2024 INNOVATE CITIES CONFERENCE

10-12 SEPTEMBER 2024 • MONTREAL, CANADA

AI x City climate action / HACKATHON

Kick-off Session

Tuesday, 16 July 2024

11:00 AM CEST

GLOBAL COVENANT of MAYORS for CLIMATE & ENERGY

Bloomberg Philanthropies

Co-funded by the European Union

UN-HABITAT

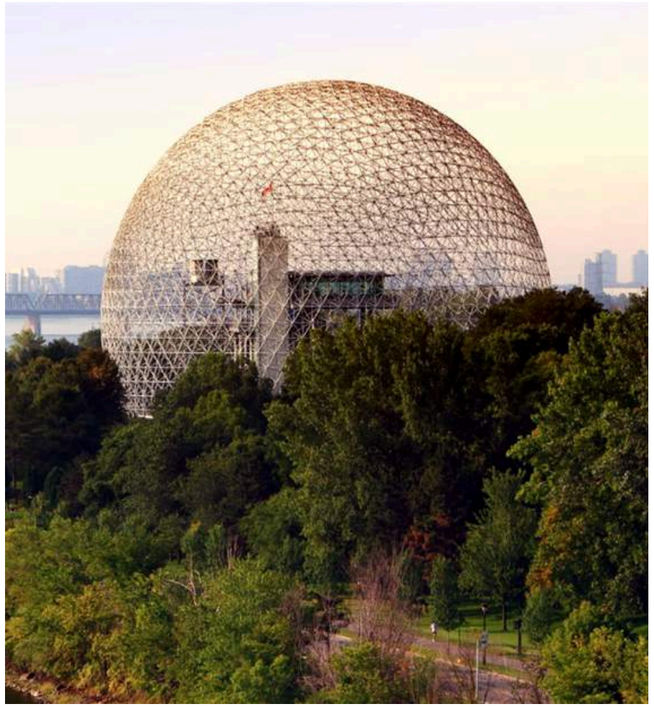
/ AGENDA

WELCOME / 3 minutes / **JP ASTOLFO**
I4C CONFERENCE / 3 minutes / **LEA RANALDER**
HOW DOES THE HACKATHON WORK? / 9 minutes
WHAT IS THE CHALLENGE? / 10 minutes / **SIYASANGA SAUKA**
WHAT ARE THE AVAILABLE DATA? / 10 minutes
PICTERRA PLATFORM / 5 minutes / **DAN RUSHTON**
Q&A / 20 minutes / **JP**

The Innovate4Cities Conference

Co-funded by the European Union

Duration	10 – 12 Sept, 3 days
Delivery format	In-person with select hybrid components (e.g. plenary streaming)
Program focus	**Four preliminary focal themes:** • Biodiversity and resilience • Governance • Finance • Digitalization Intersection between 'sectoral' areas and 'means of implementation', leveraging cross-cutting thematic knowledge and discussion Focus on knowledge generation and cross-sector partnerships (thorough regionalized Call for Abstracts + discussion opportunities) Equity, access, and justice lens across the program



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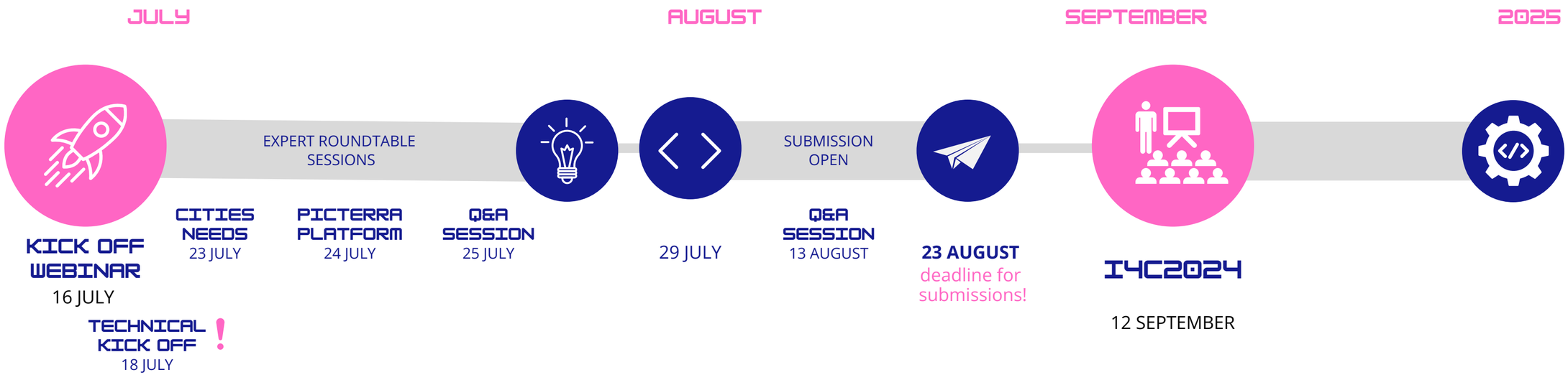


