THE COOLING EFFECT OF CANOPY COVER AND SURFACE TYPE : MEASURING URBAN HEAT ISLAND MIGTION IN NAKHON SI THAMMARAT, THAILAND

Student: Ms. Arisa Pramkasin, Ms. Chanidapa Bensalaman, Ms. Duangporn Kumphaphat,
Ms. Jittanan Na Bangchang, Ms. Kankanit Ketkul, Ms. Kanokporn Rattanasombun,
Mr. Nathakorn Sukwattana,
Ms. Natthaporn Kueasen, Ms. Phariyapha Siriphuttinan, Ms. Phetcharaphorn Pantha,
Ms.Phimnapa Suntamit, Ms. Pimchanok Somkaew,Ms. Piyatida Rattananok,Ms. Poonyapa Laoongkaew,
Ms. Rinrada Songpram, Ms. Thanyalak Jutin.
School:Srithammaratsuksa School
Scientists: Assoc.Prof.Dr.Krisanadej Jaorensutasinee, Assoc.Prof.Dr.Mullica Jaroensutasinee, Mr.
Babey Dimla Tonny,Mr.Patipon Thawornnuwong, of Excellence for Ecoinformatics, School of Science,
Walailak University, Thailand.

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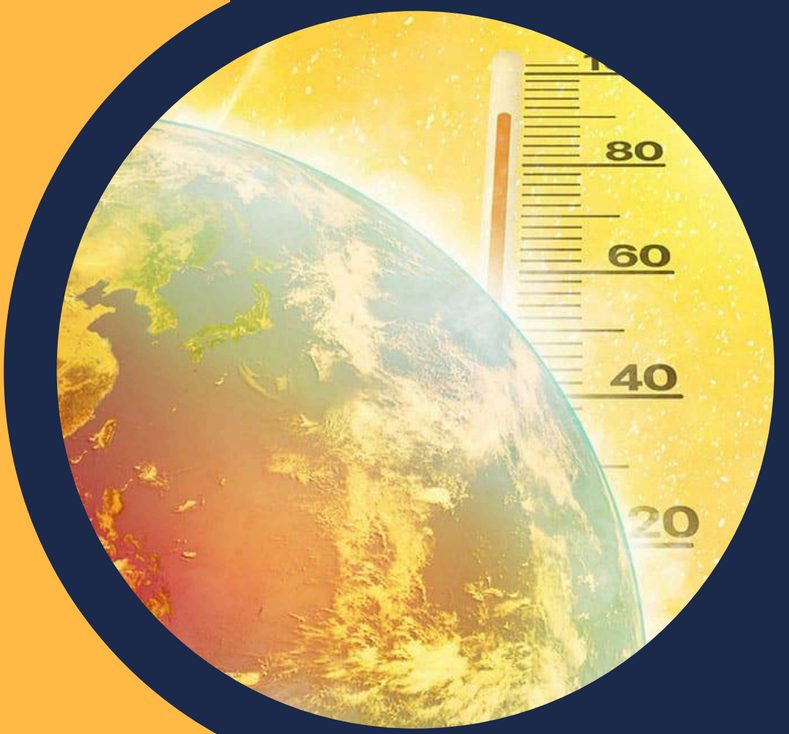
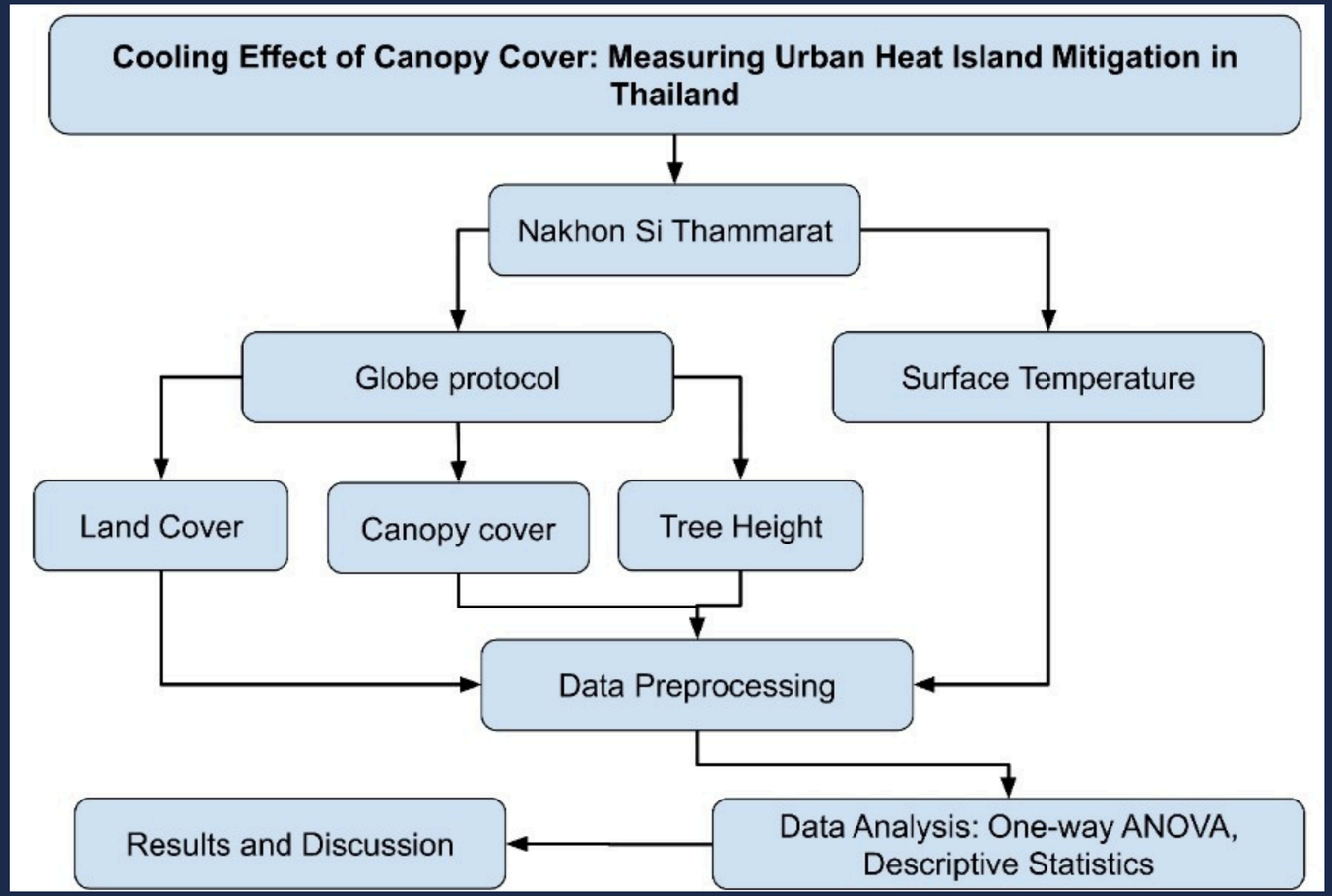
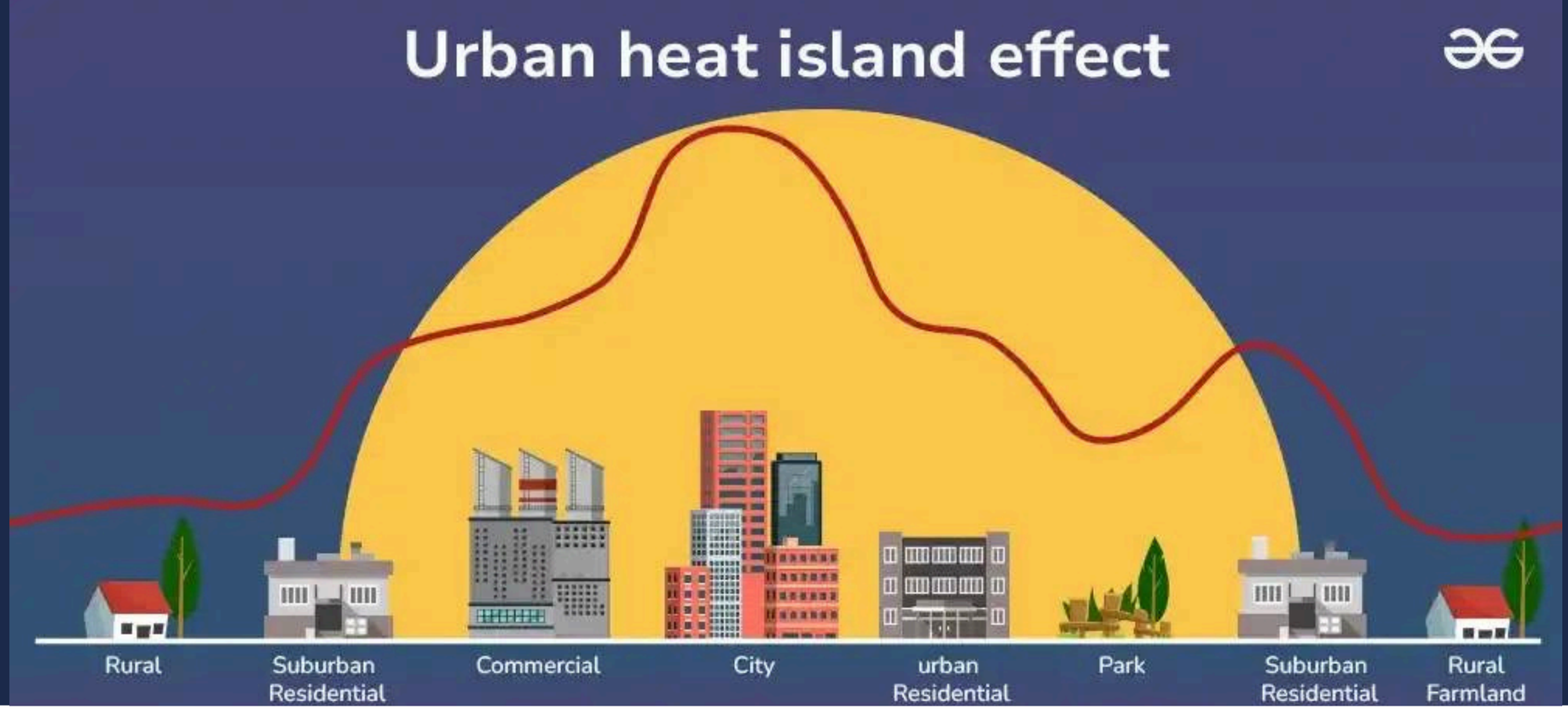


