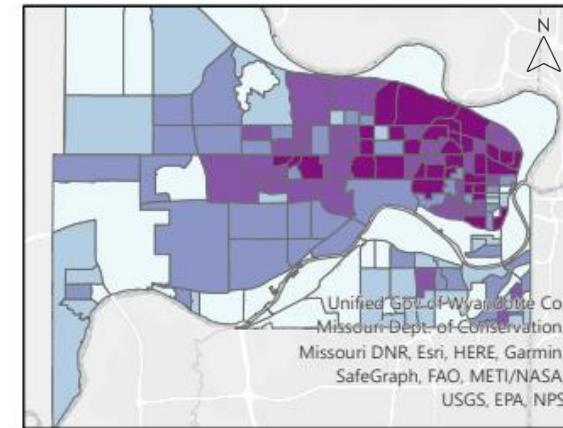
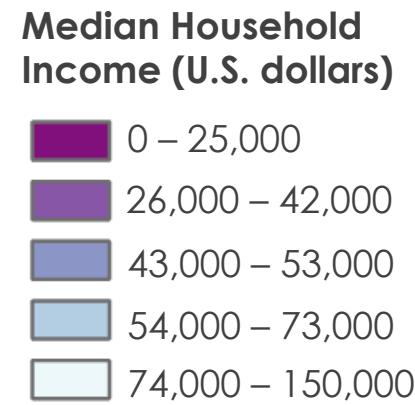
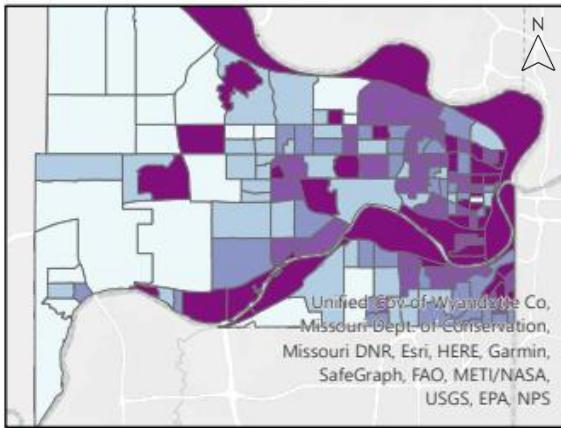
2001



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- .179 - .307
- .308 - .508
- .509 - .7

Unified Gov of Wyandotte Co. Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

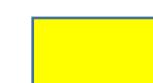
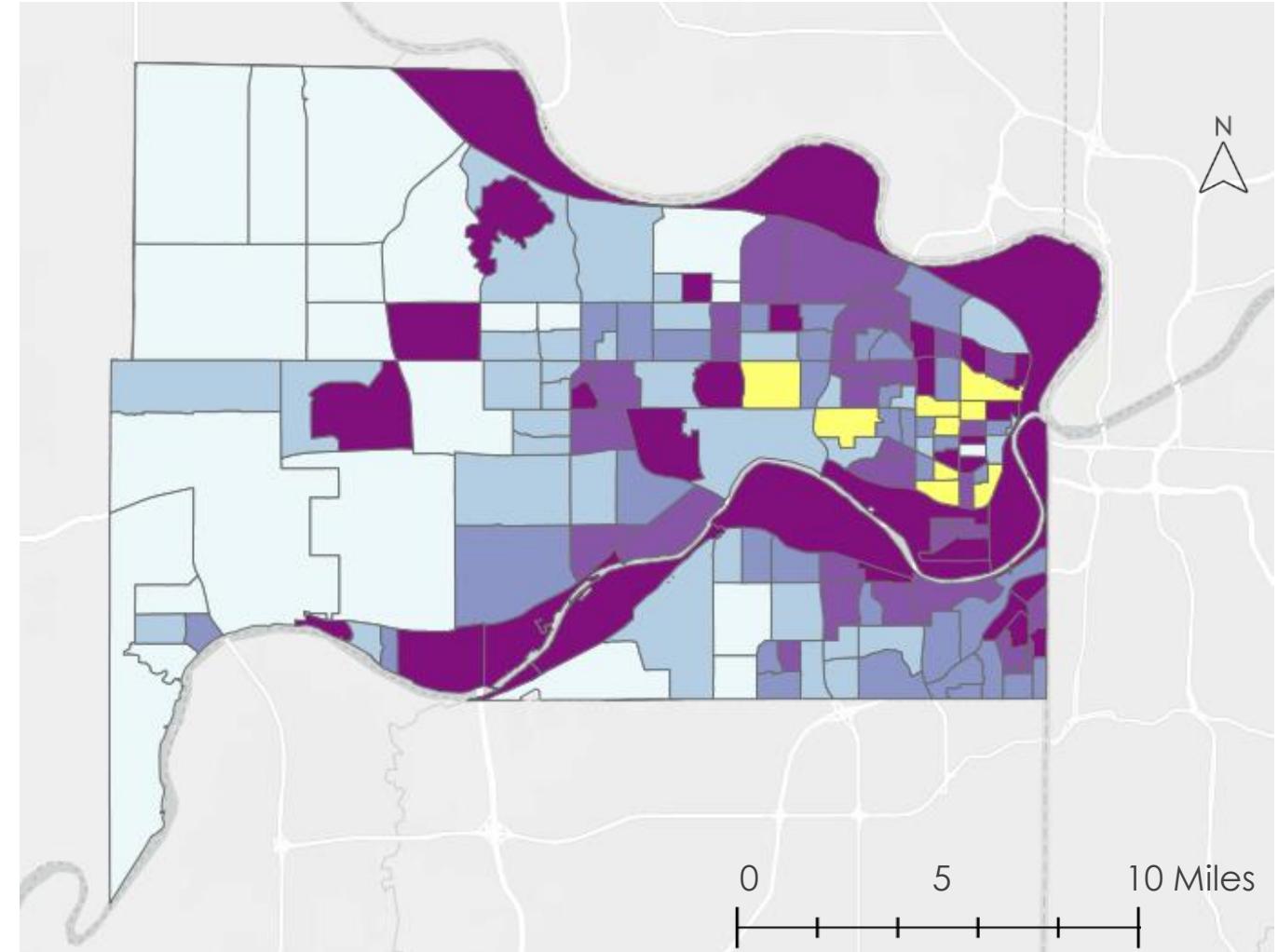
RESULTS: Socioeconomic Implications



CONCLUSIONS

- ▶ As impervious land cover has increased from 2001 to 2019, stormwater retention has decreased
- ▶ Stormwater retention is poor in areas of high socioeconomic vulnerability suggesting runoff and water quality concerns in these areas
- ▶ Green infrastructure initiatives would be the most effective in census blocks highlighted in yellow

Ideal Green Infrastructure Candidates



10 census blocks that make the most ideal green infrastructure candidates



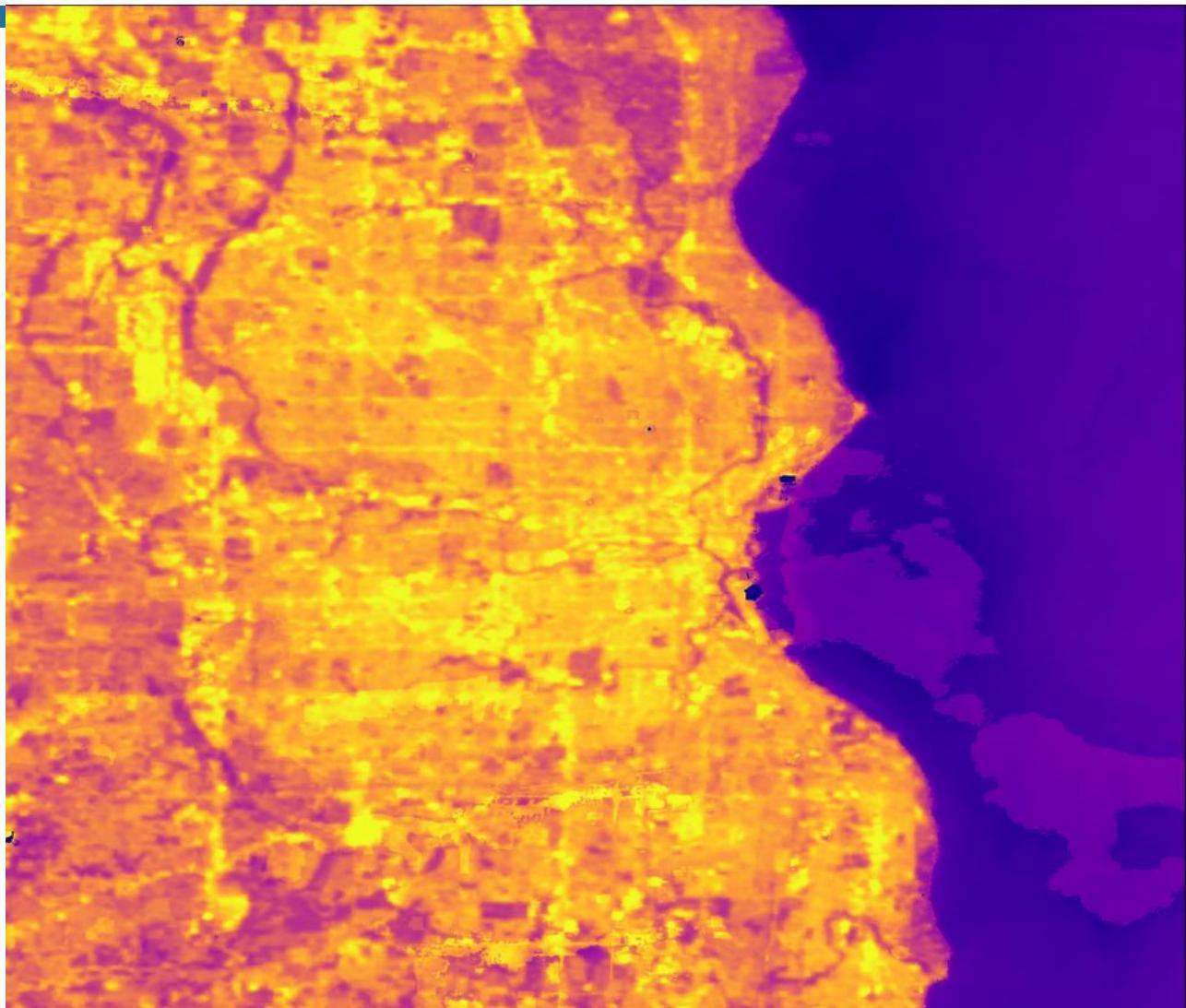
Milwaukee

Urban Development II

Assessing Climate Vulnerability through the
InVEST Model on Urban Cooling in
Milwaukee Using NASA Earth Observations

Nash Keyes (Project Lead)
Caleigh McLaren
Nati Phan
Dalia Vazquez

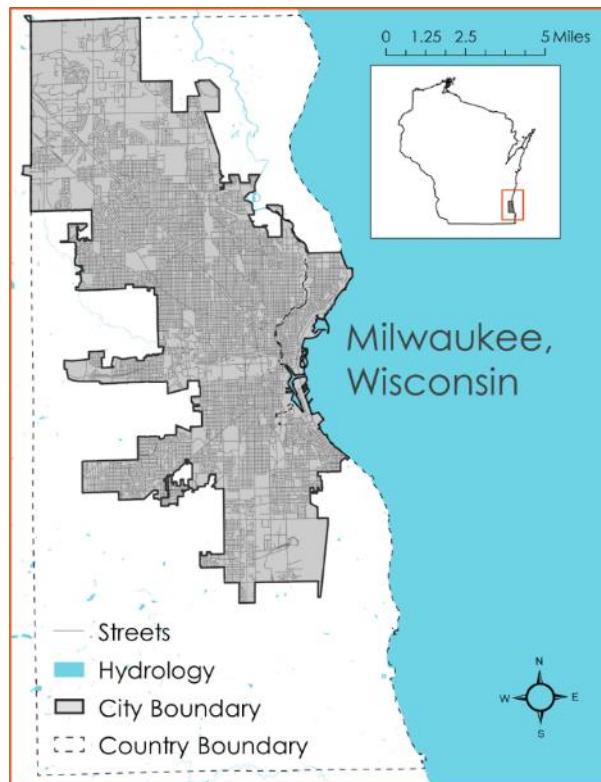
National Aeronautics and
Space Administration



Project Overview

Study Area

Milwaukee, Wisconsin



Study Period: 2010 – 2021

Partner Organizations

- Groundwork USA
- Groundwork Milwaukee

Community Concerns

- Extreme heat
- Climate resilience
- Urban development
- Mitigation scenarios



Term I

- ▶ **Modeled** Urban **Flood** Risk in Milwaukee
- ▶ **Analyzed** drivers of urban **flood** risk
- ▶ **Quantified** spatial distribution of **flood** vulnerability



Term II

- ▶ **Modeled** Urban **Cooling** in Milwaukee
- ▶ **Analyzed** drivers of urban **heat** risk
- ▶ **Quantified** spatial distribution of **heat** vulnerability & **cooling** capacity