LEAR ABOUT THE CHALLENGE

Join these sessions to gather insights on what the problem is, what's the data available and how you can bring in your knowledge and perspective to provide a solution.

PREPARE YOUR SUBMISSION!

Start developing your idea! you can team up with other participants or colleagues and participate on the Question and Answer (Q&A) sessions to clear any doubts you might have.
Send your submission before the deadline!

PITCH!

If you are one of the up to 10 selected semi finalists, pitch your idea virtually or in person at the Innovate4Cities Conference in Montreal, Canada!

DEVELOP

The winner team will get support from GCoM and partners to see their idea come to life!

AI x City climate action / HACKATHON

2024 INNOVATE CITIES CONFERENCE

/ CO-HOSTS

Global Covenant of Mayors (GCoM)
UN Habitat

/ PARTNERS

C40 - Adaptation lead
ICLEI - Knowledge partner
OEF - Tech partner
Picterra - Platform support

/ HACKATHON TEAM

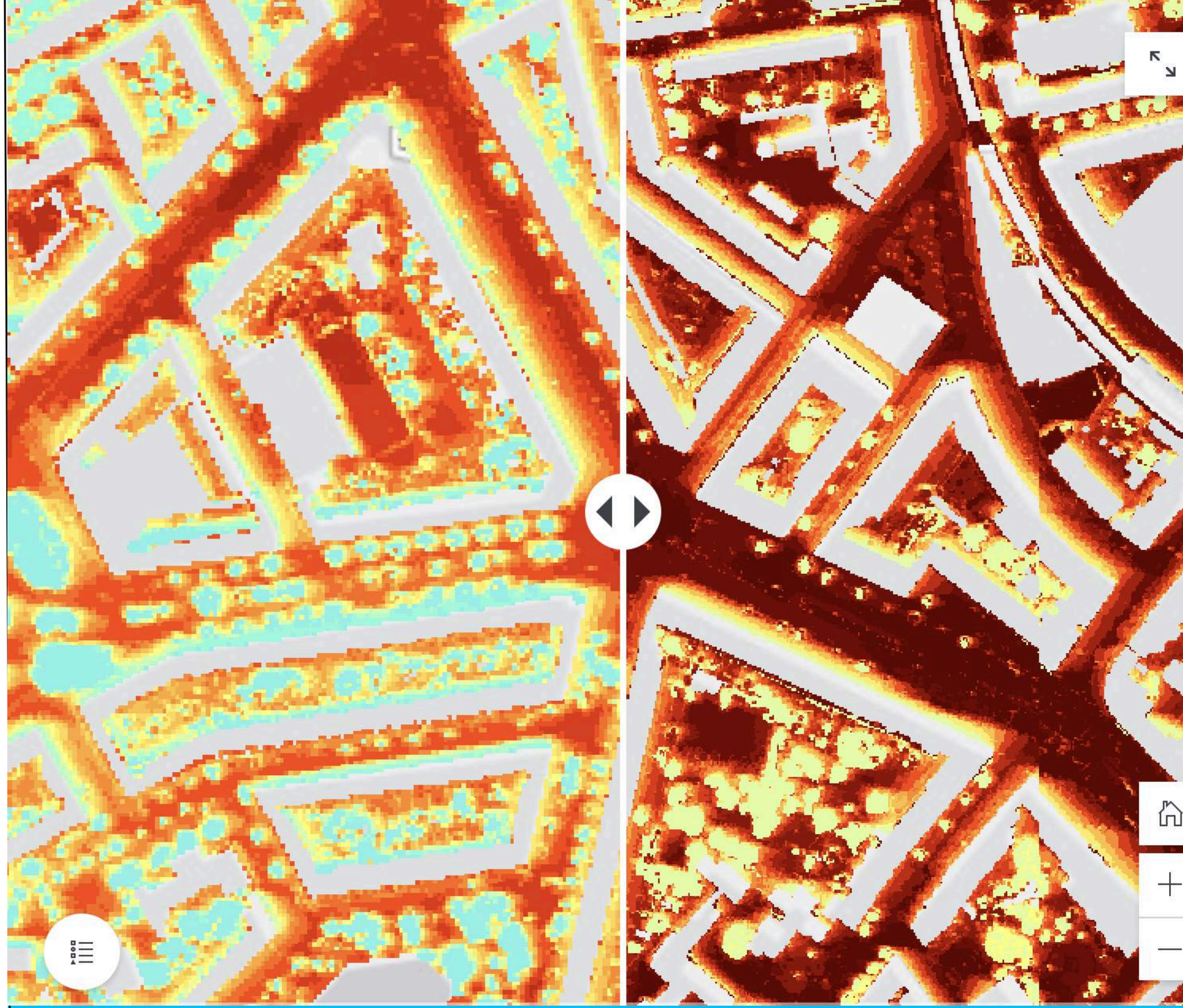
Juan Pablo Astolfo (GCoM)
Samia Khan (GCoM)
Amy Jones (ICLEI)