GLOBAL WARMING

INTRODUCTION

This study in Nakhon Si Thammarat, Thailand, explores how canopy cover and tree height influence surface temperatures. Findings show that areas with more trees and shade have lower temperatures, highlighting the role of green infrastructure in reducing urban heat.





INTRODUCTION TO HEAT ISLAND

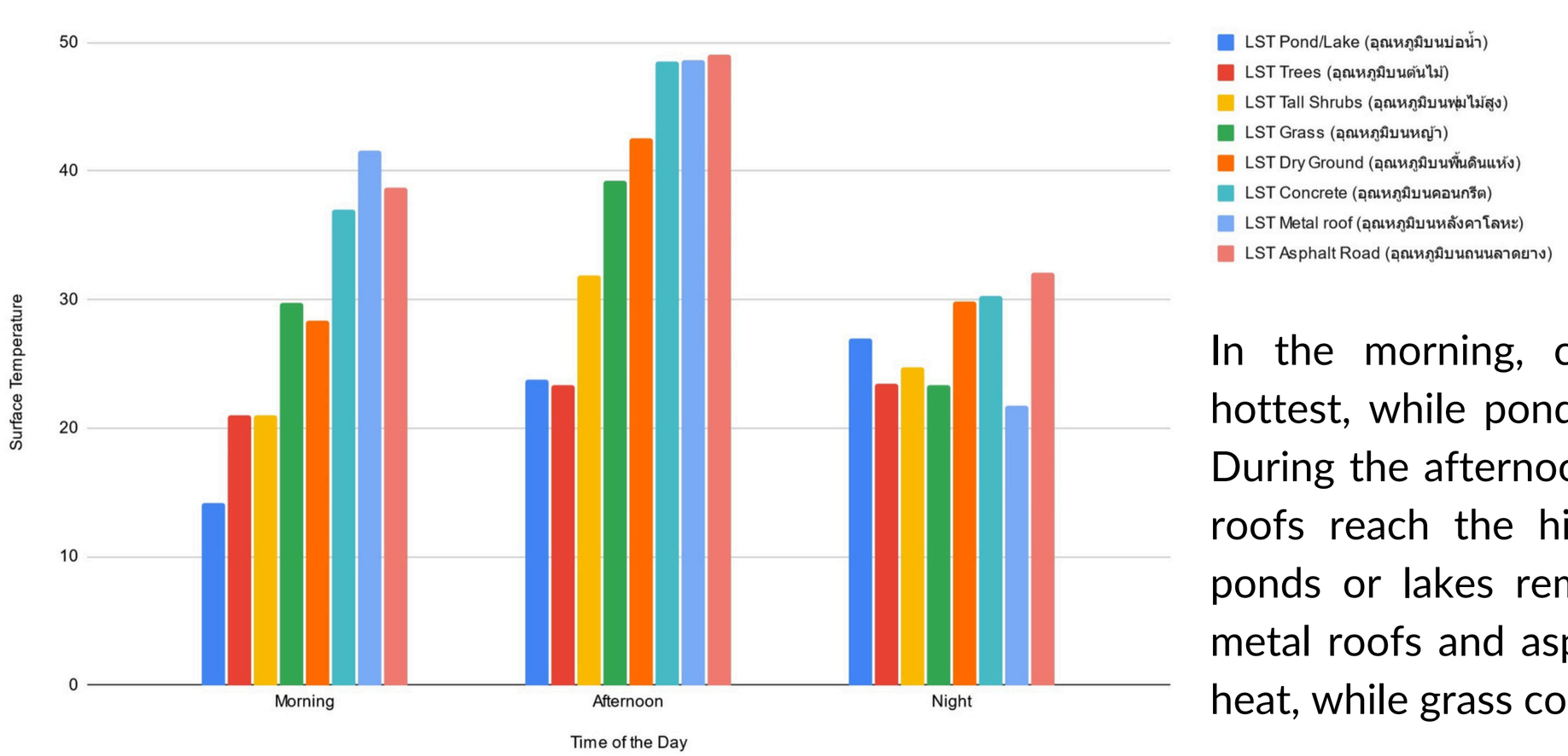
- A phenomenon where urban areas experience higher temperatures than surrounding rural areas due to heat-absorbing surfaces like concrete and asphalt.

- Urban heat islands (UHIs) raise city temperatures due to heat-absorbing surfaces like concrete and asphalt. This leads to higher energy use, poor air quality, and health risks. Green infrastructure, such as trees and reflective materials, helps reduce UHI effects and improve urban sustainability.

GLOBE

Using the GLOBE App to Measure Trees . The GLOBE app helps measure tree height using a smartphone’s camera and built-in tools. Users align the device with the tree’s base and top, then input their distance from the tree. The app calculates height based on angles and distance, making it useful for environmental studies and urban planning.