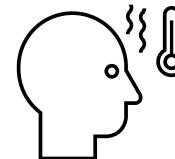
PROJECT OBJECTIVES



Urban Heat Mitigation Map Package



InVEST Flood and Cooling Tutorial/Project Methodology



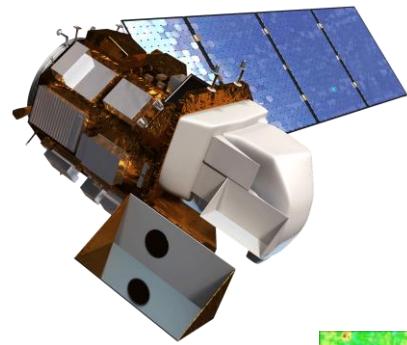
Heat Vulnerability Analysis



Milwaukee Climate Resiliency Flyer



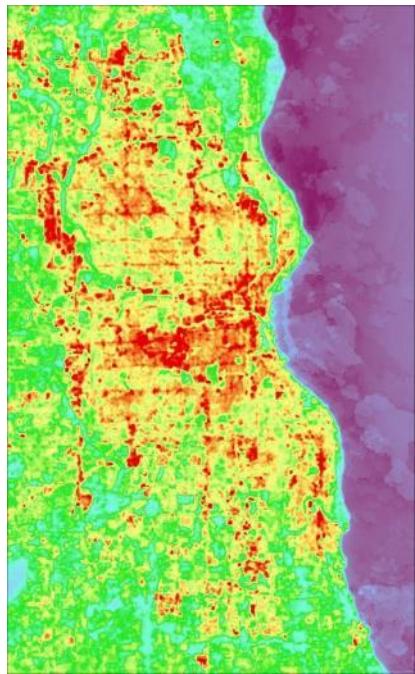
NASA EARTH OBSERVATIONS



Landsat 8

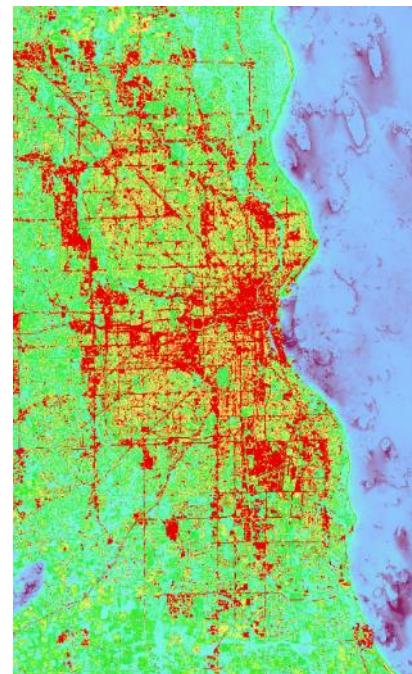
- ▶ Thermal Infrared Sensor (TIRS)
- ▶ Operational Land Imager (OLI)

Higher Values
Lower Values



Daytime LST

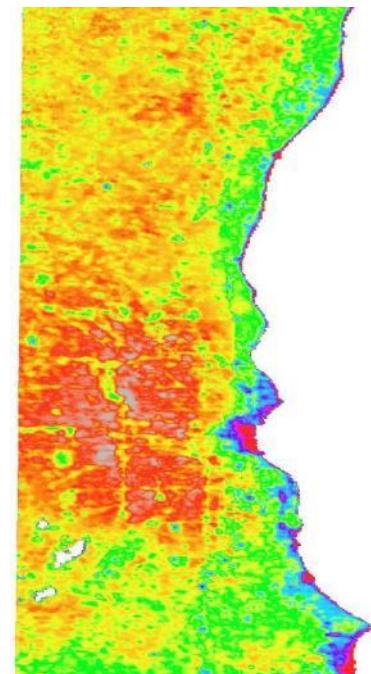
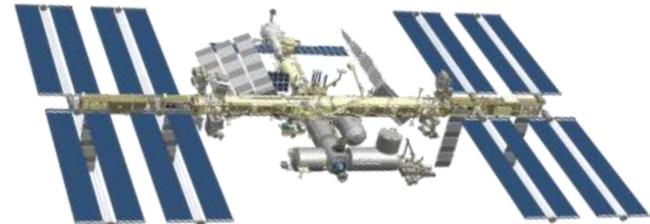
0 0.75 1.5 3 Miles



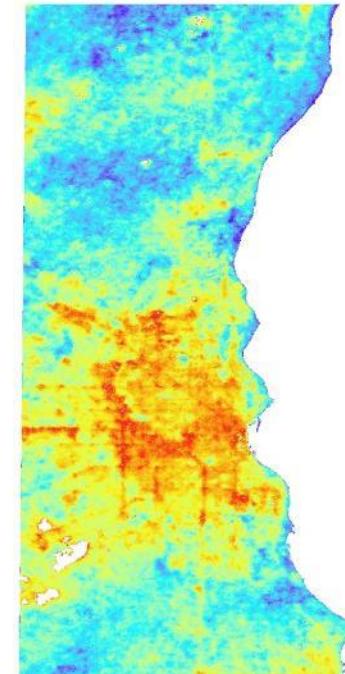
Surface Reflectance

ISS

- ▶ The ECOSystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS)



Evapotranspiration

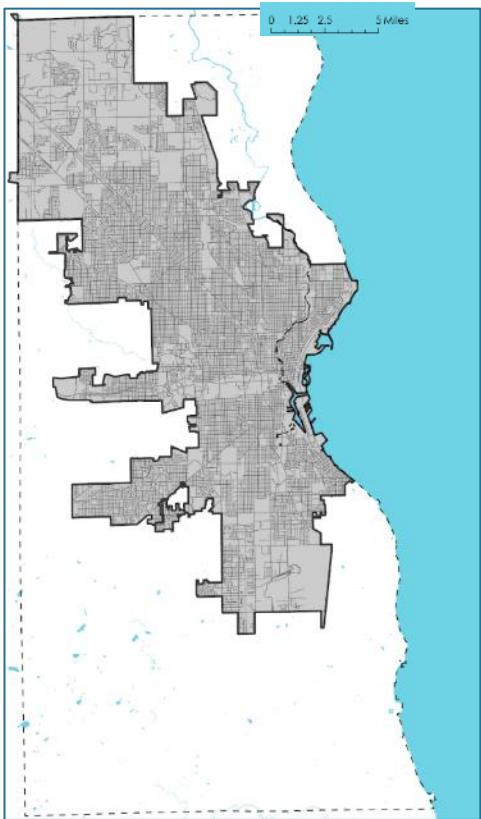


Nighttime LST

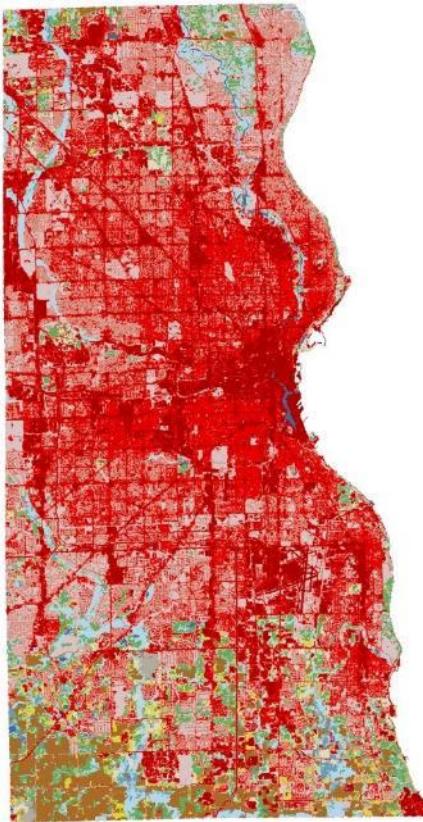


Image Credit: NASA

ANCILLARY DATASETS



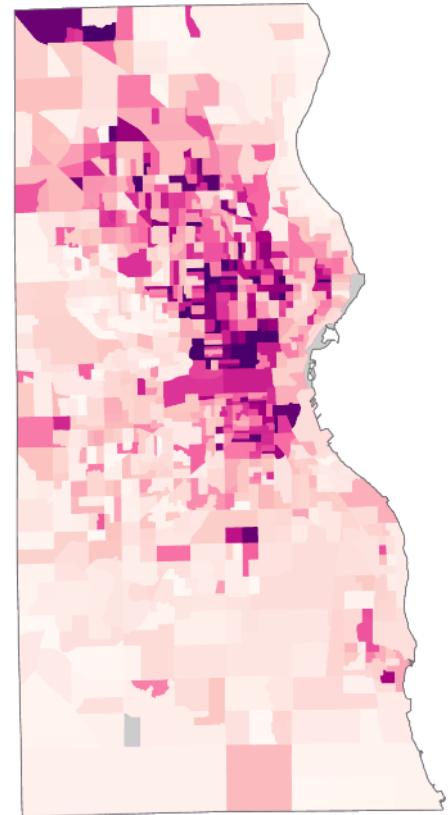
Study Area



Land Cover



Tree Canopy



American
Community
Survey



0 0.75 1.5 3 Miles



MITIGATION SCENARIOS



CITY/COUNTY WIDE
TREE CANOPY
INCREASE



VACANT LOTS
MITIGATION



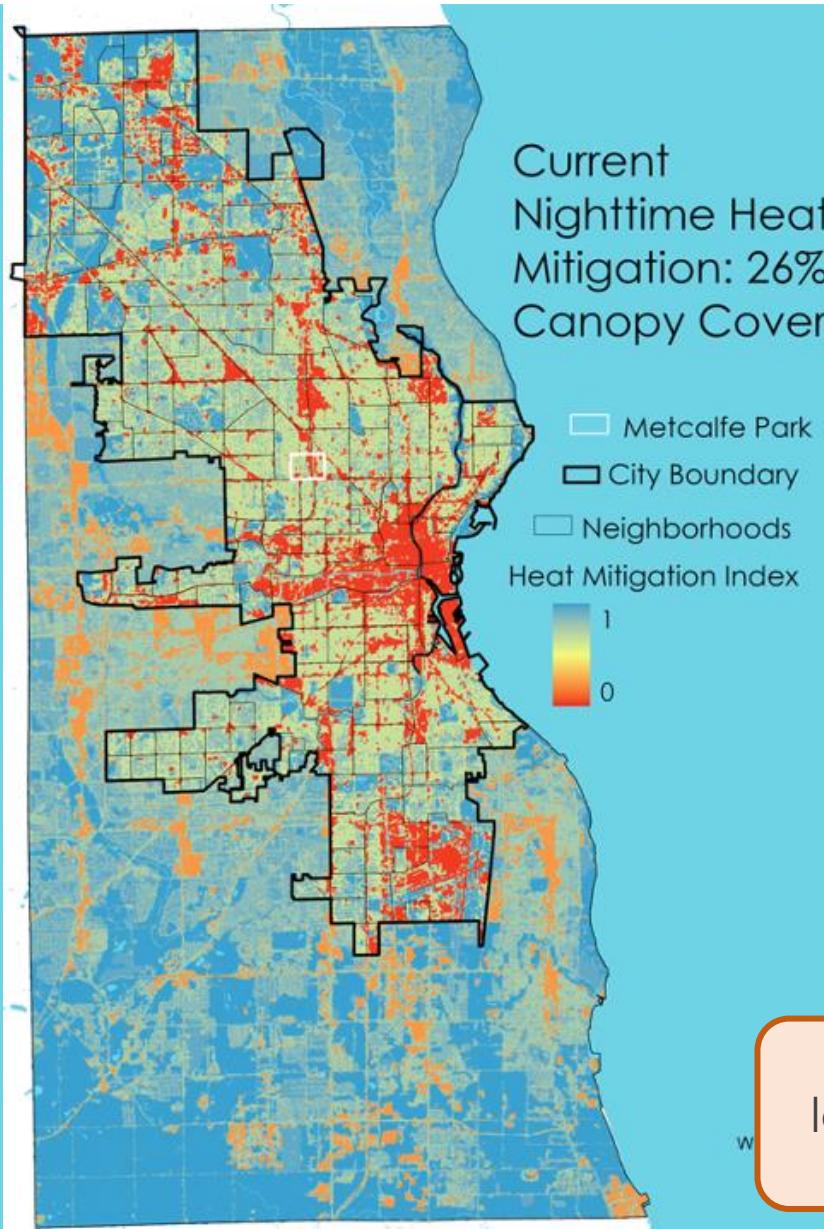
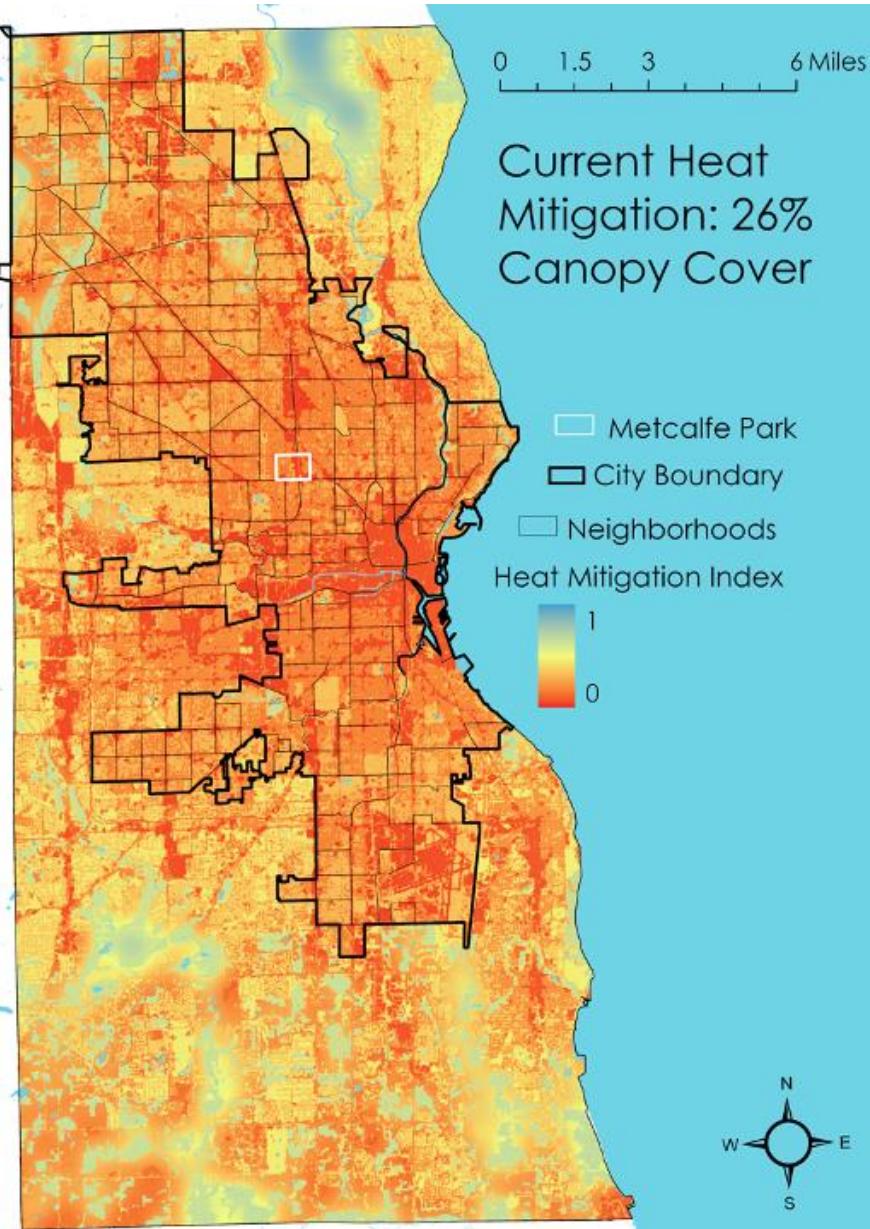
NEIGHBORHOOD
MITIGATION



