CitiesAdapt Tool

For data-driven climate risk assessments

What is it?

A web-based application to analyse open-source **satellite data** to support rapid spatial **climate risk assessments** towards climate-resilient urban development.

What is it for?

- **Identify patterns of high surface temperatures*** to prioritise adaptation strategies
- **Track vegetation condition** and **land cover** with changes in surface temperature over time

*Further data validation recommended as part of a more robust methodology for heat island identification.

How does it work?

1. Click on the link to open the tool.

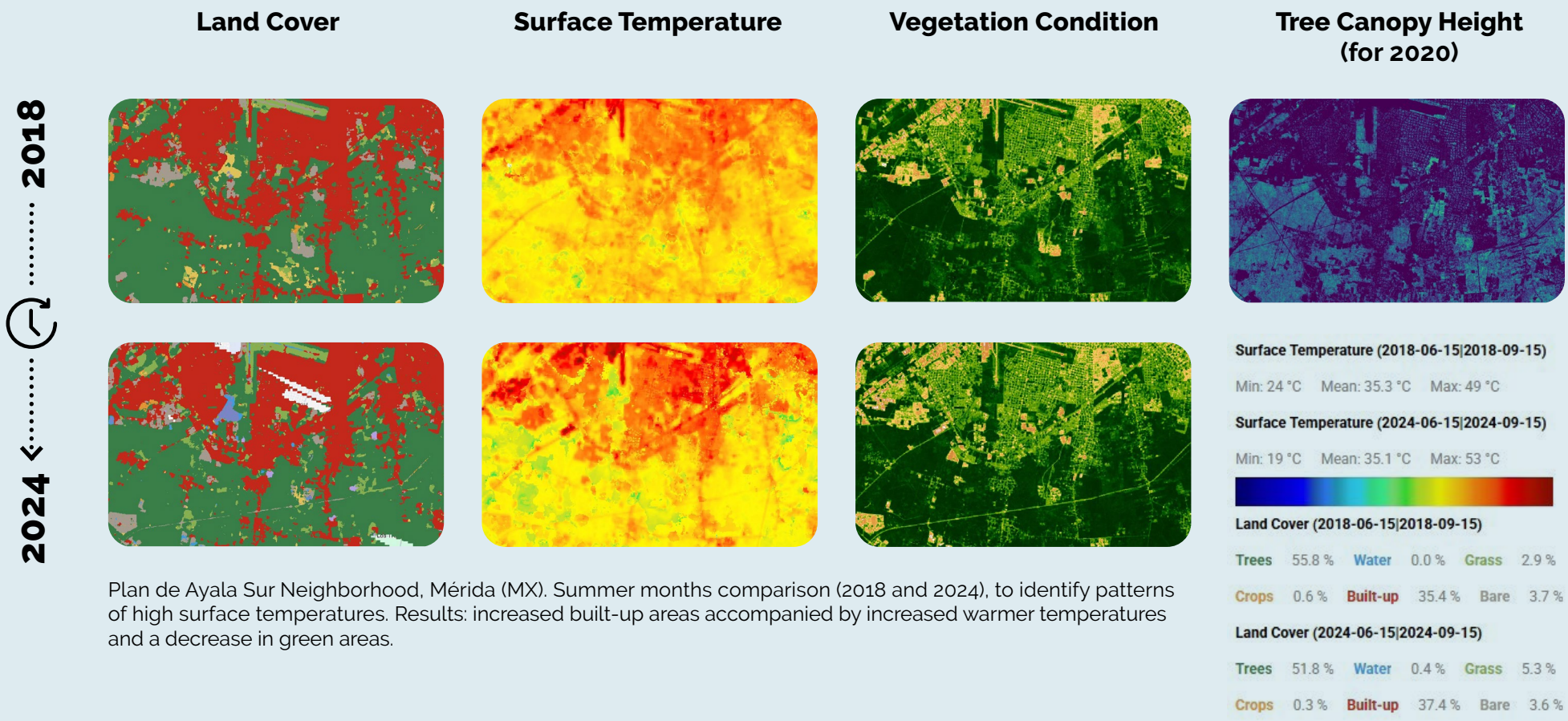
2. Search for a city or find it on the map, and draw the perimeter of the area you would like to analyse.

