

**URBAN
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Extreme Urban Heat: Opportunities to Mitigate Risks in Cities

August 13, 2024

8:00 – 9:00 CST; 11:00 -12:00 BRT & ART; 19:30 - 20:30 IST

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AGENDA

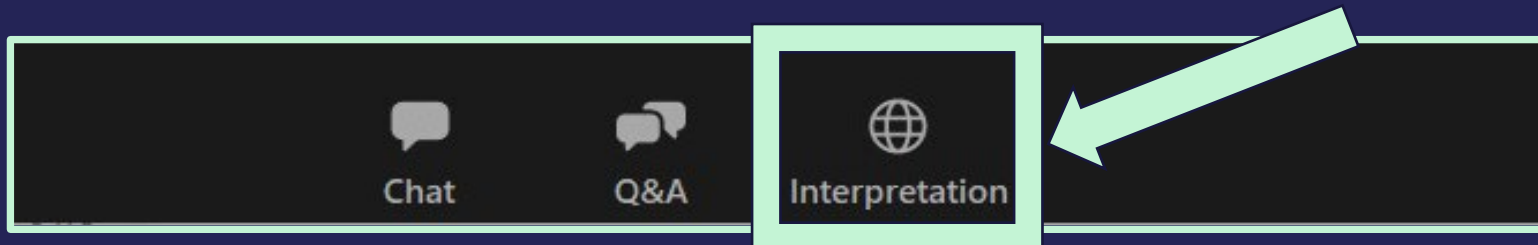
- **Welcome and Housekeeping:** Eillie Anzilotti, WRI
- **Introductory Remarks:** The Challenge of Extreme Heat in Cities: Highlighting the UN Secretary General's Call to Action on Extreme Heat and the Global Cooling Pledge: Gulnara Roll, UNEP
- **Presentation:** Using Geospatial Data to Better Understand Urban Heat Hazards and Measure Heat Risks in Cities: Ruth Engel and Saif Shabou, WRI
- **Panel Discussion:** Interventions to Mitigate Heat Risks – Learning from Cities
 - Panelists: Esteban Jaramillo Ruiz, Medellin; Eugenia Kargbo, Freetown; Candes Arendse, Cape Town
 - Moderator: John-Rob Pool, WRI
- **Respondent:** Highlighting Opportunities and Global Efforts to Tackle Extreme Heat in Cities: Eleni Myrivili, UN Habitat & Arsht-Rock
- **Closing remarks:** Jaya Dhindaw, WRI India



Interpretation

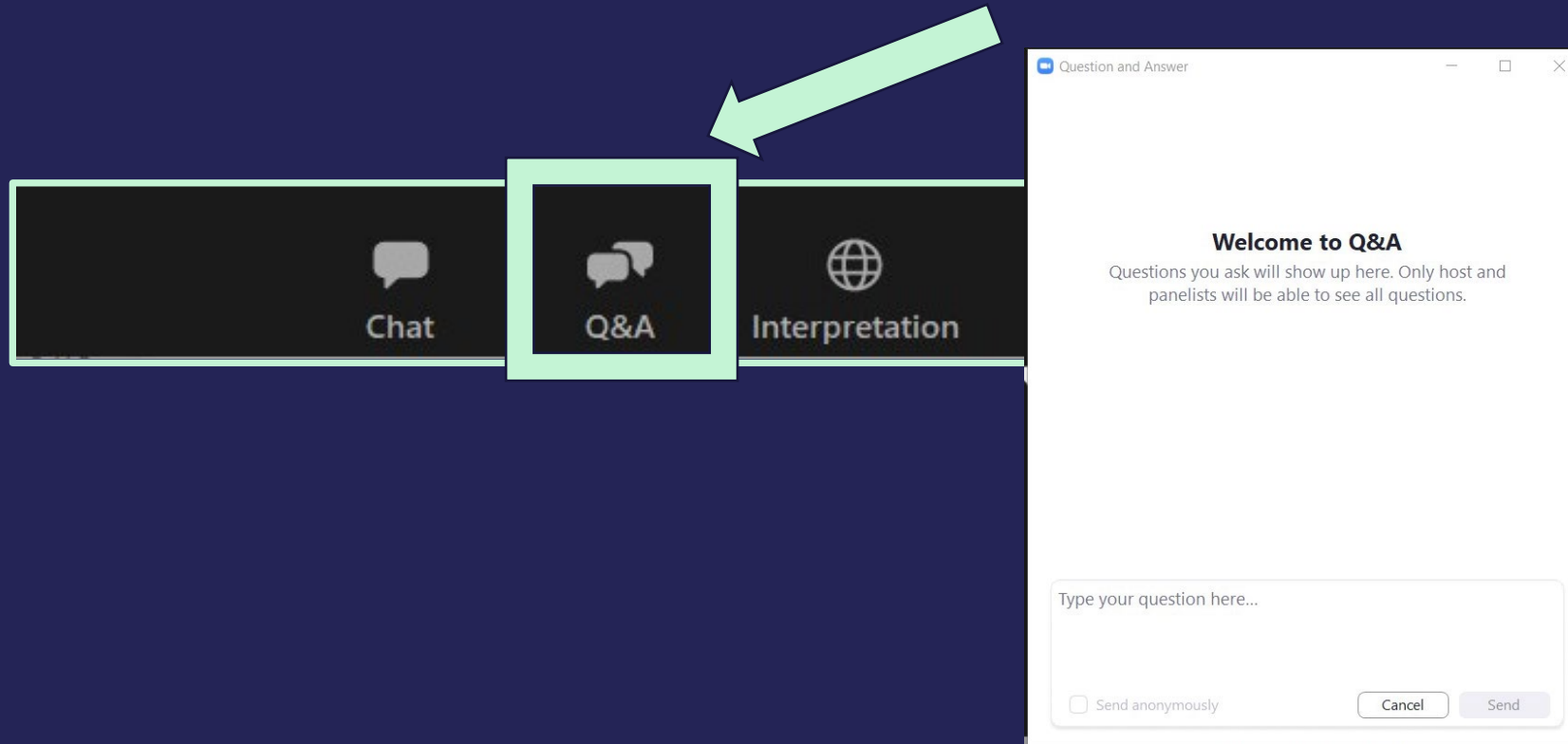
ES: ¡Contamos con interpretación simultánea en español! Haga clic en el icono de "interpretación" en la parte inferior de su pantalla para escuchar el evento en español.