PARKS MITIGATION



InVEST RESULTS: Current Heat Mitigation *

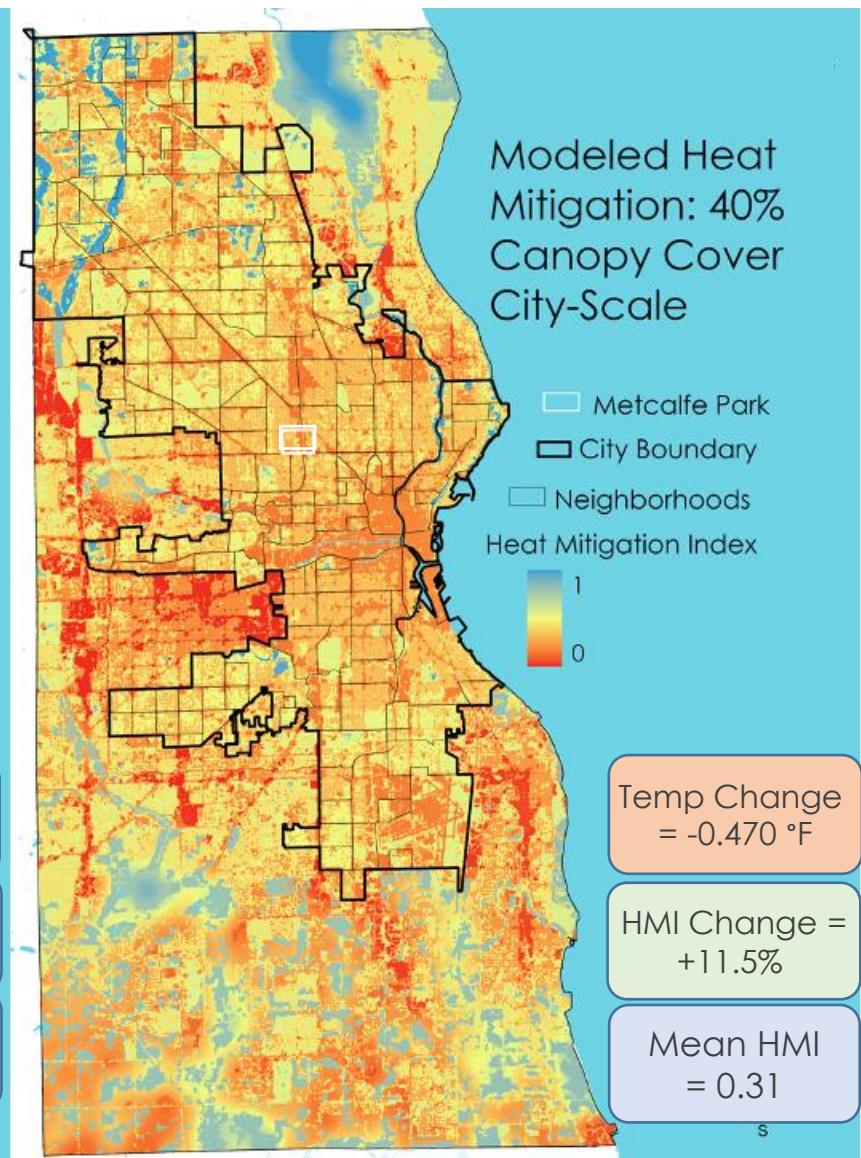
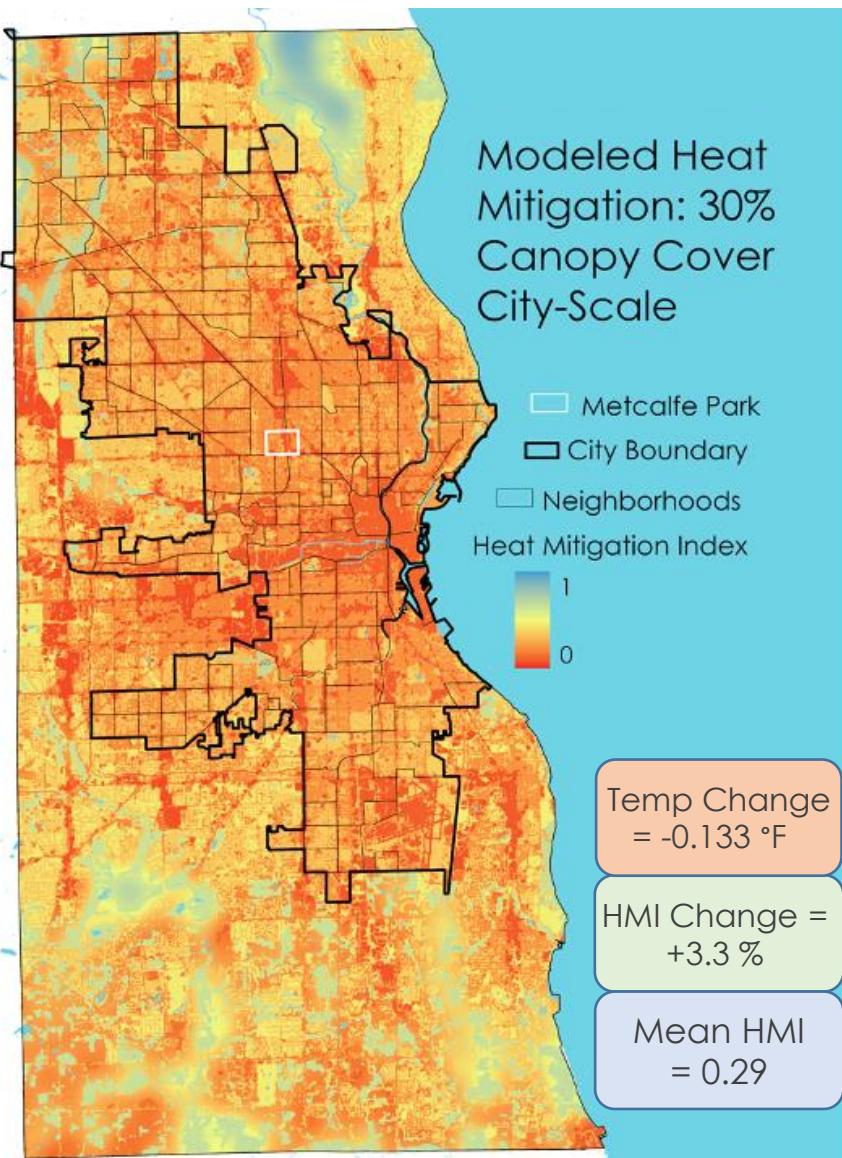
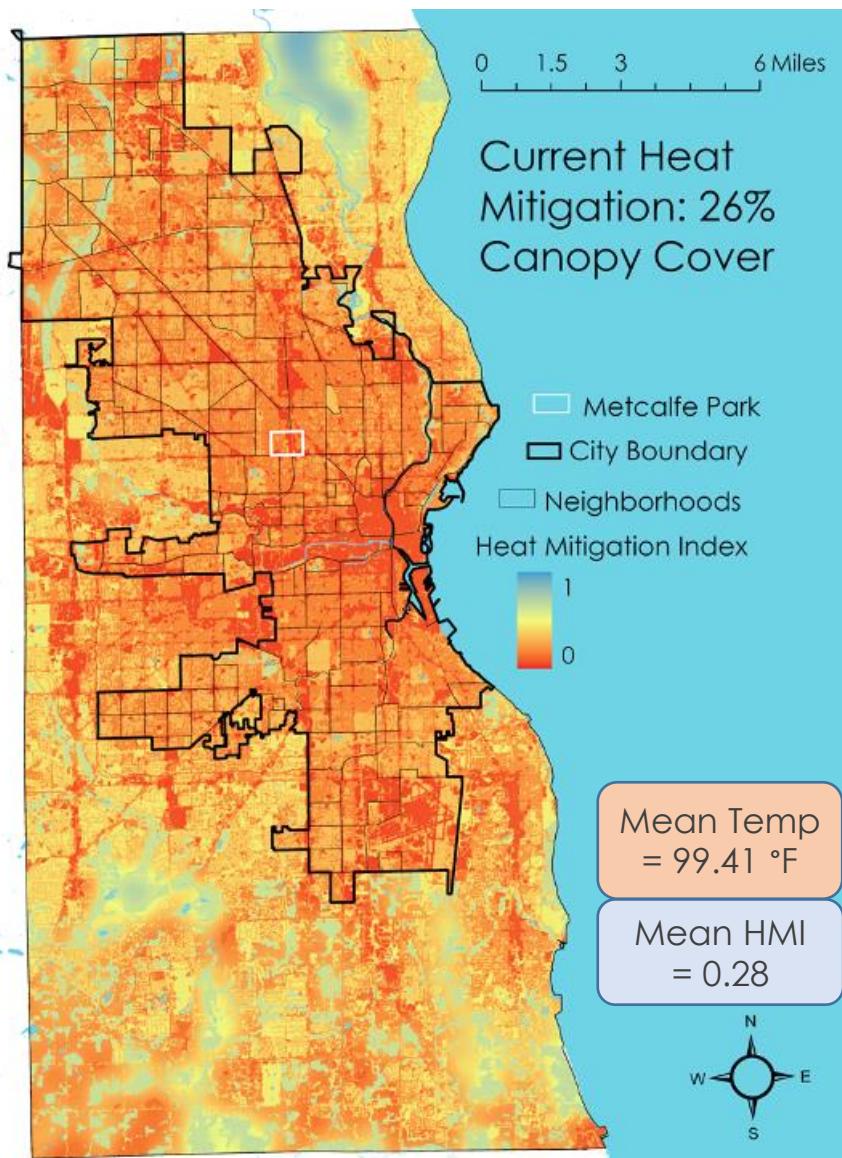


Neighborhoods with highest HMI	
1	Hilltop Parish
2	Mill Valley
3	Ridgeview
4	Little Menomonee Parkway
5	North Granville

