Session 2.1

Modern Times: Promoting innovation, new technologies and future visions for inclusive urban forests

Chair: Anand Persad

World Forum on Urban Forests

2nd World Forum on Urban Forests

Washington DC, 2023

Modern Times

Living Infrastructure Field Kit: An Open-Source Community Engagement Tool for Urban Forestry Management

Presented by

Andy Lipkis, Project Executive

Devon Provo, Policy Manager

Accelerate Resilience Los Angeles (ARLA)

ARLA

acceleratela.org

We Activate Communities, Organizations, and Governments to Expedite Climate Resilience

What is Living Infrastructure?

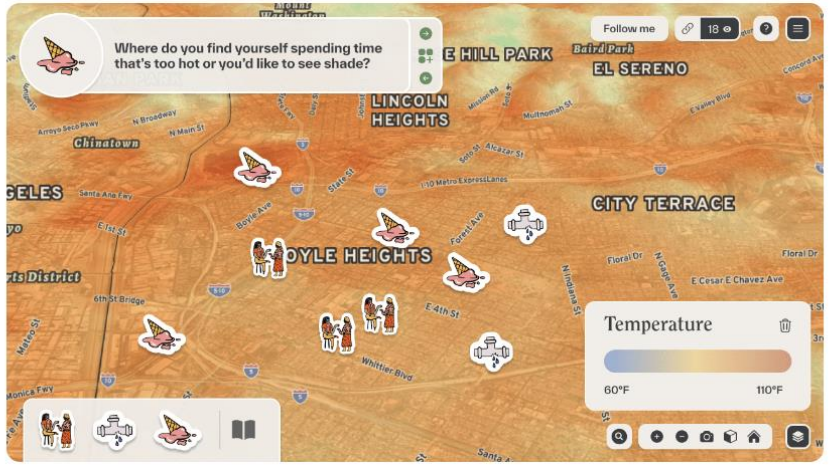
- Integrates built, natural, and social systems to help communities thrive
- Involves communities through visioning, implementation, and maintenance
- Takes a whole-systems perspective to achieve diverse benefits

What's In the Field Kit?

Living Infrastructure Primer

An educational platform including short videos, interactive tours, and other resources to help people understand and recognize living infrastructure in their environments

Visioning Tool



A collaborative mapping tool for understanding the stressors and potentials facing a community, collecting community stories, and co-designing sketches of projects

What Project Types Are Supported?

Urban Forestry

Stormwater

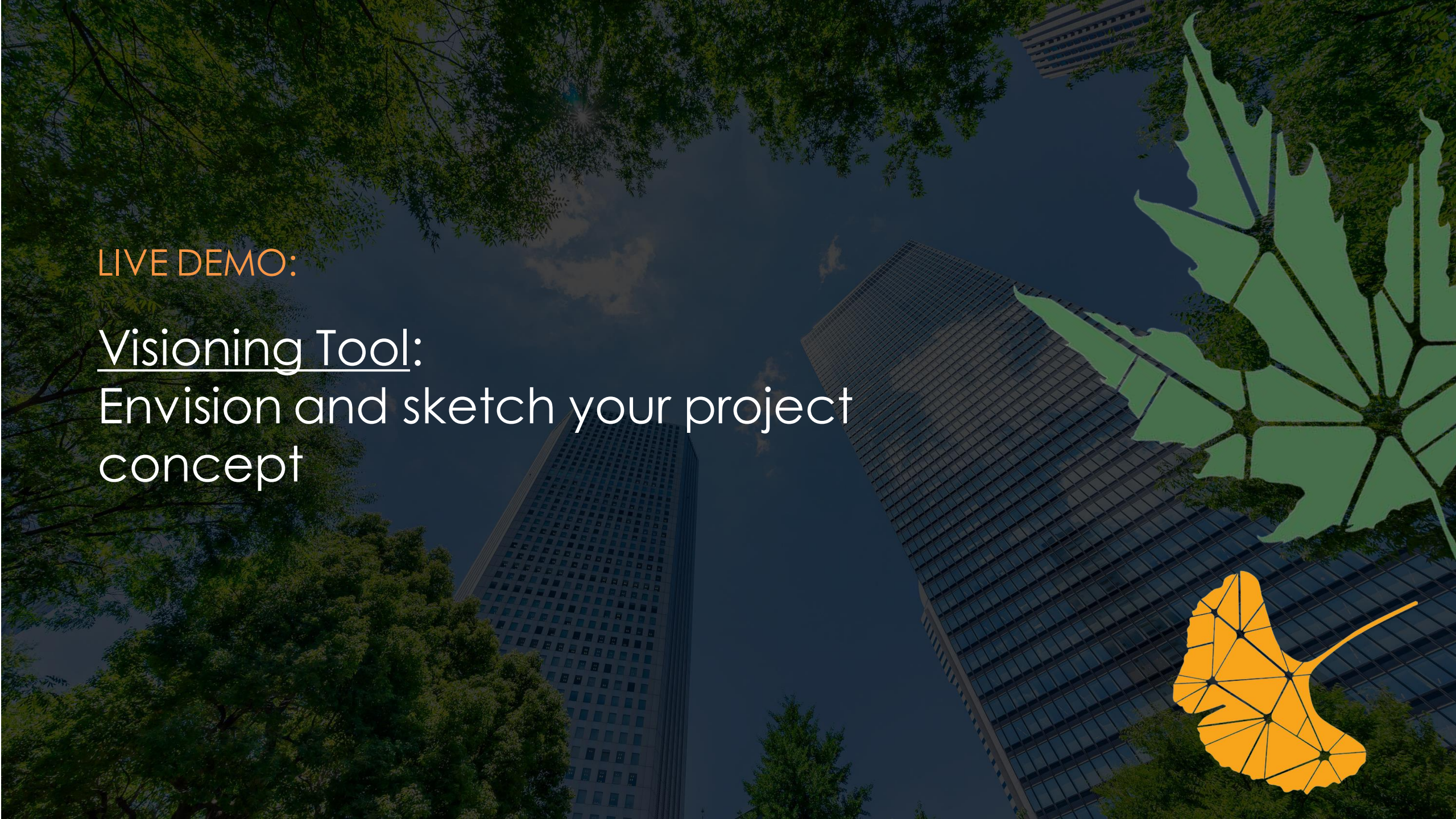
Green Streets

Parks

Schoolyards

LIVE DEMO:

Primer: Explore living infrastructure in action



LIVE DEMO:

Visioning Tool:
Envision and sketch your project concept

Project Fact Sheets

PROJECT SKETCH

This sketch provides a high-level vision for what the project might look like. It is not intended to be a vetted design proposal and is subject to feasibility analysis and detailed design.

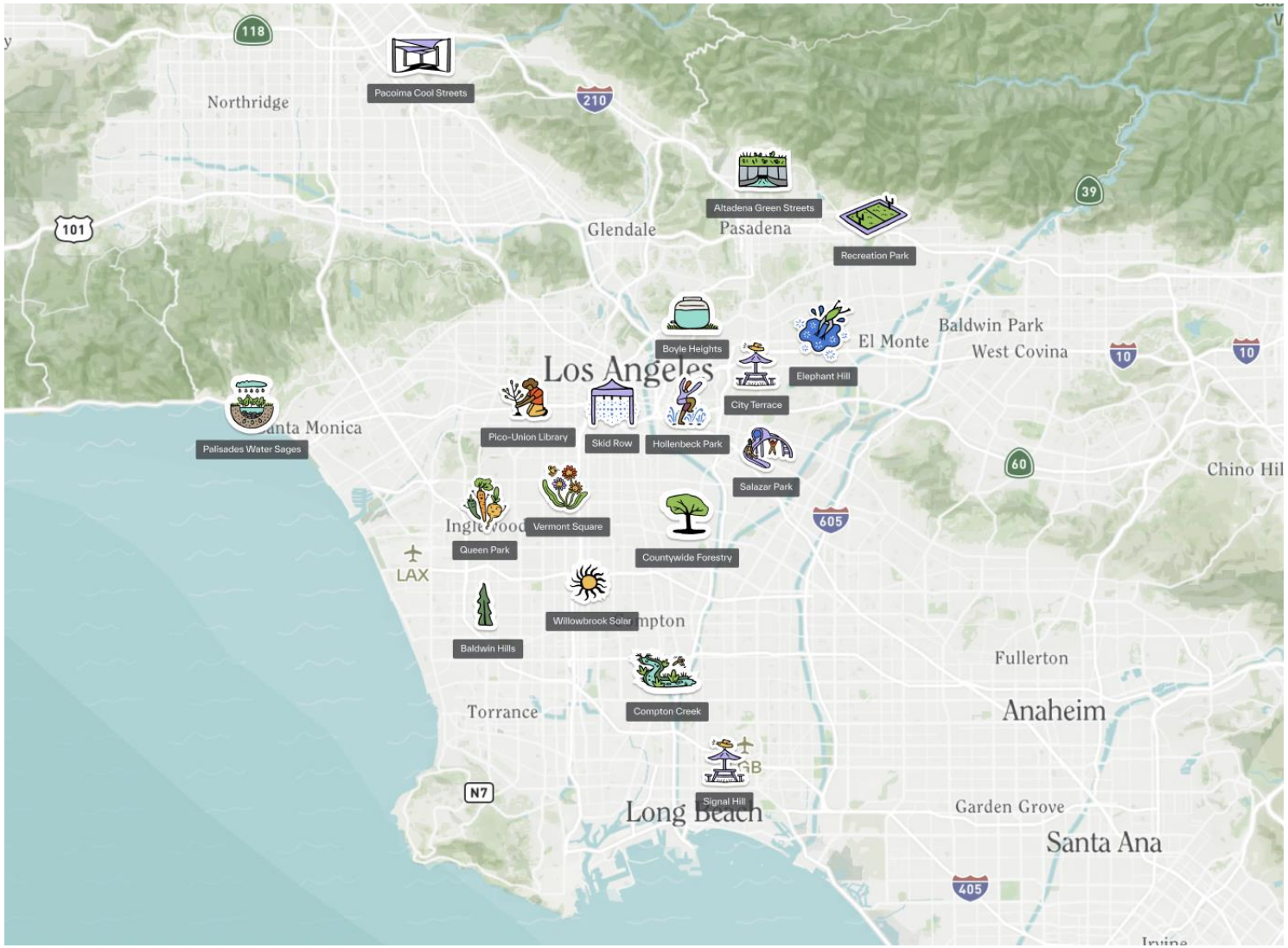
PROJECT REMEDIES

- **BUFFER TREE** 13x
- **FRUIT TREE** 4x
- **VEGETABLE GARDEN** 2x
- **SHADE TREE** 5x
- **PLAYGROUND** 1x
- **SHADE STRUCTURE** 1x

LOCATION

Footprint (sqft)	530,963
Assessor Parcel Numbers	5180014003, 5180014004, 5180014012, 5180014009, 5180014900, 5180014011, 5180014010
Land Use Type	Commercial, Government, Multi-Unit Residential
Land Ownership	Private, L A Unified School Dist
Neighborhood	Boyle Heights
Municipality	Los Angeles
Supervisorial District	District 1
Watershed	[LA River] > [Upper Los Angeles River] > [WMG_1_348523]
Census Tract	06037204300
Disadvantaged Community? Using CalEnviroScreen designation	Yes
Coordinates	34.04066395439879, -118.2051974285982

Existing Projects



Thank you

Andy Lipkis, Devon Provo | ARLA

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dprovo@acceleratela.org

Food and Agriculture Organization of the United Nations

Arbor Day Foundation

POLITECNICO MILANO 1863

ISA International Society of Arboriculture

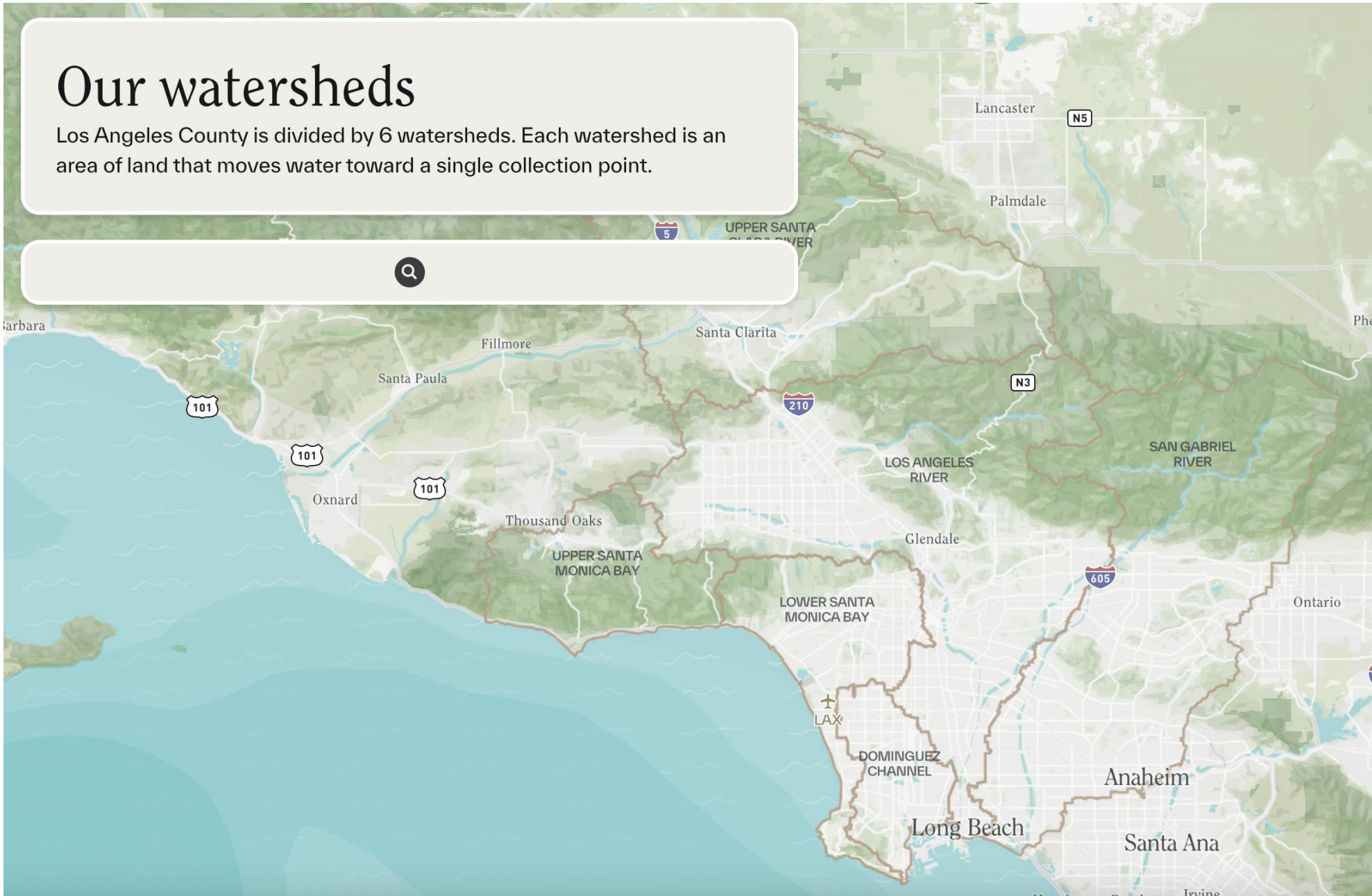
Smithsonian

Appendix

Reference Images

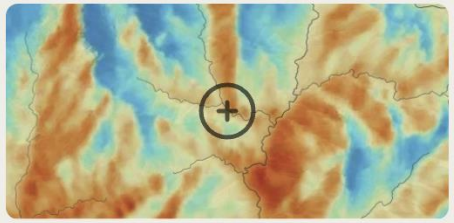
Our watersheds

Los Angeles County is divided by 6 watersheds. Each watershed is an area of land that moves water toward a single collection point.



Layers

All | Air | Community | Habitat | Health | Heat | Water

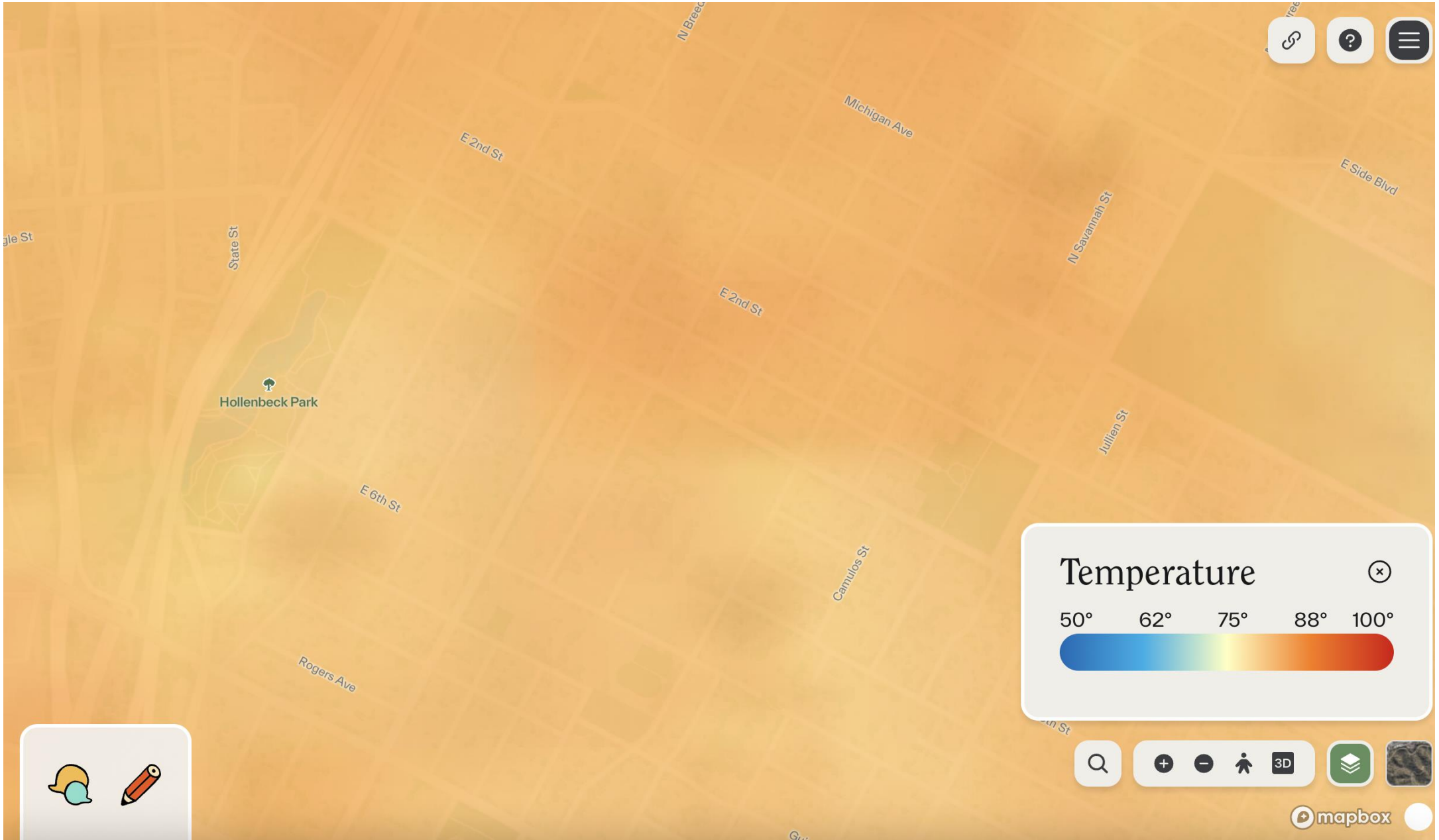


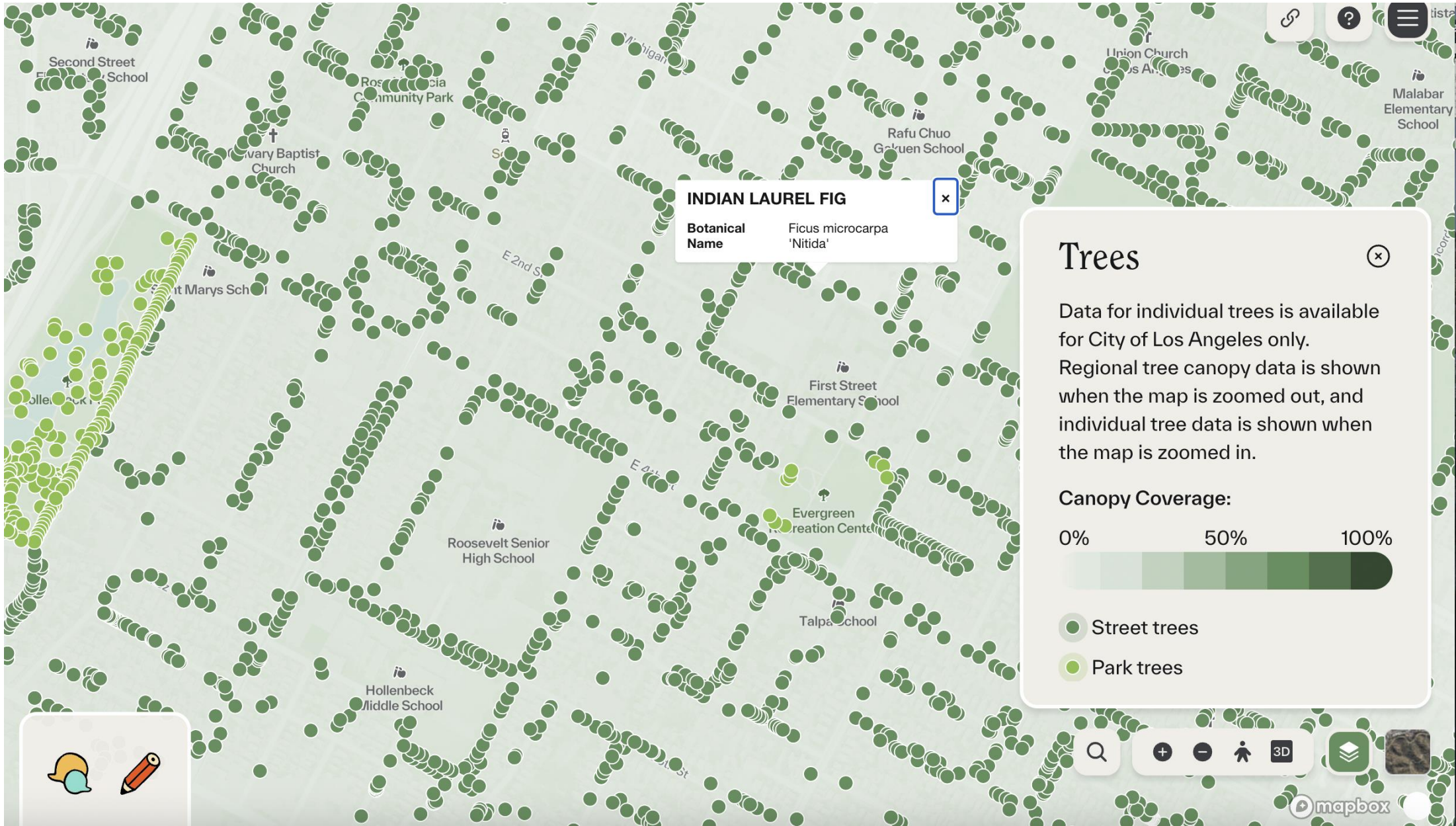
Temperature

Particulate matter (PM 2.5)

Ozone

Toxic releases


Temperature
50°
62°
75°
88°
100°
Hollenbeck Park
E 2nd St
E 6th St
Michigan Ave
N Savannah St
E Side Blvd
State St
Jullien St
Camulos St
Rogers Ave
3D
mapbox


INDIAN LAUREL FIG
Botanical Name
Ficus microcarpa 'Nitida'
Trees
Data for individual trees is available for City of Los Angeles only. Regional tree canopy data is shown when the map is zoomed out, and individual tree data is shown when the map is zoomed in.
Canopy Coverage:
0%
50%
100%
Street trees
Park trees
Second Street
Rafu Chuo Gakuen School
Malabar Elementary School
First Street Elementary School
Roosevelt Senior High School
Hollenbeck Middle School
Evergreen
3D
mapbox

Prompts

Custom prompt

Your Workshop | Library

ALL | AIR | COMMUNITY | HABITAT | HEALTH | HEAT | WATER

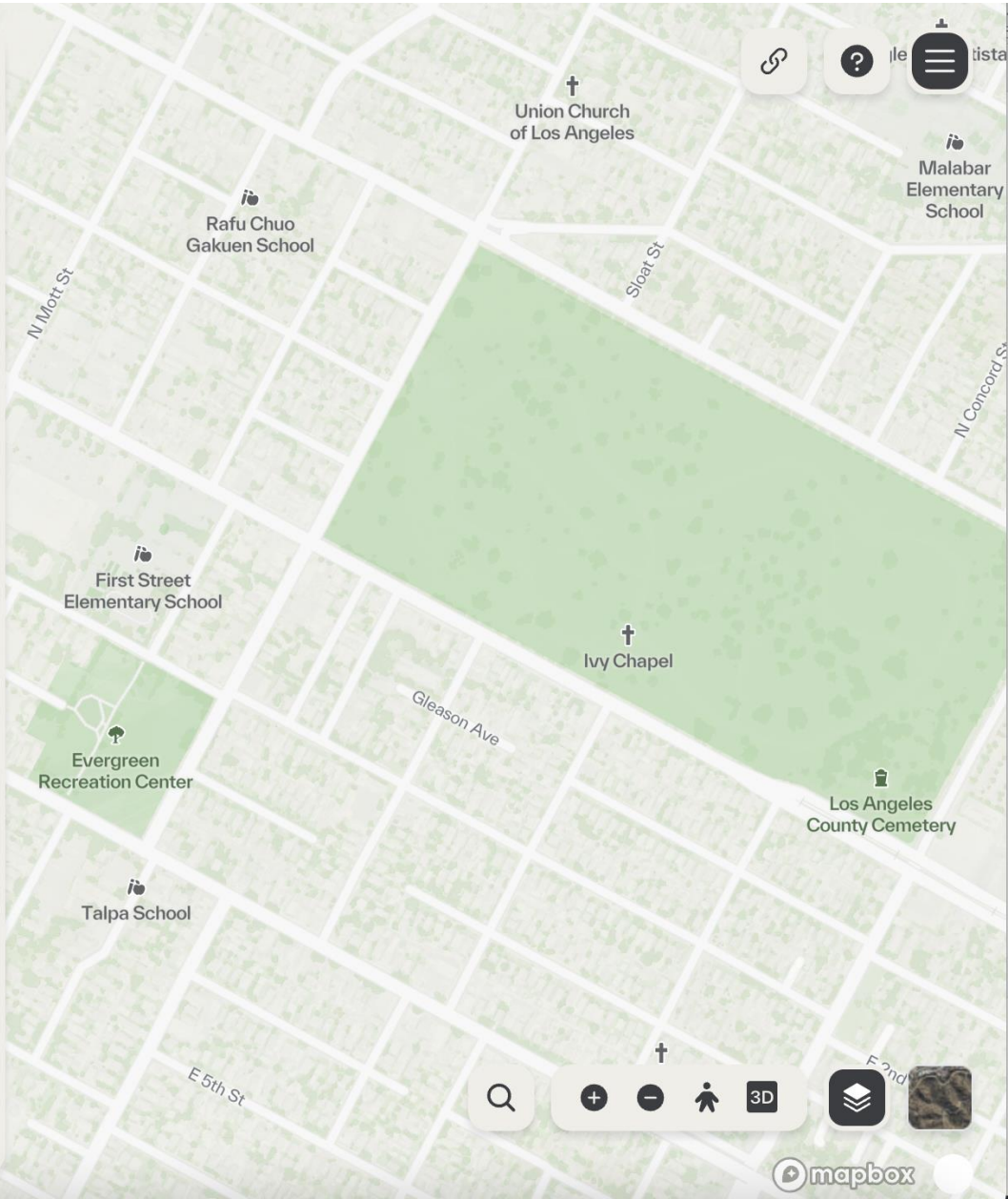
Are there any places you avoid? Where are they and why do you avoid them?