/ JURY

Michael Reuss (Viegand Maagøe)
Pooja Mahapatra (WGIC)
Siyasanga Sauka (C40)
Pourya Salehi (ICLEI)
TBC

What is the Challenge?

16 July 2024
By: Siya Sauka



Context: Climate Risk

Climate-related risks, hazards, and disasters are intensifying and becoming more frequent - affecting people, nature and urban systems

“We are living through climate collapse in real-time - and the impact is devastating” said UN Secretary-General Antonio Guterres at COP28.

With nearly 70% of people living in cities by 2050, climate events are projected to continue dramatically affect urban life, posing unprecedented challenges to city dwellers.

It is increasingly important that stakeholders work together to help cities adapt and thrive in the face of climate change... To ensure that our urban future is safe, sustainable, and thriving.

Why understanding risk is important?

Understanding past climate trends & current climate hazards

Understanding how this is likely to change in future (evidence-based)

Understanding how climate is affecting / impacting the city, and how this is likely to change in future

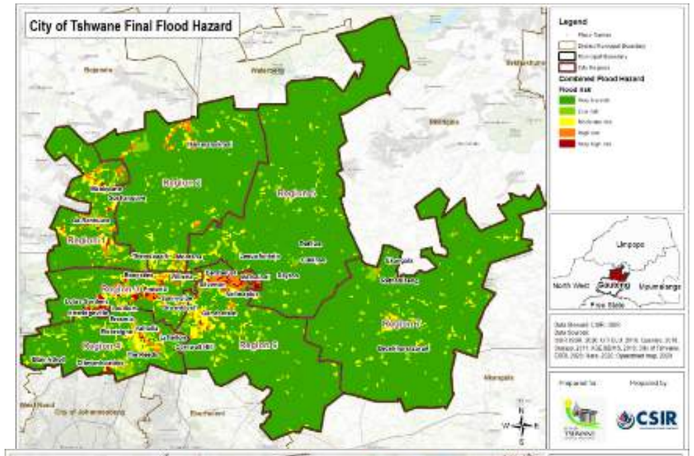
- People (Lives & Livelihoods)
- Health & Quality of Life
- Services (Access & Provision)
- Sectors of the Economy
- Assets & Infrastructure
- Ecosystems / Natural Env