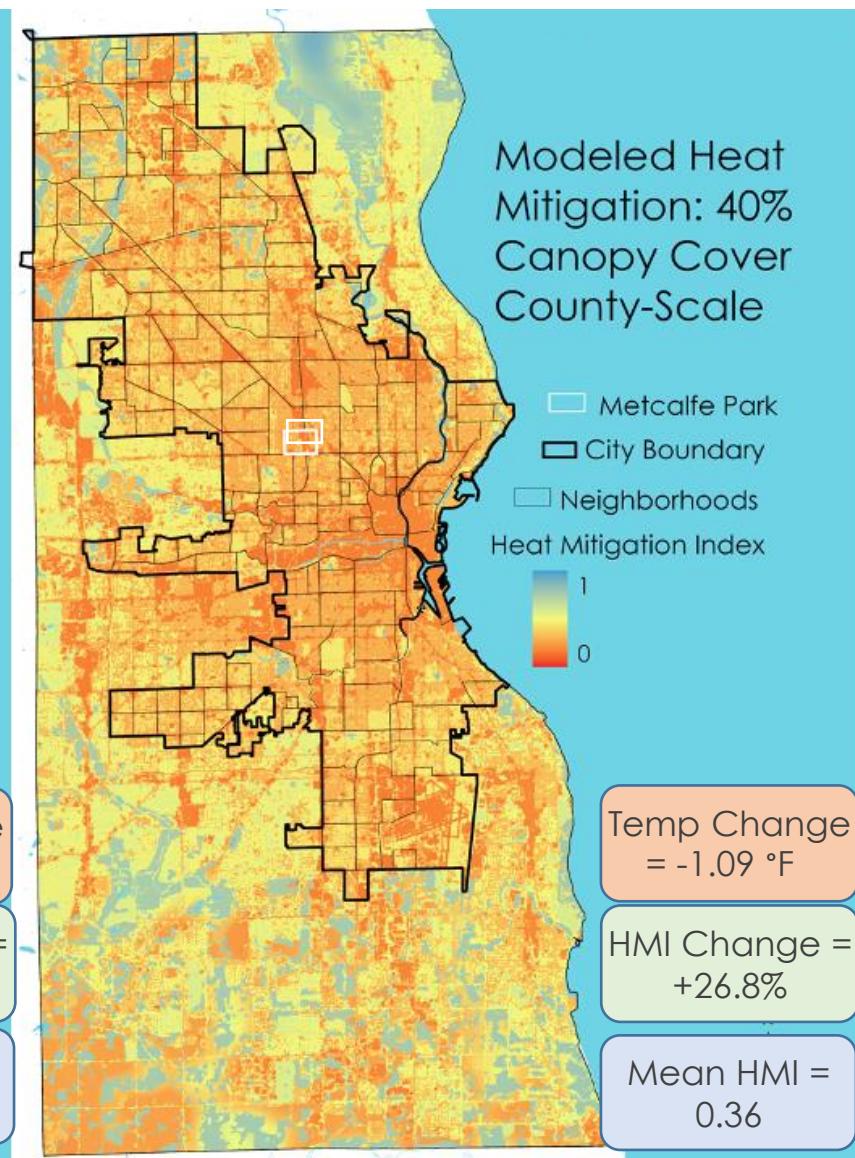
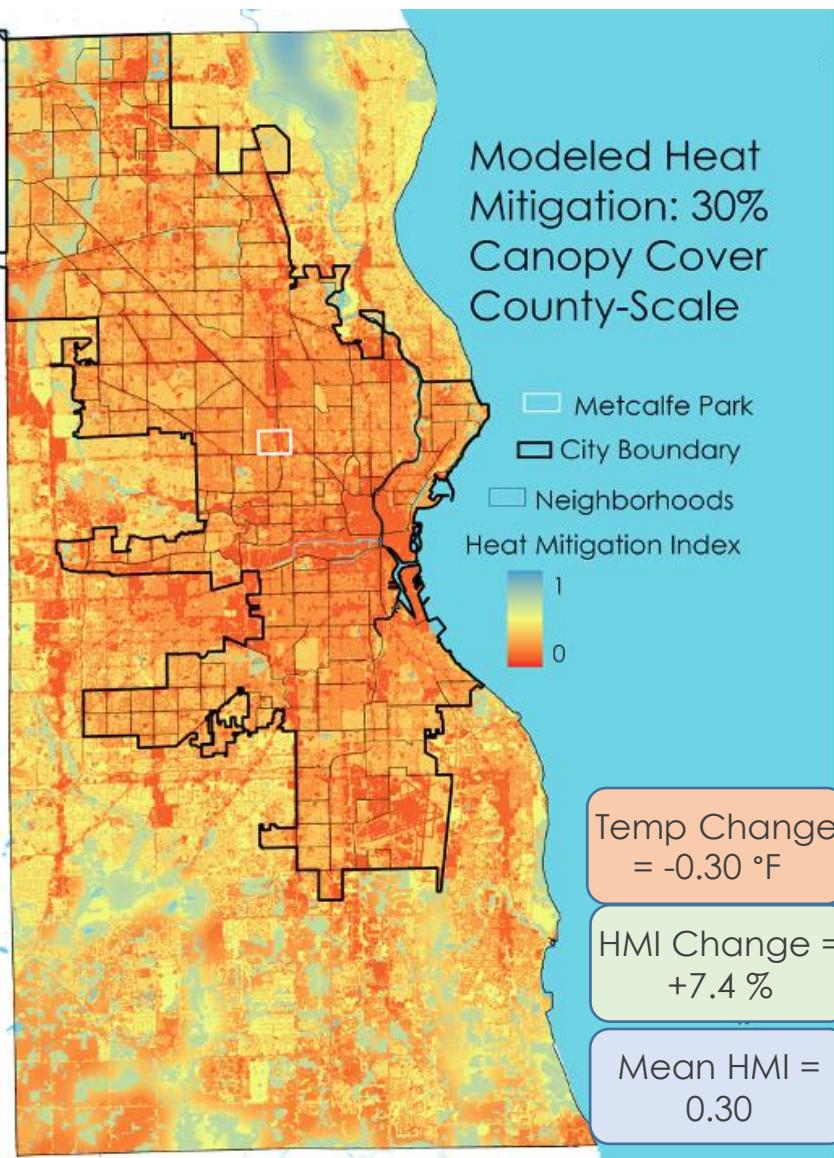
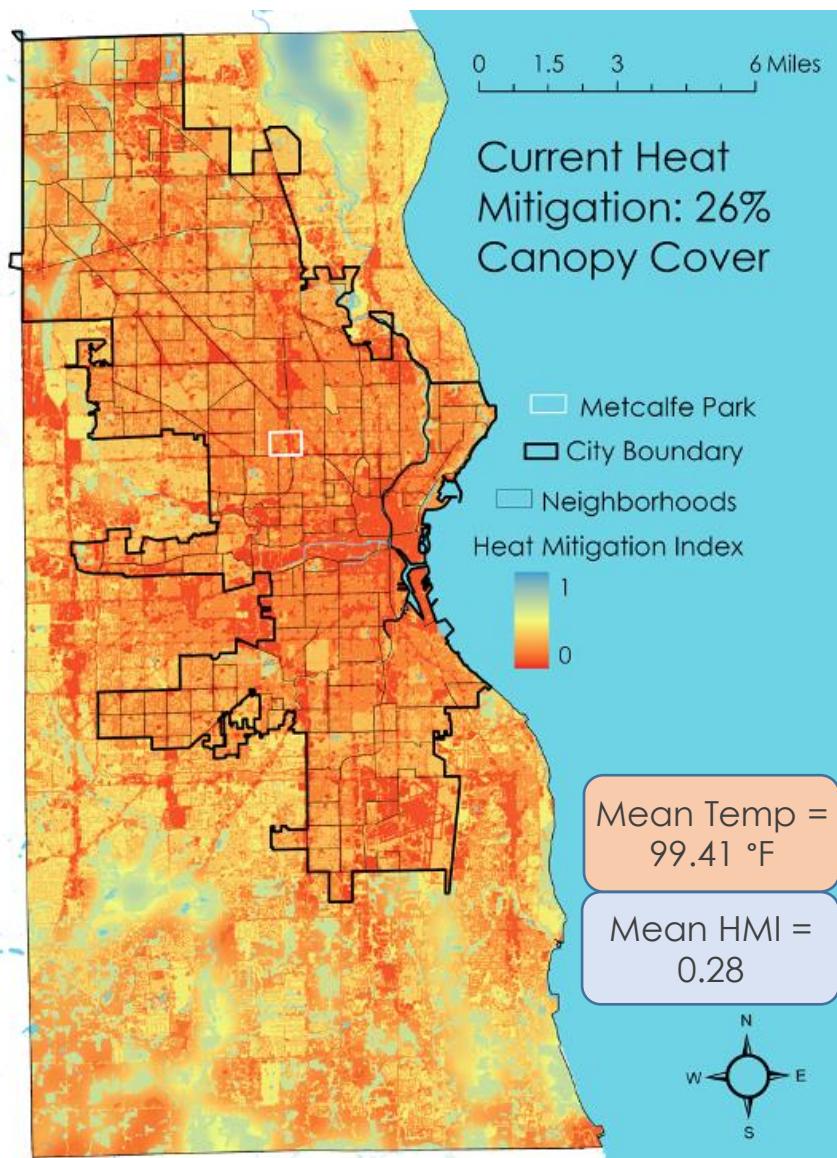
Neighborhoods with lowest HMI	
1	Menomonee River Valley
2	Miller Valley
3	Killbourne Town
4	Haymarket
5	Schlitz Park

Metcalfe Park has the 16th lowest HMI score in the city, out of 190 neighborhoods