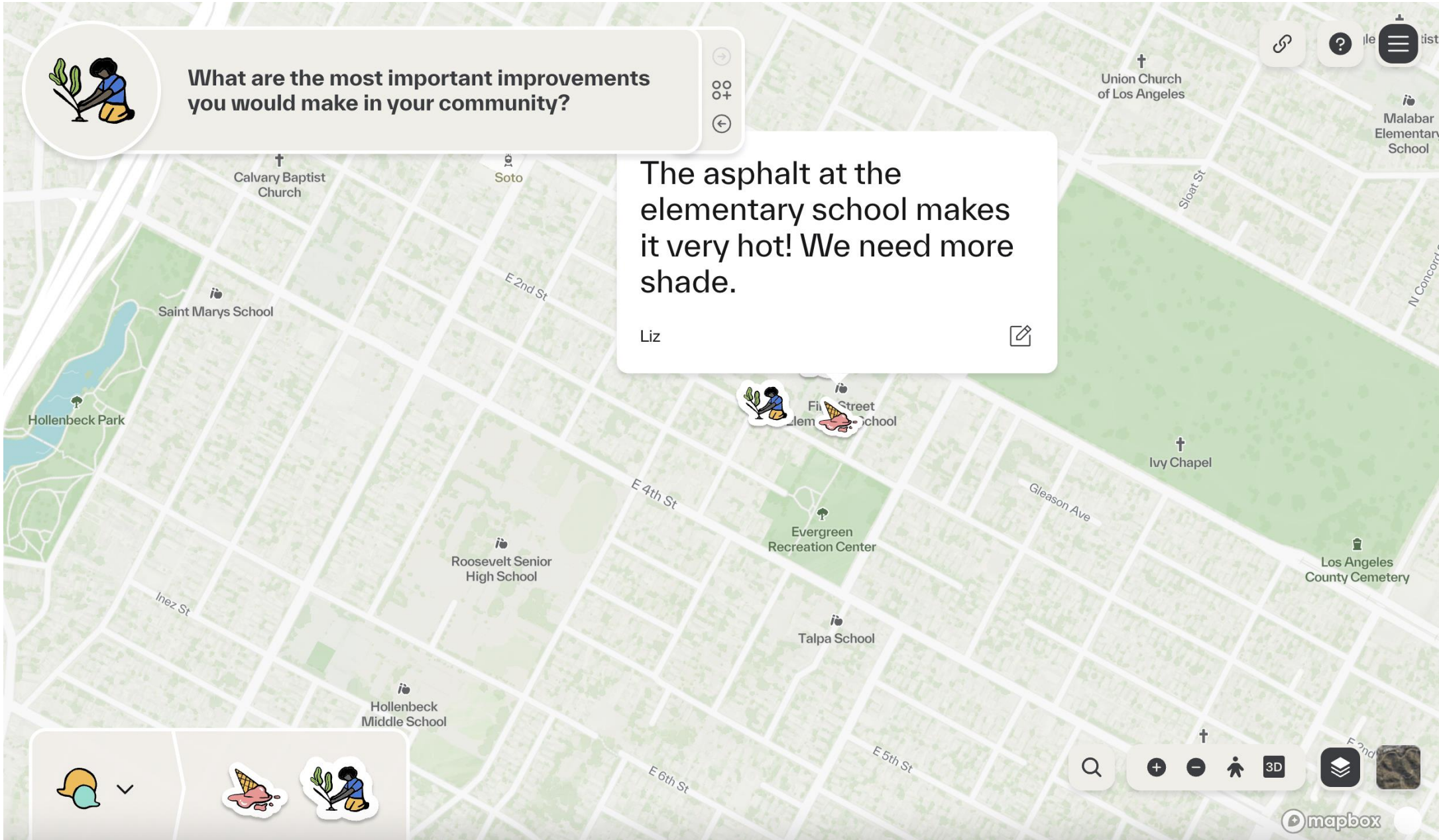
What are the most beautiful places in your community? What do you find beautiful about them?

What are the most important improvements you would make in your community?

What parts of your community do you show people when they visit?

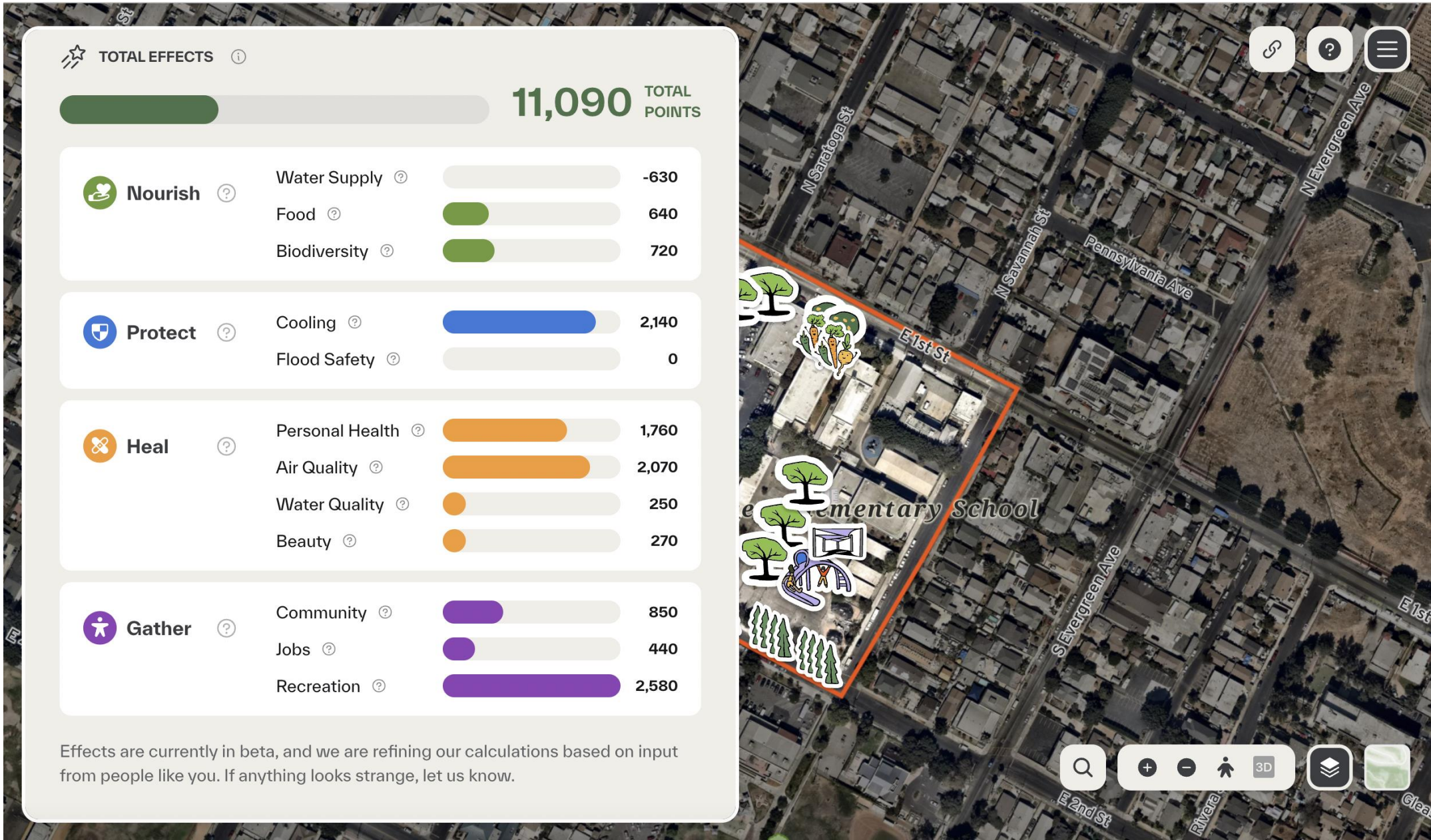
What places do you wish were more beautiful? How would you make them more beautiful?




What are the most important improvements you would make in your community?
The asphalt at the elementary school makes it very hot! We need more shade.
Liz
Union Church of Los Angeles
Malabar Elementary School
Calvary Baptist Church
Soto
Sloat St
E 2nd St
Saint Marys School
Hollenbeck Park
Ivy Chapel
E 4th St
Gleason Ave
Evergreen Recreation Center
Roosevelt Senior High School
Los Angeles County Cemetery
Inez St
Talpa School
Hollenbeck Middle School
E 5th St
E 6th St
3D
mapbox


EFFECTS 0 points
E 1st St
N Saratoga St
N Evergreen Ave
S Mott St
S Fickett St
N Savannah St
Pennsylvania Ave
E 2nd St
E 3rd St
First Street Elementary School
S Saratoga St
S Evergreen Ave
3D


EFFECTS 11,090 points
SHADE TREE
M 100 sqft
A woody, perennial plant that provides shade, which makes the outdoors safe and lowers energy costs.
+280 points
↓ WATER SUPPLY
↑ BIODIVERSITY
↑ COOLING
↑ PERSONAL HEALTH
↑ AIR QUALITY
↑ WATER QUALITY
↑ BEAUTY
↑ COMMUNITY
↑ JOBS
E 1st St
N Mott St
N Saratoga St
N Evergreen Ave
S Mott St
S Fickett St
E 2nd St
N Savannah St
Pennsylvania Ave
E 3rd St
E 4th St
S Evergreen Ave
3D



TOTAL EFFECTS

11,090 TOTAL POINTS

Nourish	Water Supply	-630
	Food	640
	Biodiversity	720
Protect	Cooling	2,140
	Flood Safety	0
Heal	Personal Health	1,760
	Air Quality	2,070
	Water Quality	250
	Beauty	270
Gather	Community	850
	Jobs	440
	Recreation	2,580

Effects are currently in beta, and we are refining our calculations based on input from people like you. If anything looks strange, let us know.

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2023

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From Pixels to Parklands: The role of satellite Data in Urban Green Spaces

Applying novel satellite technology to inform design and management of urban forests

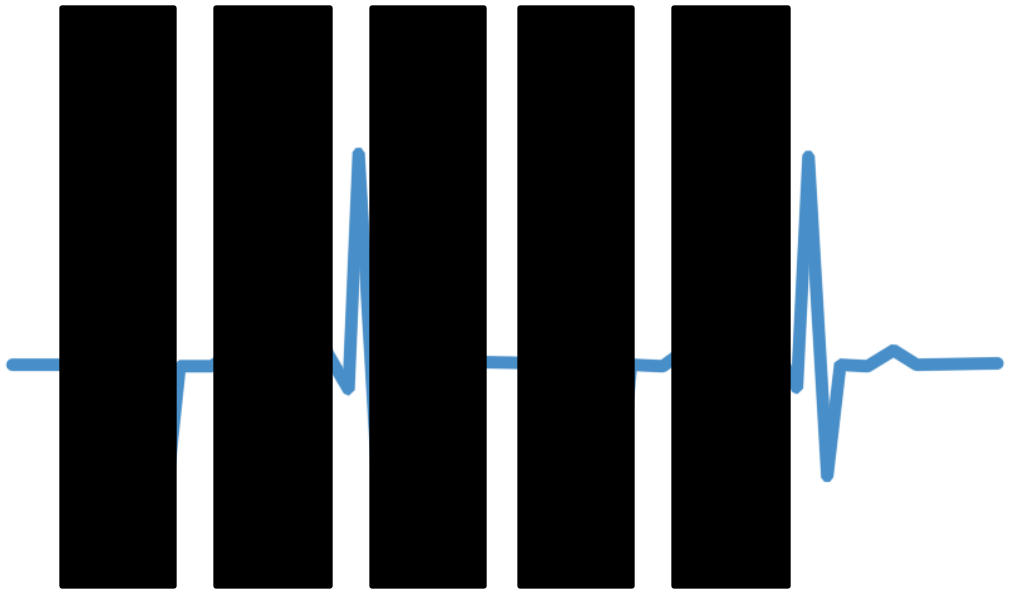
Presented by

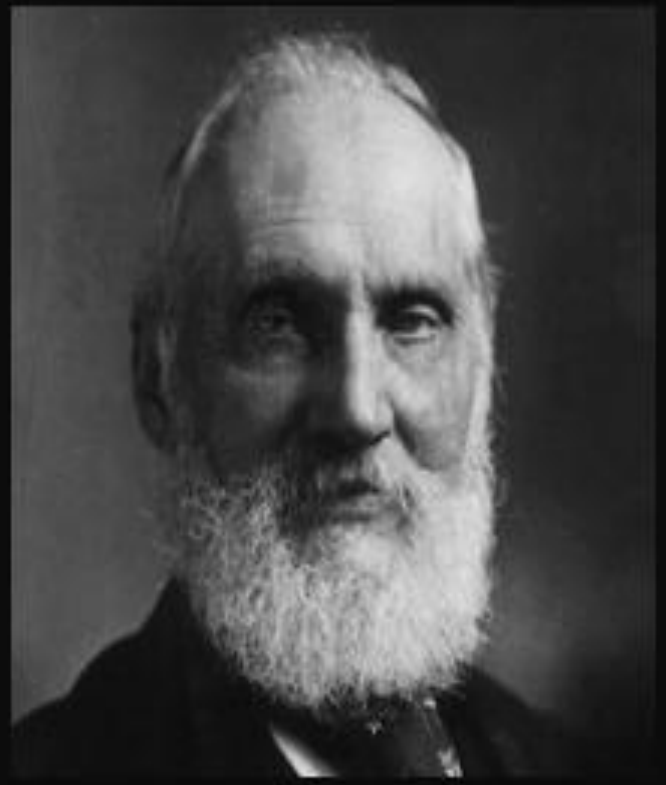
Mads Christensen

Senior Business Development Manager

DHI A/S


106
120
90





If you can not measure it, you can not improve it.

~ Lord Kelvin

DHI at a glance

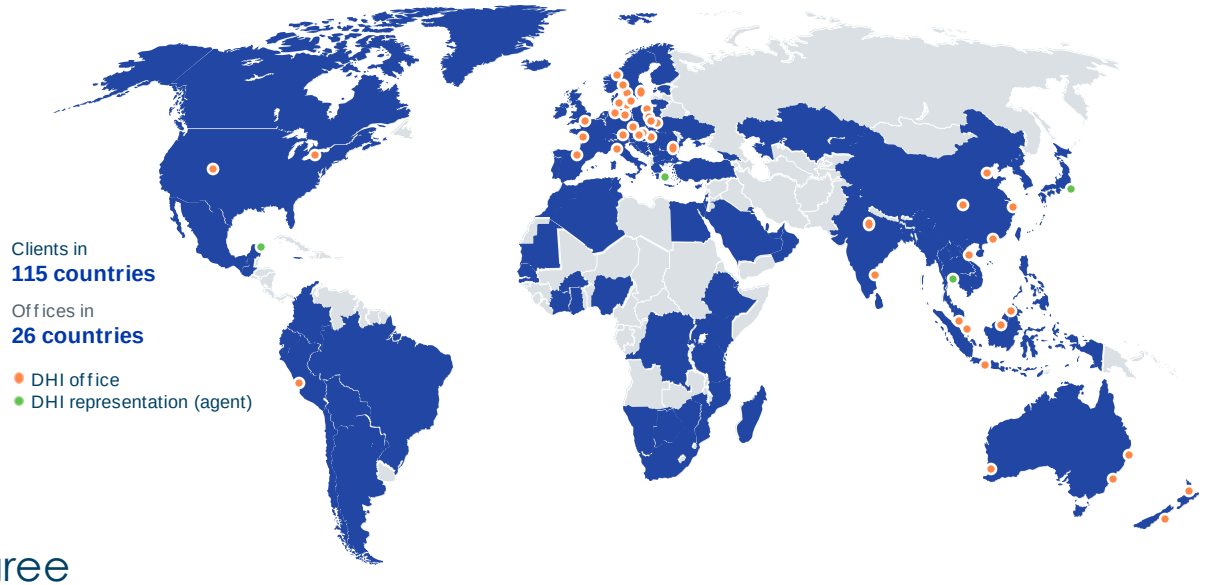
Global advisory company with deep domain knowledge, strong technology and continuous innovation

Independent, private, not-for-profit

Supports the UN sustainability agenda

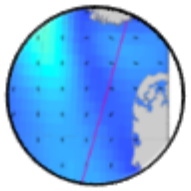
1100+ employees, 80% with an MSc or PhD degree

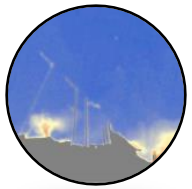
Representing 50+ years of dedicated research and real-life experiences (over 2400 projects worldwide)

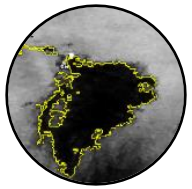


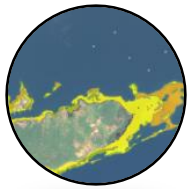
DHI

Providing a satellite perspective on water+ data for over 20 years

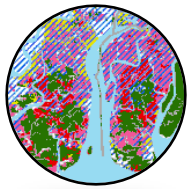

MetOcean data

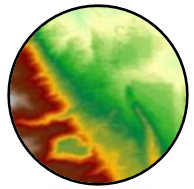

Sea Surface Temperature


Oil Spill


Marine Habitat Maps

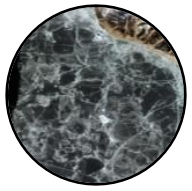

Satellite Images

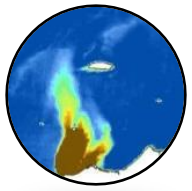

Coastal Vegetation


Digital Elevation

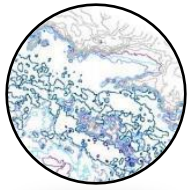

Urban Mapping

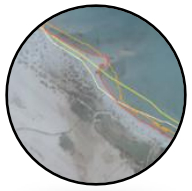

Vegetation Health

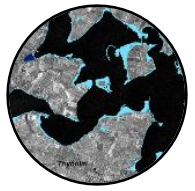

Sea Ice and Icebergs

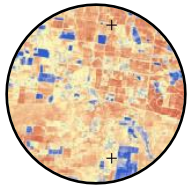

Dredge Plumes

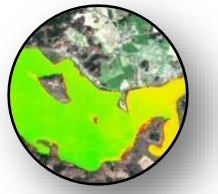

Water Quality


Bathymetry


Coastal Dynamics

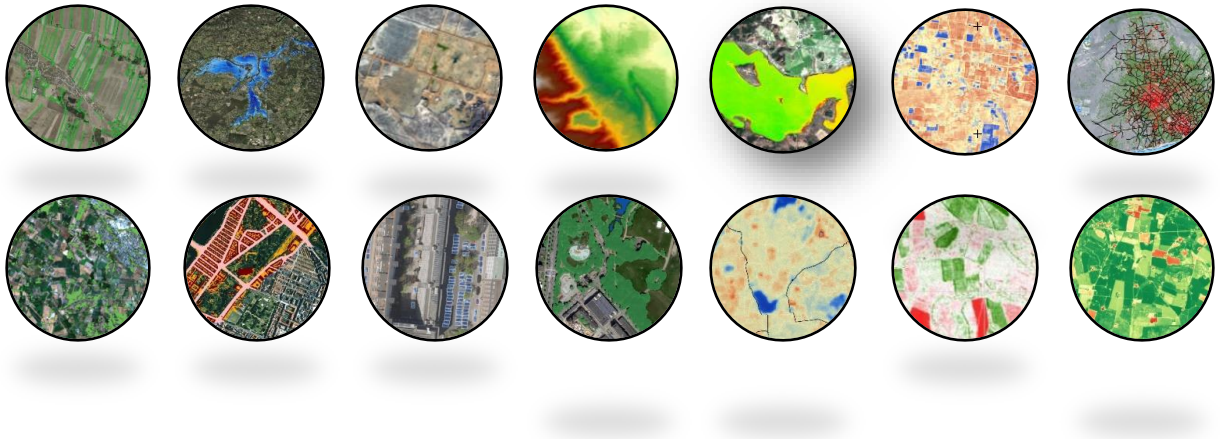

Flooding

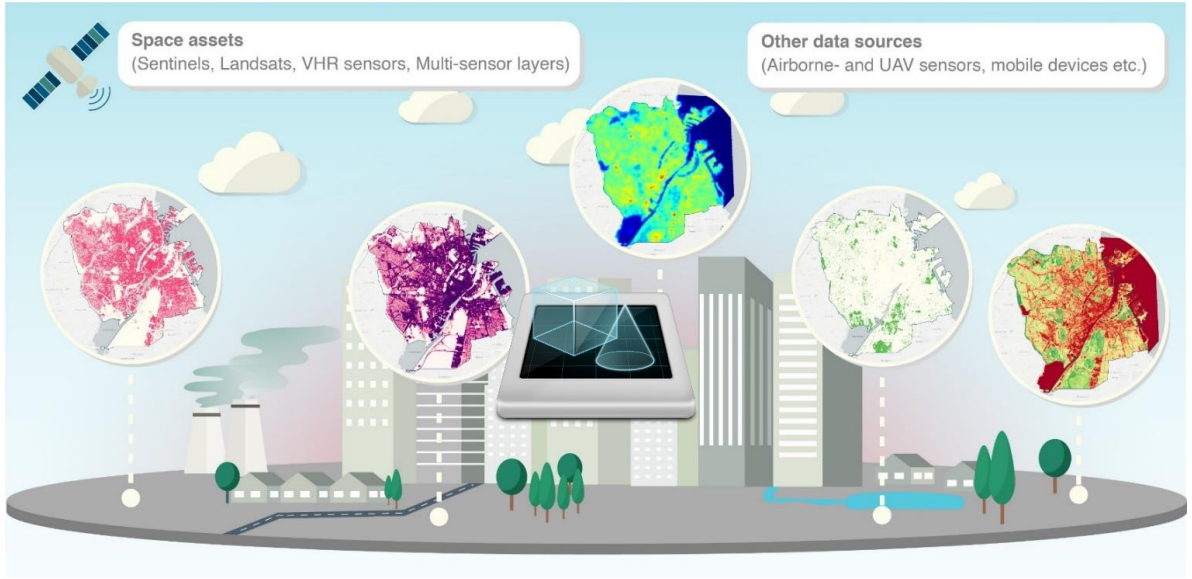

ET and drought


Freshwater Monitoring


Land Cover - Land Use

Offshore and Near shore | Coastal Zone | Onshore and inland




Space assets
(Sentinels, Landsats, VHR sensors, Multi-sensor layers)
Other data sources
(Airborne- and UAV sensors, mobile devices etc.)