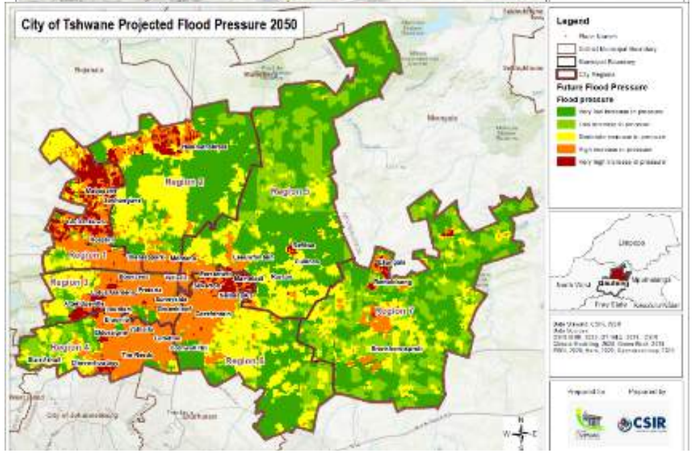
C40 CITIES

Components of a Robust Climate Risk Assessment

1 Understand Current & Future Climate Hazards

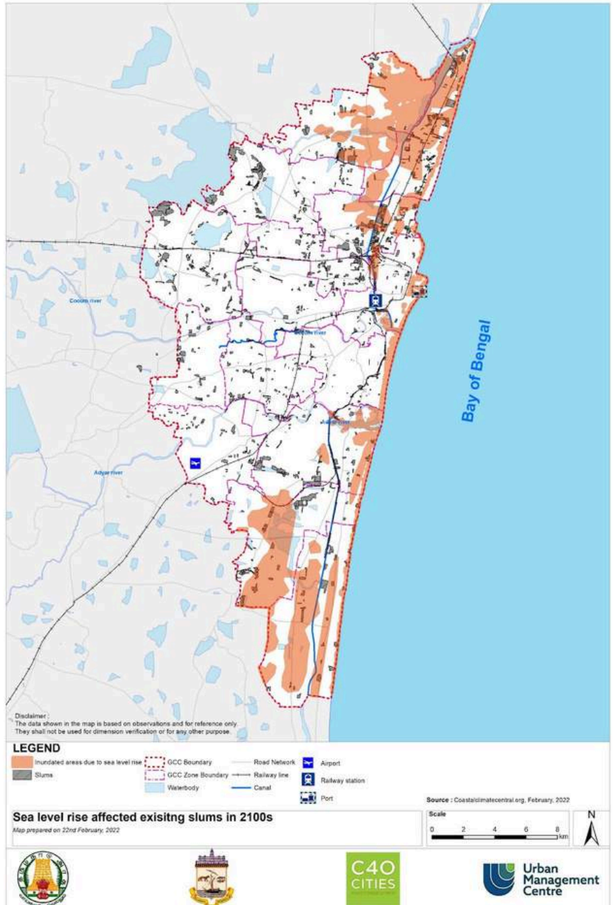
Tshwane - Curr & Future Flood Hazards





2 Understand Climate Impacts *(How hazards affect city?)*

Chennai - SLR impacts on Vuln. Housing



3 Understand Climate Risks *(Risks faced by city)*

Kuala Lumpur - Drought Risks

Medium Risk

HEALTH ISSUES

Particulate matters suspended in hotter air can irritate lungs, causing chronic respiratory illnesses, increasing the burden on the healthcare system. Growing studies have indicated a strong link between air pollution and cardiovascular disease as well.

High Risk

DISRUPTION TO BUSINESS OPERATIONS

Drought conditions lead to changes in water availability, which may cause disruptions to many day-to-day activities for businesses.

High Risk

INCREASED DRINKING WATER SHORTAGE

Long dry spells have caused issues in water availability in Kuala Lumpur as upstream dams deplete. According to the Ministry of Environment and Water, by 2040 the Dam Sungai Selangor may face significant dry spells with a return period of more than 10 years. The World Resource Institute (WRI) indicates that the current low level of water stress will worsen to a high level by 2040[30]. Water rationing measures may be needed more often, disproportionately impacting poor