PT: A interpretação em português ao vivo está disponível! Clique no ícone "interpretação" na parte inferior da tela para ouvir o evento em português.



Audience Questions

If you have any questions about the presentations during the event, feel free to enter them into the question and answer box. We will respond to questions entered into the Q&A box throughout the event.



The image shows a navigation bar with three buttons: Chat, Q&A, and Interpretation. The Q&A button is highlighted with a red box, and a red arrow points to it. To the right is a screenshot of the 'Question and Answer' interface. The interface has a title bar that says 'Question and Answer'. Below the title bar, it says 'Welcome to Q&A' and 'Questions you ask will show up here. Only host and panelists will be able to see all questions.' There is a text input field with the placeholder text 'Type your question here...'. Below the input field, there is a checkbox labeled 'Send anonymously' and two buttons: 'Cancel' and 'Send'.

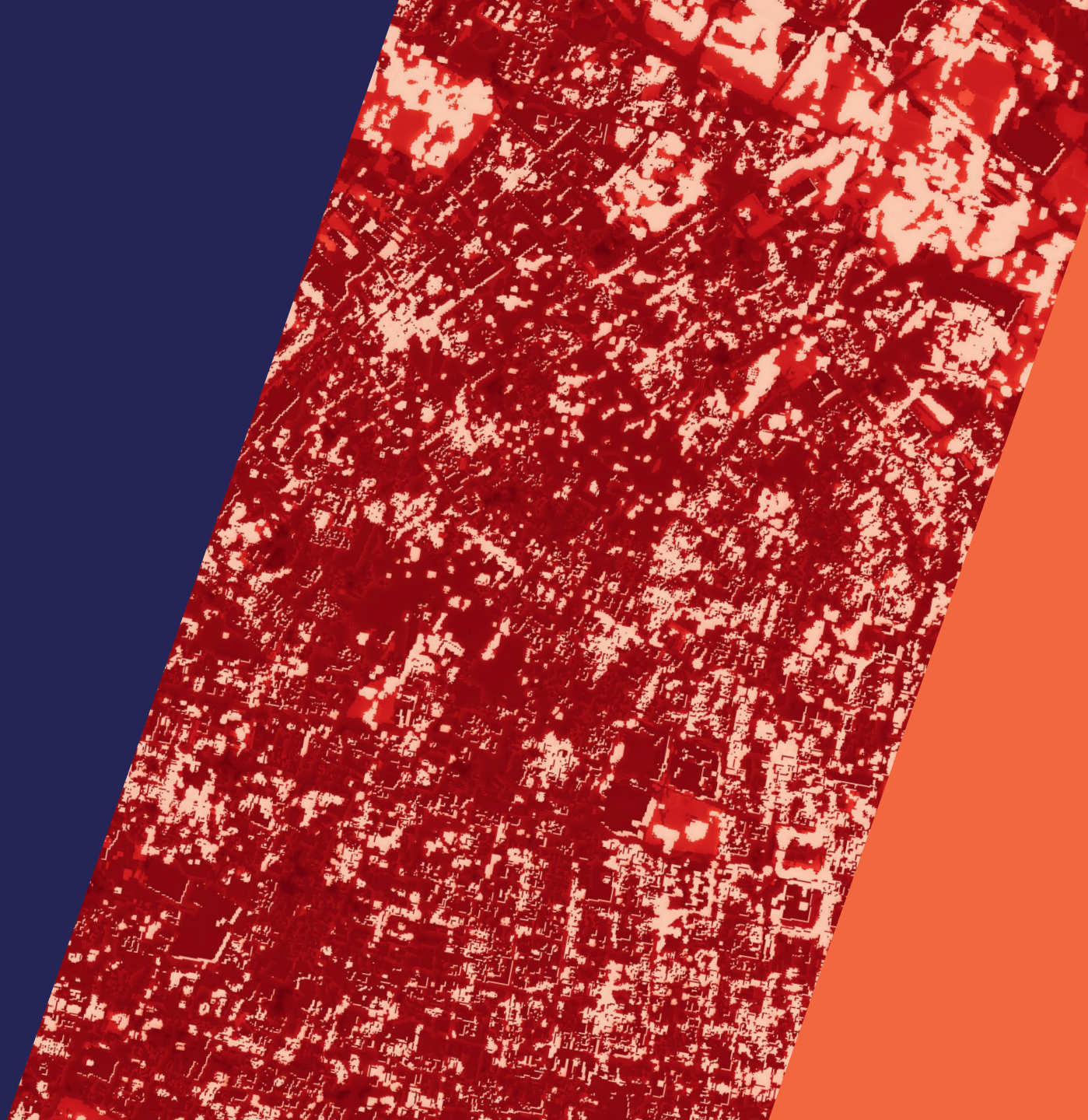
The Challenge of Extreme Heat in Cities: Highlighting the UN Secretary General's Call to Action on Extreme Heat and the Global Cooling Pledge