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Washington DC, 2023

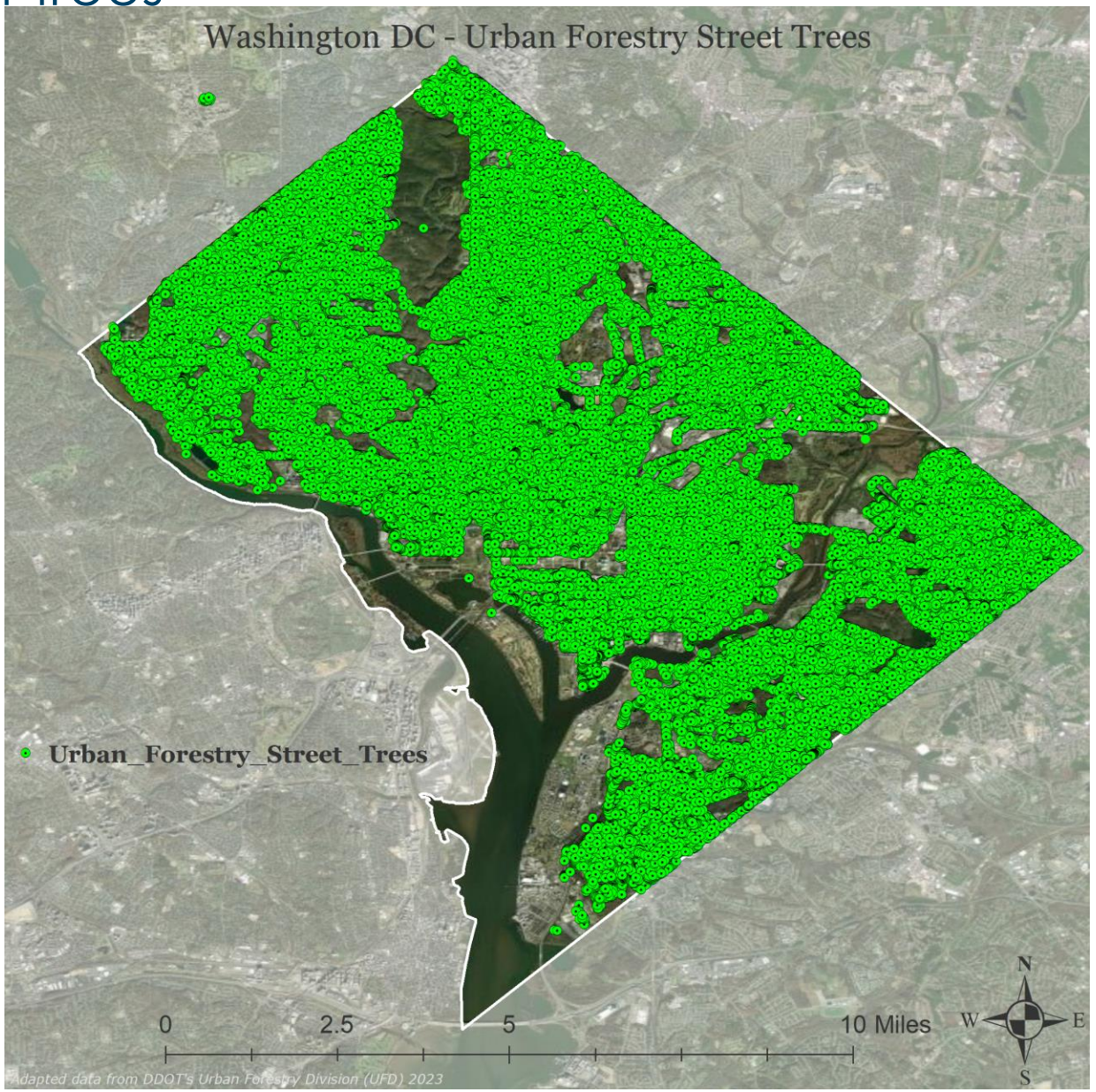
Many cities lacks basic information about the location of trees

Why are urban tree inventories important:

- Enable better urban planning and development.
- Helps identify suitable areas for tree planting, green spaces, and infrastructure development.
- Empowers city officials to make data-driven decisions about tree maintenance, removal, planting and urban heat island mitigation measures.
- Ensures resources are allocated efficiently.
- Sharing tree data with the public fosters transparency and community engagement.
- …

However the associated costs are high:

- Expenses related to the initial collection of tree data
  - *The New York City 'TreesCount!2015' census reportedly cost 2.2 million $ and involved thousands of volunteers and staff to complete.*
- Provides just a snapshot in time as trees are always changing and tree inventory data



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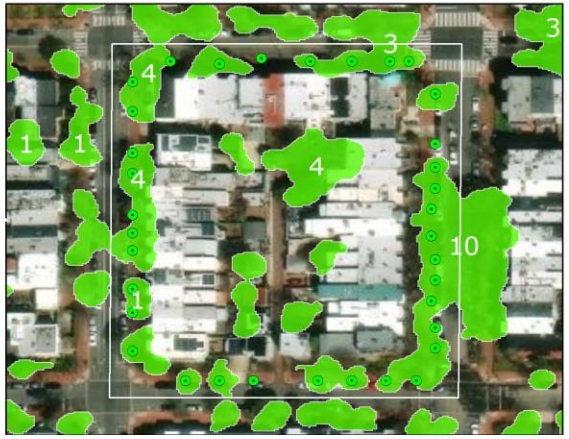
Earth observation and AI technology is part of the answer

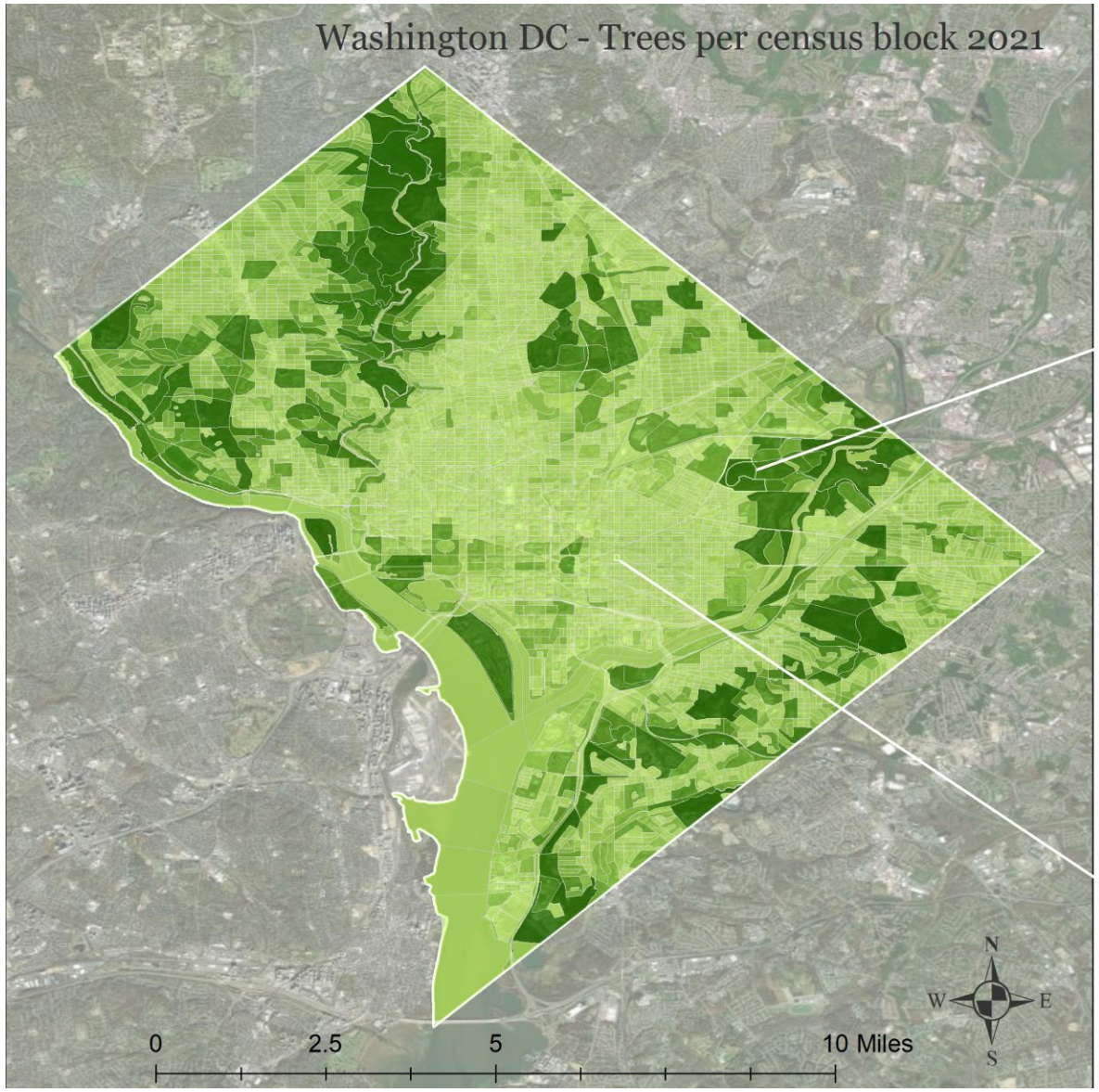
Airbus Pléiades Neo satellite image,
2021
30 cm resolution

Block: 3046 + 3047
Urban Forestry Street Trees: 204 trees
DHI EO method: 2508 trees

Block: 3002
Urban Forestry Street Trees: 35 trees
DHI EO method: 37 trees



Aggregation of trees per census block



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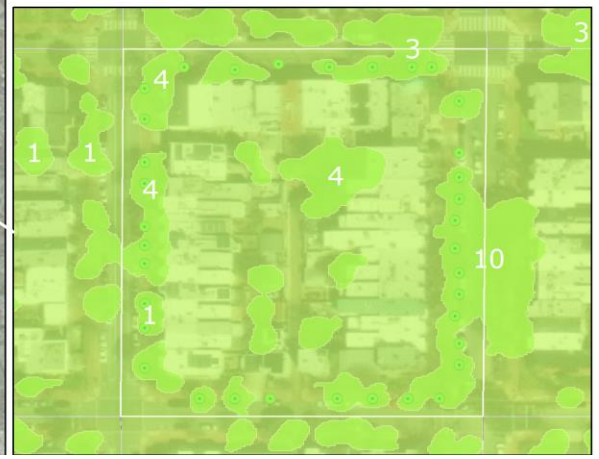
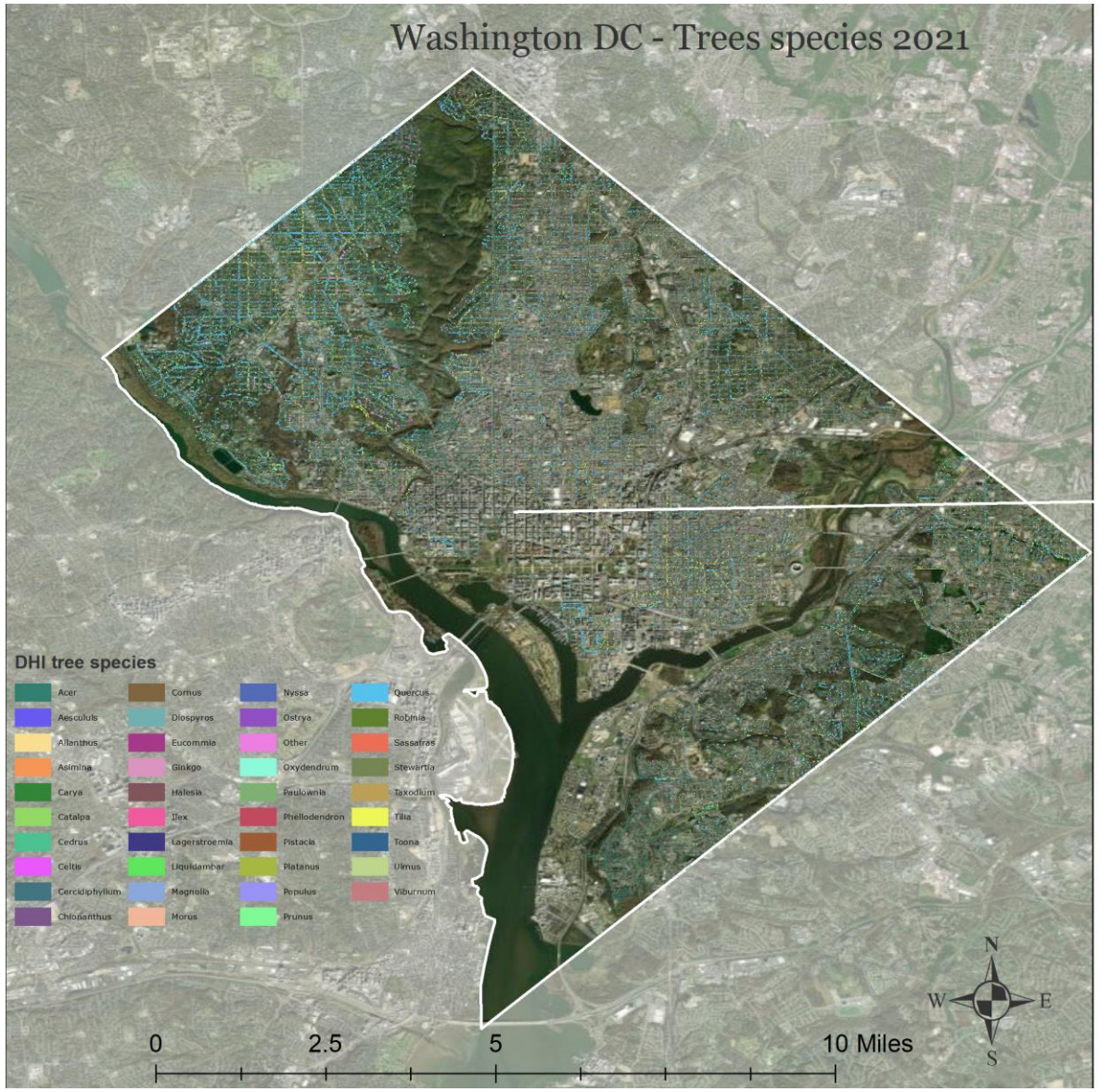
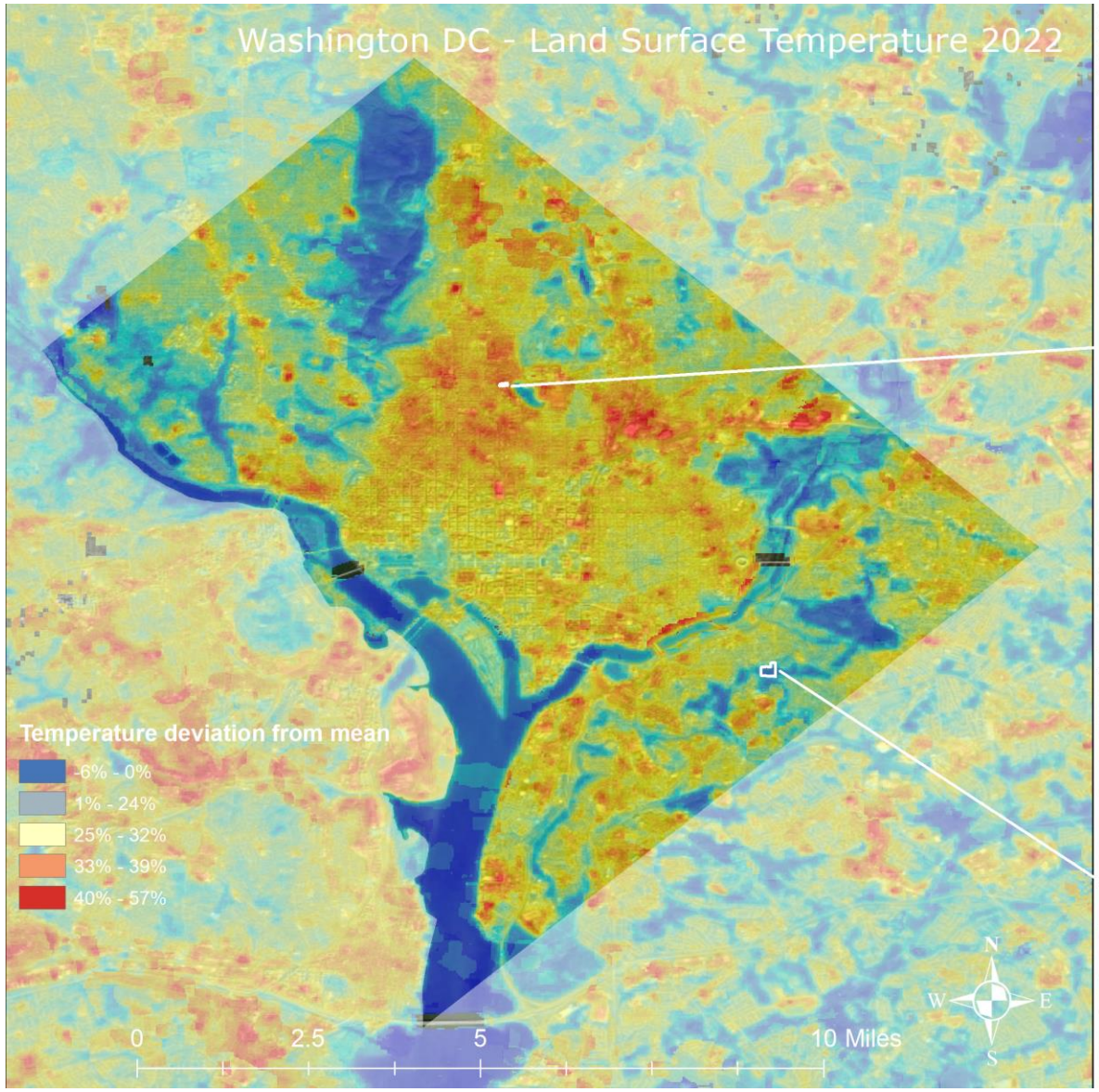


Mapping tree species – under development



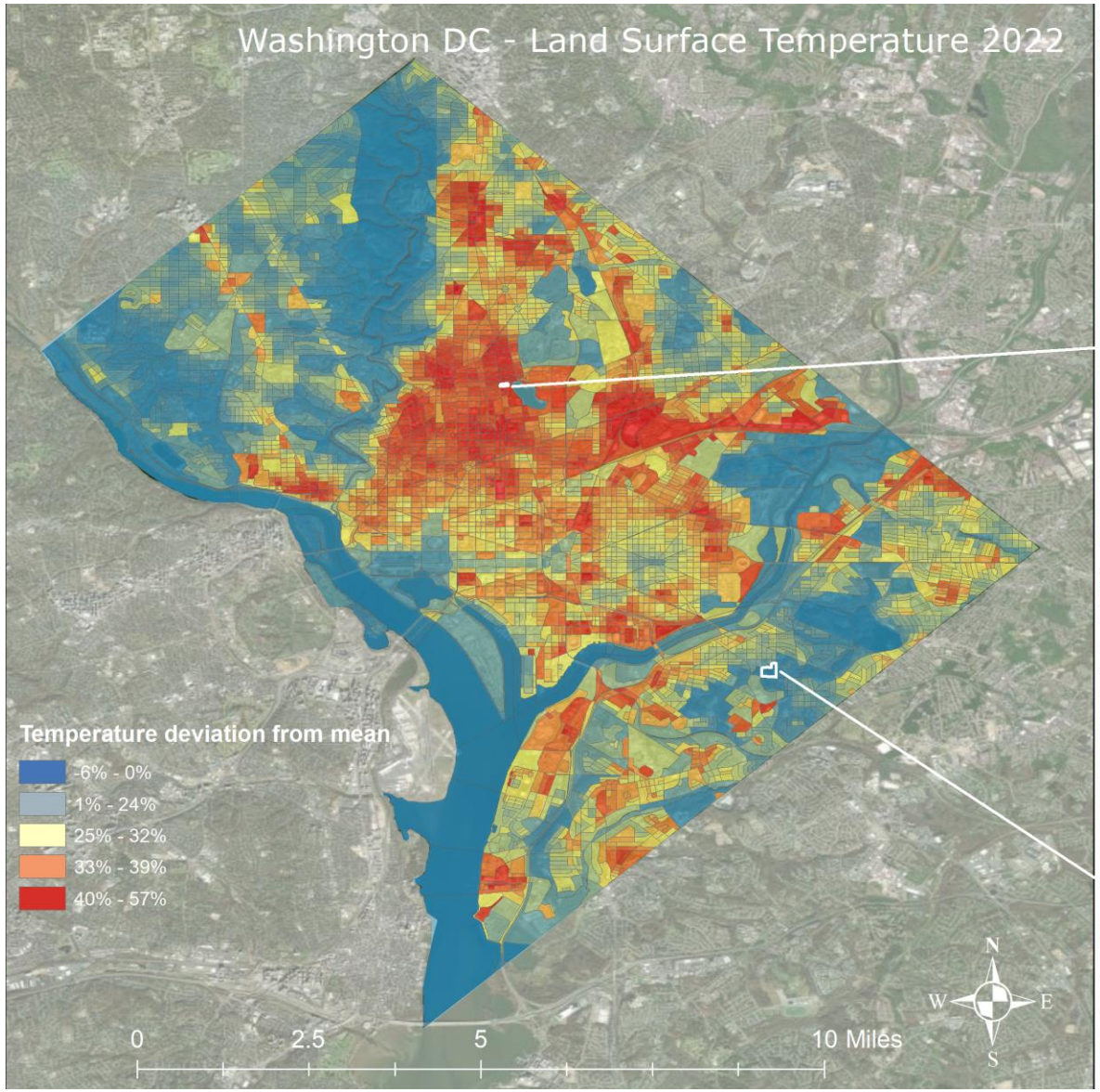
Assessing Urban Heat Islands with satellite derived land surface temperature (LST) deviation



Block: 4001
Population: 164
Temperature max: + 58%
Temperature Mean: + 55%

Block: 2011
Population: 58
Temperature max: + 18%
Temperature Mean: + 3%

Assessing Urban Heat Islands with satellite derived land surface temperature (LST) deviation