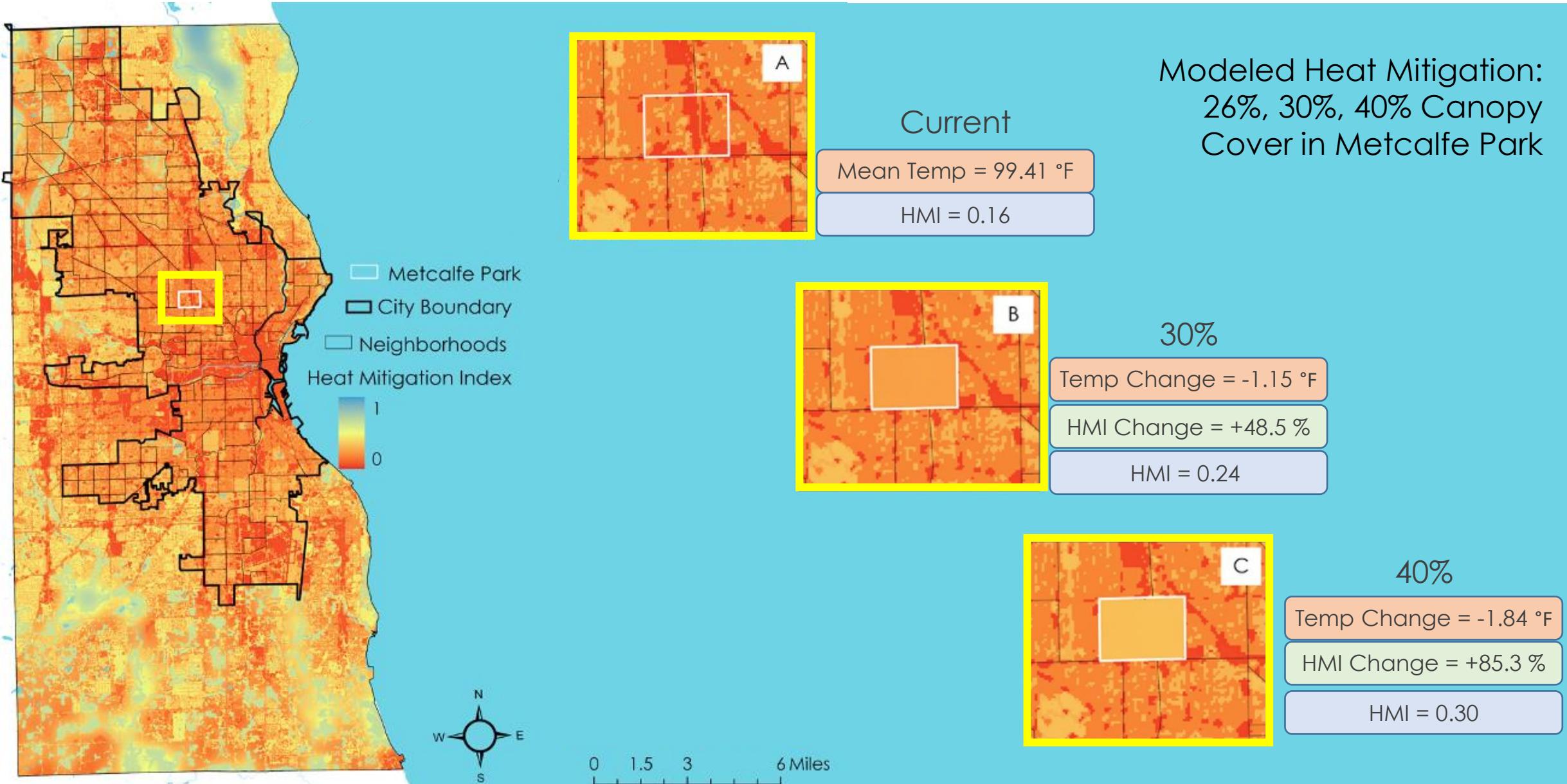
InVEST RESULTS: City-wide Mitigation



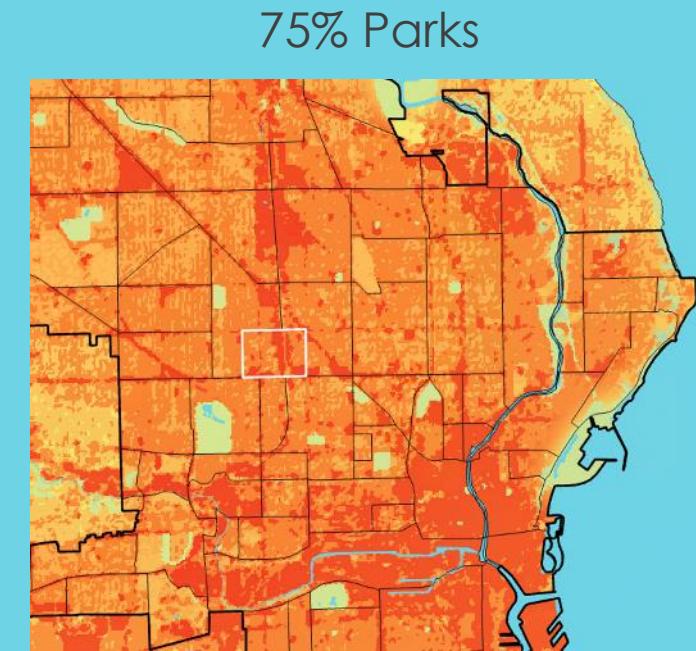
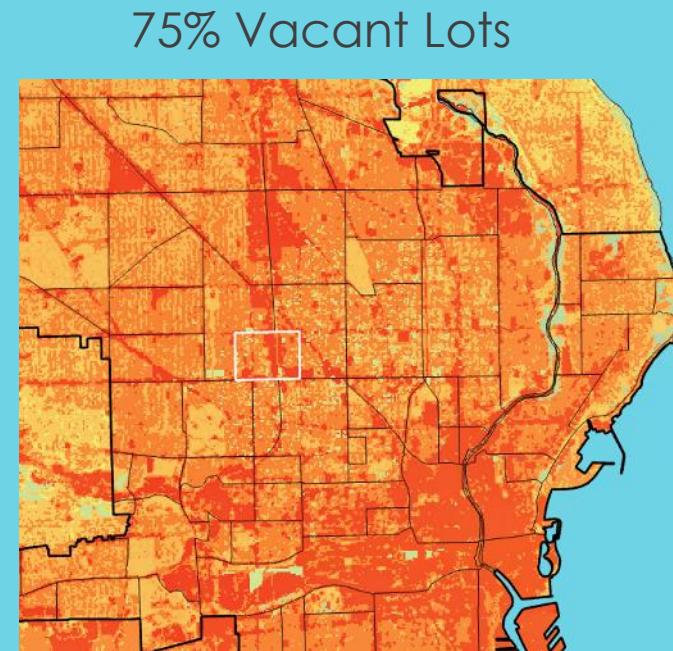
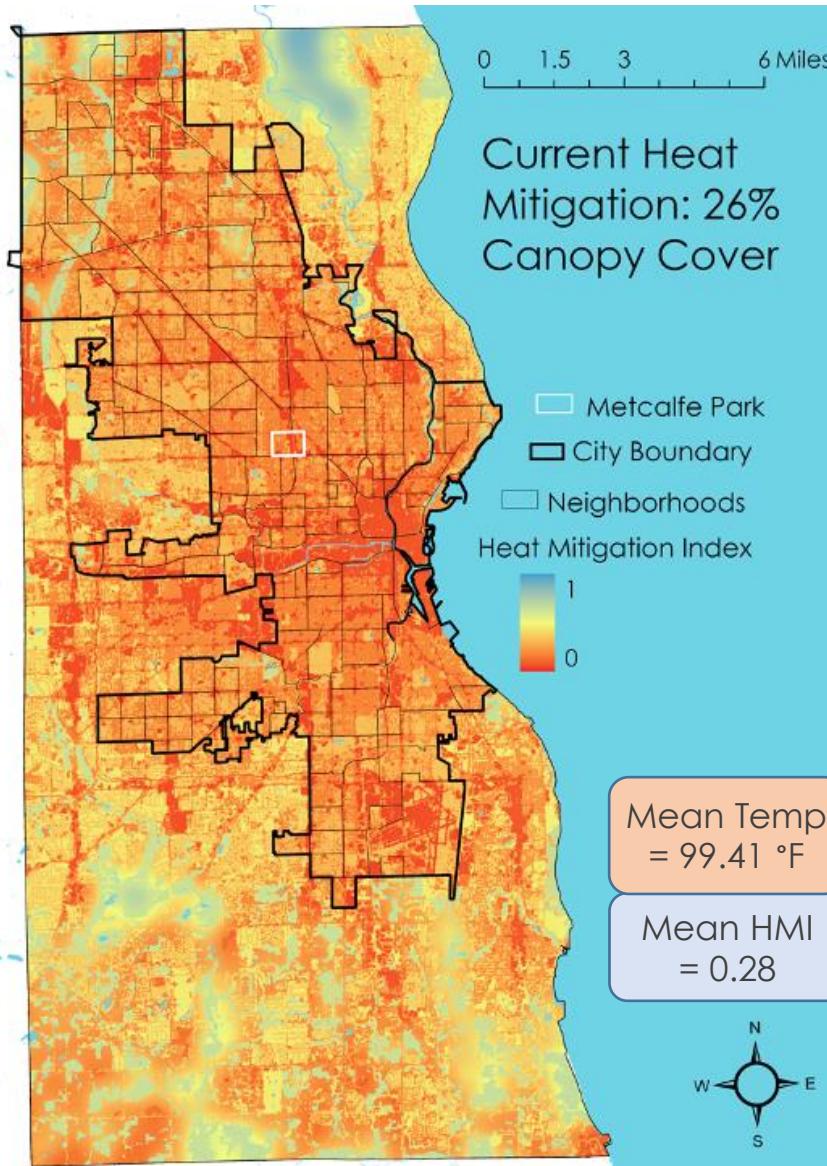
InVEST RESULTS: County-wide Mitigation



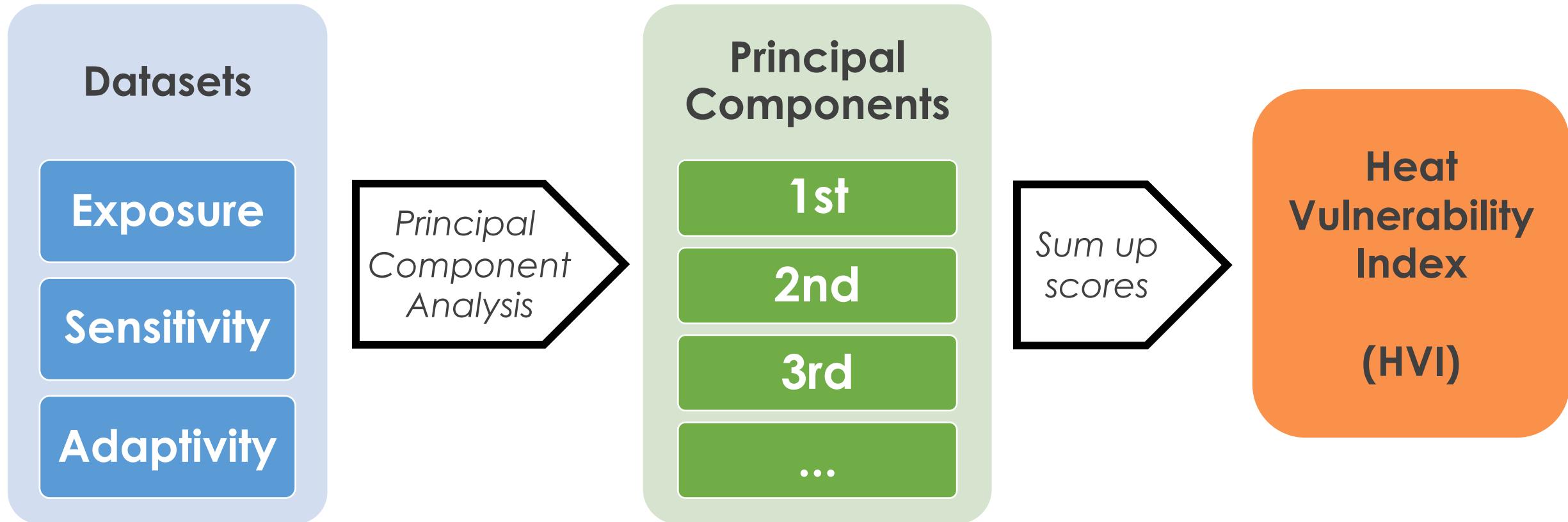
InVEST RESULTS: Metcalfe Park Mitigation



InVEST RESULTS: Vacant Lots and Parks



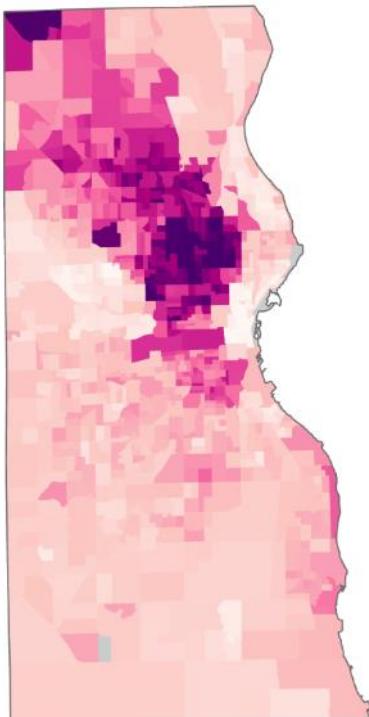
HEAT VULNERABILITY ANALYSIS



HEAT VULNERABILITY: PCA COMPONENTS

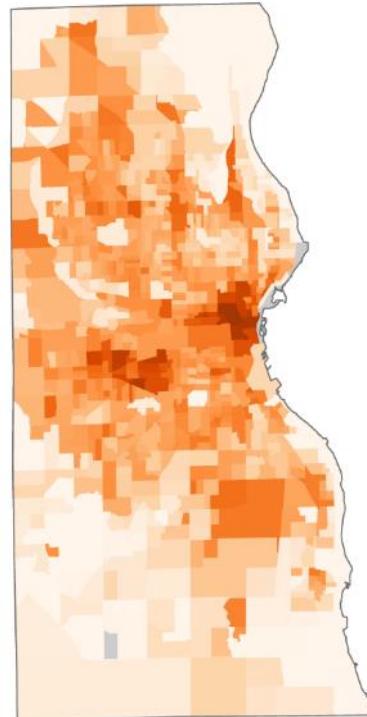
(PC 1)

health, race,
income



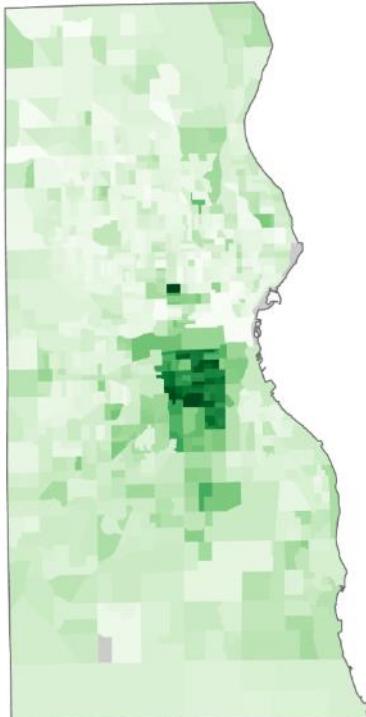
(PC 2)

temperature,
shade, heat
mitigation



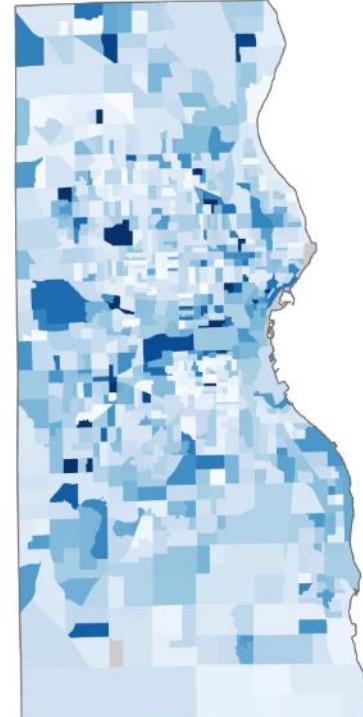
(PC 3)

language,
citizenship,
education



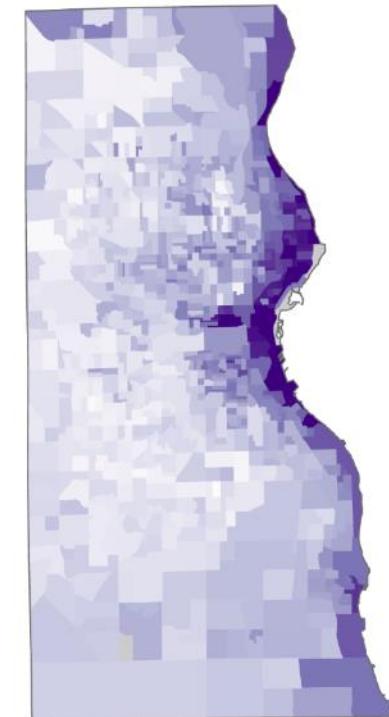
(PC 4)

no computer,
living alone



(PC 5)