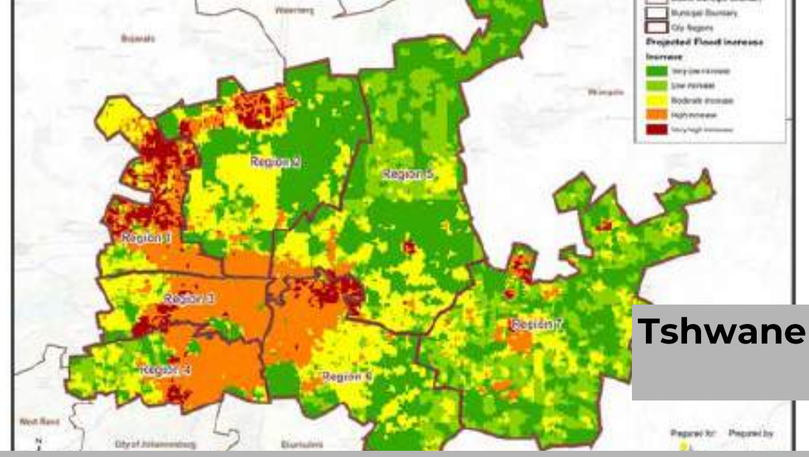
Good Quality Spatial Data forms basis of robust Risk Assessment

Data: Hazards, Sectors & Urban Systems, Vulnerable Populations & High Risk Zone

AI provides an opportunity to unlock the evidence base needed for cities

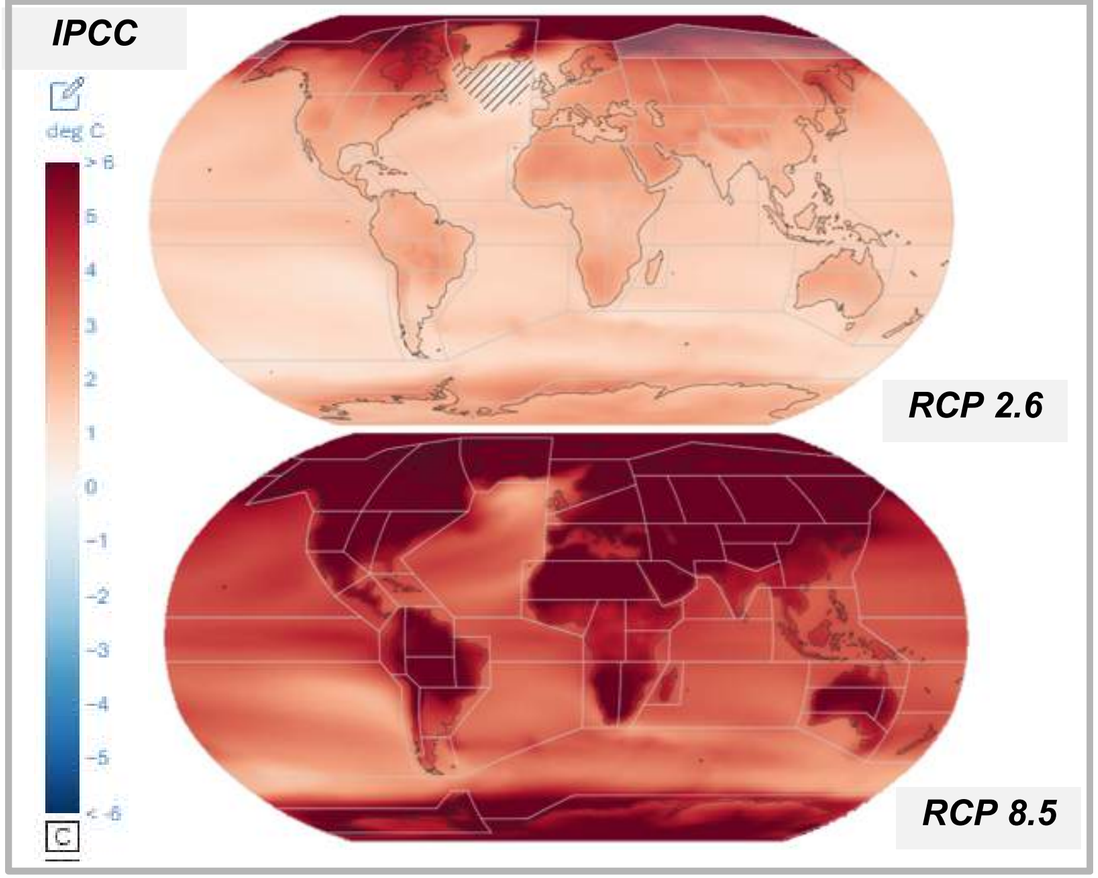
AI and machine learning algorithms can automate the process of hazard identification & vulnerability assessment.