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Temperature max: + 18%
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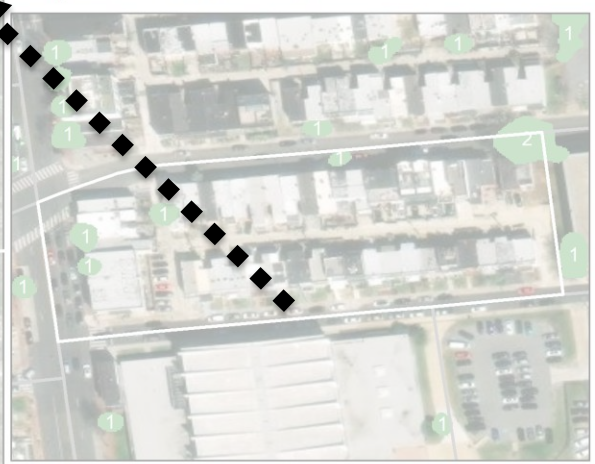
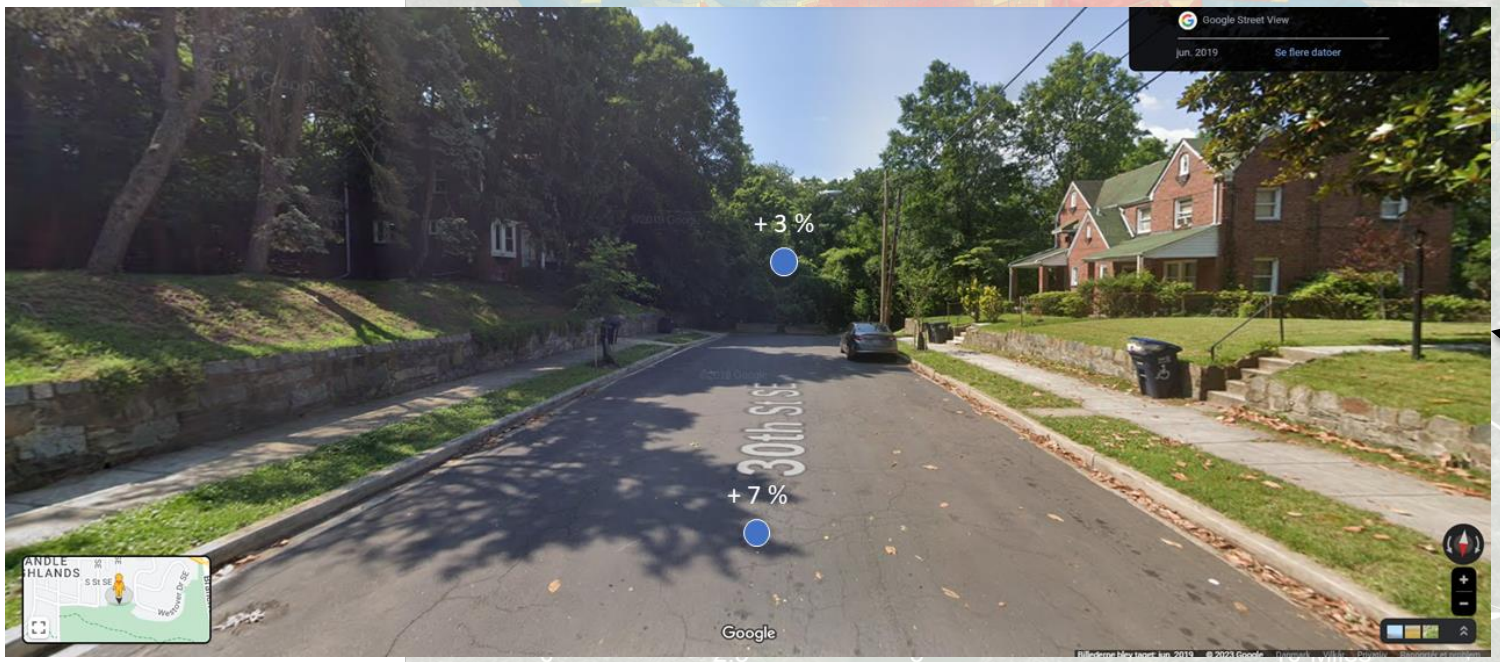
derived land surface temperature (LST)

Block: 4001
Population: 164
Temperature max: + 58%
Temperature Mean: + 55%

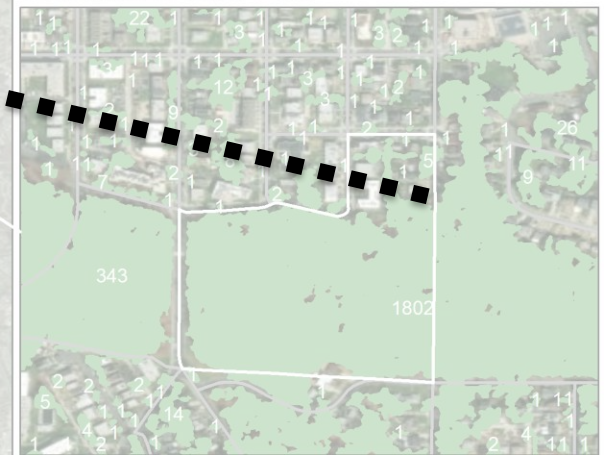
6/Hectare



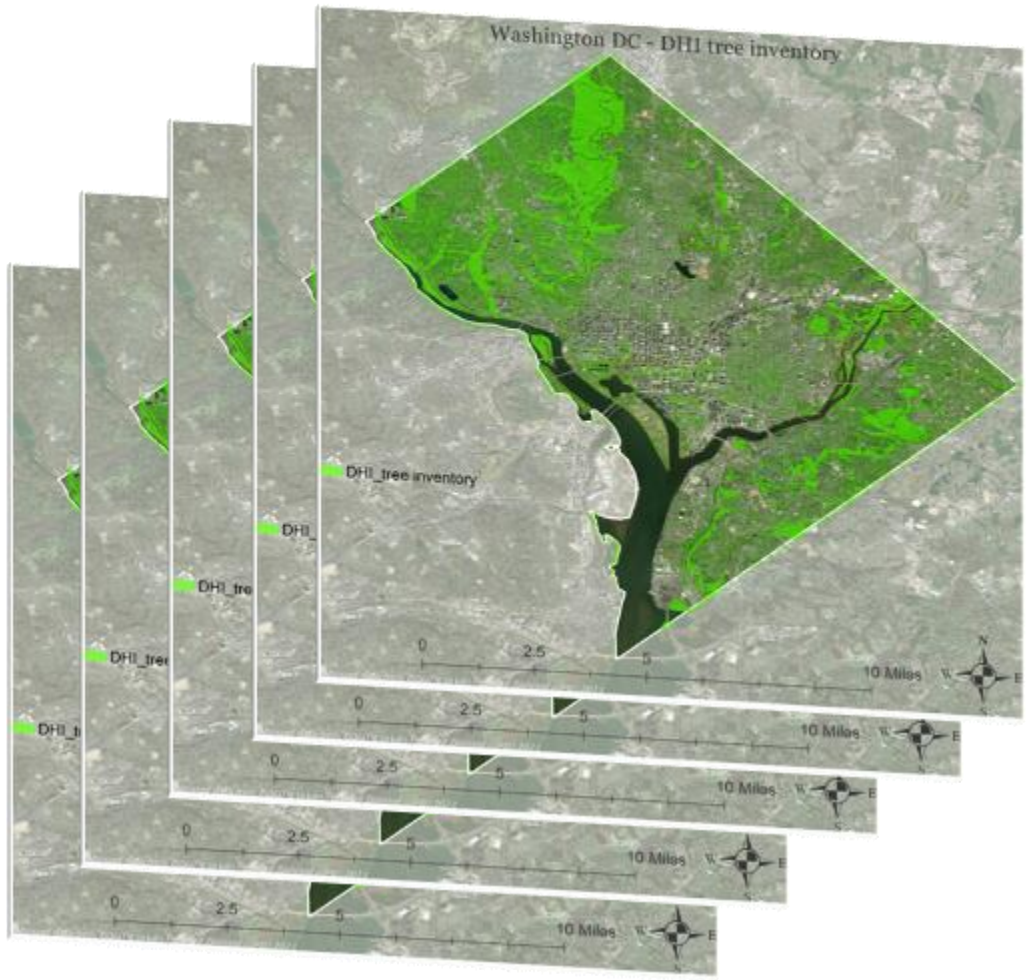


Block: 2011
Population: 58
Temperature max: + 18%
Temperature Mean: + 3%

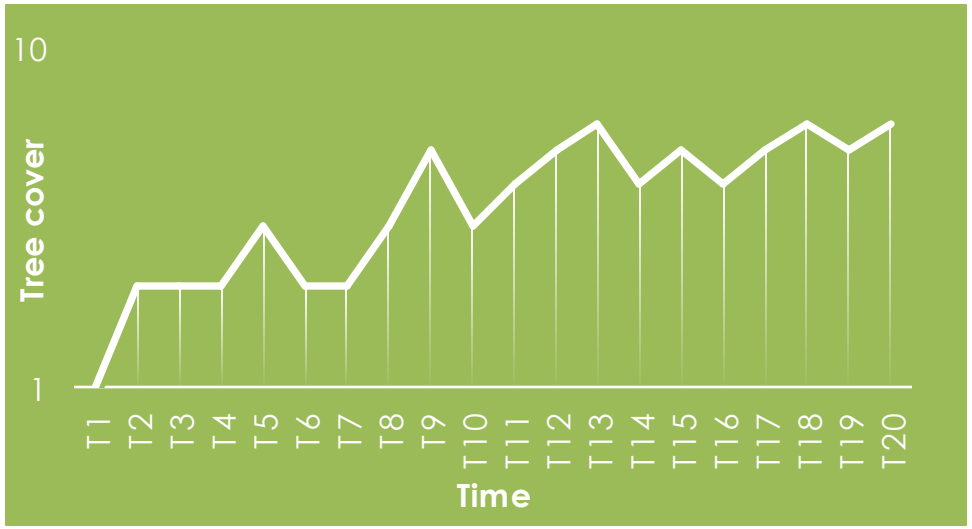
70/Hectare



Dynamic urban monitoring – as often as needed

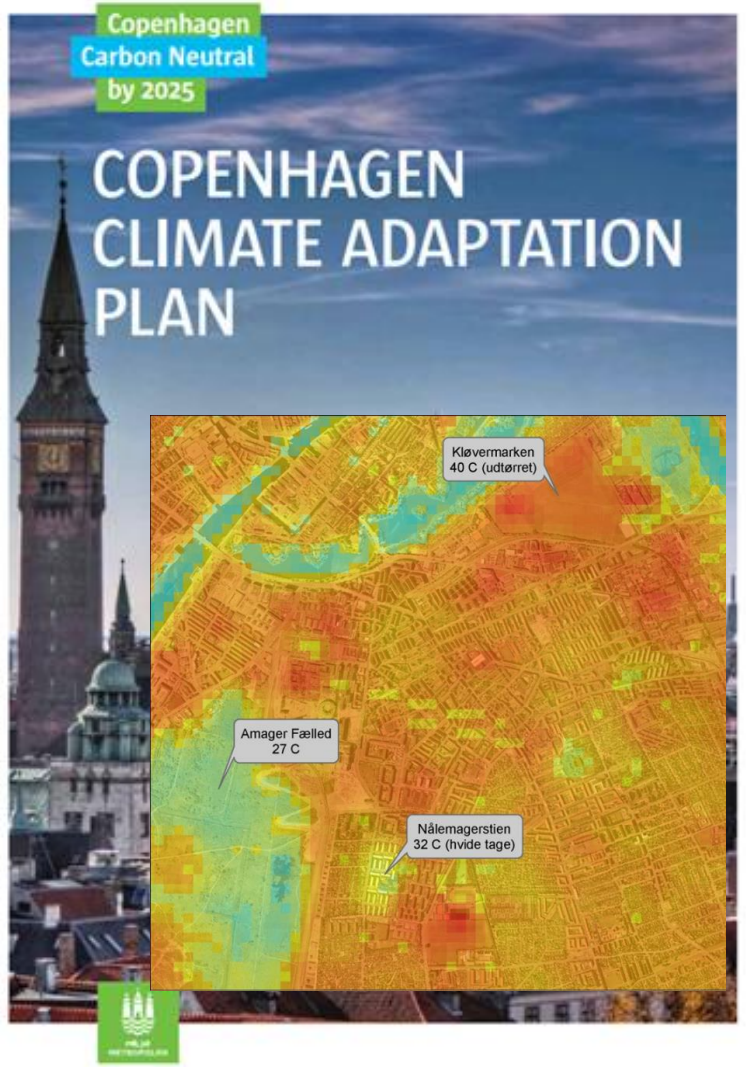


Time

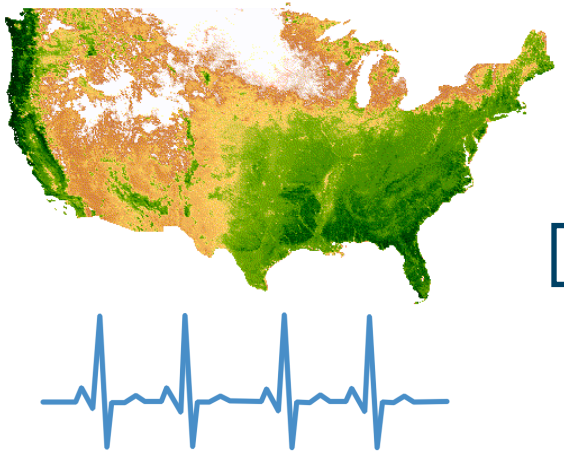


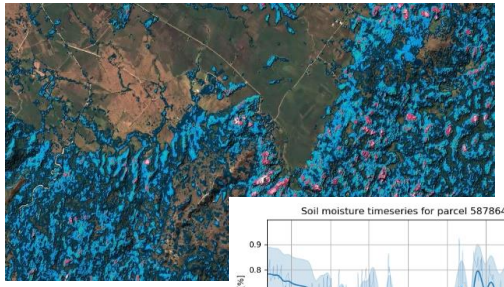
Planning city space "Urban Heat Islands"

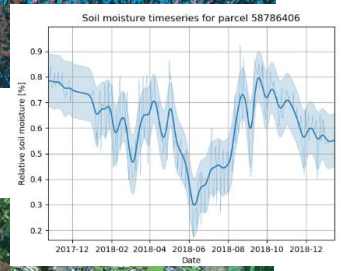
- Which areas in the city are exposed to urban heat? And what effect does green/blue infrastructure have?

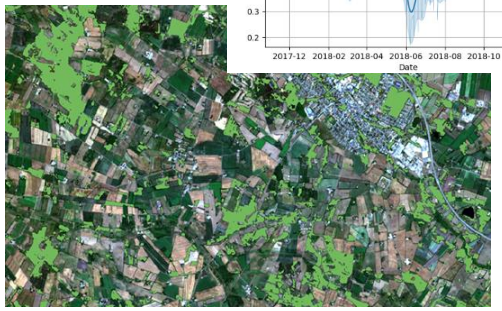


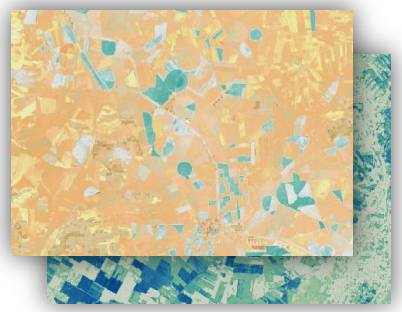
Dynamic monitoring at large











Surface water

- Dynamics (extent and volume)
- Frequency
- Flooding's – extent and depth
- Drought
- …

Land/soil

- Volumetric Soil moisture
- Actual Evapotranspiration
- Soil organic carbon
- Digital Elevation Models
- Land cover
- Land deformation and degradation
- …

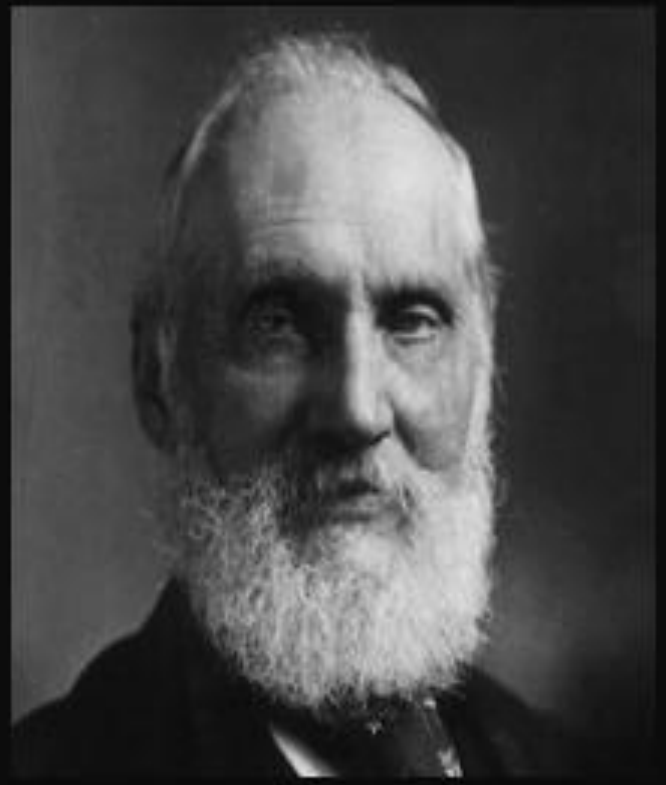
Vegetation

- Trees and tree cover
- Small landscape features
- Irrigation support
- Parcel delineation
- Biomass
- Forest height and canopy cover
- …

The pulse of land and water

Automated and operational data infrastructure

A wide array of EO based data products and analytics



If you can ~~not~~ measure it, you can ~~not~~ improve it.

~ Lord Kelvin

Thank you

Mads Christensen | DHI A/S

www.linkedin.com/in/mads-chr

madc@dhigroup.com

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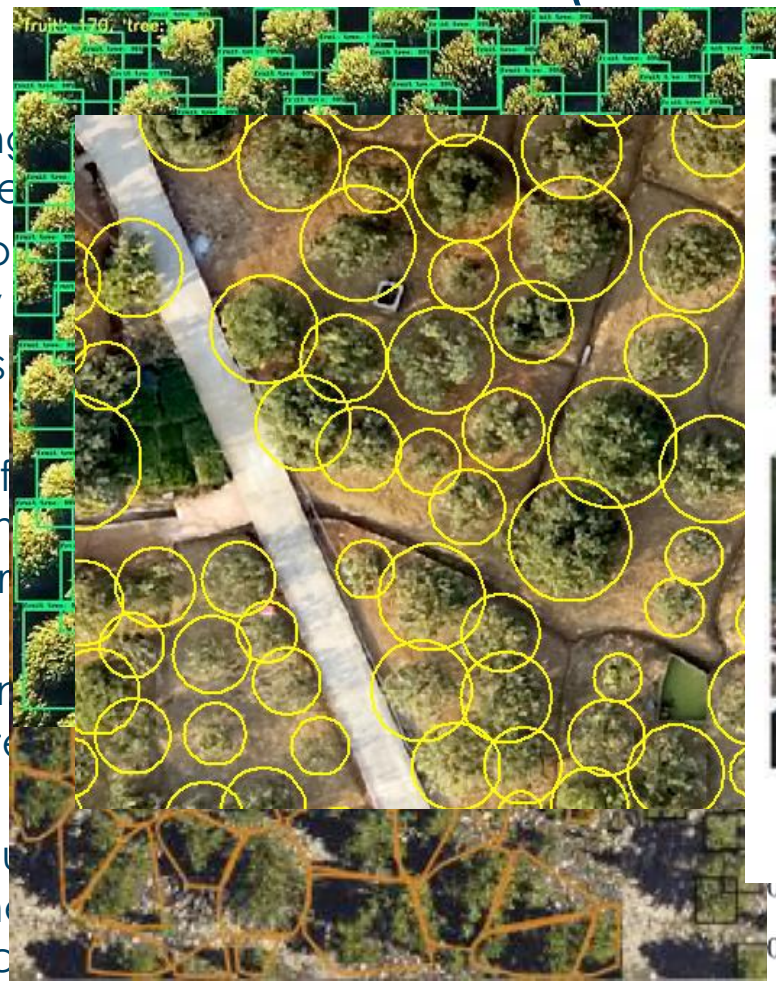
4-band, 50cm satellite image

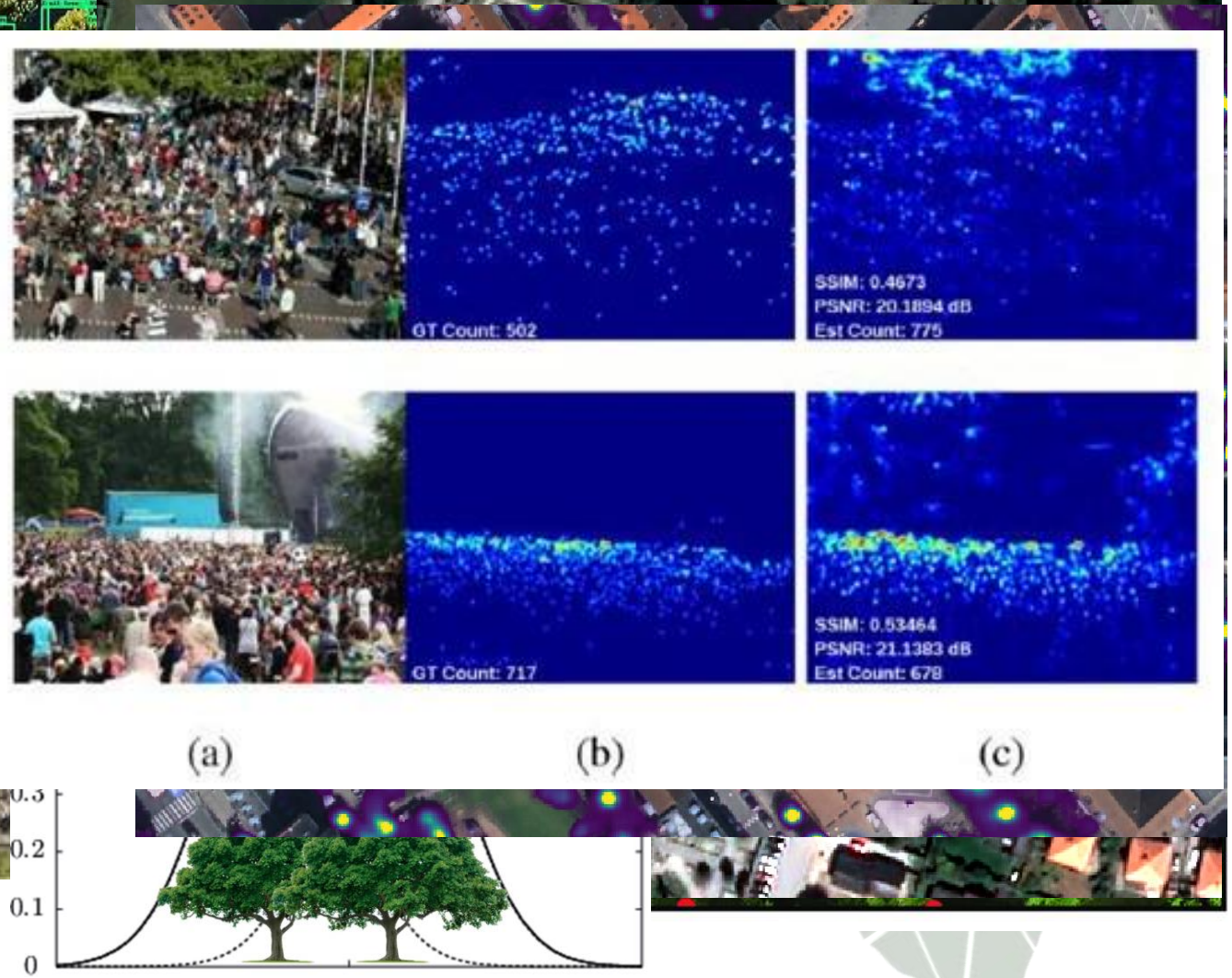
Density map prediction

Density thresholding, object delineation

Regression – Tree count (density)

- Most existing object dete
  - Good fo imagery
  - Requires data
- Inspiration f counting m objects var overlap
- Rather than we estimate trees
  - As the nu grow, the approac
- A gaussian kernel is fitted over each tree point





2nd World Forum on Urban Forests

2023

World Forum on Urban Forests

2nd World Forum on Urban Forests

Washington DC, 2023

Treenet: Promoting and Leading Urban Forest Research, Knowledge, and Networks in Australia

Presented by

Tim Johnson

Director

tim@treenet.org

treenet

treenet

TREENET

- **T**ree and **R**oadway **E**xperimental and **E**ducational **Net**work
- Non-profit, national organisation founded in 1997
- Funded by members, sponsors, donors and grants
- Dedicated to improving Australia's urban forests through
  - research and education
  - community support and engagement
  - projects, information and outreach

Projects

Tree species trials

TREEPLOTTER INVENTORY

LOG IN

Celebes Sea
Indonesia
Java Sea
Surabaya
Banda Sea
Jayapura
Bismarck Sea
Papua New Guinea
Port Moresby
Arafura Sea
Solomon Islands
Timor Sea
Coral Sea
New Caledonia
NORTHERN TERRITORY
QUEENSLAND
Australia
WESTERN AUSTRALIA
SOUTH AUSTRALIA
NEW SOUTH WALES
Perth
Great Australian Bight
Melbourne
TASMANIA
Hobart

Tree 680
13 of 16

Tree	
Botanical Name	Melaleuca quinquenervia
Common Name	Broad-leaved Paperbark
DBH [cm]	
Health	Good
Tree Height (Estimated) [m]	15
Planting Date	
Address	

DETAILS | PHOTOS | ECO-BENEFITS | STREET VIEW | SHARE

PHOTOS

08/06/2023

Broad-leaved paperbark Melaleuca quinquenervia Smith St Charlestown NSW pic taken 24 April 2023 TJohnson TreeID680 (a).JPG

LEGEND

treenet

Layer: Trees
Display by: Botanical Name
Symbology: None

Showing 1,083 of 1,089 sites.