*Gulnara Roll, Head, Cities Unit,
UN Environment Programme*

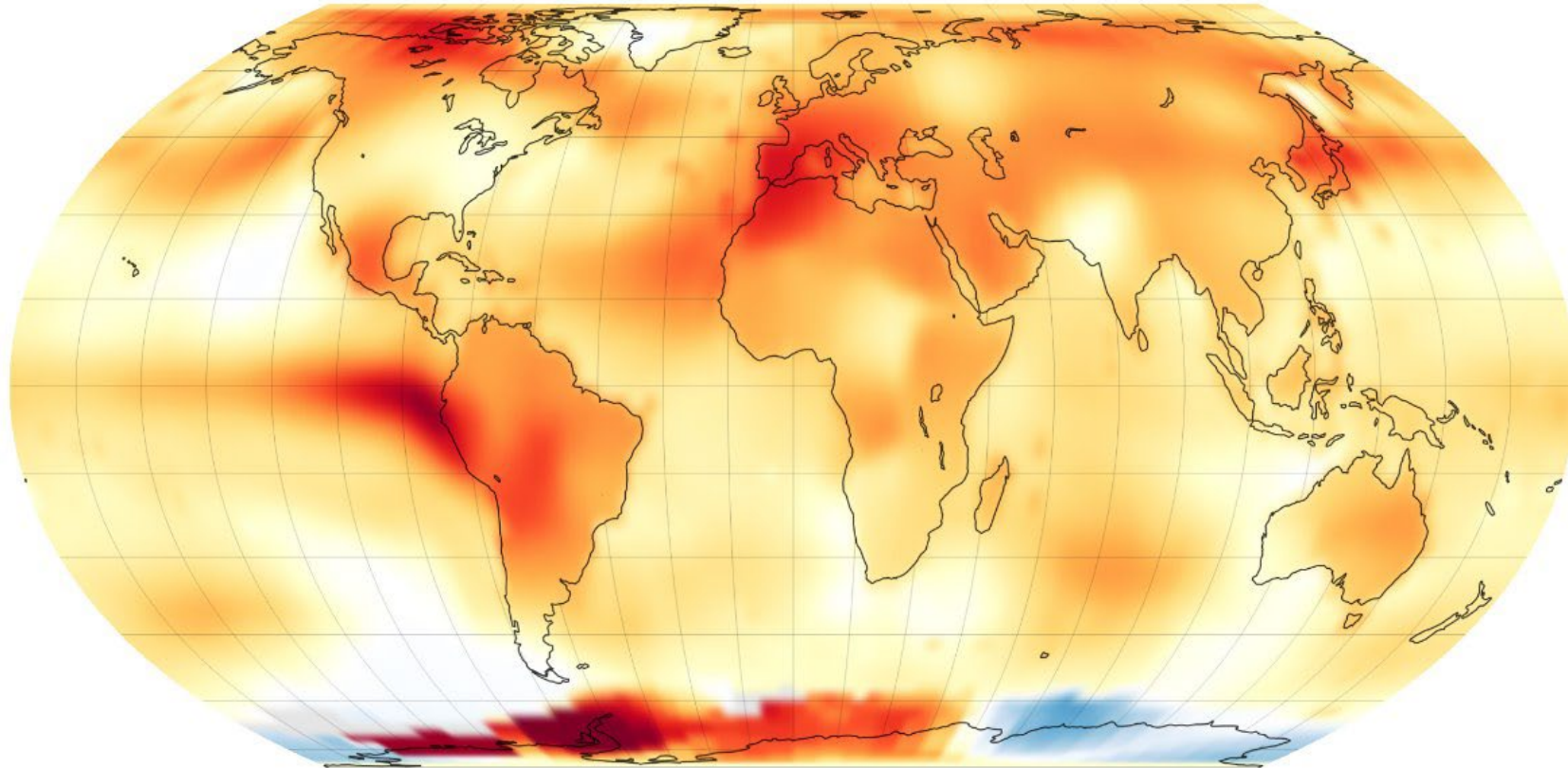


Presentation: Using Geospatial Data to Better Understand Urban Heat Hazards and Measure Heat Risks in Cities

Ruth Engel and Saif Shabou, WRI



EXTREME HEAT IS A GROWING & INEQUITABLE HAZARD



June, July, and August Global Temperature Anomaly (°C compared to 1951-1980 average)



- Heat is the # 1 weather-related killer globally
- 2023 was the hottest year in recorded history
- An estimated 250,000 annual deaths will occur from heat by 2050, mostly in cities ([WHO](#))

CITIES ARE BUILDING HEAT RESILIENCE

WRI Partnerships to Explore Urban Heat Resilience



BUT THERE ARE BARRIERS TO ACTION...

Top identified barriers

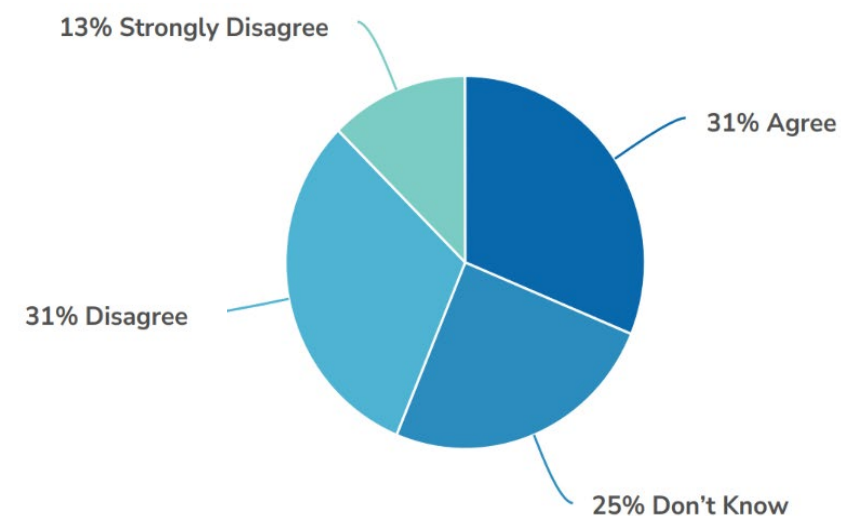
- 1 **Political will**
- 2 **Identifying and prioritizing actions**
- 3 **Institutional alignment**

Item	Overall Rank	Rank Distribution	Score	No. of Rankings
Political will	1		77	17
Identifying and prioritizing actions	2		77	16
Institutional alignment	3		68	17
Finances / Budget	4		64	16
Tracking progress	5		63	16
Technical implementation	6		56	16
Building a narrative	7		54	16

Data availability

46%

Of urban heat decisionmakers do not have sufficient access to heat related data



UNDERSTANDING USERS, DECISIONS AND INFORMATION NEEDS

Discovery Interviews

City Officials

Urban planning, Climate, Disaster management, environment...