AI can be used to process and analyze climate data, identify vulnerability hotspots, and predict future climate-related risks.



Tshwane

Mean Temp (Change in oC)
Long Term (2081-2100) rel. to 1850-1900)



What is the Challenge?

OBJECTIVE: Delivering a high-level understanding of the risks and vulnerabilities of any Brazilian cities to climate hazards - assessing heat extremes, droughts, sea level rise, floods and other climate hazards

This will enable cities to select and prioritize the most impactful actions to implement and plan effective climate action is based on a risk and vulnerabilities assessments.

<u>THE CHALLENGE</u>: To develop a methodology or process flow that can retrieve/extract
one / a few / all of the data points, maps and narratives needed for a high-level assessment of climate risks and vulnerabilities for any Brazilian city.

You can demonstrate it with an AI application, by using geospatial tools and data, through dashboards or other data science applications or by providing case studies.

C40 CITIES

/ WHAT ARE THE AVAILABLE DATA?

/ WHAT ARE THE AVAILABLE DATA?

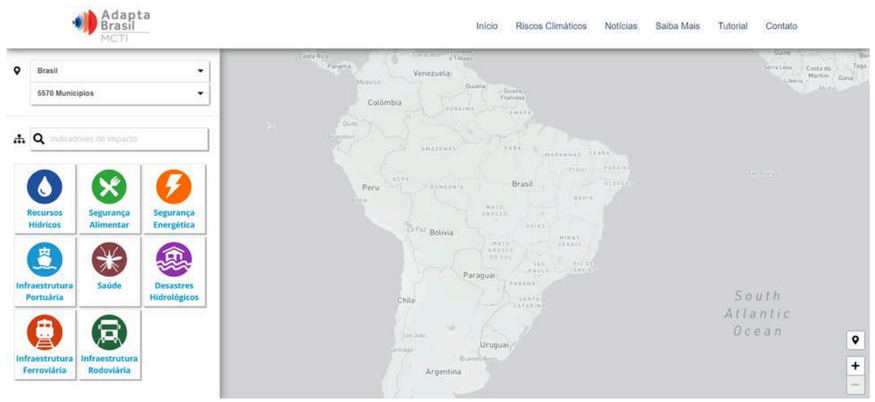
Hackathon Asks

1	**Period and Scenario**
2	**Data Sources**
3	**Data and Summary on temperature and rainfall**
4	**Climate hazards.** Assess the probability and consequences of the following climate hazards: **Floods, Heat, drought, sea level rise**
5	**Summary on climate hazards**
6	**Maps of current and projections for temperature, rainfall and hazards**
7	**Narrative (including location) on key hazards and impacts**

Technical Kick Off
18 July - 5pm CEST

Open Earth Foundation

Adapta Brasil



Picterra

AI-powered geospatial solutions for **people, purpose, and planet**

www.picterra.ch

Picterra

Leveraging Earth Observation imagery and AI for actionable insights

- *Founded in 2016 in Switzerland*
- *Cloud-native & secure platform*
- *100+ enterprise clients globally*