Search

- [x] Toggle All
- [x] Acacia aneura (4)
- [x] Acacia auriculiformis
- [x] Acacia pendula (7)
- [x] Acacia podalyriifolia (2)
- [x] Acacia pycnantha (2)
- [x] Acacia salicina (2)
- [x] Acacia saligna (2)
- [x] Acacia stenophylla
- [x] Acer japonicum
- [x] Acer negundo
- [x] Acer negundo 'Sensation' (2)
- [x] Acer palmatum
- [x] Acer rubrum 'October Glory'
- [x] Acer x freemanii 'Jeffersred' (3)
- [x] Acmena smithii cv (3)
- [x] Acmena smithii var. minor
- [x] Acronychia littoralis
- [x] Adenanthera pavonina
- [x] Adonidia merrillii
- [x] Aesculus hippocastanum
- [x] Agathis robusta (3)

https://au.pg-cloud.com/TREENET/

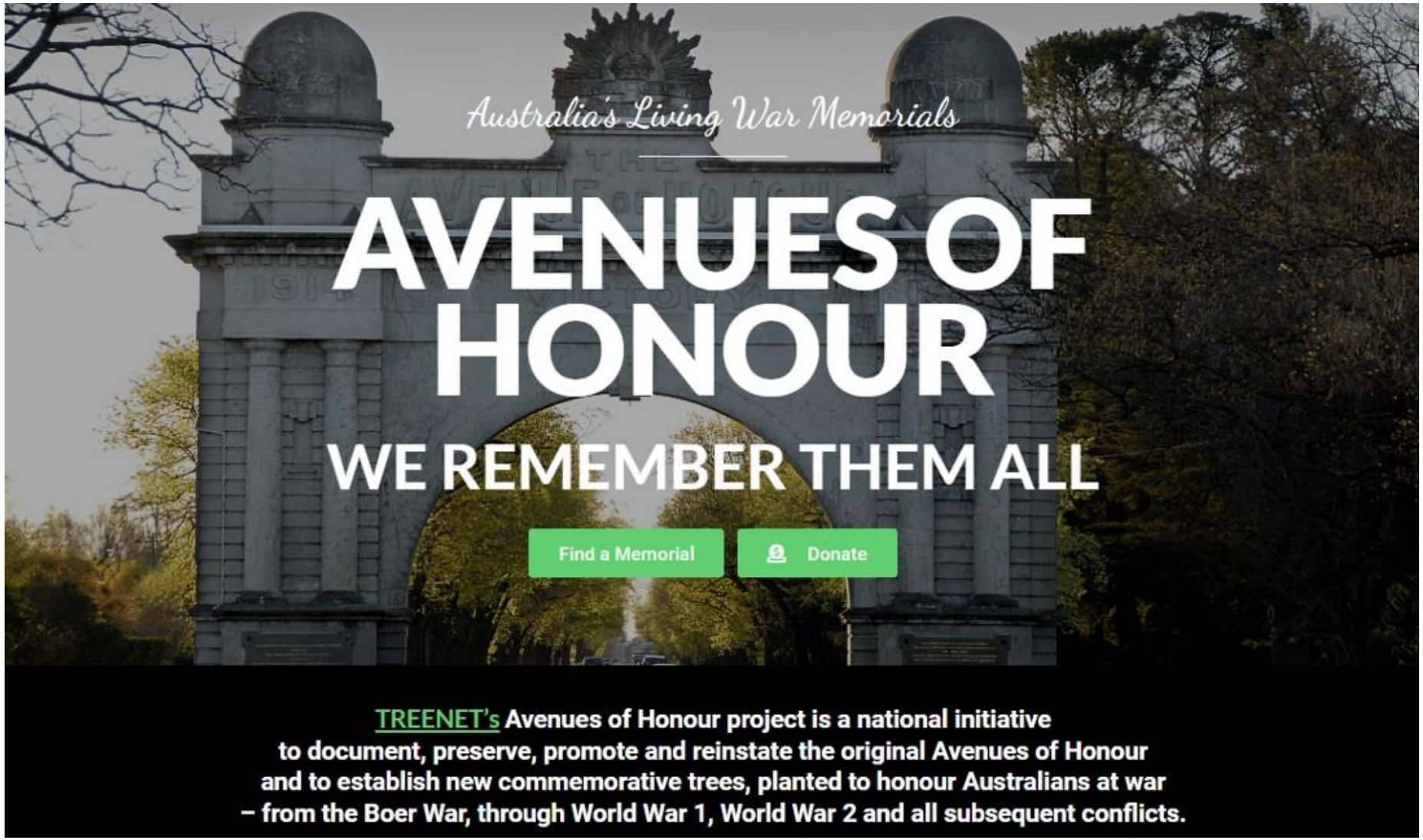
Projects

Engineered spaces for trees

- tree root management
- passive irrigation using stormwater
- enhanced urban heat island mitigation

treenet

AVENUES OF HONOUR
WE REMEMBER THEM ALL



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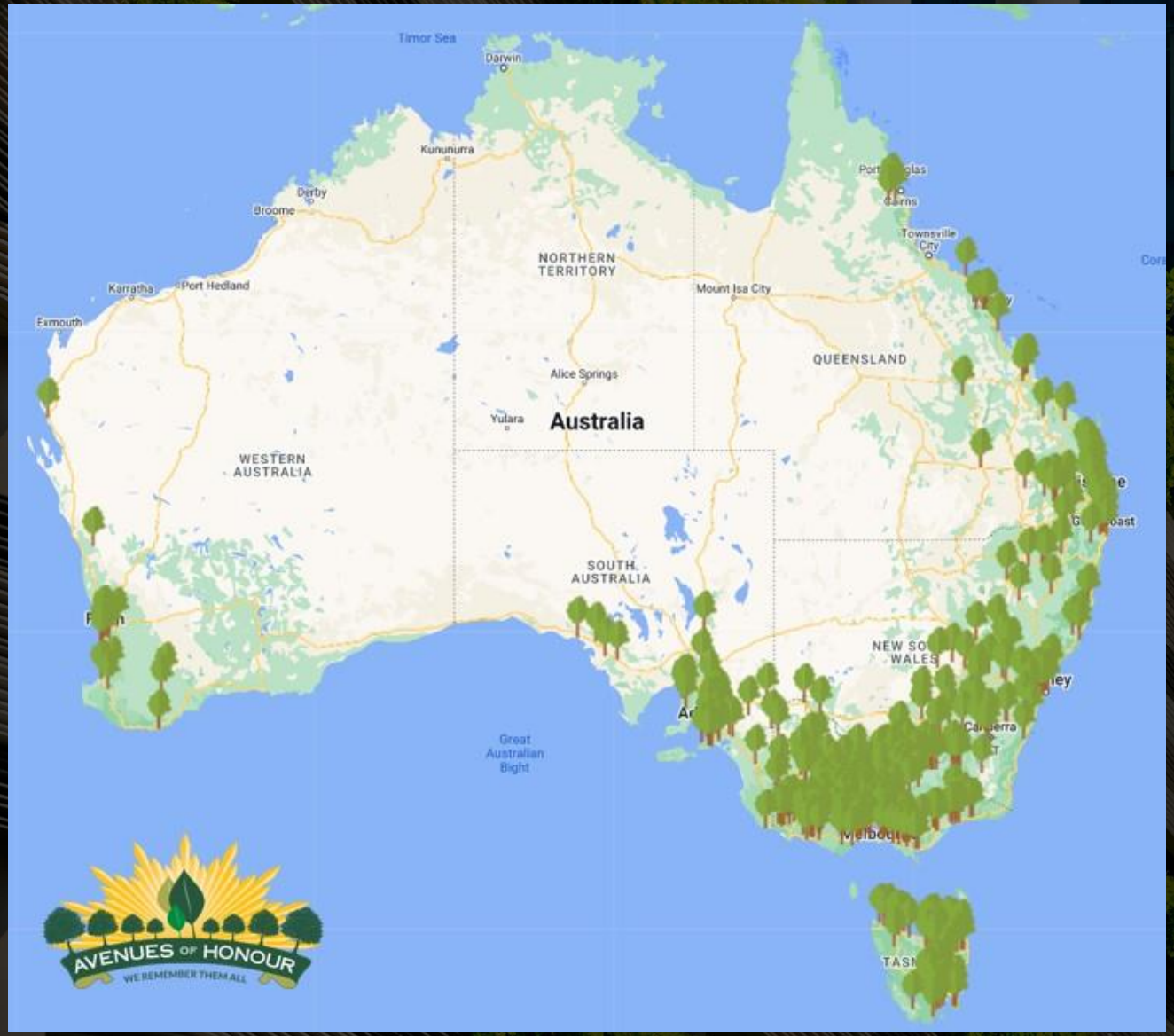
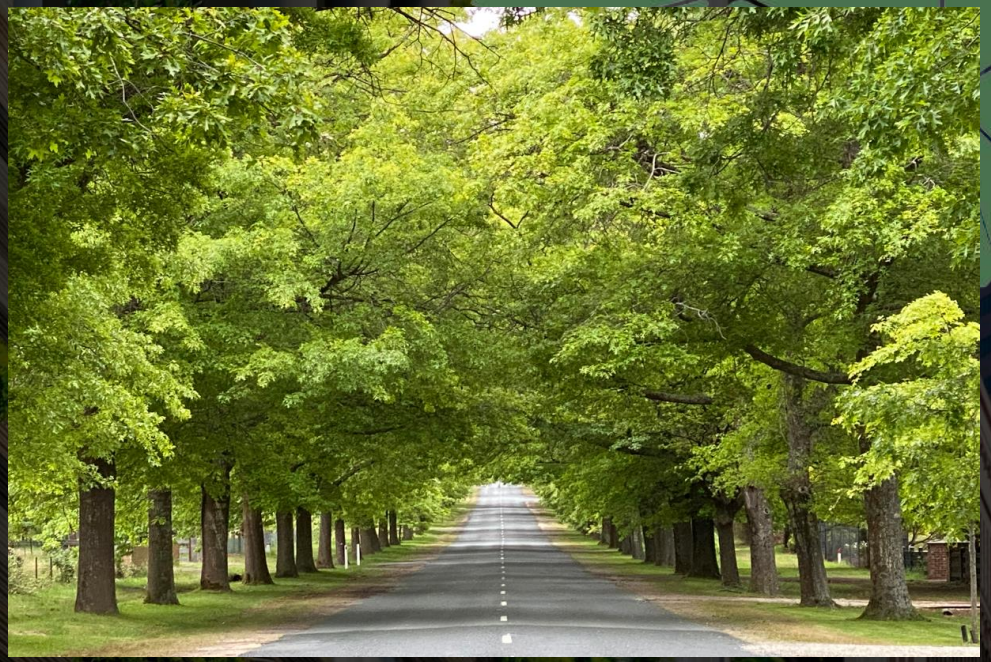
AVENUES OF HONOUR
WE REMEMBER THEM ALL

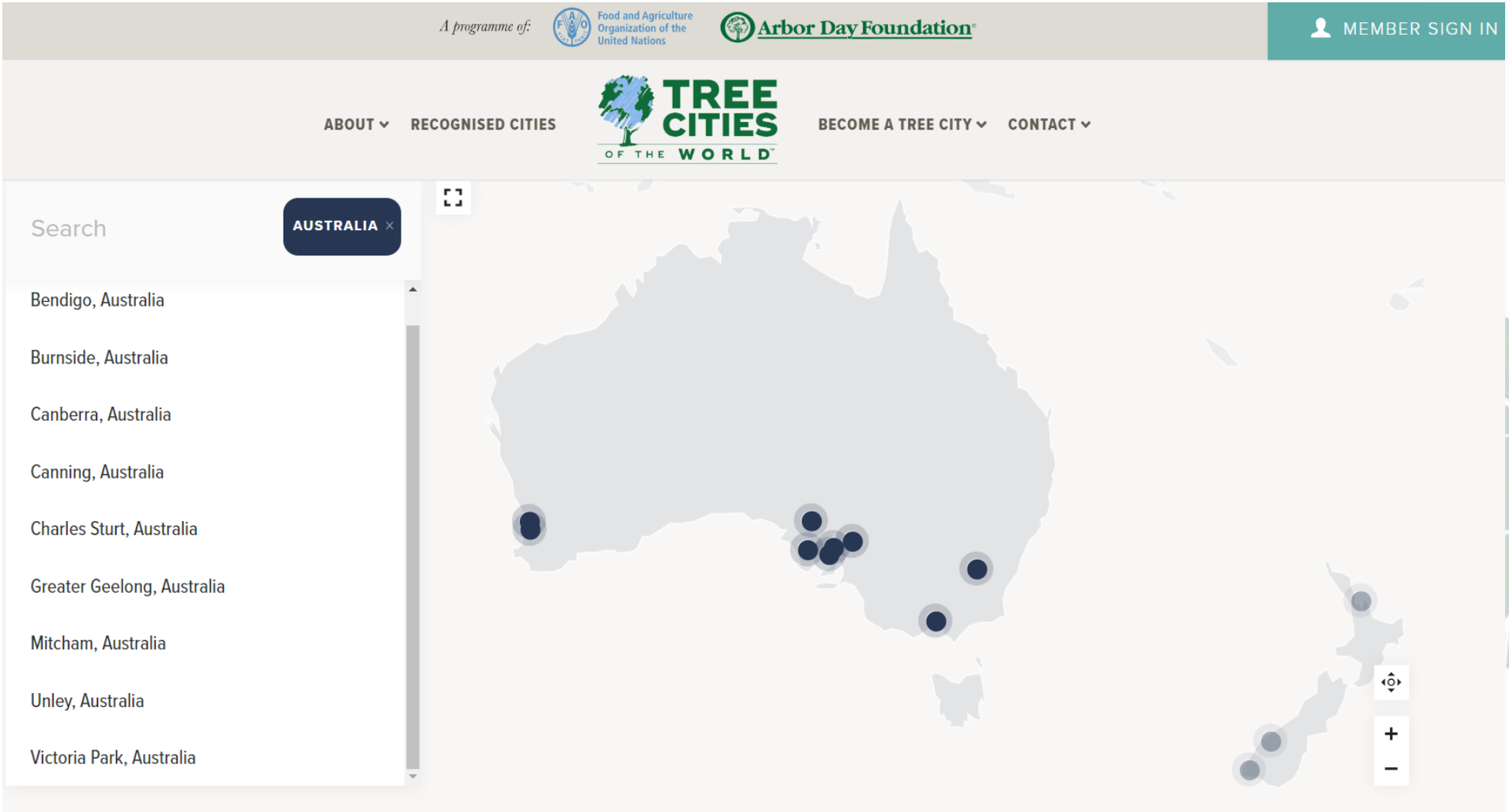




https://avenuesofhonour.org

https://avenuesofhonour.org

treenet



https://treecitiesoftheworld.org

Australian Urban Forest Literature Database

Accessing urban forestry information is easy with our new Australian Urban Forest Literature Database. With a wealth of information and a range of ways to search it is easy to use and delivers relevant articles on a range of key topics.

The database is designed for the public, for arborists and for urban foresters – anyone looking for key relevant, evidence-based information.

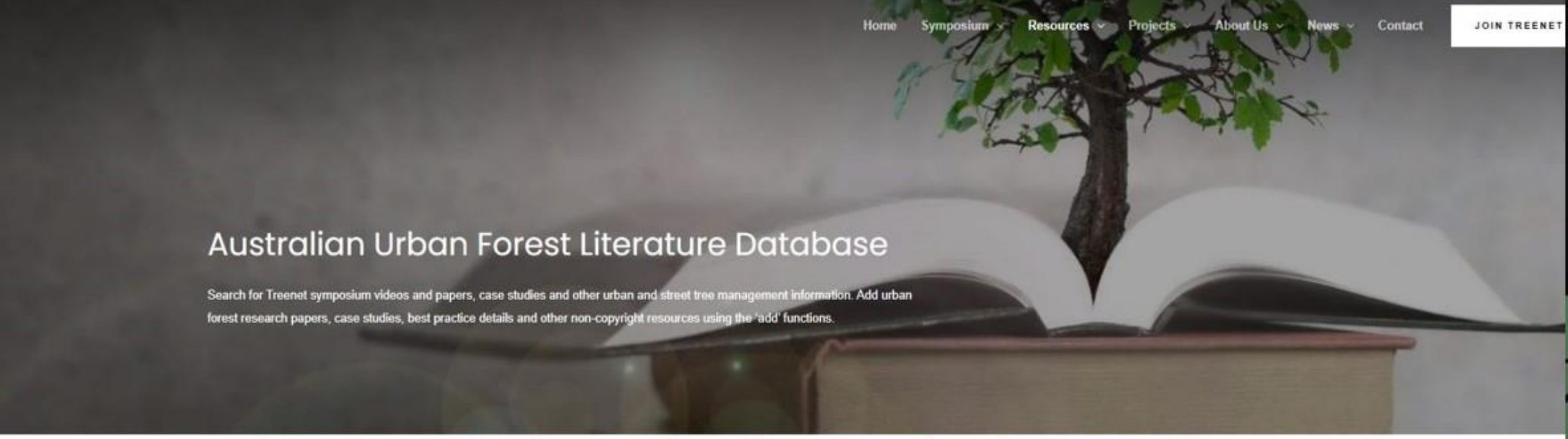
Become a Member

Membership not only supports a national, independent, environmental, not-for-profit organisation dedicated to research & education for urban arboriculture and liveable towns and cities.

Membership helps you to tap into a wealth of resources & participate in professional conversations. Government, Corporate and Association members also receive one complimentary ticket for the two-day, annual TREENET Symposium and achieve a 15% discounted registration for all other colleagues.

TREENET National Street Tree Symposium

- held annually in September
- 2-day event, plenary and field-based
- papers and videos provided free online



Australian Urban Forest Literature Database

Search for Treenet symposium videos and papers, case studies and other urban and street tree management information. Add urban forest research papers, case studies, best practice details and other non-copyright resources using the 'add' functions.

TREENET PAPERS & VIDEOS | CASE STUDIES | ADD A PUBLICATION | ADD A CASE STUDY

All Resource Types

All Year Published

All Resource Authors

Search ...

All Categories

All Journals

All Resource Source

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[Using ground penetrating radar to locate and categorise tree roots under urban pavements]

Author(s): Lucke, Terry | McCallum, Adrian | Nichols, Peter

Year Published: 2017

Tree Roots Ground Penetrating Radar

Pavement Damage

[Nursery Practices and the Effectiveness of Different Containers on Root Development]

Author(s): Moore, Derek

Year Published: 2001

Trees can be very long-lived and the successful establishment of all trees in any given landscape requires a knowledge of their biology and also...

Symposium Resource 2001 Symposium

The future…

- increased community engagement
- community urban forest advocacy
- research and education
- celebrate trees and urban forestry
- increase collaboration with like-minded agencies
- increase membership to increase outputs

Thank you

Tim Johnson | TREENET

tim@treenet.org

treenet

Food and Agriculture Organization of the United Nations

Arbor Day Foundation

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2nd World Forum on Urban Forests

Washington DC, 2023

Modern Times: promoting innovation, new technologies and future visions for inclusive urban forests

The Uforest project – providing training and education for urban forests as nature-based solutions

Presented by

Rik DE VREESE[a], Ilaria DOIMO[b], Sofia PAOLI[c], Maria Chiara PASTORE[c], Cecil KONIJNENDIJK[d], Colm O'DRISCOLL[b], Joan PINO[e]

[a] European Forest Institute, [b] ETIFOR Valuing Nature, [c] Department of Architecture and Urban Studies, Politecnico di Milano, [d] Nature Based Solutions Institute, [e] Centro de Investigación Ecológica y Aplicaciones Forestales, Universitat Autònoma de Barcelona

The UFOREST project

Uforest is a Knowledge Alliance project co-funded by the Erasmus+ Programme of the European Union.

Bringing together **universities**, **businesses**, and **public institutions**, the Alliance has developed a **3-steps approach** to foster innovation in the Urban Forestry sector

Challenges that have lead to initiating UFOREST

CHALLENGE 1

Many cities across the globe are setting challenging urban reforestation targets, but they are struggling with:

- high costs for planting and management
- the need for long-term citizen engagement
- lack of capacity with existing institutions to implement UF solutions.

CHALLENGE 2

Today, the demand for UF practitioners able to innovate urban areas is increasing,

but there is a lack of interdisciplinary training and support for innovative public-private UF initiatives.

2nd World Forum on Urban Forests
Washington DC, 2023

Step 1. JOIN the UFOREST Alliance

SCAN & JOIN

230 members around the globe

Step 2. LEARN

REPORTS

uforest.eu/learn

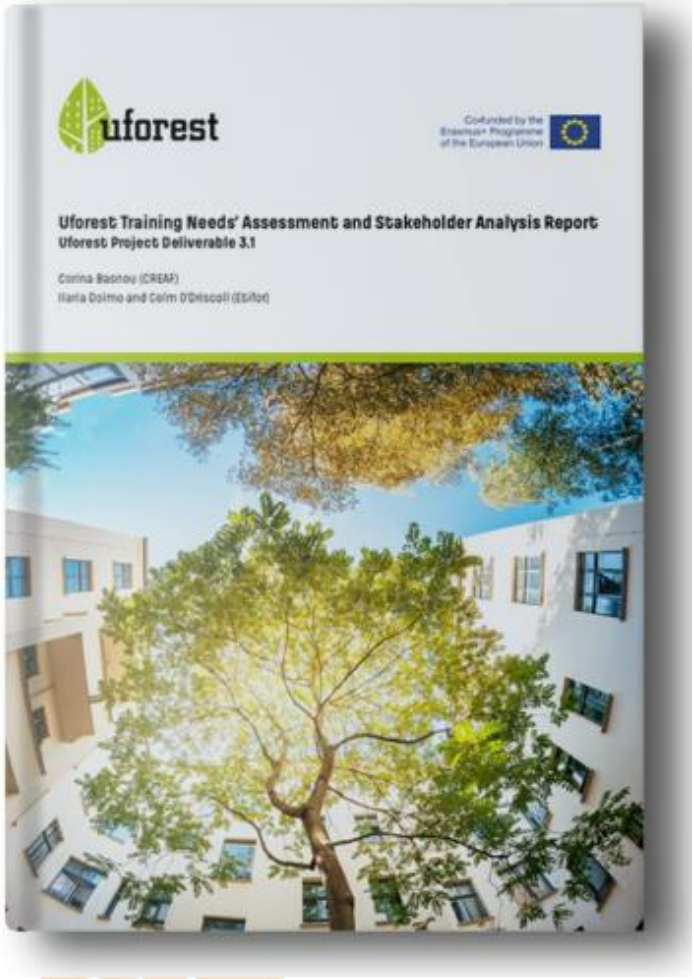
FACTSHEETS

uforest.eu/case-studies

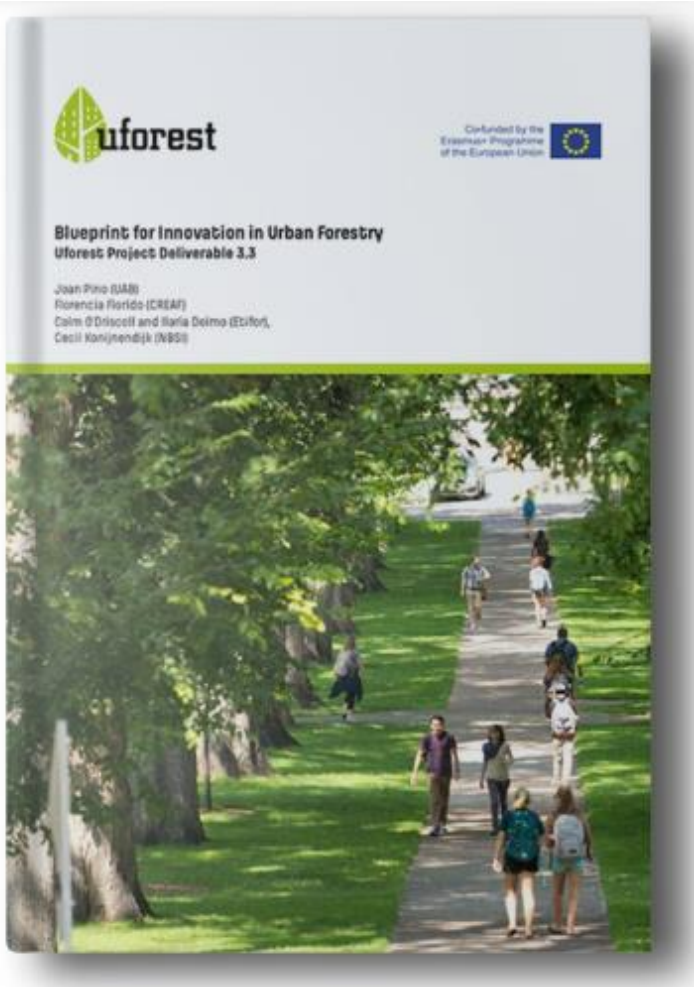
E-LEARNING COURSES

https://www.pok.polimi.it

Step 2. LEARN - Reports



Training Needs Assessment and Stakeholder Analysis



Blueprint for Innovation in Urban Forestry

Unlocking th potential of UF. Developing a Local urban Forest Action Plan.