Results



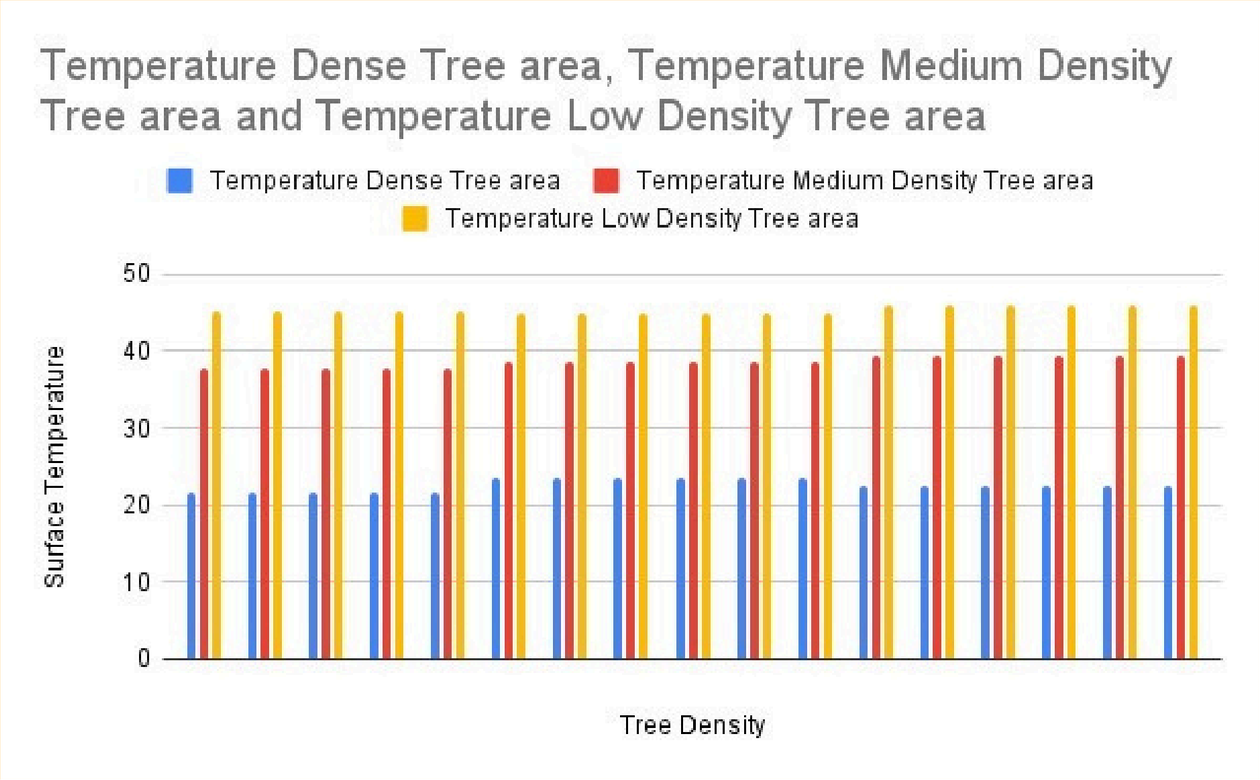
In the morning, concrete surfaces are the hottest, while ponds or lakes are the coolest. During the afternoon, asphalt roads and metal roofs reach the highest temperatures, while ponds or lakes remain the coolest. At night, metal roofs and asphalt roads retain the most heat, while grass cools down the most.

Tool

The tool used is an infrared thermometer.

Press the button and aim the laser at the object, keeping a distance of about 1 ruler. Wait for the reading to stabilize, then record the value.

CANOPY COVER AND TREE HEIGHT MEASUREMENTS



- We equally measured the canopy cover of the tree areas using densiometers.
- The tree areas with dense canopy cover recorded lower temperatures compared to areas with moderate and low canopy cover. This suggest that having more trees will reduce temperatures compared to having less trees.
- A densiometer measures canopy cover using a small mirror with a marked grid and a bubble level for accuracy. To use it, hold it at chest height, count the grid squares covered by leaves, and calculate the canopy percentage. It is widely used in forestry, environmental studies, and urban planning.