THE WORLD BANK

SKYTEC
AERIAL DATA SPECIALISTS

WalterMatter

FUGRO

TRUST FOR PUBLIC LAND

gm general motors

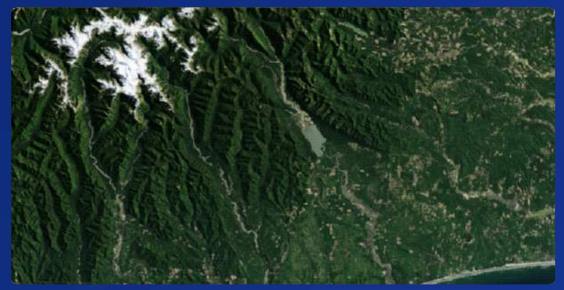
CIVIS

sensand

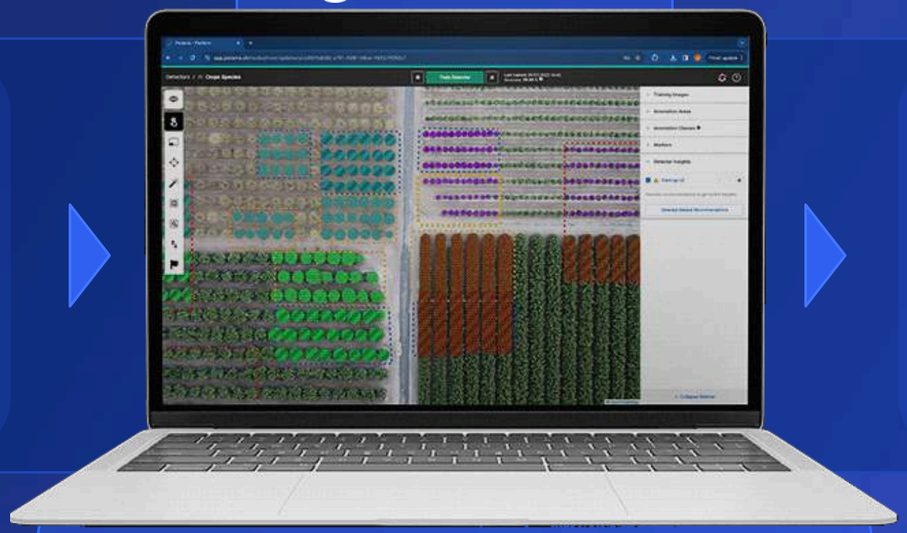
eraMET

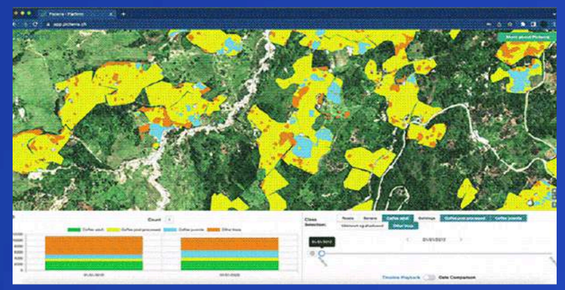
SUNCOR ENERGY

Versatile platform with scalable infrastructure



Satellite, aerial, and drone data





Multiclass detection report

Satellite, Drone, Aerial imagery
(*open or commercial data*)

Picterra Machine Learning platform to **analyse imagery accurately and in near real time**
No coding skills required
Full set-up in days, not months (95% time saved)

Cloud-based dashboards to interactively navigate, in time and space, through different assets for **actionable insights**

How we benefit cities in their efforts

towards climate resilience

1.

Urban planning & infrastructure development

Fast and accurate land classification, object detection, and mapping processes
High-resolution global urban-area maps for analyzing future land-use changes
Identification of adaptation needs for climate adaptive planning and infrastructure development

Picterra

How we benefit cities in their efforts

towards climate resilience

2.
Environmental monitoring

Monitoring of vegetation health, land cover changes, biodiversity, and water resources

Assessment of climate change impacts on ecosystems

Addressing deforestation, urban heat islands, and water scarcity through data-driven insights

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How we benefit cities in their efforts

towards climate resilience

3.

Hazard mapping & risk assessment

Mapping and assessment of climate-related hazards like floods, wildfires, and coastal erosion
Identification of high-risk areas using geospatial data and historical patterns
Development of strategies for mitigation and adaptation to climate hazards

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How we benefit cities in their efforts

towards climate resilience

4.
Integration & scaling up renewable energy

Assistance in integrating renewable energy into urban planning and policies
Identification of optimal locations for renewable energy installations
Support for scaling up renewables in heating, cooling, transportation, and power sectors
Reduction of emissions, enhanced energy access, and economic development