Challenges that hinder implementation of UF as NBS

- Based on online survey, in-depth interviews, literature review and 20 EU case studies
- Hindering challenges
  - Ecosystem disservices
  - Lack of appropriate growing conditions
  - Social inequity
  - Governance
  - Knowledge gaps (including on the use of technology)
  - Funding and economic development
  - Training gaps

Training needs regarding urban forestry

- Assessing forest management scenarios
- Estimating delivery of ecosystem services by urban forests
- Developing marketing strategies for urban forestry and/or the ecosystems they provide
- Connecting technology with urban nature
- Integrating strategically with transversal domains (pedagogy, AI, arts, storytelling …)

LEARN - Uforest courses

online

1. NATURE IN THE CITY: TURNING KNOWLEDGE INTO URBAN FORESTRY PRACTICE

FREE AND ACCESSIBLE TO EVERYONE

+

online

2. GREENING YOUR CITY: DEVELOP YOUR URBAN FORESTRY PROJECT

SPECIALIZED COURSE FOR PARTNER UNIVERSITIES

Credits: 6 ECTS

the 20 best performing participants will be invited to

In-person

3. INNOVATION PROGRAMME

INTENSIVE 14-DAYS TRAINING (1 WEEK IN MILAN, 1 WEEK IN BARCELONA)

Credits: 8 ECTS

online

1. NATURE IN THE CITY: TURNING KNOWLEDGE INTO URBAN FORESTRY PRACTICE

FREE AND ACCESSIBLE TO EVERYONE

From November 2022 to April 2023

6 modules, streamed lessons

Total workload: 50 hours

Participants will learn how to effectively apply the transdisciplinary principles of **Urban Forestry**, spanning from **urban design** to **forest ecology**, from **socioeconomics** to **information and communication technologies**. No specific background is required.

7 interdisciplinary weeks

1. History of urban forestry
2. Urban Forestry planning and design
3. Urban forest ecology
4. Socioeconomics - Governance and community engagement
5. Entrepreneurship and innovation
6. Final assessment
7. Live events - Urban Forest Case Studies

969 enrolled participants

online / in person

2. GREENING YOUR CITY: DEVELOP YOUR URBAN FORESTRY PROJECT

SPECIALIZED COURSE FOR STUDENTS OF PARTNER UNIVERSITIES

POLITECNICO MILANO 1863

UAB Universitat Autònoma de Barcelona

Transilvania University of Brasov

Trinity College Dublin

From February 2023 to June 2023

4 modules, streamed lessons

Total workload: 100 hours

This course is limited to **150 participants** to provide **specialised training in Urban Forestry** and is designed with a **project-based approach**, meaning that participants will have the opportunity to develop **their own project idea**.

Step 3. GREEN your city

3. INNOVATION PROGRAMME

September 2023

2 weeks, in person (1 week in Milan, 1 week in Barcelona)

Total workload: 180 hours

The **20 best performing participants** of the e-learning course will be given the opportunity to participate in the Innovation Programme, an **intensive 14-days training delivered in person** (1 week in Milan, 1 week in Barcelona). Grants and financial aid are provided.

Urban Forestry
WORKSHOPS

Step 3. Simultaneous planting campaign

- **European SIMULTANEOUS PLANTING CAMPAIGN** in 4 different - Milan, Brasov, Barcelona and Dublin

- Each campaign will implement **an innovative Urban Forestry solution tailored to the needs of that specific urban context**.

Credits: Thirdman, Pexels

Outcomes

- Innovative MOOC with almost 1000 registered students
- 95 students attended the specialisation course
- Innovation Challenge for 20 international students
- Simultaneous tree planting in 4 European cities
- Facilitated peer learning between top UF-experts, students, professionals and decision-makers
- Reached more than 8000 people through conferences, webinars etc.
- 230 people registered as Alliance member
- 4 national launches + 1 European launh

Thank you

Rik DE VREESE| European Forest Institute (EFI)

rik.devreese@efi.int

http://www.uforest.eu

https://www.linkedin.com/company/ufore

Uforest has been promoted by

In partnership with

Co-funded by the Erasmus+ Programme of the European Union

2nd World Forum on Urban Forests

2023

World Forum on Urban Forests

2nd World Forum on Urban Forests

Washington DC, 2023

Under Cover:
Planting Priorities, Equitable Canopy, and Technology

Presented by

Ian Hanou

Founder and CEO

PlanIT Geo, Inc.

PlanIT Geo™ developers of TreePlotter

AGENDA

Canopy Assessment Technology

Setting Planting Priorities

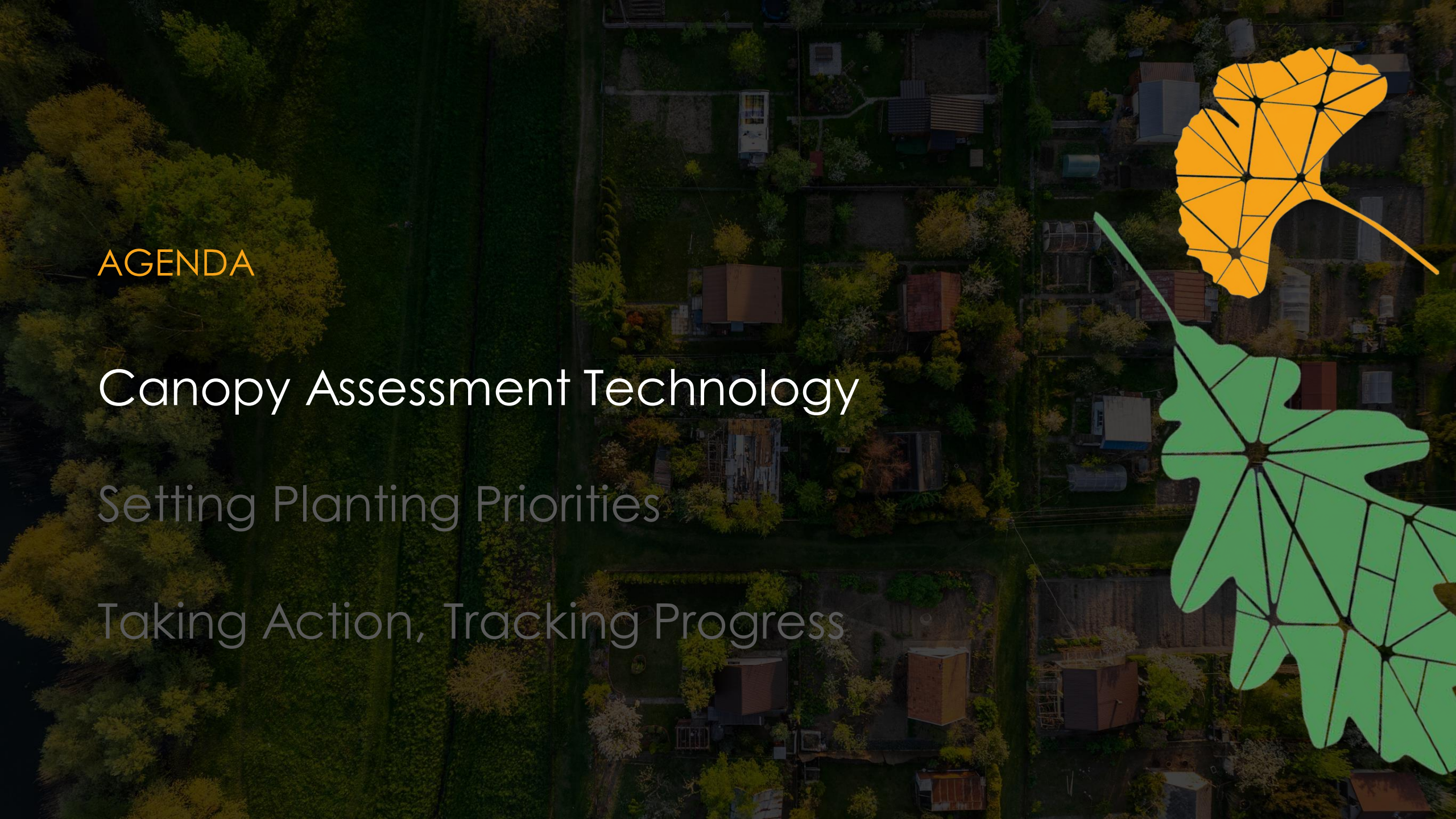
Taking Action, Tracking Progress

AGENDA

Canopy Assessment Technology

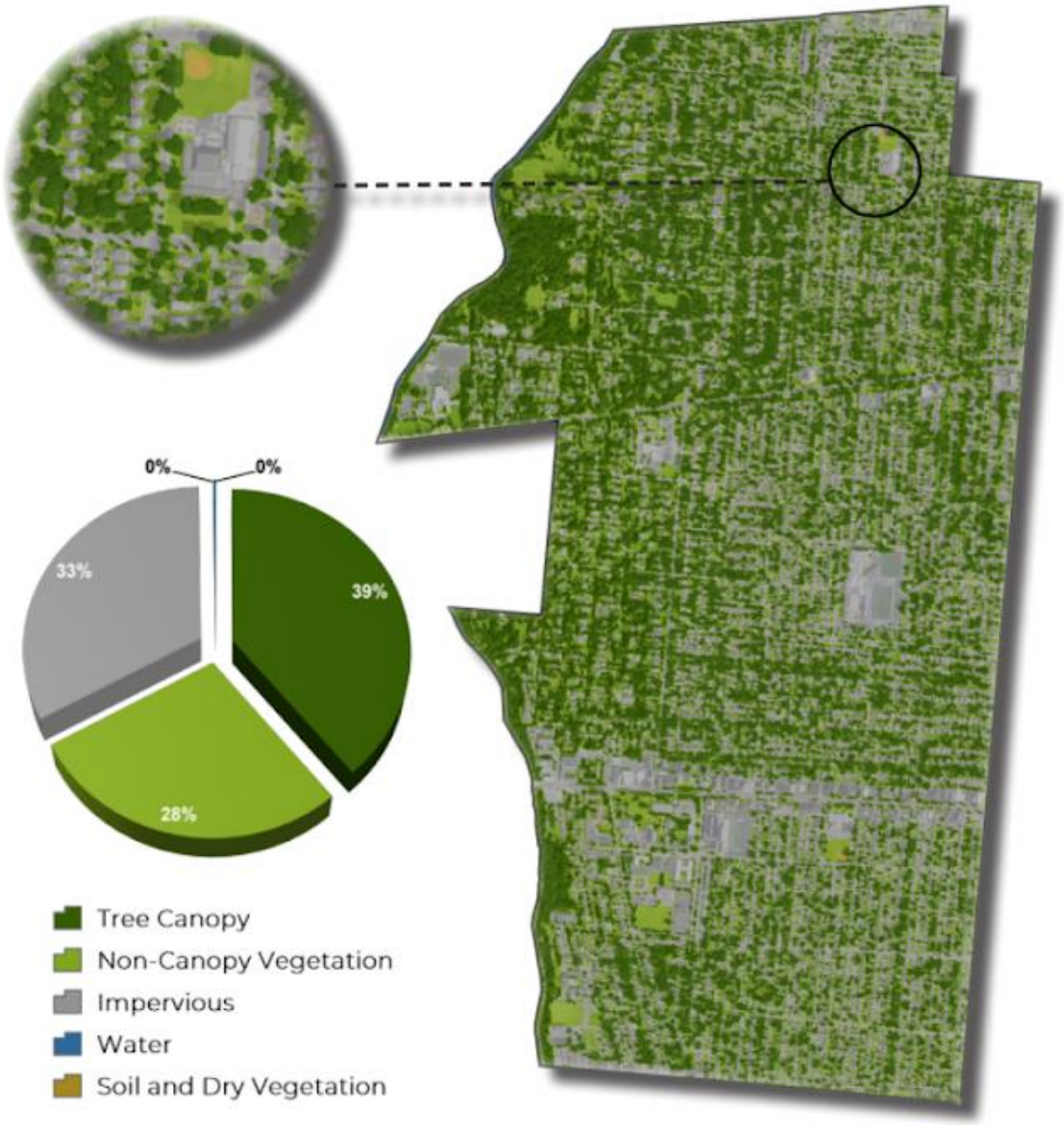
Setting Planting Priorities

Taking Action, Tracking Progress



High Resolution Land Cover Mapping

- Remote sensing image classification uses high-resolution aerial imagery or satellite and elevation (LiDAR) data to create detailed land cover data
- Set benchmarks, create planting project areas, track progress and impacts
- Inform management/master plans, budgeting or grant requests, and leverage for greater support/funding



Big Data, Nationally, at High Resolution

A partnership between

earthdefine

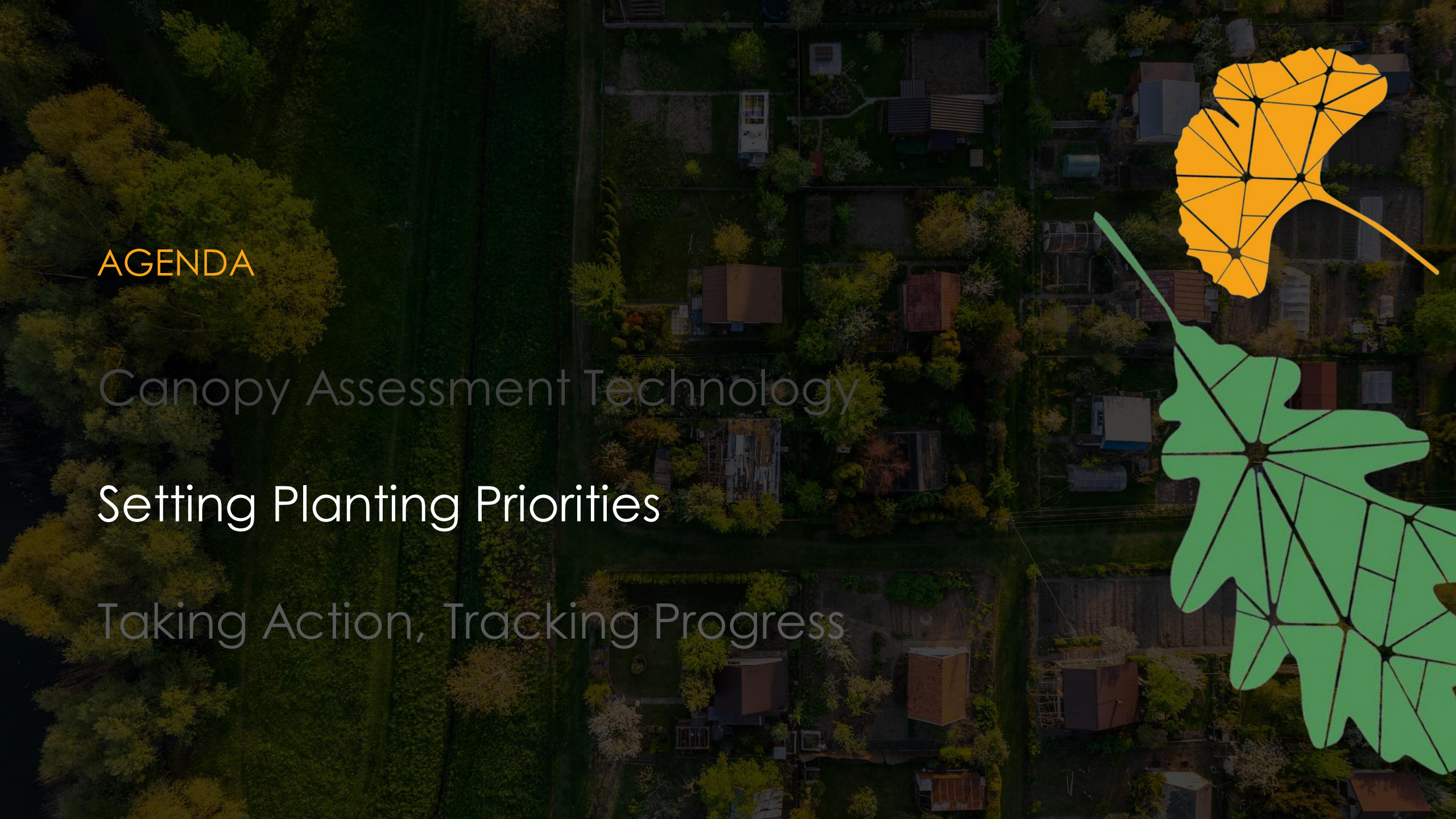
PlanITGeo™
developers of TreePlotter

AGENDA

Canopy Assessment Technology

Setting Planting Priorities

Taking Action, Tracking Progress



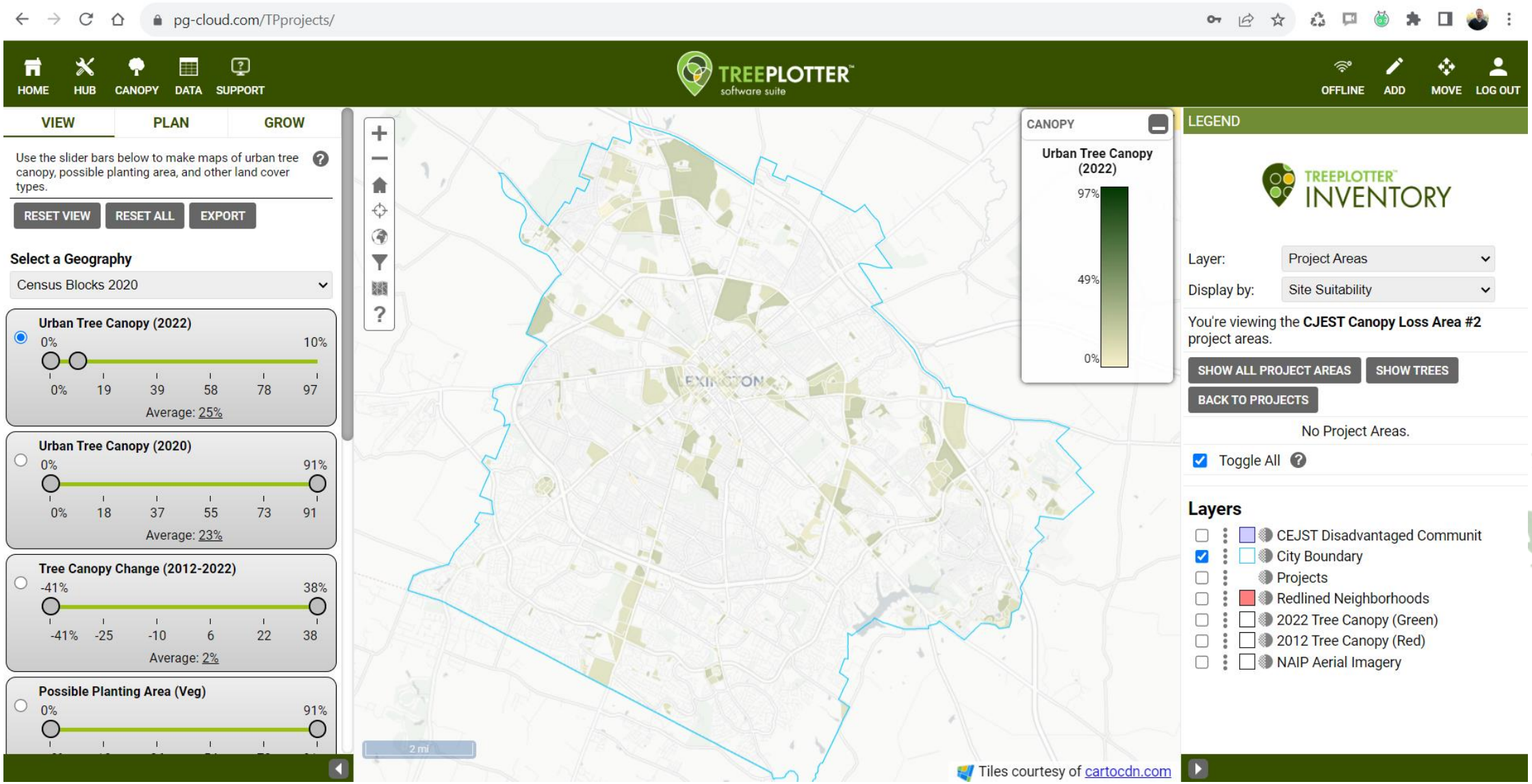
Visual Workflow Examples

Needs

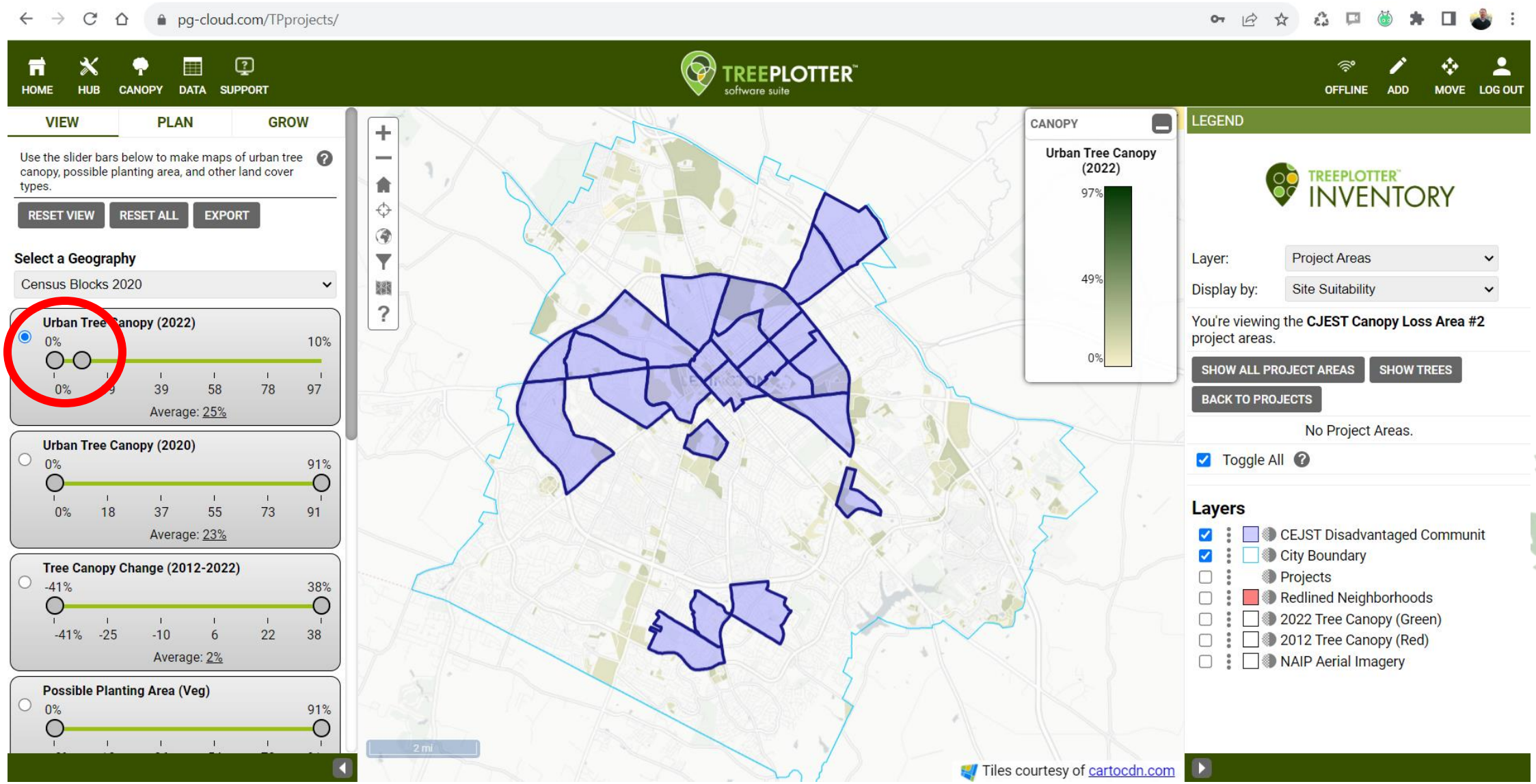
- Where is there low canopy and high planting availability in CEJST and redline boundaries as a starting point to identify impactful projects?
- What else can drive priorities using data?
  - Areas that have lost canopy recently
  - Vulnerable populations
  - High impervious surface area (heat, health, and runoff issues)
- How can metrics be tracked for funding and impact reporting?