Local context: urban heat agenda, existing initiatives, local data

Heat Experts

Chief Heat Officers, Smart surface Coalition, Arshtr-Rock Center, C40...

Users' needs: profiles, responsibilities, heat adaptation journeys

Co-Design process: engagement, pilot cities

Main Insights



Heat Metrics

- Heat metric depending on the **scale** of analysis
- Thermal Comfort



Heat Data

- Hyper-local heat data
- Priority data: Shade, surfaces characteristics, urban features, tree cover...
- Data silos: climate, health, urban planning



Use Cases



WHERE: Prioritizing areas for planning cooling infrastructures



WHAT: Scenarios for simulating cooling benefit of different urban interventions



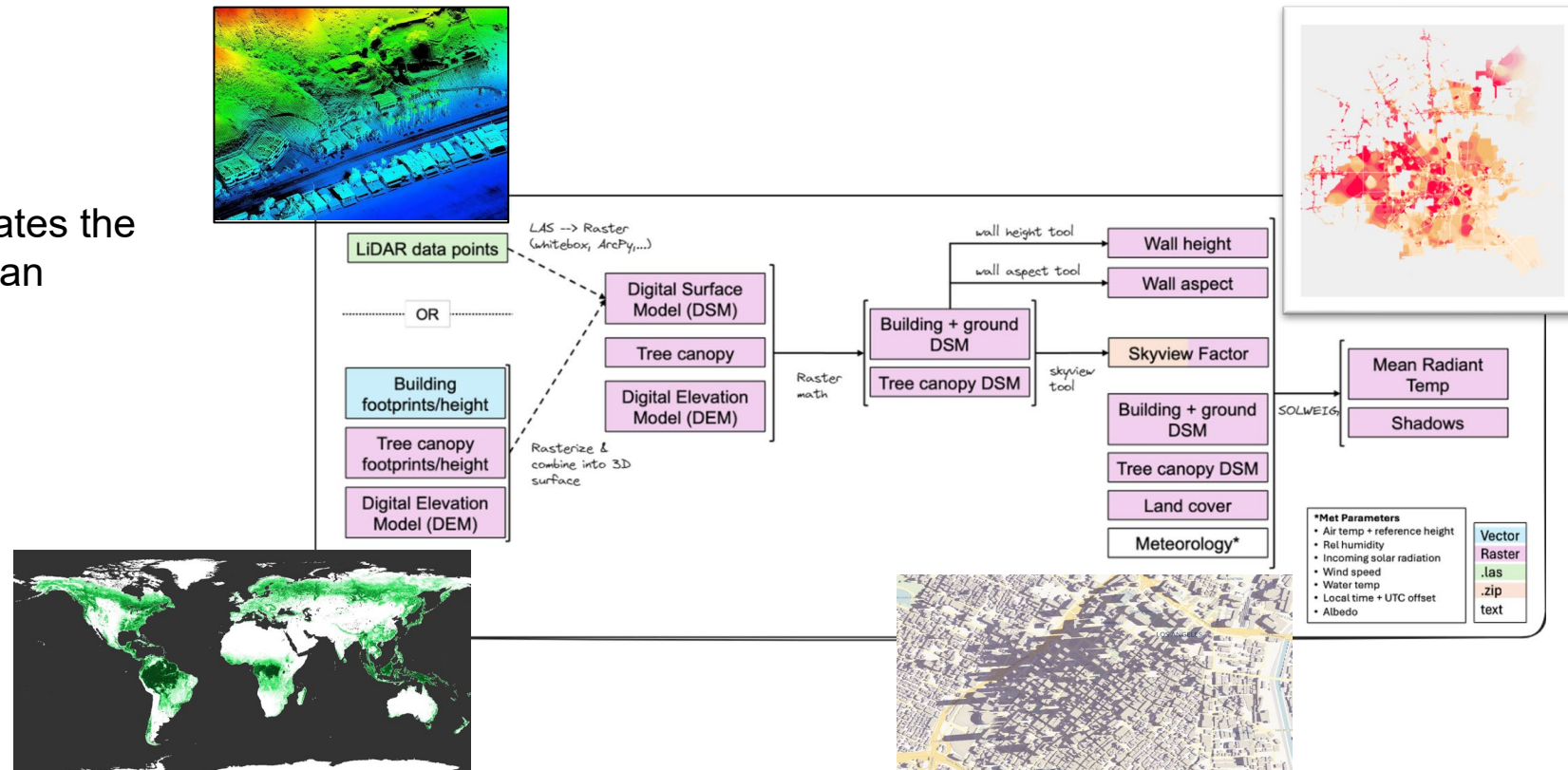
MODELING LOCAL HEAT EXPOSURE

Thermal comfort modeling: hyperlocal heat exposure analysis

We examine thermal comfort using the SOLWEIG physical model, which simulates the local 3D effects of meteorology and urban form.

We use:

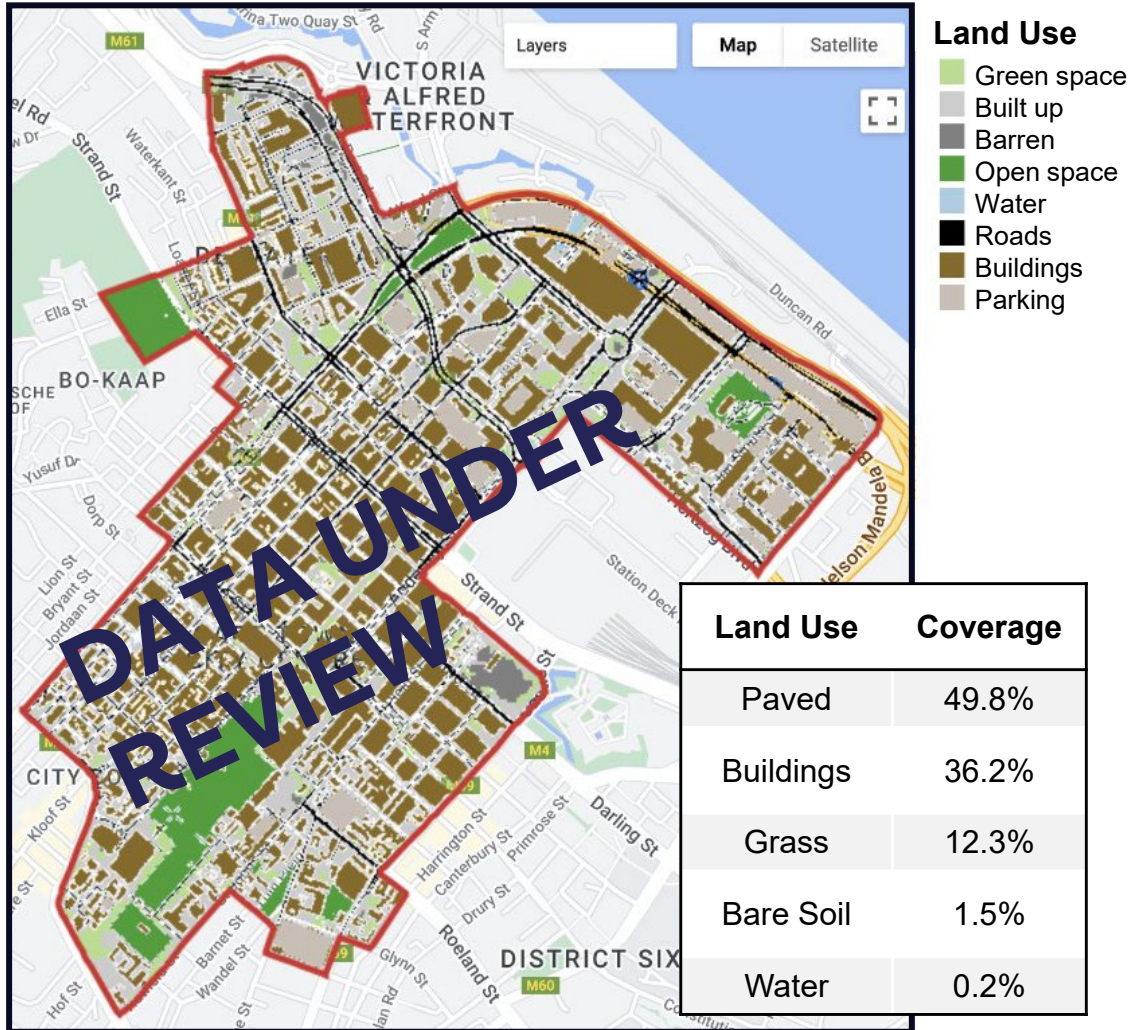
- Ground elevation
- Building height
- Tree height
- Land cover
- Weather



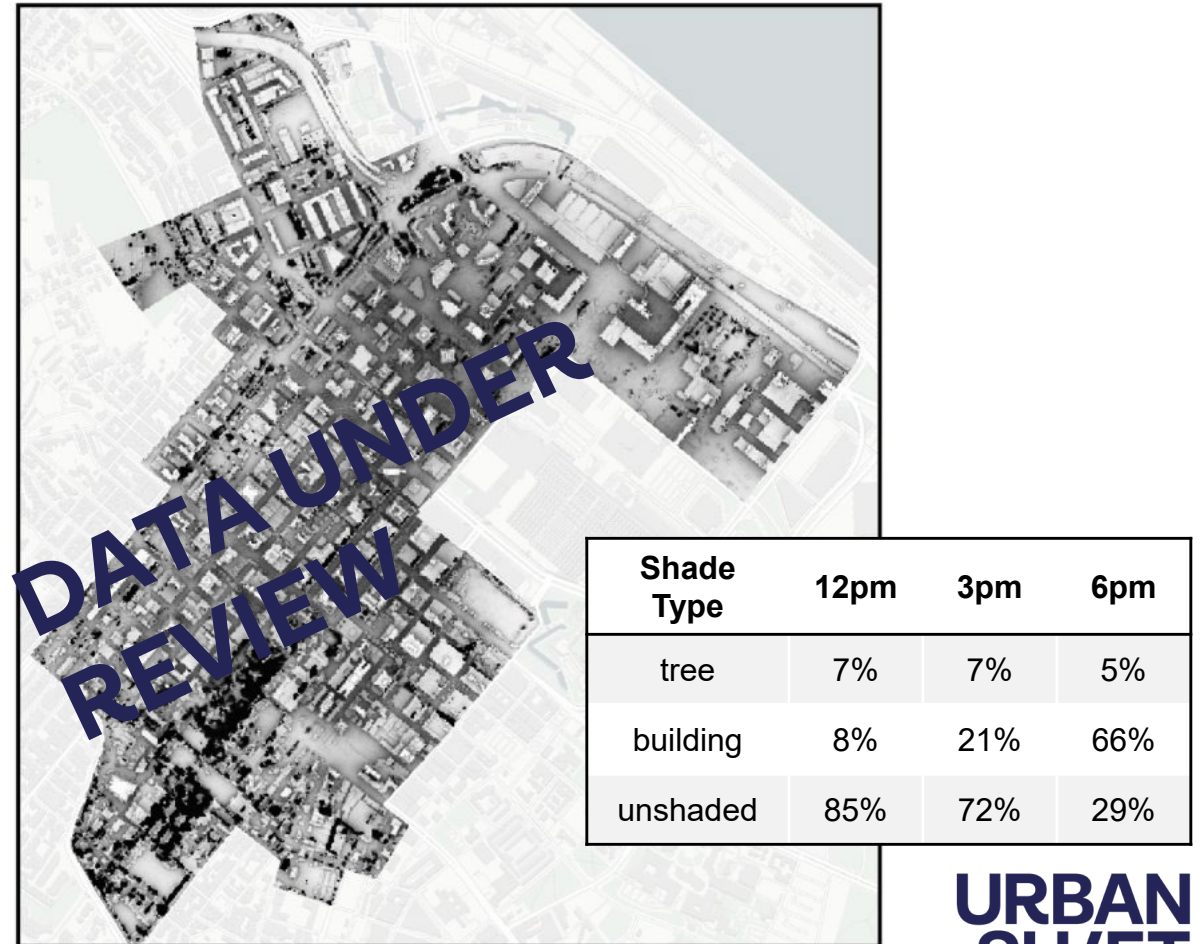
We calculate **thermal comfort** in two indices, as well as **shade** from buildings and trees.

