AI techniques to evaluate the effectiveness of NBS in reducing urban heat islands

Rens de Boer1, Confidence Duku1, Gert-Jan Steeneveld2, Rutger Dankers1, Xiaolu Hu3, Shannen Dill1

Background
Urban green infrastructure is increasingly being promoted as a nature-based solution to reduce urban heat islands (UHIs) and heat risks in a city environment. In this project we want to evaluate the effectiveness of urban green infrastructure in a city in the Netherlands in reducing UHIs under different climate change scenarios, based on open source data on climate, vegetation and urban characteristics.

Objective
Develop a scalable data-driven model to predict land surface temperatures over the Netherlands as a function of climate, vegetation and urban characteristics. Explore the use of amateur weather data and other urban weather data in the model.

Results
An Extreme gradient boosting model has been developed to predict land surface temperature at high resolution as a function of urban vegetation and climate characteristics.

Next step – scenario analysis
Using the model developed in the first step based on historical data, we will predict and compare surface UHIs with and without urban green infrastructure expansion plans under different climate scenarios for a city in the Netherlands.

Deliverables
- A rapid assessment tool for urban nature-based adaptation solutions based on open-source data
- a research paper to be submitted to a peer-reviewed journal with high impact factor.
- a web-based interactive platform for viewing the spatial data in an attractive visual way (e.g., a storymap or infographic (in collaboration with WANDER lab).

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