Conclusion

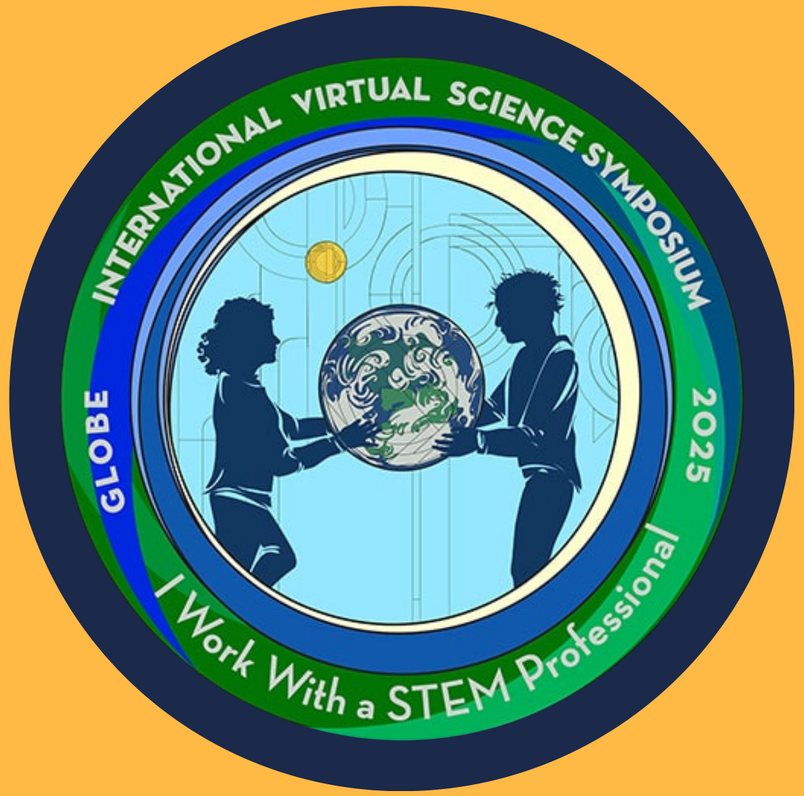
Summary of Findings— This study confirms UHI effects in Nakhon Si Thammarat, showing significant temperature differences based on surface type and canopy cover. Surface materials and tree cover play key roles in heat accumulation and dissipation.

Practical Applications— Findings support urban planning strategies such as adding green spaces, regulating surface materials, designing heat-resilient cities, and improving public health measures.

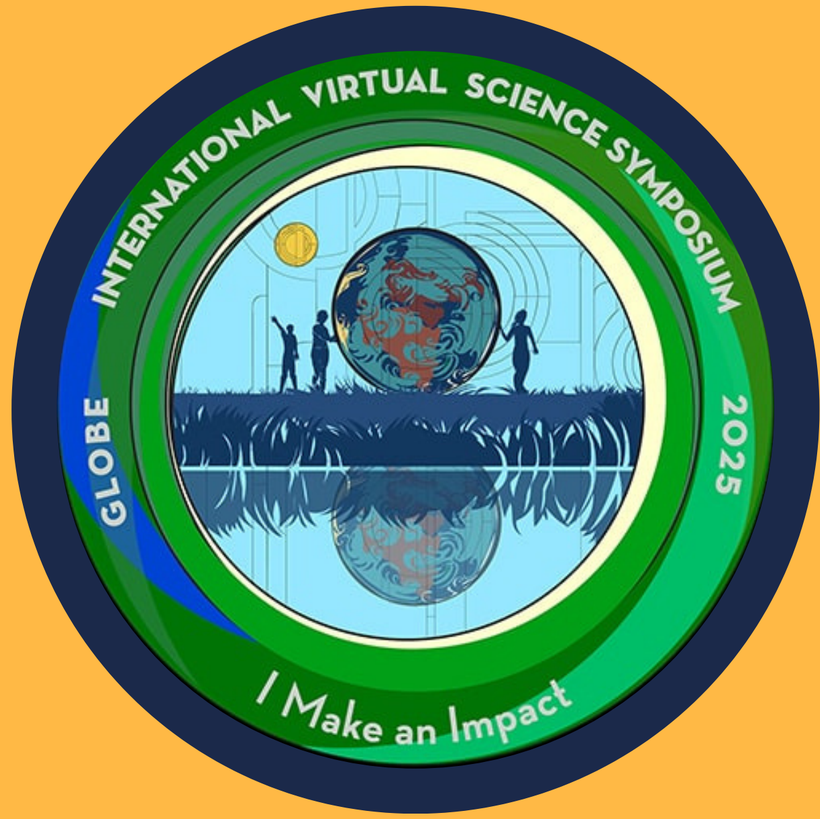
Recommendations— Immediate Actions: Increase urban vegetation, improve roofing standards, protect water bodies, and raise public awareness.
Long-term Strategies: Develop urban cooling plans, update building codes, design climate-resilient cities, and establish monitoring networks.

IVSS BADGES

I AM A DATA SCIENTIST.



I AM A STEM PROFESSIONAL.



I MAKE AN IMPACT

THANK YOU!

For your attention