UNDERSTANDING HEAT INFRASTRUCTURE

Land Use: Cape Town's central business district

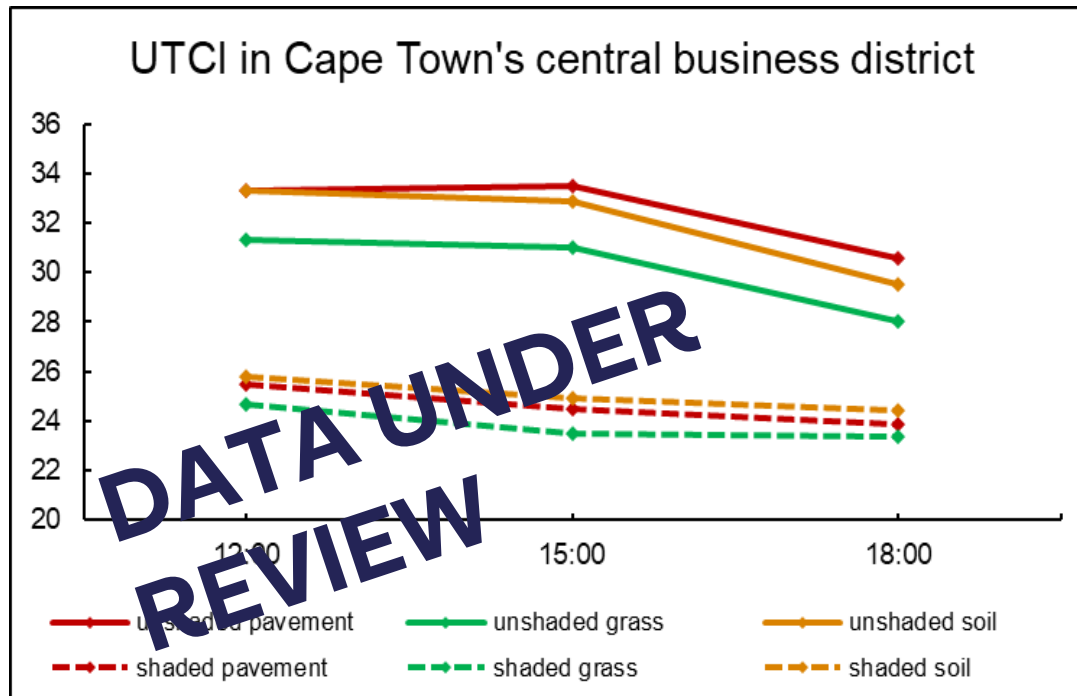
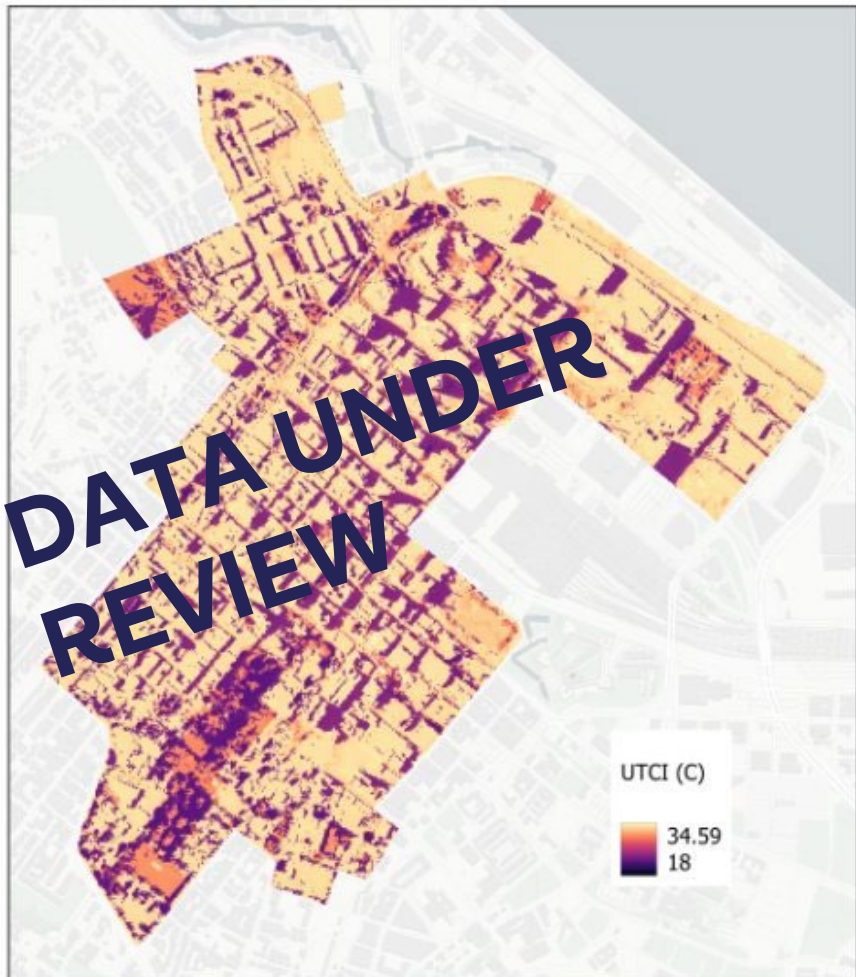


Hourly Shade Coverage: Cape Town's central business district



MODEL THE EFFECTS OF INFRASTRUCTURE ON HEAT EXPOSURE

Universal Thermal Comfort Index: 3pm



Effects of Parks and Shade on Thermal Comfort (3pm)