https://screeningtool.geoplatform.gov/ Climate and Economic Justice Screening Tool

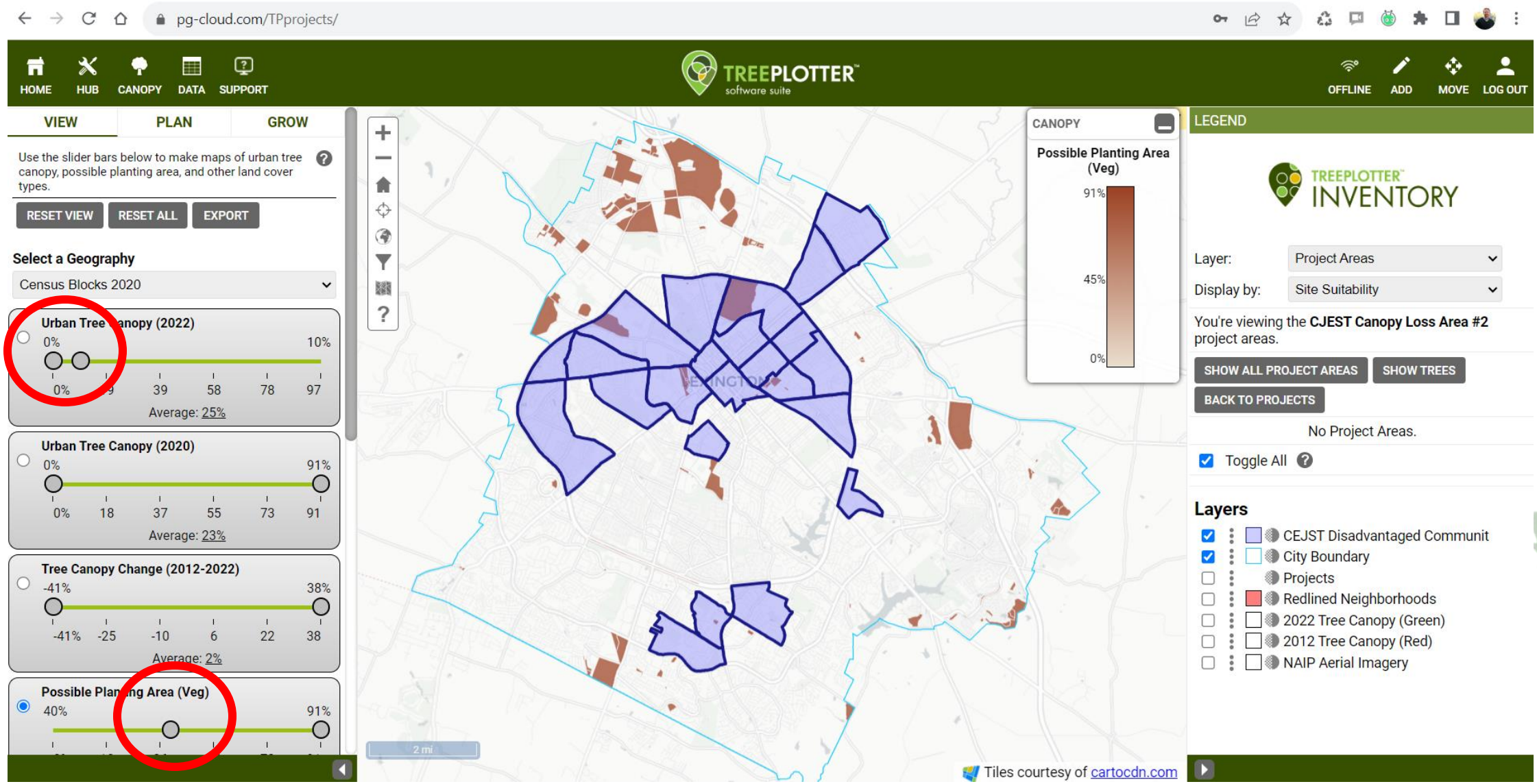
Lexington, KY: Tree Canopy <10%



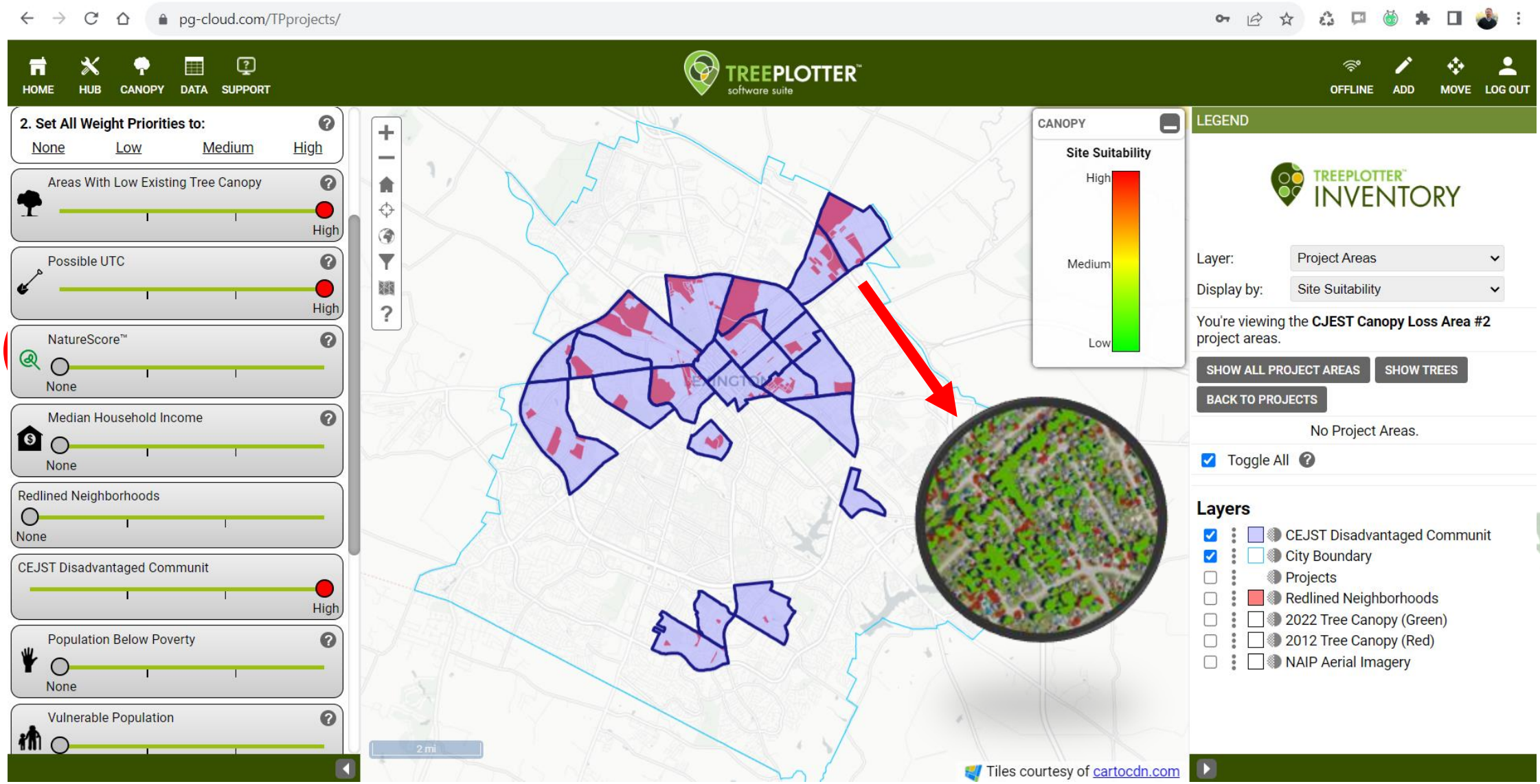
Tree Canopy <10% with CEJST Boundaries



Tree Canopy <10% with CEJST Boundaries



Tree Canopy <10% with CEJST Boundaries

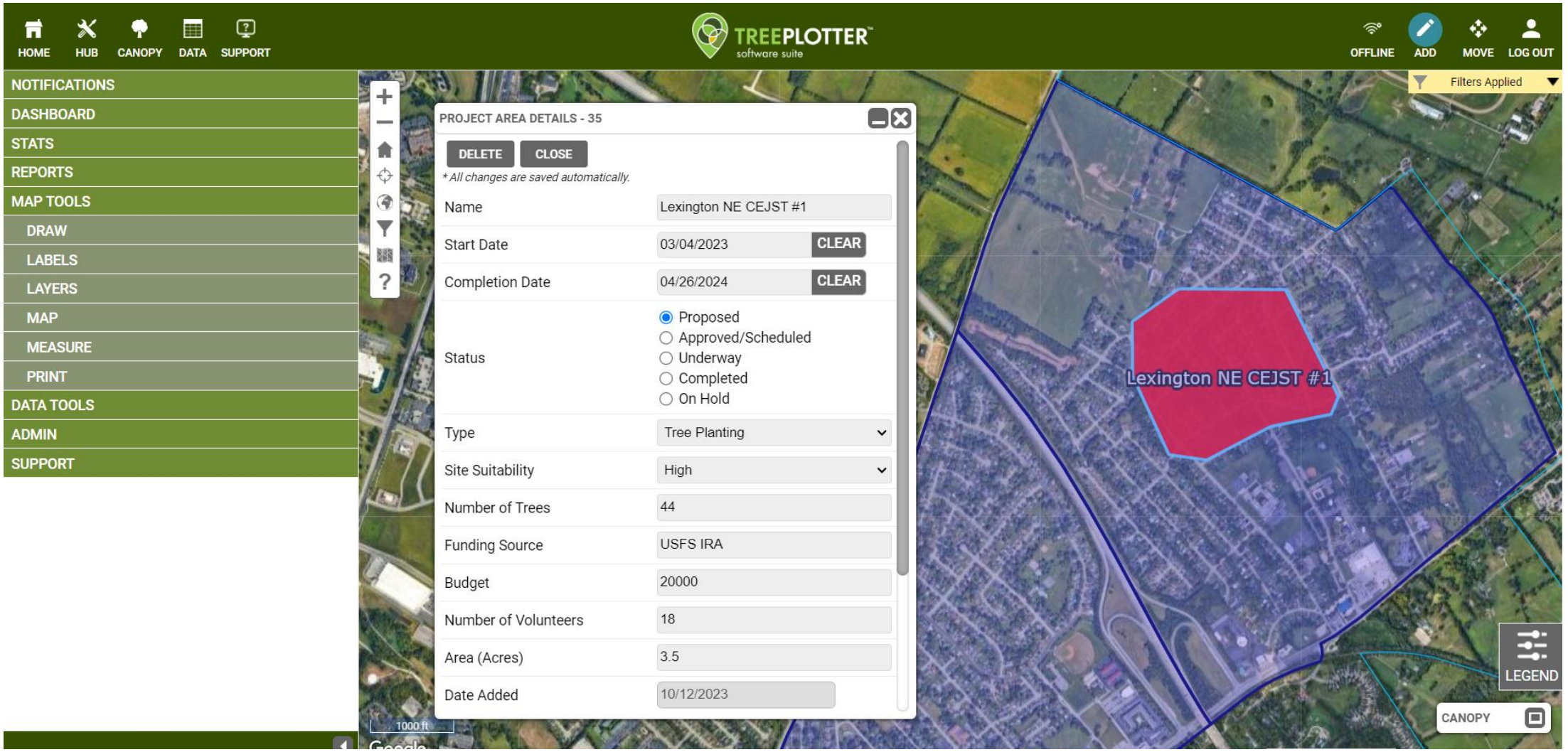


Creating a Project: Canopy in Green

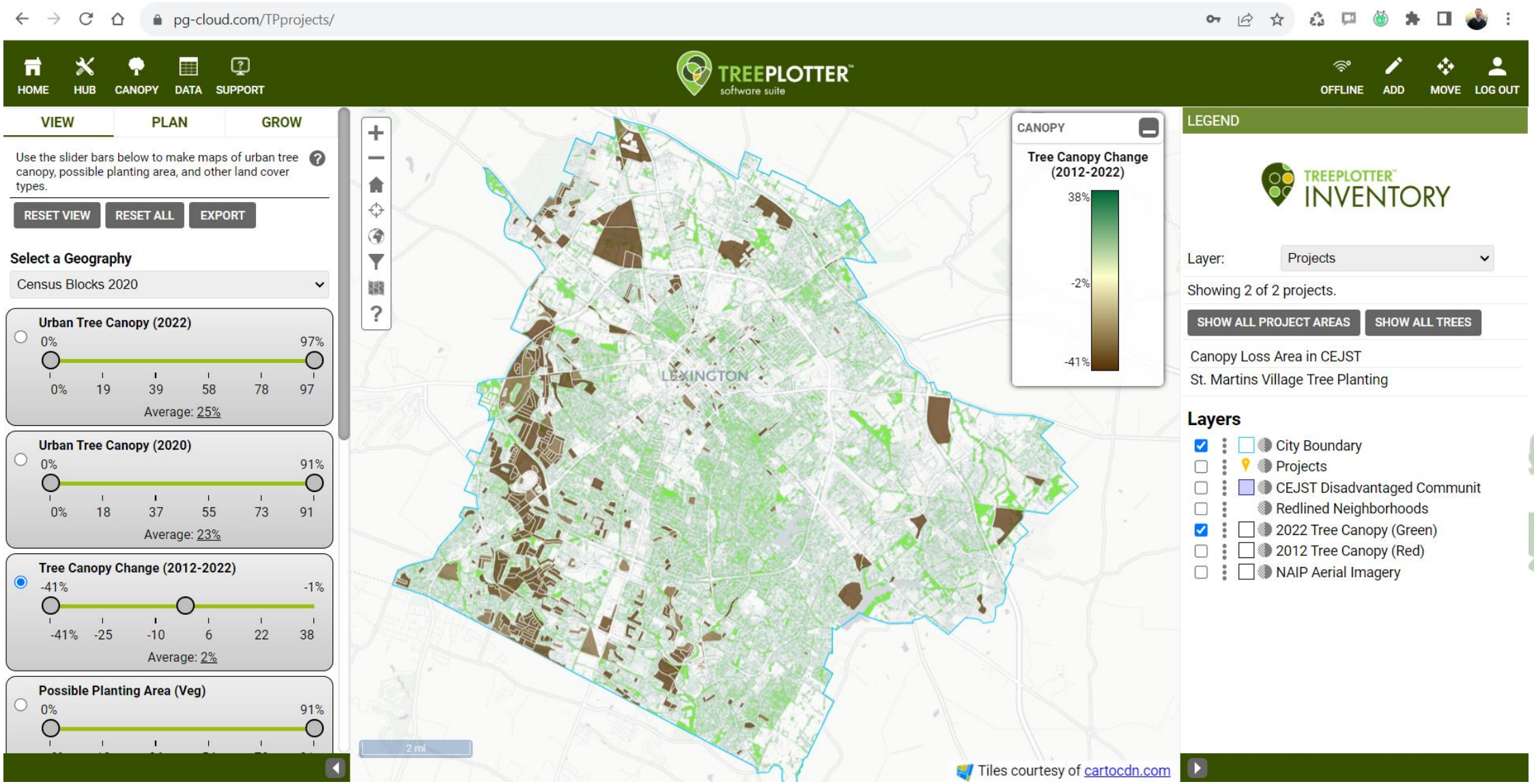
Creating a Project: Canopy Loss in Red

Creating a Project: Canopy Loss in Red

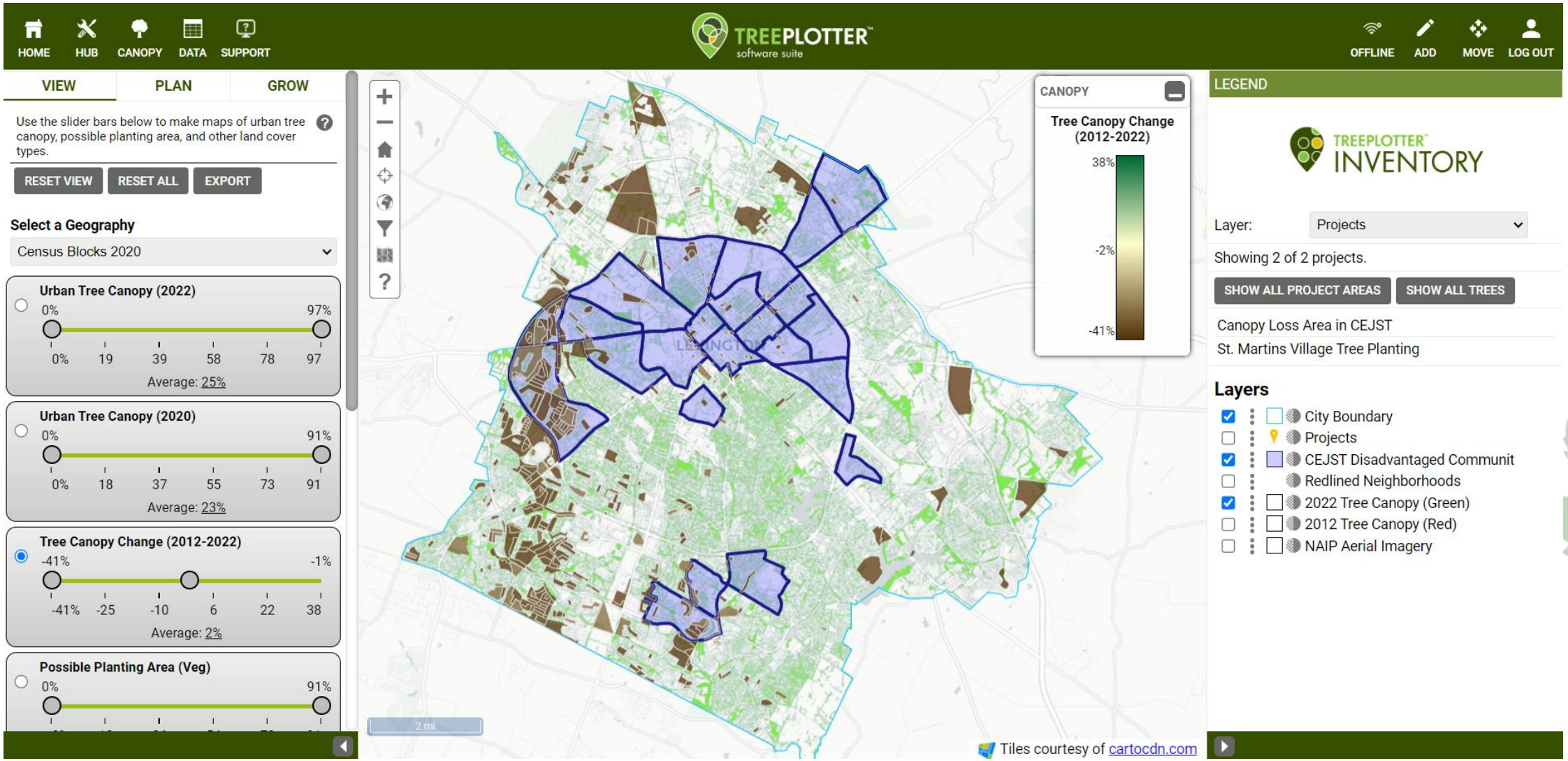
Creating a Project: Canopy Loss in Red



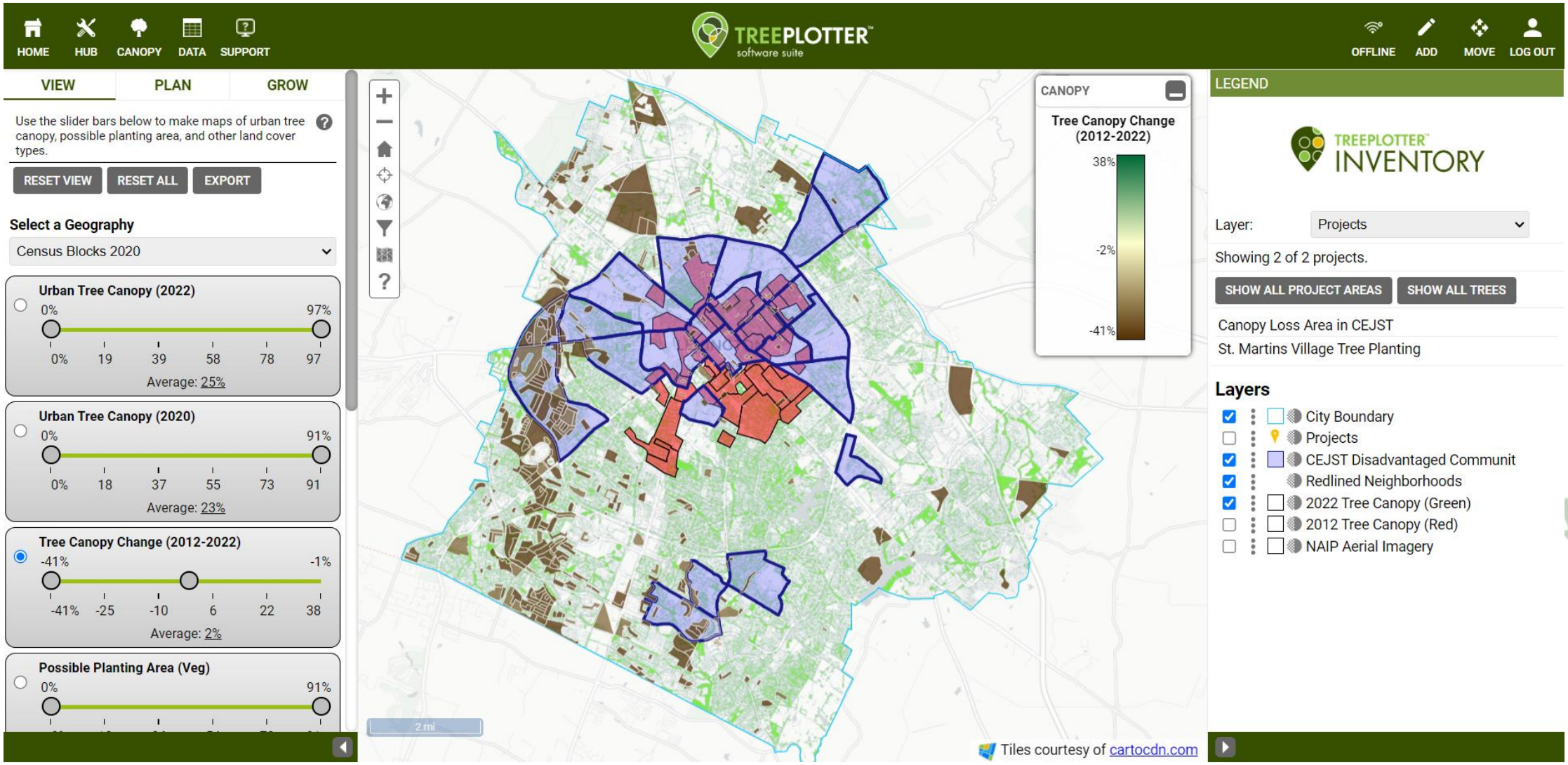
Lexington, KY: Tree Canopy Change



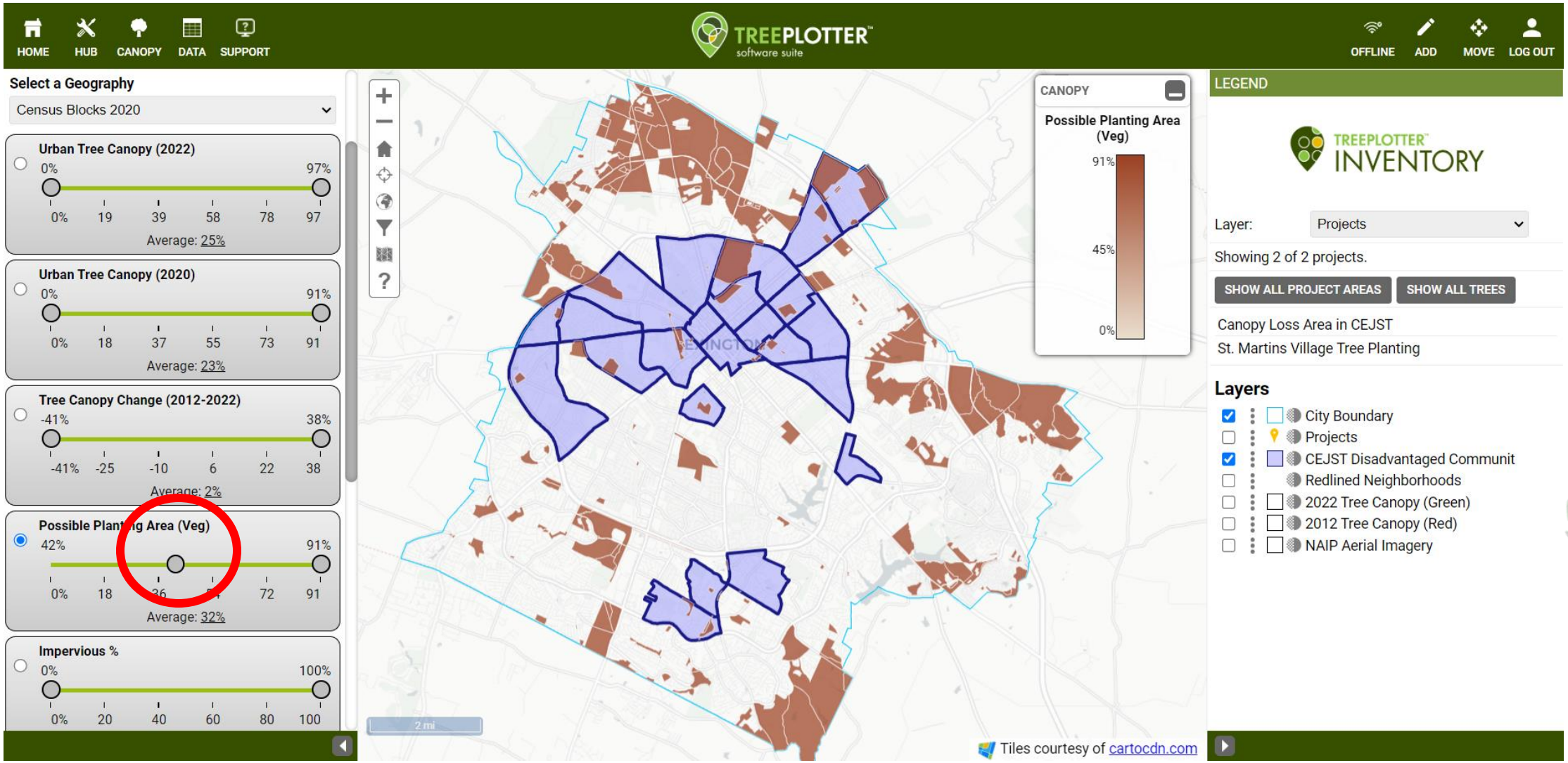
Tree Canopy Change + CEJST Boundaries



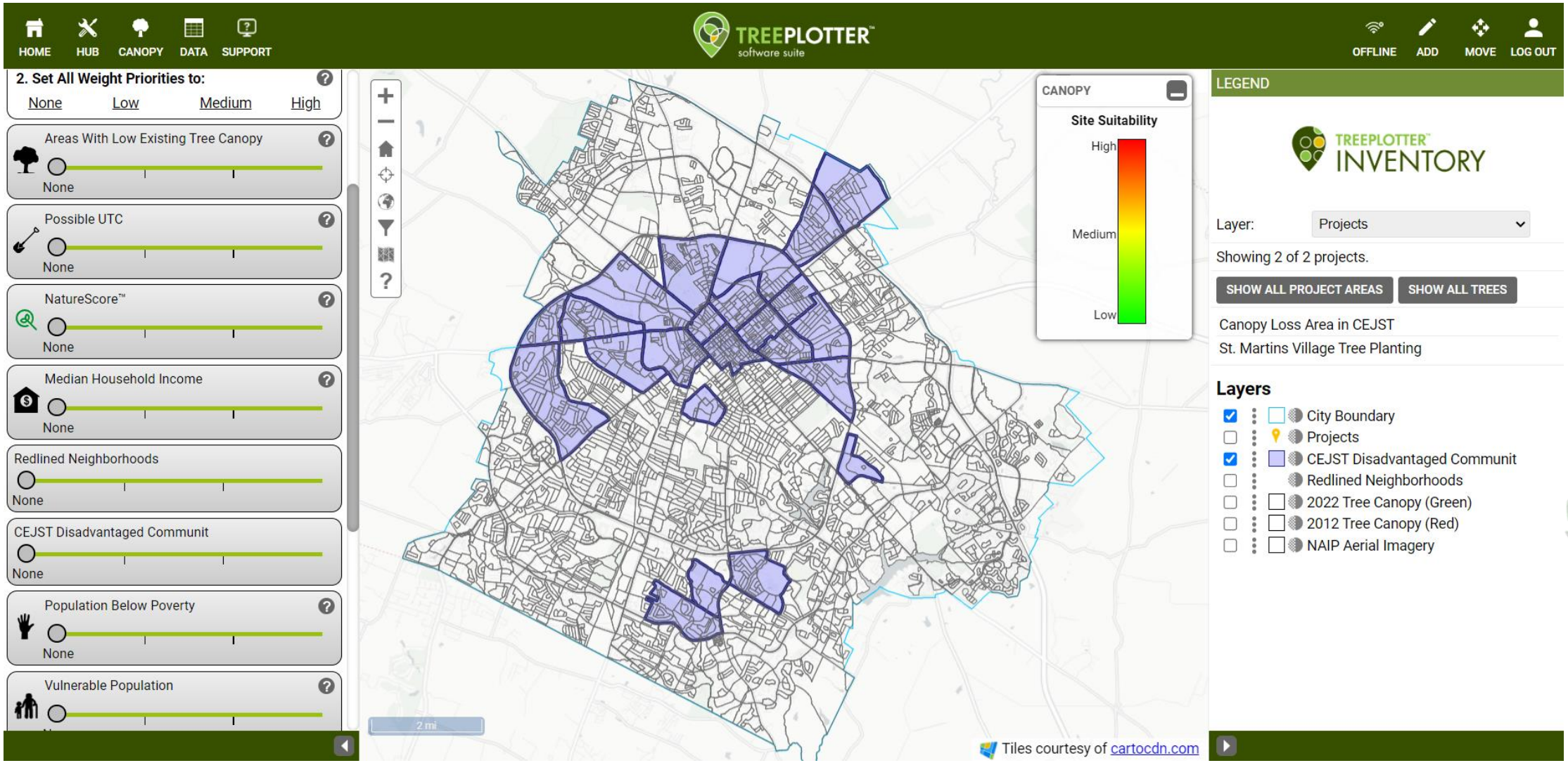
Canopy Change + CEJST + Redlining



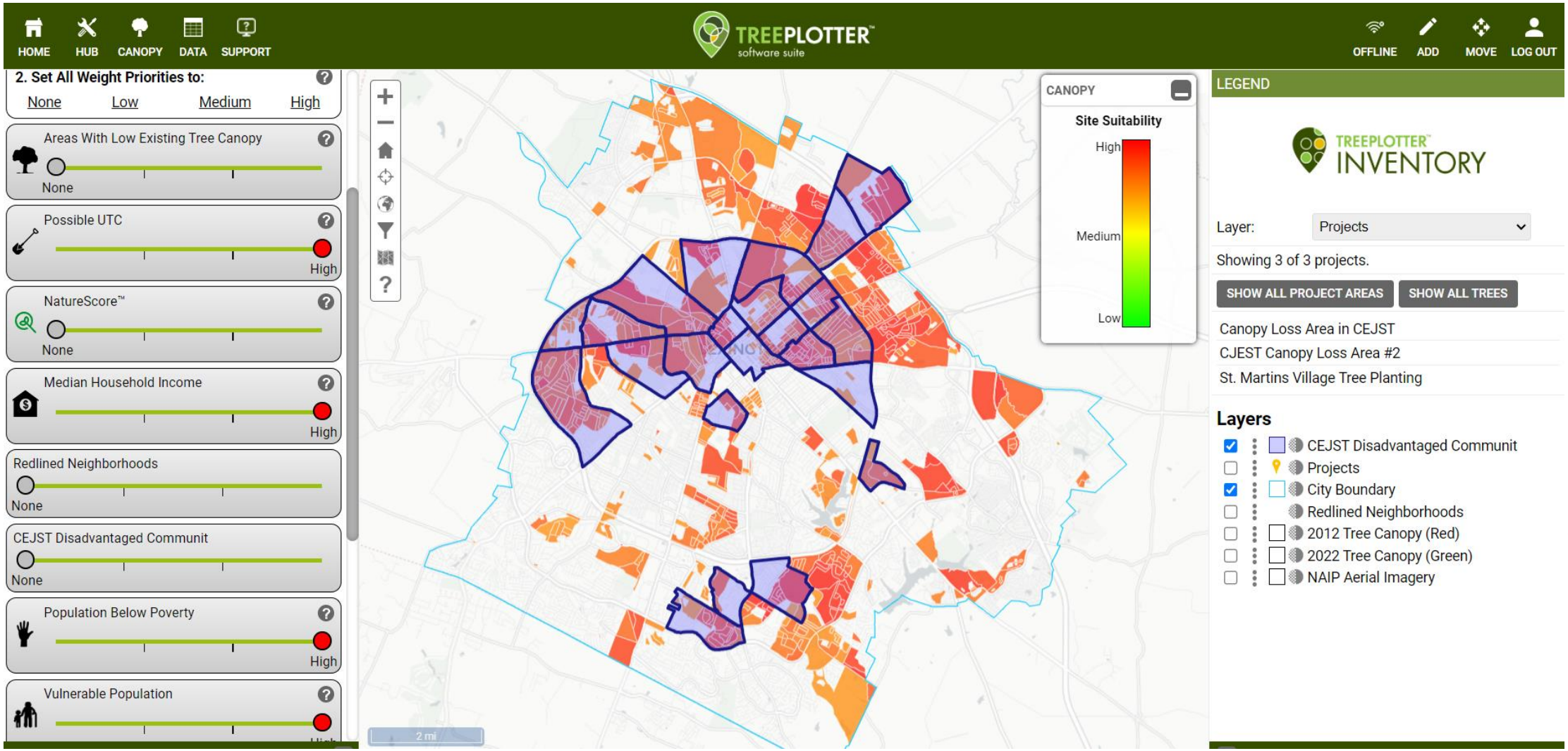
Most Plantable Area + CEJST

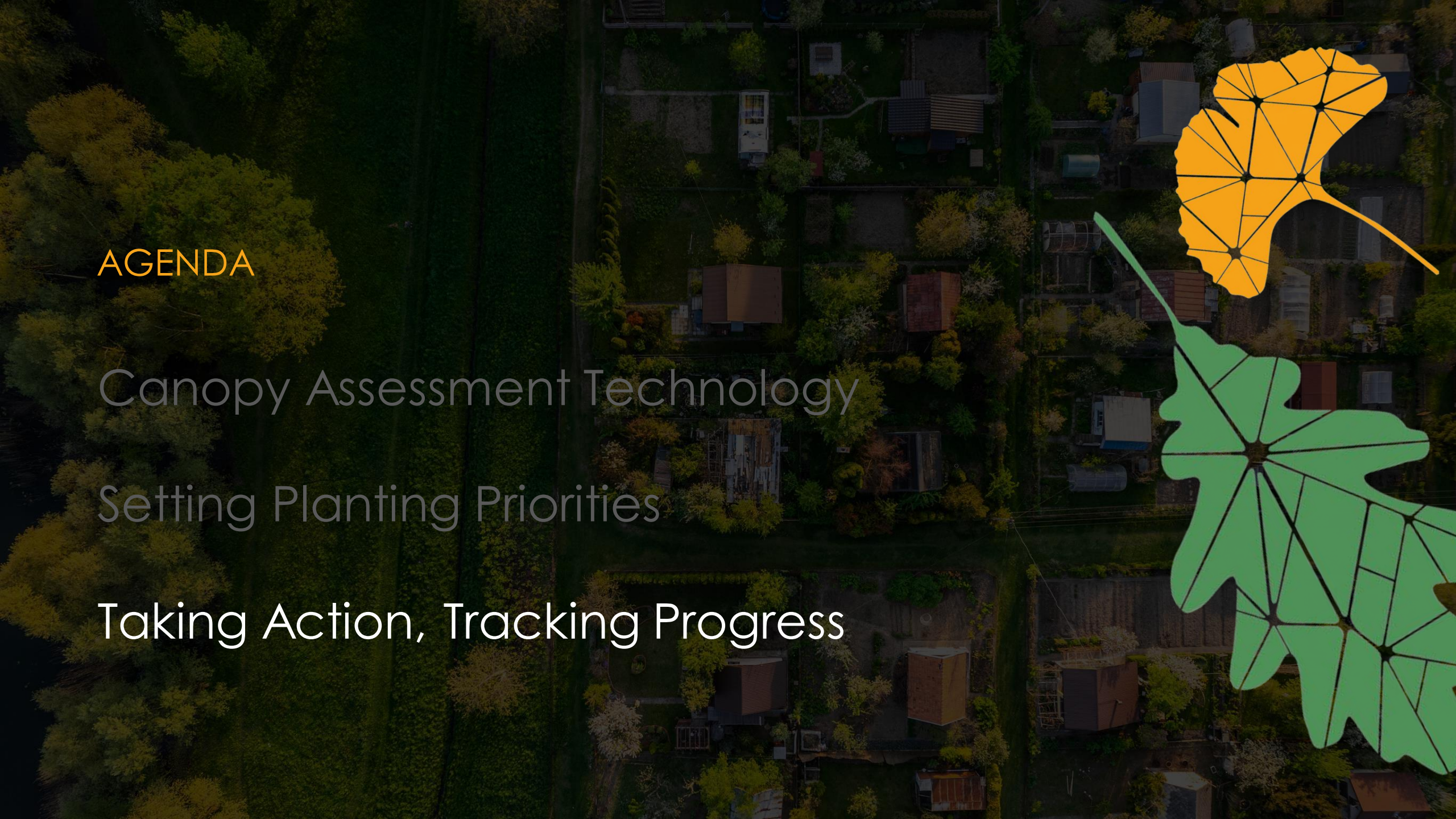


Census Blocks & CEJST: No Prioritization



"Equally Weighted" Equity Criteria





AGENDA

Canopy Assessment Technology

Setting Planting Priorities

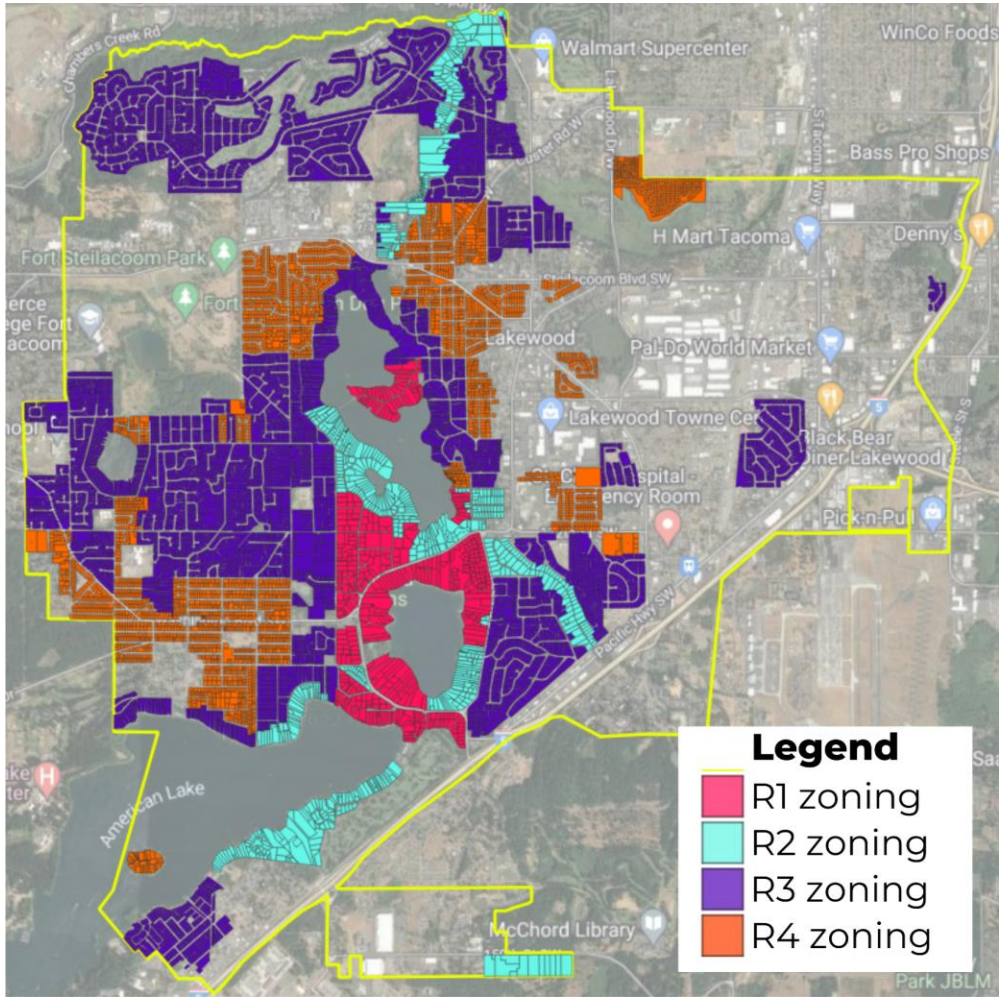
Taking Action, Tracking Progress

Example: Lakewood, Washington