albedo, car
use, evapo-
transpiration



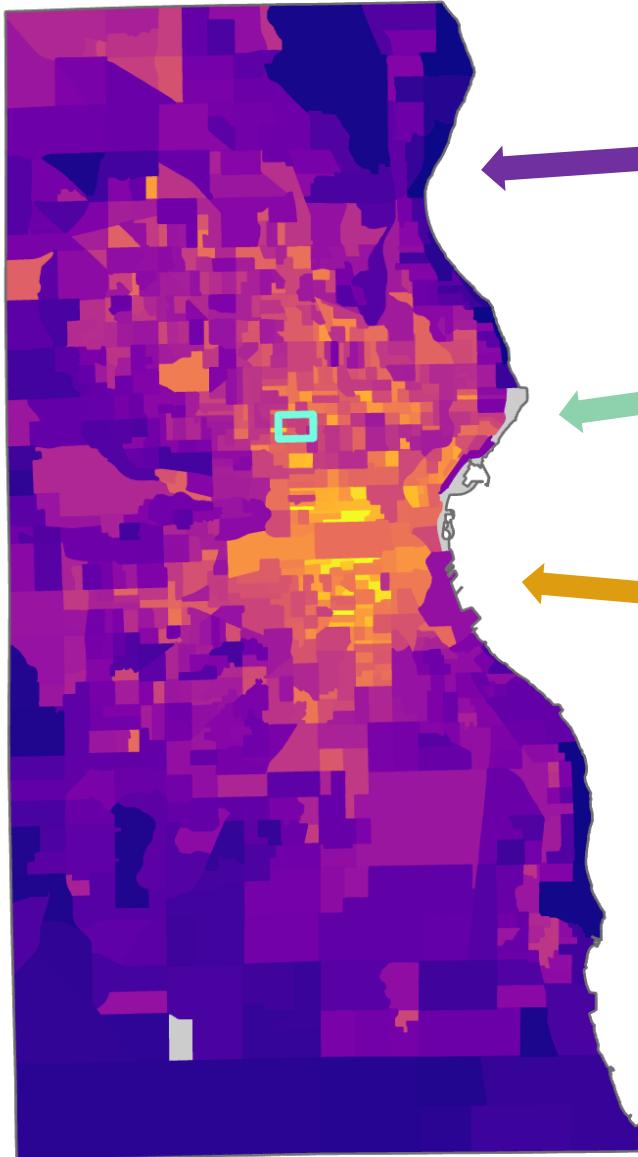
Higher
Vulnerability

Lower
Vulnerability



HEAT VULNERABILITY: INDEX RESULT

PC 1
+
PC 2
+
PC 3
+
PC 4
+
PC 5



Surrounding county area to
northeast & south less vulnerable

Metcalf Park is somewhat vulnerable

Central & Northwest city
areas more vulnerable

Higher
Vulnerability

Lower
Vulnerability

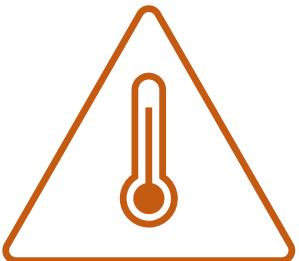
Missing census data



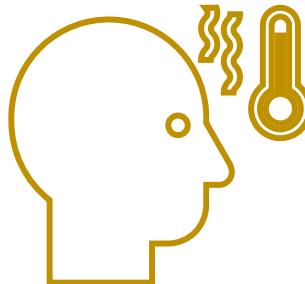
CONCLUSIONS



- Current city-wide heat mitigation is low
- 40% canopy cover at city & county levels cools effectively



- Metcalfe Park: heat mitigation 16th lowest in city
- Targeted tree canopy interventions can cool effectively



- Metcalfe Park: vulnerability 49th highest in city
- Central city area is most vulnerable to extreme urban heat



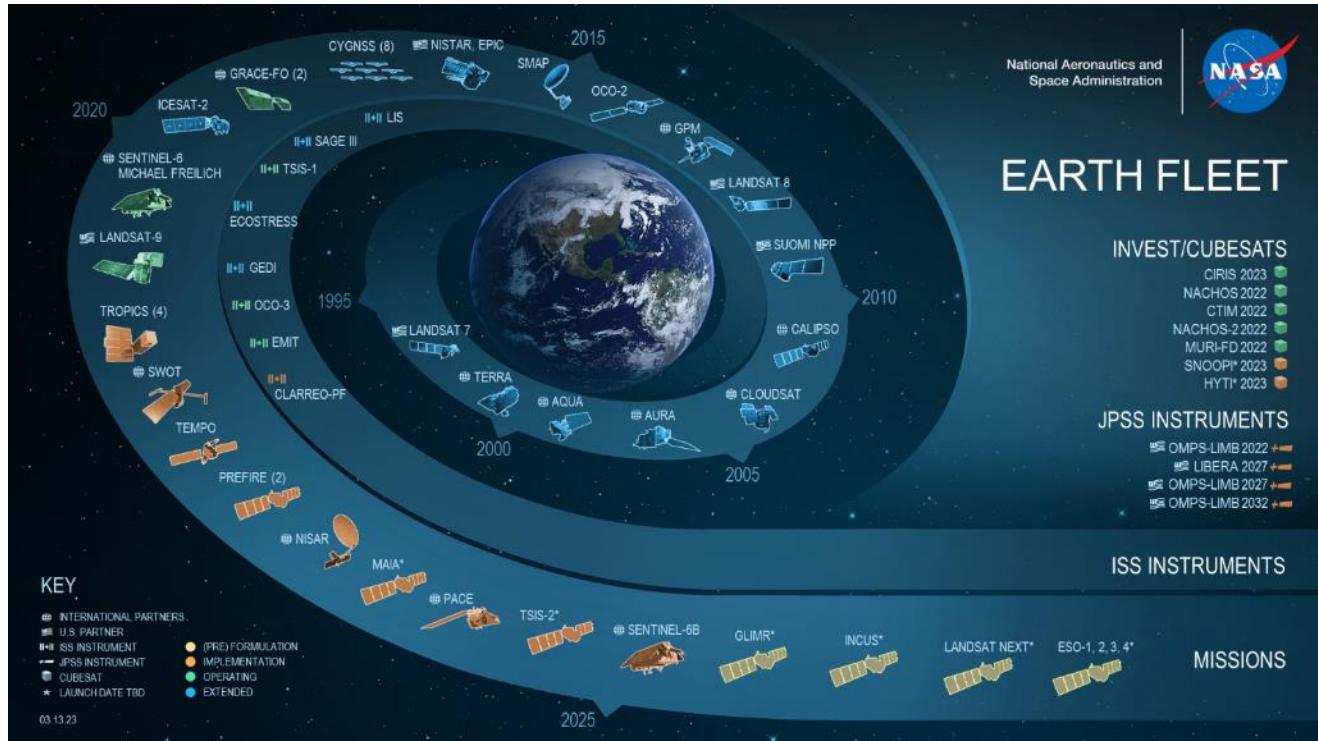
- Unequal distribution of urban heat & vulnerability
- Ongoing need for heat mitigation in EJ communities



Remote Sensing Insights & Resources



Benefits of Using Satellite Remote Sensing Data & Geospatial Analysis



- Observe and characterize the Earth's surface from your computer
- Collect information over large spatial areas and across time
- Monitor and understand change over years
- Satellite data can be integrated with in situ measurements for a holistic understanding of our environment
- Visualize your results in a multitude of ways through mapping, data plots, heat maps, etc.

NASA Earth observation data are a free and open resource for the world

Resolution Considerations



Landsat 8 data from July 7, 2019 over Iceland showing varying spatial resolutions.

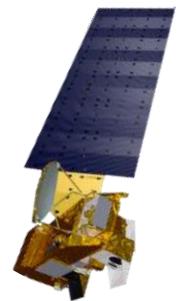
Resolution plays a role in how data from a sensor can be used. Depending on the satellite's orbit and sensor design, resolution can vary. There are **four** types of resolution to consider for any dataset:

- **Radiometric resolution** is the amount of information in each pixel, i.e. the number of bits representing the energy recorded.
- **Spectral resolution** is the ability of a sensor to discern finer wavelengths, that is, having more and narrower bands.
- **Spatial resolution** is defined by the size of each pixel within a digital image and the area on the Earth's surface represented by that pixel.
- **Temporal resolution** is the time it takes for a satellite to complete an orbit and revisit the same observation area.

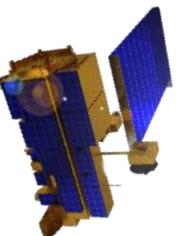
Satellites & Sensors



Landsat series: 50+ years of observations measuring Earth's surface changes (vegetation health, water quality, wildfire severity, deforestation, urban expansion, etc.) at a 30m resolution since 1982 (temperature data at 100m).



Aqua: Since 2001, Aqua has used its 6 instruments to provide daily measurements of aerosols, natural hazards, vegetation cover on the land, phytoplankton and dissolved organic matter in the oceans, and air, land, and water temperatures. 250m – 40km depending on the measurement.



Terra: Since 2000, Terra data has used its 5 instruments to document the connections between Earth systems in areas including atmospheric composition, carbon cycle and ecosystems, climate variability and change, Earth surface and interior, the water and energy cycle, and weather. 15m to 22km depending on the instrument and measurement.



Global Precipitation Measurement (GPM): Is an international network of satellites that provide global observations of rain and snow every 30 minutes (at 10km spatial resolution) to advance our understanding of Earth's water and energy cycles and improve forecasting of extreme events that cause natural hazards and disasters.



Suomi NPP: Launched in 2011 with 5 instruments that acquire a wide range of land, ocean, and atmospheric measurements including: climate change, ozone layer, natural disasters, weather predictions, vegetation, global ice cover, air pollution, Earth's energy budget, and a global record of land surface and sea surface temperatures. 500m and coarser spatial resolution collected daily.

Future Missions:

TEMPO: monitor air pollutants (ozone, nitrogen dioxide and others) hourly across the North American continent during daytime.

NISAR: radar that will systematically map Earth to measure changes in our planet's surface less than a centimeter across.

MAIA: observations of small, atmospheric aerosols combined with ground-based pollution monitors and computer models, to create daily maps of particulates in 12 large metropolitan areas around the world.

RESOURCES: NASA DATA

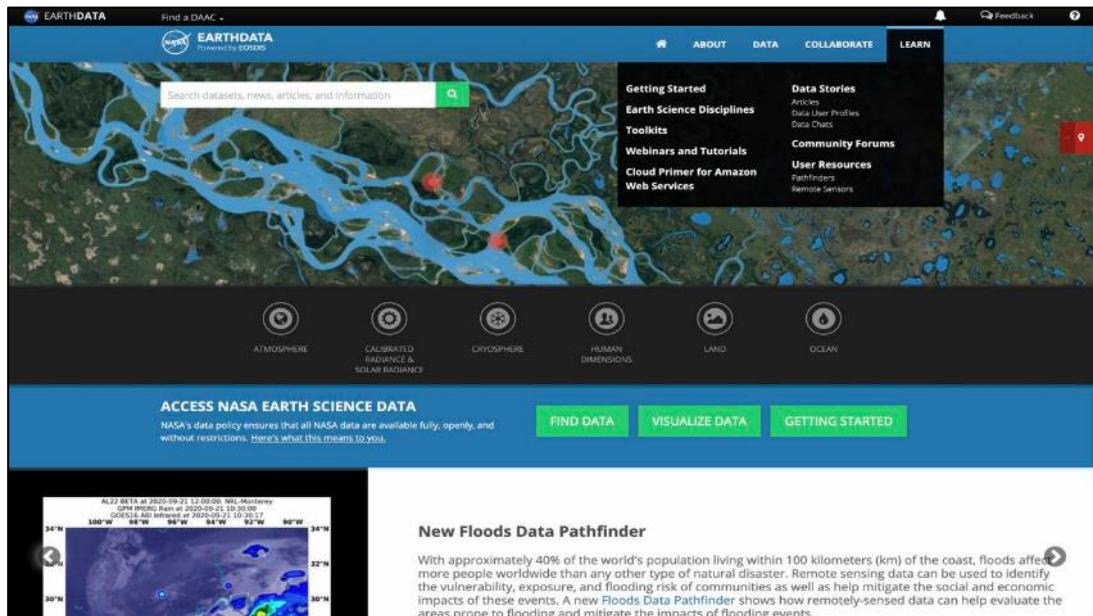
NASA Data Center Resources

Need access to NASA data? Check out the following sites:

- **EOSDIS Distributed Active Archive Centers (DAACs)** <https://earthdata.nasa.gov/about/daacs>
- **Earth Data Search**
<https://search.earthdata.nasa.gov/search>
- **Earthdata Forum**
<https://forum.earthdata.nasa.gov/>
 - Ask questions about data types, access, issues, etc.
- **LP DAAC AppEEARS**
<https://lpdaac.usgs.gov/tools/appears/>
 - Simple and efficient data access and transformation

The image shows two screenshots of NASA data center resources. The top screenshot is titled "EOSDIS Distributed Active Archive Centers (DAAC)" and features a map of the United States where several states are highlighted in green, indicating the locations of active archive centers. A callout box provides information about the DAACs. The bottom screenshot shows the "Earth Data Search" interface, displaying a search results page for "SENTINEL-1A, SLC". The results list various datasets, including "SENTINEL-1A, SLC (4201250-Direct, 2014-04-09 mapping)", "GEOS-5-SENTINEL-1A, SLC v1.0P", and "SENTINEL-1A, DUAL POL, HIGH, RG (1202370-00 weekly, 2014-04-09 mapping)". To the right of the search results is a world map showing land surface reflectance data from the Sentinel-1 mission.

RESOURCE: DATA PATHFINDERS



- **NASA's Data Pathfinders** provide a path for users to understand what datasets are relevant to their environmental issues and needs
- Point you to NASA's freely available data

<https://earthdata.nasa.gov/learn/pathfinders>

Areas of focus:

- Agriculture and Water Resources
- Biological Diversity and Ecological Forecasting
- Disasters
- Flooding
- Geographical Information Systems
- Health and Air Quality
- Sea Level Change
- Water Quality
- Wildfires



RESOURCES: ARSET



ARSET Trainings

Through ARSET trainings, you can learn how to:

- Use NASA data for environmental management
- Search and access NASA resources relevant to your needs
- Visualize, interpret, and apply remote sensing data and imagery



Remote Sensing Fundamentals: These webinars are available for viewing at any time. They provide basic information about the fundamentals of remote sensing and are often a prerequisite for other ARSET trainings.