Land Use & Shade	Mean UTCI	Std Dev UTCI	Max UTCI
Non-Park Shadow	25.623	3.398	34.374
Non-Park Non-Shadow	32.142	2.908	34.758
Park Shadow	24.077	2.327	33.640
Park Non-Shadow	29.485	2.940	34.322

SCENARIO MODELING FOR THERMAL COMFORT



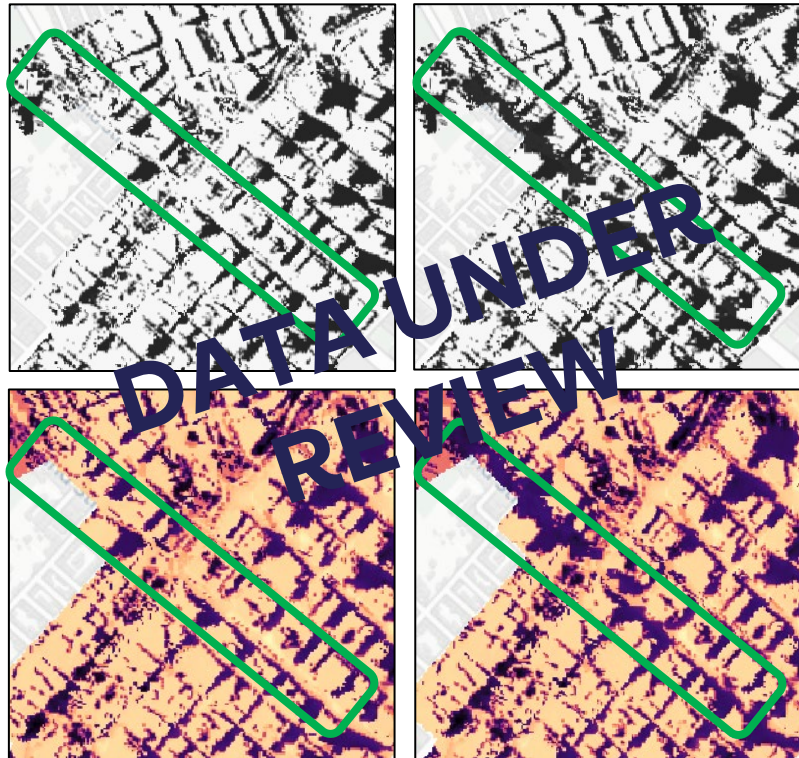
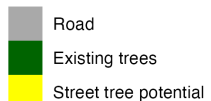
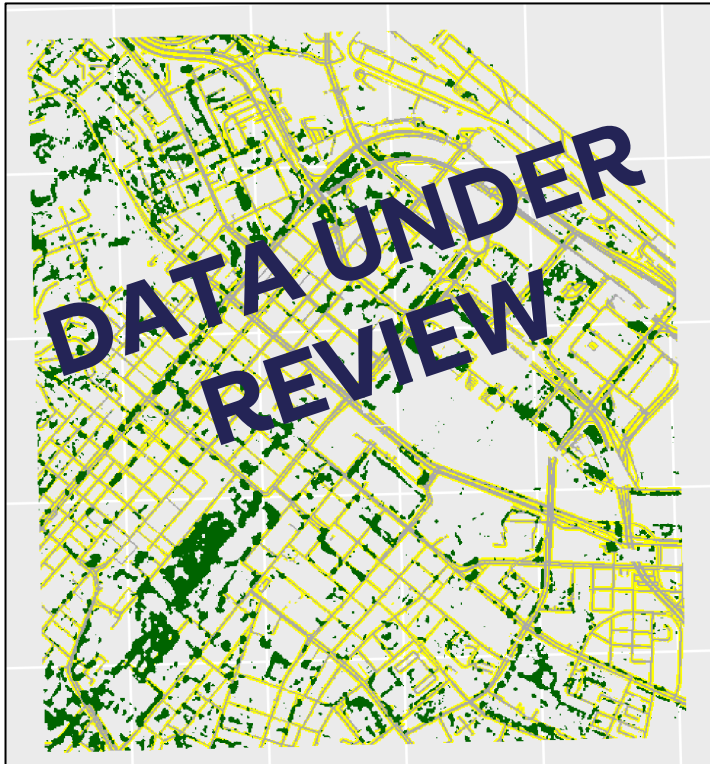
Evaluate intervention scenario



