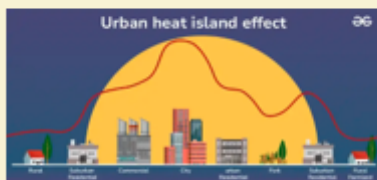# Cross-City Insights into Urban Heat Hotspots: Evidence from Ouagadougou, Burkina Faso

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Background

Urban Heatwaves: Rising risks for vulnerable communities

The Problem

- According to Zouma et al. (2025), recent heatwaves in Burkina Faso have had a substantial impact on people's health and well-being, with the most severe consequences for vulnerable groups, including women, children, and the elderly.

- Semi-arid inland climate ➡ High vulnerability.

Knowledge Gap

- Few studies on urban heatwave monitoring in Burkina Faso.
- Need to understand local drivers of heatwave hotspots using machine learning and Earth Observation approaches.

Research Motivation

- Leverage on previous research, which focus on Shanghai, China.

- Focus now: **Ouagadougou**, Burkina Faso as case study.

Hoang et al. (2025) -> An interpretable machine learning framework for mapping hotspots and identifying their driving factors in urban environments during heatwaves

Research Questions

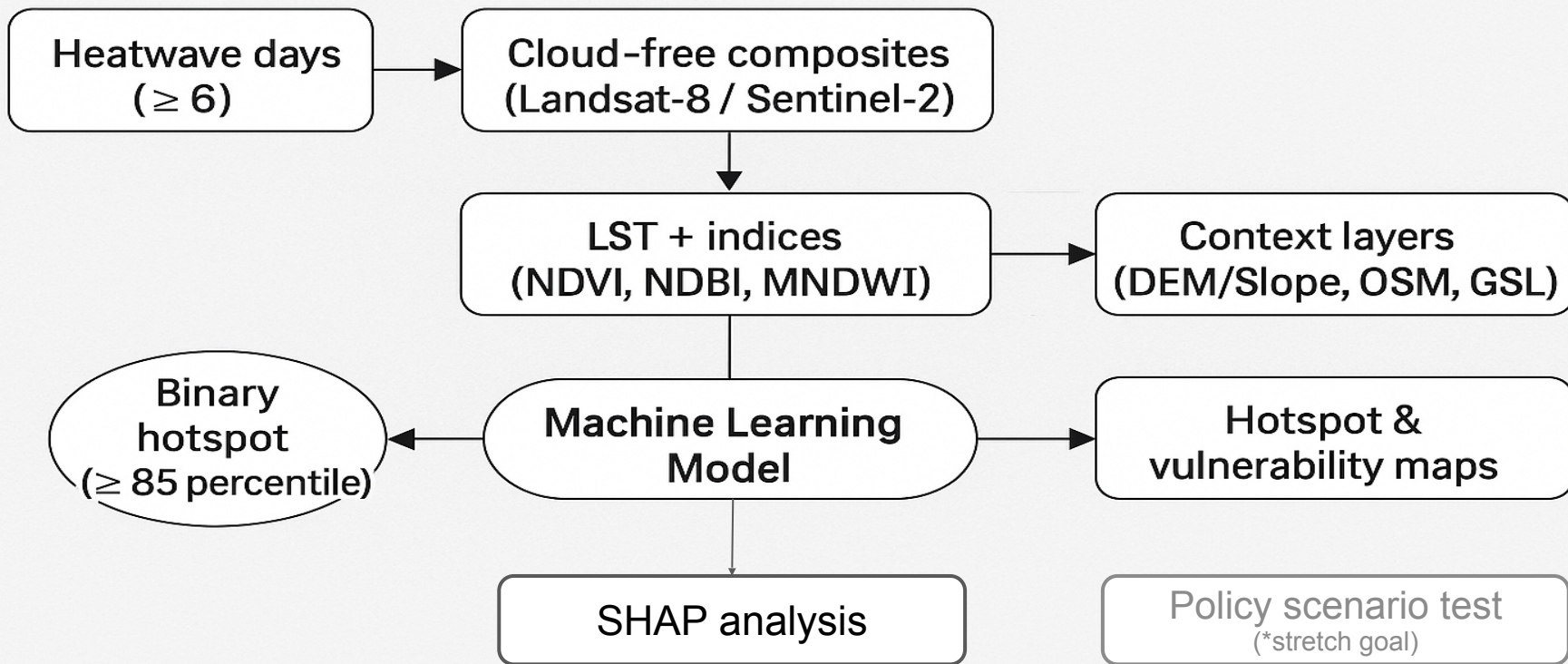1. What are the most influential environmental and urban factors driving hotspot formation in Ouagadougou, Burkina Faso? 🏢🔥

2. How do the identified factors compare to the ones found by Hoang et al. (2025)? 🌃🏙️

3. What is the effectiveness of machine learning models in identifying hotspots during heatwave events? 🤖🤖

Methodology

Expected Outcomes

A comparative analysis of key drivers

Identification of key universal vs. local drivers of urban hot spots during heatwaves (e.g. built-up areas are universal, but driving factors like bare soil are unique to Ouagadougou's arid climate, unlike in coastal Da Nang).

A heat vulnerability map

A high-resolution map of Ouagadougou pinpointing the highest-risk neighborhoods and areas.

Policy guidance (*stretch goal)

Policy recommendations on effective heat mitigation strategies for the city (e.g. increasing green space in District A could reduce heat by X% based on our model testing).

Potential impact

Scientific Impact
- Evidence on generalizability and identification of urban heat drivers in a Sahelian context.

Policy Impact
- Vulnerability maps to guide targeted adaptation.

Validating machine learning methodology in Ouagadougou to uncover universal and local drivers of urban heat for targeted planning.