<https://appliedsciences.nasa.gov/join-mission/training/english/fundamentals-remote-sensing>

- Session 1: Fundamentals of Remote Sensing
- Session 1A: NASA's Earth Observing Fleet
- Session 2A: Satellites, Sensors, Data and Tools for Land Management and Wildfire Applications
- Session 2B: Satellites, Sensors, and Earth Systems Models for Water Resources Management
- Session 2C: Fundamentals of Aquatic Remote Sensing

RESOURCES: DEVELOP



Engage with DEVELOP

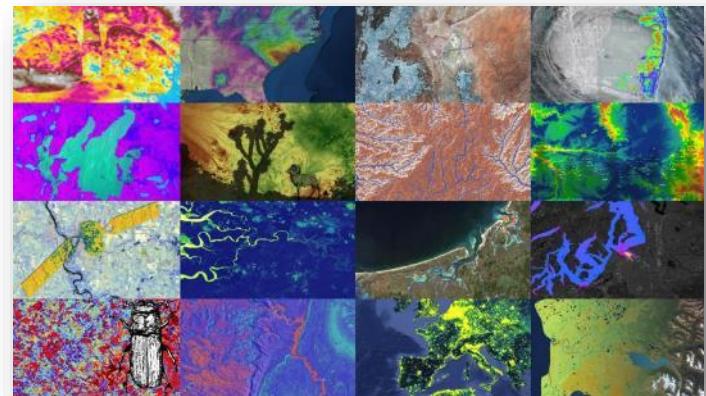
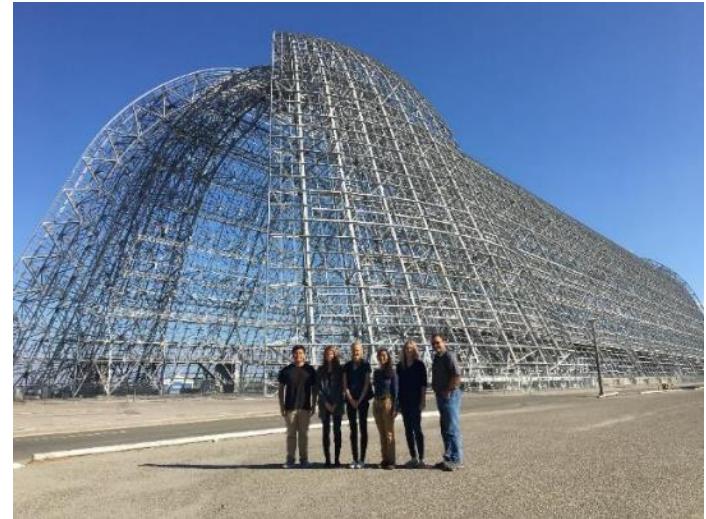
<https://appliedsciences.nasa.gov/nasadevelop>

Organizations/Communities:
Propose a Project Idea

Have a project idea? We are collecting ideas for the 2024 spring and 2024 summer terms now to June.

Individuals:
Apply to be a Participant

2023 Spring Term application window is open Aug 28 – Oct 6, 2023. Term dates: Jan 22 – Mar 29, 2024.



THANK YOU

Lauren Childs-Gleason, Lauren.M.Childs@nasa.gov

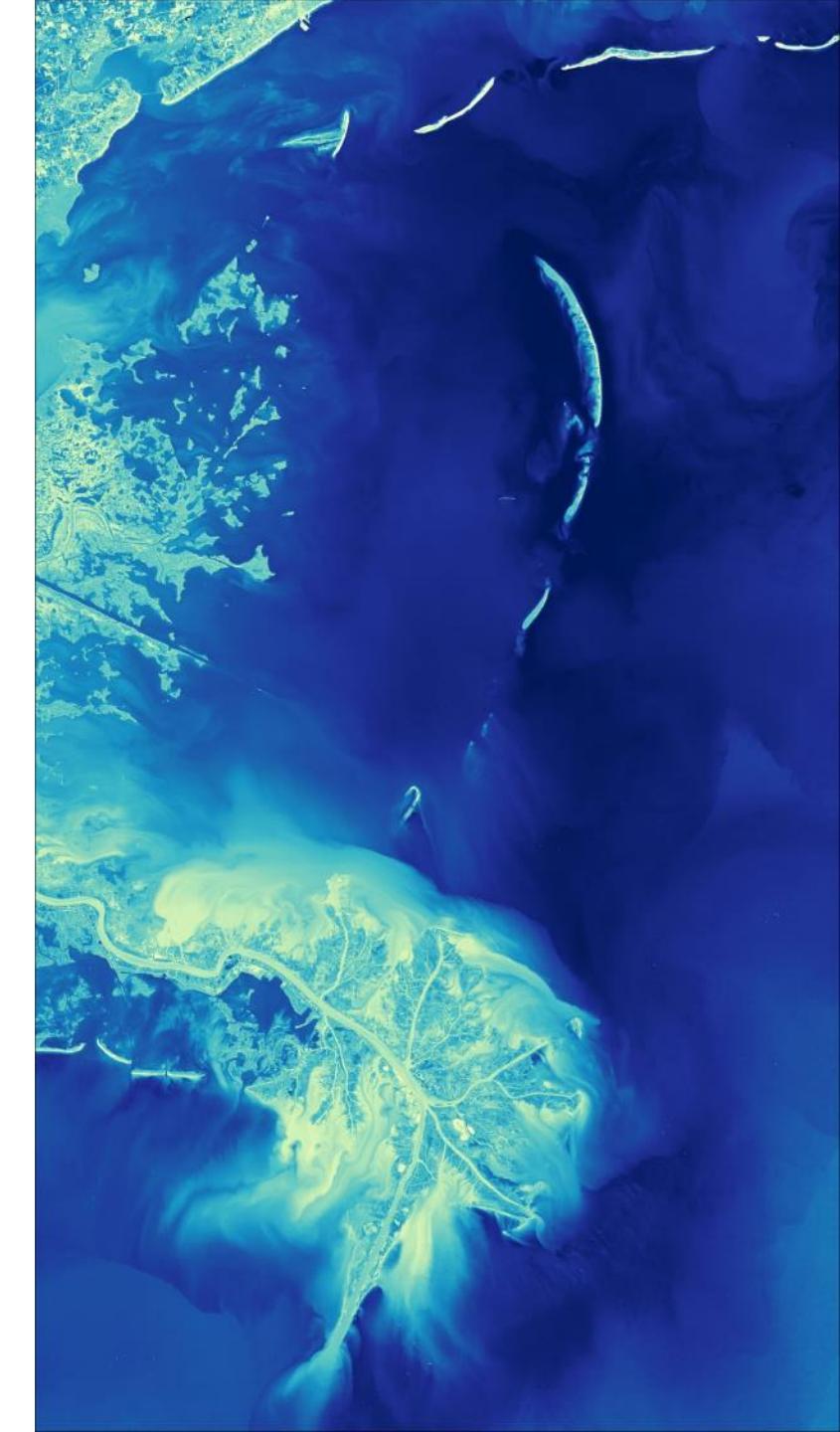
Nati Phan, Nati.K.Phan@nasa.gov

Owen Hooks, Richard.O.Hooks@nasa.gov

<https://appliedsciences.nasa.gov/>



EARTH SCIENCE
APPLIED SCIENCES



Environmental Justice Searchable Literature databases

Global Health:

<https://ovidsp.dc2.ovid.com/ovid-b/ovidweb.cgi?QS2=434f4e1a73d37e8cd9587e31747c59e325a3fe5b1994993b3af97a9b48f5d2a1dc8e430d40b3da25dc118026d1b38b5e12de7819110f07ed03c3dfdb8511fc2b931a6fcfd6c6ca92e2040f0128cd9a5fa32a3e4976bef83c108176123f4dfa48e895107b6af952852d280018c0c0434a034e43449b2dd5ff229902420f0a8781e78285b80b742073501a93722887a65fb5e8fc2d148d48c20ddfecfad0d8178c414c91a33c9045f9b0a9b606cc6cacb141b4781c6a89cdc34bb925e1e013afa09c5caff5bec4dd955901d3c07cec1de0407c48f99fb9576cfaf0bc2fc0654fb522c1d5019b46c85b36bedc39f3ab1fc4ade955bdbe786b656e9d190692293c43ad10dc5d8cca1bdd6db3648fd893826deb8cd9c4e1bee3357be3ae50a4248f373d09dccc8bf8bff7a072b0bf13a2b780>

PubMed:

<https://pubmed.ncbi.nlm.nih.gov/?myncbshare=tulanelib&otool=tulanelib>

EBSCO:

https://search.ebscohost.com/WebAuth/Community.aspx?custid=s8978822&groupid=main&ref=https%3a%2f%2flibrary.tulane.edu%2f&shibtoken=A2VQwHhv55eGSBqpeVfaeA8gf7-qEqnxiwpIBTPDyyovd5YdKLD4SUUOQ2o7OhacCkE3fkWmFfK0OErU5MPniheZ9H6swn1yh_CZ4vCHIEzl-VjsIUFxQjBgFg_shjl6d7PnTyJ8btlafkvY_fQLPq9lza-IC84FwqpOYUBR-x6nKinKVvi5RUxZr4H9jqV2Ez6LxRJCHWE1LbGIPzTJP8NvmRK5ghH3nnCjk-DMPgljfz0766utsIAJseLRYEqNrnNm_dCEQjg6pZ9ZBs2Xh7-P91Tn1MnoSu1O58vq_d2hBIFqpP2CNnKpHRG77nWBuRahiof7fuwk9ofy_Sp7WRGS8vsXUGLA8d4q1OZEFUIsMjBa2vf0f--DzybgDxMINmU6mn8YF5A80Qn70QbCxuMdS91eRlod3eDctPxXwxXySBnmSGO-PvljVMk1MJ8Cm4wX93cnXg9OXL7WUMPeH68VTLK&authtype=shibboleth&stsug=AmX0PfDjMMmapl8gc0lEAtBjS8k6D9JO_io8VnQkcdjNSA0A5fJcxQtxUvZMF6e5XNsABG3sQ1iAj341_GzqVN-9R-mzjIDB-5EDIJ86AVnUumJStFHvGs_4V7jJXPFqYiNO2zfQQQlsWVLd5woDzK0qYTt1OclY17pY_6Gw-442hGgU&IsAdminMobile=N&encid=22D731163C7635873746355632253C473583390377C376C377C376C373C376C370C331&selectServicesToken=A2U7bZajh87tLmlffrmhPsq6uGBluQKnxipIBTPDyyqfGF-mk8iydI6NMcoTq9fMum67guziX9qgmtlD7hh7bcyxhrULexJKu9Q8m42wzBwB5eHcvCVagcuHddmXVVle4OxCr_UQbhsA3YTF3HtPtOG8kYtXXLbrobRkr1UWo8ooHjbLcjIC-jJtMIMwm991BYxRlipZZ6dMbqPV8lhs5XspS1IL6Y5Ynw5ubKfBXjAbiO-HFehsK0oOwzV6C_izaS0hzRwl9_EcZ_Cj_jAwGHs8_Wrrz4sTyuR

Pro Quest:

<https://www.proquest.com/advanced?accountid=14437&forcedol=true&forcedol=true>

Web of Science:

<https://www.webofscience.com/wos/woscc/basic-search>

Peer-reviewed Articles by Category + Authors + Institutions

Search 1

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Environmental Justice)

Search 2

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Climate Justice)

Search 3

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Economic Justice)

Search 4

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Racial Justice)

Result Category:

- 1). Environmental Justice**
- 2). Water/oil spill**
- 3). Land Use/Historic Area/ Indigenous**
- 4). Environmental Management/Strategies/Technology**

These results are synchronized with the “Peer-reviewed” column on the spreadsheet file and EndNote

Database Service: Global Health

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Environmental Justice)
(Total of 2 peer-reviewed articles)

Result Category:

-Environmental Justice

Deepwater Horizon, Environmental Justice, and the Prosecution of Federal Environmental Crimes in the U.S. Gulf Coast

cited 0

Dr. Melissa L. Jarrell is a Dean at University College, Professor of Criminal Justice, Texas A&M University Corpus Christi, Corpus Christi, Texas, USA.

Dr. Joshua Ozmy, Department of Social Science, Texas A&M University Corpus Christi, 6300 Ocean Drive, Corpus Christi, TX 78412, USA
E-mail Address: joshua.ozmy@tamu.edu

- Land Use/Historic Area/Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

cited 0

Jennifer Blanks, Texas A & M University, 400 Bizzell Street, College Station, TX 77843, USA
E-mail Address: jenrblanks@gmail.com

Alexander Abuabara is a Doctoral Candidate at Texas A & M University, College Station, Texas, USA.

Dr. Andrea Roberts is an Assistant Professor in the College of Architecture at Texas A & M University, College Station, Texas, USA.

Joy Semien is a Doctoral Candidate at Texas A & M University, College Station, Texas, USA.

-Water/Oil Spill- 0 result; Environmental Management/Technology/ Strategies- 0 result

Database Service: Global Health

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Climate Justice) – 0 result

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Economic Justice) – 0 result

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Racial Justice) – 0 result

*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

Database Service: PubMed

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Environmental Justice)
(Total of 7 peer-reviewed articles)

Result Category:

-Water/ Oil Spill

"I Remember the Mental Chaos While They Tried To Seal the Well and Clean Up the Oil Spill - How Much Fear and Uncertainty Everyone Felt": An interview with Marylee and Michael Orr, Louisiana Environmental Action Network

cited 1

John Sullivan, University of Texas Medical Branch/National Institute of Environmental Health Sciences, Galveston, TX, USA.