Model infrastructure and heat changes



Map scenario cooling potential

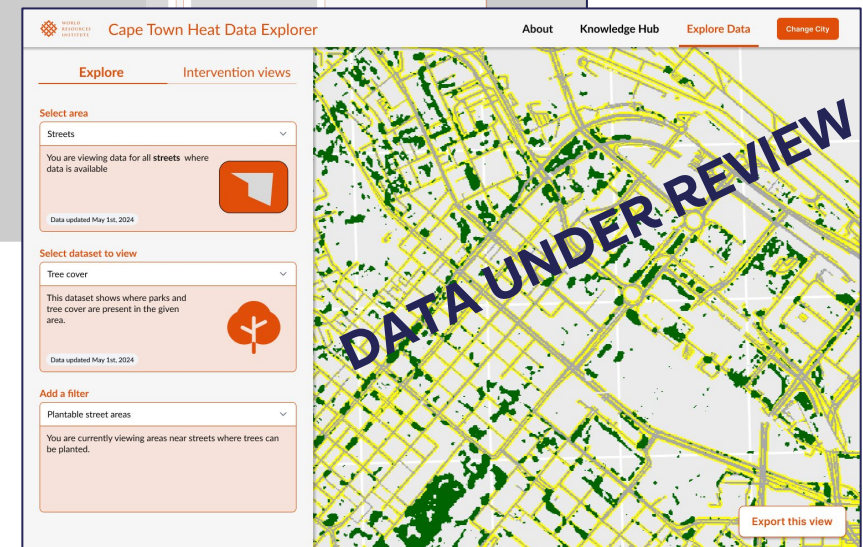
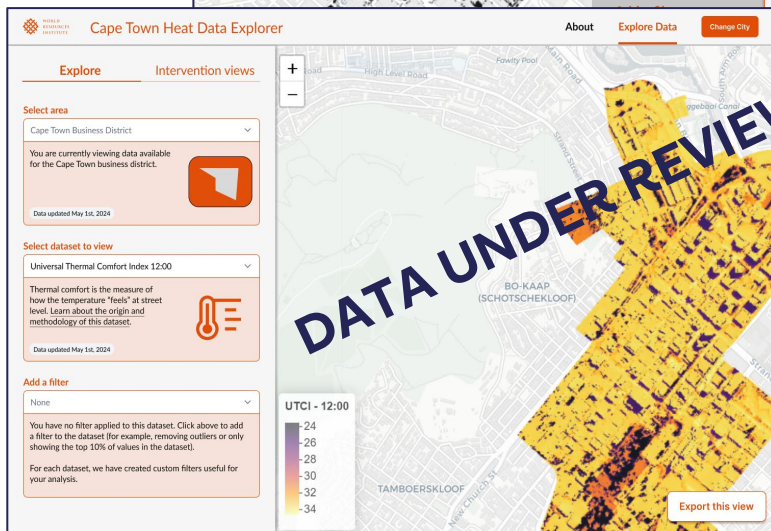
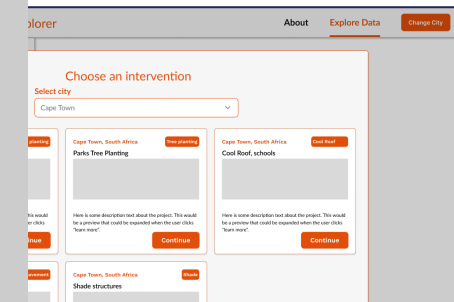
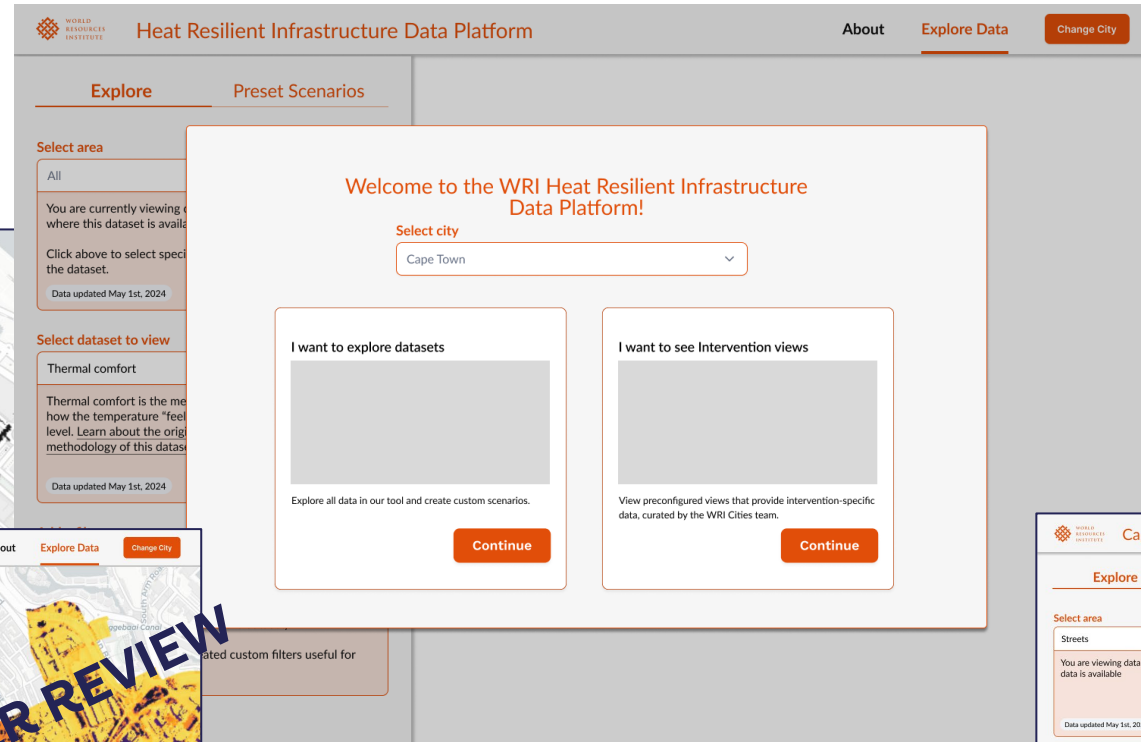


Change in UTCI (C)



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BUILDING HEAT RESILIENT INFRASTRUCTURE DATA PLATFORM



THANK YOU



Schedule a Demo



Get in Touch

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Ruth.Engel@wri.org

citiesdata@wri.org

**Panel Discussion:
Interventions to
Mitigate Heat Risks**
Learning from Cities



PANEL DISCUSSION



**Esteban Jaramillo
Ruiz**
Natural Resources
Secretary,
Medellín, Colombia



Eugenia Kargbo
Chief Heat
Officer, City of
Freetown, Sierra
Leone



Candes Arendse
Professional
Officer, Climate
Change Planning,
Risk and
Resilience, Cape
Town, South
Africa



John-Rob Pool
Senior Manager,
Nature-Positive
Urban Development
& UrbanShift,
World Resources
Institute

Highlighting Opportunities and Global Efforts to Tackle Extreme Heat in Cities

*Eleni Myrivili, Global Chief Heat
Officer, UN Habitat &
Nonresident Senior Fellow,
Arsht-Rock*



Closing Remarks

*Jaya Dhindaw, Executive
Program Director, Sustainable
Cities and Director, WRI India
Ross Center*



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Cities for People
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Planning



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Urban Growth



Integrated
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Planning



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Thank you!

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- John-Rob Pool, WRI: john-rob.pool@wri.org
- Eillie Anzilotti, WRI: eileen.anzilotti@wri.org