3. Insert the start and end date, and click on Get Analysis.

Wait a few seconds and... **Done!**

4. Navigate through the output layers and/or set another time period (for comparison, do not refresh the page).

Outputs

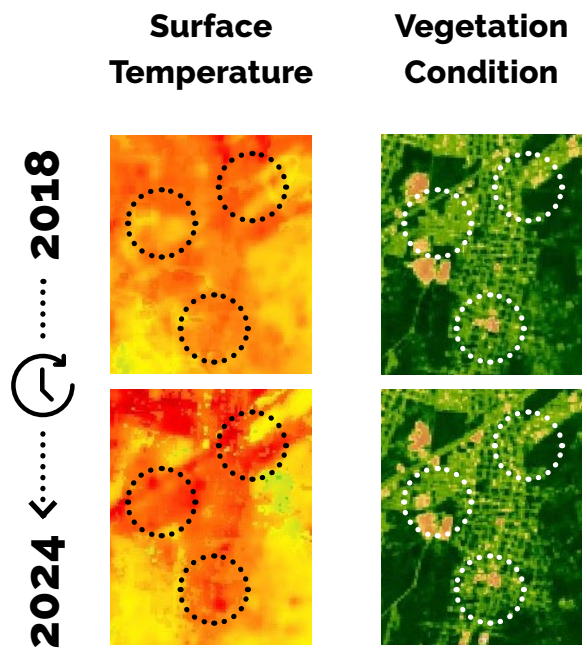


Plan de Ayala Sur Neighborhood, Mérida (MX). Summer months comparison (2018 and 2024), to identify patterns of high surface temperatures. Results: increased built-up areas accompanied by increased warmer temperatures and a decrease in green areas.

What now?

- You can analyse a **single period** of a couple of months (min. 1 month, max. recommendable 12 months), or **compare two periods** (since 2013).
- For period comparison on high surface temperature pattern identification, choose the months with the highest temperatures in a year (summer months, no-rain season). Check layer-boxes on and off to spatially identify possible patterns of changes over time.

It is highly recommendable to validate the hotspots and land cover by trying out other timeframes, collecting information with the community, site visits, and checking official sources for historical temperature in the specific city.



Zoom-in of the results from the comparison in Mérida: decrease of vegetation associated with new hotspots of high surface temperatures.

Recommendations

No data or blank pixels?

Satellite imageries might be limited in case the cloud coverage is too high, compromising the data. Try again by changing the timeframe or try the same period in a different year.

Misaligned layers?

The layers have different sources and sometimes, different resolutions. E.g. land coverage percentages might not match the layer of vegetation condition. Further verification and validation is needed.

Size and scale of analysis

The application supports areas of max. 300 km² (appr. the size of small-medium cities or neighbourhood scale).

Still not working?

Refresh the page and start again.

Data Source and Exporting

The application does not allow direct downloads and exports. To use the output data, screenshots from the maps and legend can be copied into reports and presentations.

The data sources used in this tool are:

Landsat-8 - Source: USGS

Landsat-8 Surface Temperature - Source: NASA

Remote Sensing: spectral indices

Dynamic World Land Cover - Source: Google & WRI

Tree Canopy Height - Source: Meta & WRI

USER-FRIENDLY
with automated processing

EASY ACCESS
from anywhere with internet and a compatible browser

DATA-DRIVEN
policy and decision making

The CitiesAdapt Tool application was designed in Google Earth Engine (GGE) to improve climate diagnosis and strategies, and it is now available for access to global open-source satellite data. The CitiesAdapt project supports disadvantaged neighbourhoods in the project's partner cities Mérida (Mexico) and uMhlathuze (South Africa) in their transformation towards a more climate-resilient urban development pattern (**learn more**).

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