Beth Rosenberg, Tufts University School of Medicine, Boston, MA, USA.

****Interviewees: Marylee Orr and her son, Michael Orr, of the Louisiana Environmental Action Network (Baton Rouge, LA)*

"Keep Working for Environmental Justice No Matter How Bleak Things Look. Don't Give Up. Don't Just Go Away": An Interview With Wilma Subra

#cited 1

John Sullivan, University of Texas Medical Branch/Sealy Center for Environmental Health & Medicine, Galveston, TX, USA.

Katelyn Parady, Justice at Work, Boston, MA, USA.

Always on the Edge of the Next Big Storm, the Next Big Spill, Always Vulnerable: An Interview with Bayou Interfaith Shared Community Organizing

#cited 1

John Sullivan and Katelyn Parady University of Texas Medical Branch/Sealy Center for Environmental Health & Medicine, Galveston, TX, USA

****Interviewees: Sharon and David Gauthe of Bayou Interfaith Shared Community Organizing (Thibodaux, Louisiana)*

Need to check out Sharon and David, if we can invite them to the seminar.

Building and Maintaining a Citizen Science Network With Fishermen and Fishing Communities Post Deepwater Horizon Oil Disaster Using a CBPR Approach

#cited 10

John Sullivan, University of Texas Medical Branch / Sealy Center for Environmental Health & Medicine, Galveston, TX, USA

Sharon Croisant, University of Texas Medical Branch, Galveston, TX, USA

Marilyn Howarth, John Prochaska, Ghulam A. S. Ansari, and Cornelis Elferink, Center of Excellence in Environmental Toxicology, University of Pennsylvania, Philadelphia, PA, USA

Gilbert T. Rowe, Texas A&M University, College Station, TX, USA

Harshica Fernando, Prairie View A & M University, TX, USA

Amanda Phillips-Savoy, LSUHSC-University Hospitals and Clinics, New Orleans, LA, USA

Dan Jackson and Trevor M. Penning, University of Pennsylvania, Philadelphia, PA, USA

Louisiana Environmental Action Network, United Houma Nation

Bayou Interfaith Shared Community Organizing, and Dustin Nguyen-Vietnamese Community

The Gulf Coast Health Alliance: Health Risks Related to the Macondo Spill (GC-HARMS) Study: Self-Reported Health Effects

#cited 13

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*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

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Dustin Nguyen, Mississippi Vietnamese Fishing Community, Gulfport, MS, USA; dustin_ing@yahoo.com

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Chantelle Singleton and

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Implications of the GC-HARMS Fishermen's Citizen Science Network: Issues Raised, Lessons Learned, and Next Steps for the Network and Citizen Science

#cited 0

John Sullivan, University of Texas Medical Branch/National Institute of Environmental Health Sciences, Galveston, TX, USA

Sharon Croisant and Cornelis Elferink, University of Texas Medical Branch, Galveston, TX, USA

Marilyn Howarth, Center of Excellence in Environmental Toxicology, University of Pennsylvania, Philadelphia, PA, USA

Wilma Subra⁴, 4Subra Company, New Iberia, Louisiana, USA

Marylee Orr⁵, 5Louisiana Environmental Action Network, Baton Rouge, LA, USA

-Environmental Management/Strategies/Technology

Hurricane Katrina-linked environmental injustice: race, class, and place differentials in attitudes

#cited 4

Francis Adeola, Professor, Department of Sociology, University of New Orleans, United States.

Steven Picou, Professor of Sociology, Department of Sociology, Anthropology and Social Work, and Director, Coastal Resource and Resiliency Center, University of South Alabama, United States.

- Environmental Justice- 0 result; - Land use/Historic Area/ Indigenous- 0 result

Database Service: PubMed

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Racial Justice)

(Total of 1 peer-reviewed article)

Result Category:

-Environmental Management/Strategies/Technology

Hurricane Katrina-linked environmental injustice: race, class, and place differentials in attitudes

#cited 4

Francis Adeola, Professor, Department of Sociology, University of New Orleans, United States.

*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

Steven Picou, Professor of Sociology, Department of Sociology, Anthropology and Social Work, and Director, Coastal Resource and Resiliency Center, University of South Alabama, United States.

-Water/Oil Spill- 0 result; Environmental Justice- 0 result; - Land use/Historic Area/ Indigenous - 0 result

Database Service: PubMed

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Economic Justice) (Total of 3 peer-reviewed articles)

Result Category:

-Water/ Oil Spill

Implications of the GC-HARMS Fishermen's Citizen Science Network: Issues Raised, Lessons Learned, and Next Steps for the Network and Citizen Science

#cited n/a

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Building and Maintaining a Citizen Science Network With Fishermen and Fishing Communities Post Deepwater Horizon Oil Disaster Using a CBPR Approach

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Louisiana Environmental Action Network, United Houma Nation (Co-author)

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The Gulf Coast Health Alliance: Health Risks Related to the Macondo Spill (GC-HARMS) Study: Self-Reported Health Effects

#cited 13

Sharon Croisant, University of Texas Medical Branch at Galveston

Yu-Li Lin, MD, MS. University of Texas MD Anderson Cancer Center. Department of Health Services Research

Joseph Shearer, PhD, MPH, National Cancer Institute (USA), Bethesda, USA

John Prochaska, DrPH, MPH University of Texas Medical Branch at Galveston | UTMB · Department of Preventive Medicine & Community Health,

- Environmental Justice- 0 result; Environmental Management/Technology/ Strategies- 0 result; Land use/Historic Area/Indigenous – 0 result

Database Service: Web of Science

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Environmental Justice)
(Total of 11 peer-reviewed articles)

Result Category:

-Water/Oil spill

Deepwater Horizon, Environmental Justice, and the Prosecution of Federal Environmental Crimes in the U.S. Gulf Coast

#cited 0

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The Gulf Coast Health Alliance: Health Risks Related to the Macondo Spill (GC-HARMS) Study: Self-Reported Health Effects

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Gilbert Rowe, Texas A&M University at Galveston; Galveston, TX 77554, USA; roweg@tamug.edu 11

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Social and Environmental Justice as a Lens to Approach the Distribution of \$105 Million of Directed Funding in Response to the Deepwater Horizon Oil Disaster

#cited 5

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Toxic Floodwaters on the Gulf Coast and Beyond: Commentary on the Public Health Implications of Chemical Releases Triggered by Extreme Weather

#cited 0

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-Land Use/Historic Area/Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

#cited 2

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Joy Semien is a Doctoral Candidate at Texas A & M University, College Station, Texas, USA.

Historic and Contemporary Environmental Justice Issues among Native Americans in the Gulf Coast Region of the United States

#cited 1

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Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

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-Environmental Management/Strategies/Technology

Health Disparities in the U.S. Gulf Coast: The Interplay of Environmental Disaster, Material Loss, and Residential Segregation

#cited 1

*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

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Implications of the GC-HARMS Fishermen's Citizen Science Network: Issues Raised, Lessons Learned, and Next Steps for the Network and Citizen Science

#cited 3

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The NIEHS Environmental Health Sciences Data Resource Portal: Placing Advanced Technologies in Service to Vulnerable Communities

#cited 14

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Robert Tukey, Department of Pharmacology, 3Department of Chemistry and Biochemistry,

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Mark Ellisman, National Center for Microscopy and Imaging Research, Center for Research in Biological Systems and the Department of Neurosciences, University of California San Diego, La Jolla, California, USA

Perceptions of Toxic Exposure: Considering “White Male” and “Black Female” Effects

#cited 7

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J. Steven Picou. Department of Sociology, Anthropology and Social Work, University of South Alabama, Mobile, Alabama, USA

- Environmental Justice- 0 result

Database Service: Web of Science

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Economic Justice)

(Total of 5 peer-reviewed articles)

Result Category:

-Water/Oil Spill

Health Disparities in the U.S. Gulf Coast: The Interplay of Environmental Disaster, Material Loss, and Residential Segregation

#Cited 1

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The Gulf Coast Health Alliance: Health Risks Related to the Macondo Spill (GC-HARMS) Study: Self-Reported Health Effects

#Cited 11

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Social and Environmental Justice as a Lens to Approach the Distribution of \$105 Million of Directed Funding in Response to the Deepwater Horizon Oil Disaster

#Cited 5

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*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

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-Historic Area/Indigenous

*Historic and Contemporary Environmental Justice Issues among Native Americans in the Gulf Coast Region of the
United States*
#Cited 1

Jessica L. Liddell. Tulane University School of Social Work, New Orleans, LA
Catherine E. McKinley. Tulane University School of Social Work, New Orleans, LA
Jennifer M. Lilly Fordham University

-Environmental Management/Strategies/Technology

*The NIEHS Environmental Health Sciences Data Resource Portal: Placing Advanced Technologies in Service to
Vulnerable Communities*

#Cited 14

*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

Keith Pezzoli, Urban Studies and Planning Program,
Robert Tukey, Department of Pharmacology, 3Department of Chemistry and Biochemistry,
Hiram Sarabia, Urban Studies and Planning Program,
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Mark Ellisman, National Center for Microscopy and Imaging Research, Center for Research in Biological Systems and the Department of Neurosciences, University of California San Diego, La Jolla, California, USA

- Environmental Justice- 0 result

Database Service: Web of Science

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Racial Justice)
(Total of 2 peer-reviewed articles)

Result Category:

- Land Use/Historic Area/Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

#Cited 2

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*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

-Environmental Management/Strategies/Technology

Abandoned and abused: prisoners in the wake of Hurricane Katrina

#Cited 3

Author: National Prison Project of the American Civil Liberties Union

-Water/Oil Spill- 0 result; -Environmental Justice- 0 result

Database Service: Web of Science

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Climate Justice)

(Total of 3 peer-reviewed articles)

Result Category:

-Land Use/Historic Area/Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

#cited 2

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Historic and Contemporary Environmental Justice Issues among Native Americans in the Gulf Coast Region of the United States

#cited 1

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Catherine E. McKinley. Tulane University School of Social Work, New Orleans, LA

Jennifer M. Lilly Fordham University

*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

Toxic Floodwaters on the Gulf Coast and Beyond: Commentary on the Public Health Implications of Chemical Releases Triggered by Extreme Weather

#cited 0

Darya Minovi, is a Policy Analyst at the Center for Progressive Reform, Washington, District of Columbia, USA. Center for Progressive Reform, 1250 Connecticut Ave NW, Suite 700, Washington, DC 20036, USA E-mail Address: dminovi@progressivereform.org

-Water/Oil Spill- 0 result; Environmental Justice- 0 result; - Environmental Management/Technology/ Strategies- 0 result

Database Service: ProQuest

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Environmental Justice)
(Total of 7 peer-reviewed articles)

Category

-Water/Oil Spill

Always on the Edge of the Next Big Storm, the Next Big Spill, Always Vulnerable: An Interview with Bayou Interfaith Shared Community Organizing

#cited n/a

John Sullivan and Katelyn Parady University of Texas Medical Branch/Sealy Center for Environmental Health & Medicine, Galveston, TX, USA

****Interviewees: Sharon and David Gauthe of Bayou Interfaith Shared Community Organizing (Thibodaux, Louisiana)*

Need to check out Sharon and David, if we can invite them to the seminar.

"I Remember the Mental Chaos While They Tried To Seal the Well and Clean Up the Oil Spill - How Much Fear and Uncertainty Everyone Felt": An interview with Marylee and Michael Orr, Louisiana Environmental Action Network

#cited n/a

John Sullivan, University of Texas Medical Branch/National Institute of Environmental Health Sciences, Galveston, TX, USA.

Beth Rosenberg, Tufts University School of Medicine, Boston, MA, USA.

****Interviewees: Marylee Orr and her son, Michael Orr, of the Louisiana Environmental Action Network (Baton Rouge, LA)*

Social and Environmental Justice as a Lens to Approach the Distribution of \$105 Million of Directed Funding in Response to the Deepwater Horizon Oil Disaster

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#Cited n/a

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Dr. Eric Baumgartner, Pediatric specialist. LSU

Stephen Bradberry. Executive Director Alliance Institute.

Lisanne F. Brown. PhD. *Principal Associate, Health & Environment*, Ph.D., epidemiology and program evaluation, Tulane University School of Public Health & Tropical Medicine (SPHTM)

Katherine Kirkland, Executive Director at Association of Occupational and Environmental Clinics. The George Washington University

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-Land Use/Historic Area/ Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

cited n/a

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- Environmental Justice- 0 result; - Environmental Management/Technology/ Strategies- 0 result

Database Service: ProQuest

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Climate Justice)
(Total of 1 peer-reviewed article)

Result Category

-Land Use/Historic Area/ Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

cited n/a

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- Water/oil spill; Environmental Management/Technology/Strategies- 0 result

*The research was supported in part by NASA EPSCOR and Louisiana Board of Regents Support Fund

Database Service: ProQuest

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Economic Justice)
(Total of 1 peer-reviewed article)

-Land Use/Historic Area/ Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

cited n/a

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-Water/Oil Spill- 0 result; Environmental Justice- 0 result; - Environmental Management/Technology/ Strategies- 0 result

Database Service: ProQuest

Keywords: (Gulf Coast) AND (LOUISIANA) AND (Racial Justice)
(Total of 1 peer-reviewed article)

-Land Use/Historic Area/ Indigenous

Preservation at the Intersections: Patterns of Disproportionate Multihazard Risk and Vulnerability in Louisiana's Historic African American Cemeteries

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