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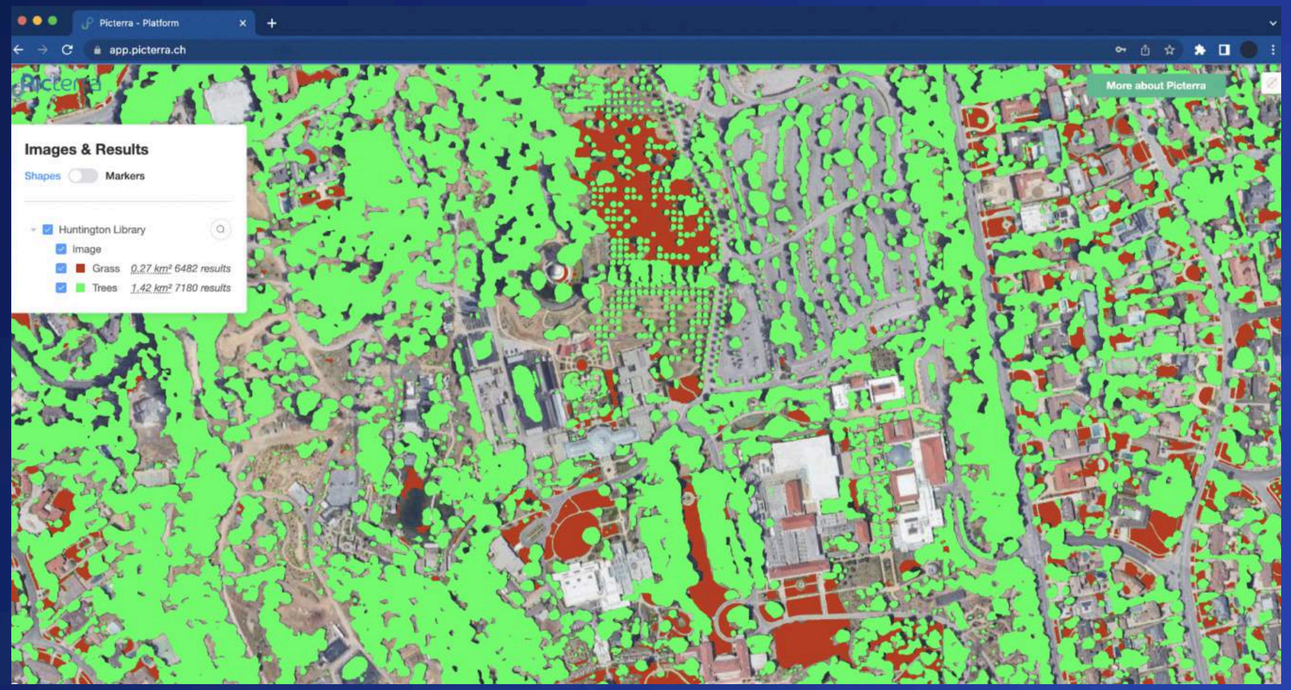
Use case example:

Urban heat islands mitigation with green infrastructure



Trees Grass

Challenge

The Urban Heat Island (UHI) effect is one of the most harmful environmental hazards for urban dwellers & climate change is expected to increase its intensity. The implementation of green spaces can partially reduce UHI intensity, promoting a resilient urban environment.By leveraging Picterra's capabilities, cities can effectively monitor and manage vegetation cover to mitigate urban heat islands.

Solution

Input data: satellite or aerial imagery
Running ML models to: accurately classify and map vegetation areas (grass, parks, gardens, tree canopies etc.) + change detection monitoring

Picterra

Use case example:

Urban solar solutions: Harnessing renewable energy with solar canopies over parking lots

Parking lots

Challenge

Harnessing renewable energy with solar canopies over parking lots is an innovative approach to bringing clean and sustainable power sources closer to urban areas. By utilizing geospatial analysis and leveraging Picterra's advanced platform cities can analyze high-resolution satellite imagery, aerial photography, and other geospatial data to identify parking lots with optimal conditions for solar energy generation.

Solution

Input data: satellite or aerial imagery
Running ML models to detect: parking lots

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Thank you

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Find out more

- Picterra info
- @picterra
- Video content
- **picterra.ch**

/ QUESTIONS AND ANSWERS

AI x City climate action
/ HACKATHON

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/ THANK YOU!