- A project to update the City's tree preservation code update
  - 22 meetings with the public, planning commissions, and city council
  - Tree canopy analysis

Example: Lakewood, Washington

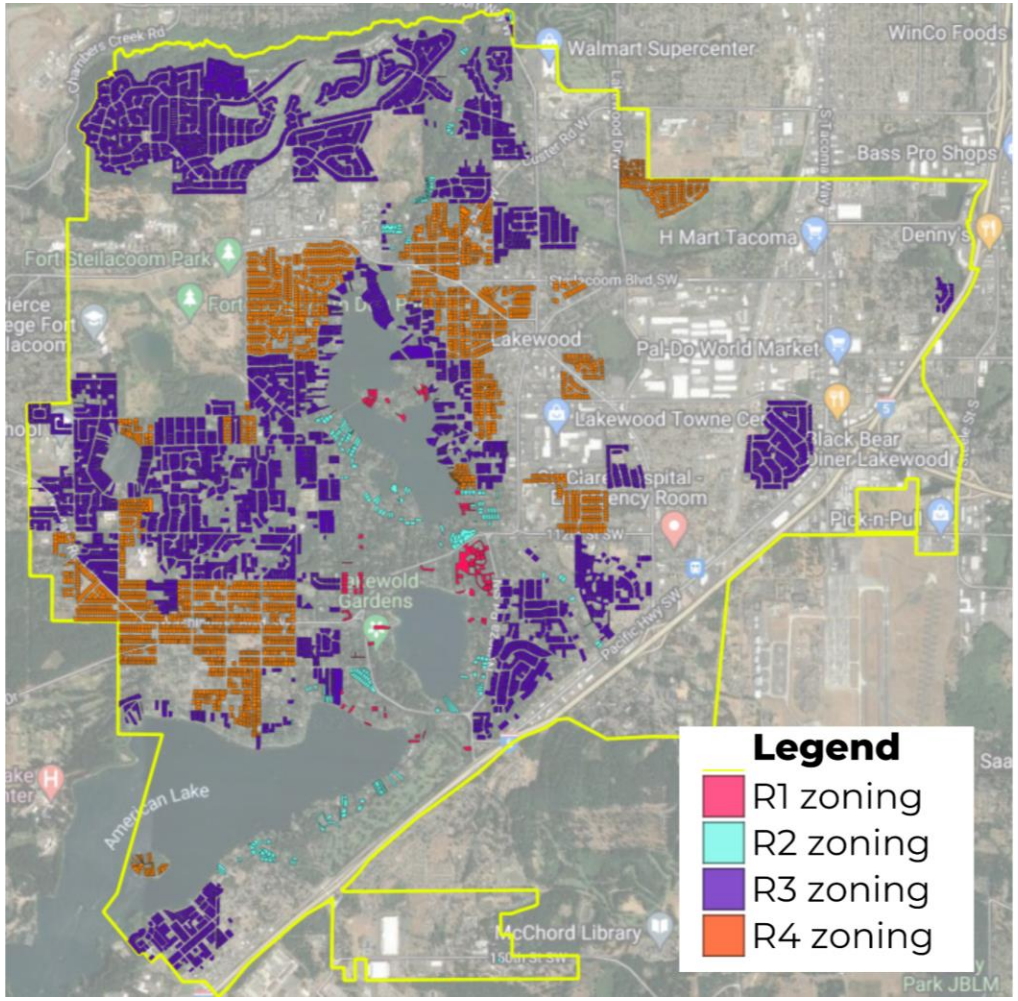
Residential districts make up 59% of citywide tree canopy



Example: Lakewood, Washington

Original tree code: single family lots under 17,000 sq.ft. were exempt

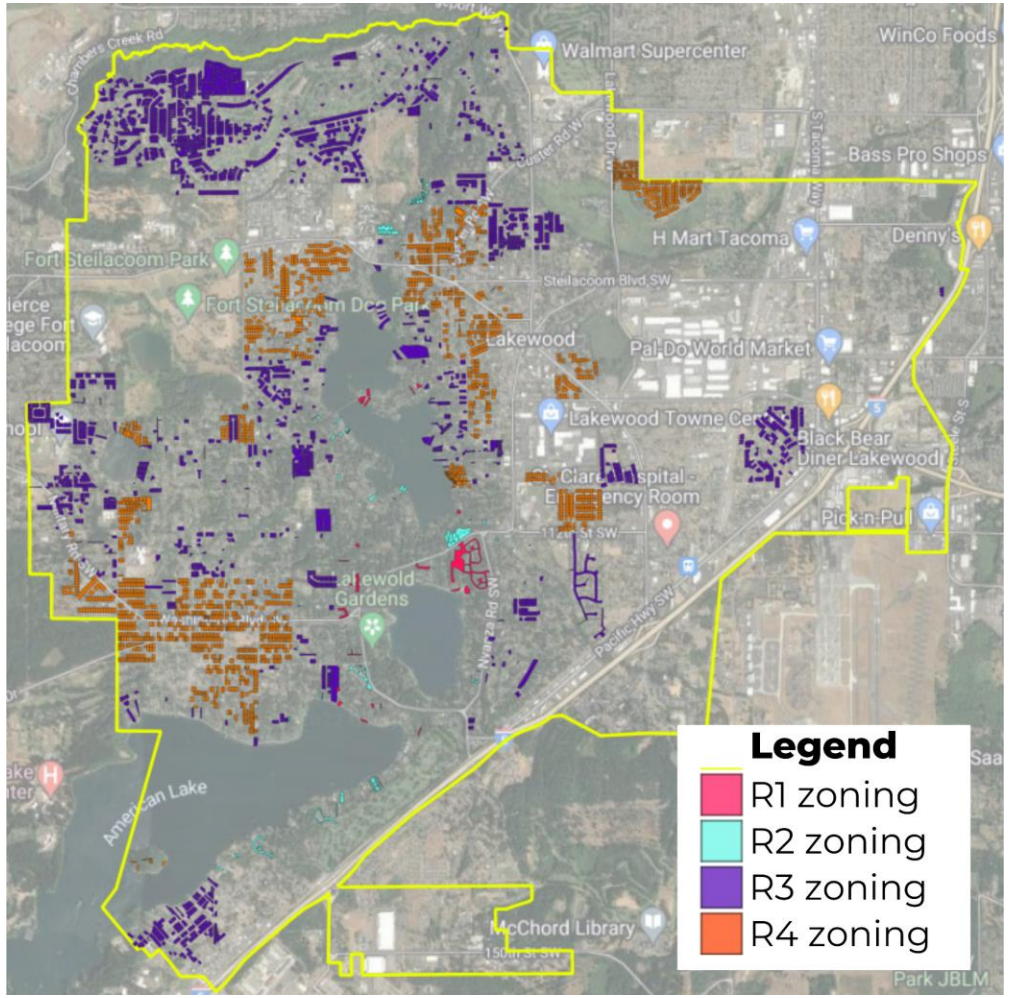
Single family lots under 17,000 sq.ft.



Example: Lakewood, Washington

New tree code: single family lots under 10,000 sq.ft. are exempt

Single family lots under **10,000 sq.ft.**



Example: Lakewood, Washington

- Adopted package
  - A canopy goal of 40% by 2050
  - Innovative incentives for tree preservation
  - Tree mitigation options measured **by canopy cover or projected carbon reductions** rather than just DBH inches or stem count

Scenario: Albuquerque, New Mexico

- 14 large trees to increase canopy 10% in the park

ASSUMPTIONS

Select a Geography

Parks: Richland Hills

- ○ Target Canopy %
- ◉ Increase Canopy By %

Increase Canopy By %

10%

0% 10 20 30 40 50 60

Average Tree Crown Diameter

20 ft. 25 30 35 40

Mortality Rate

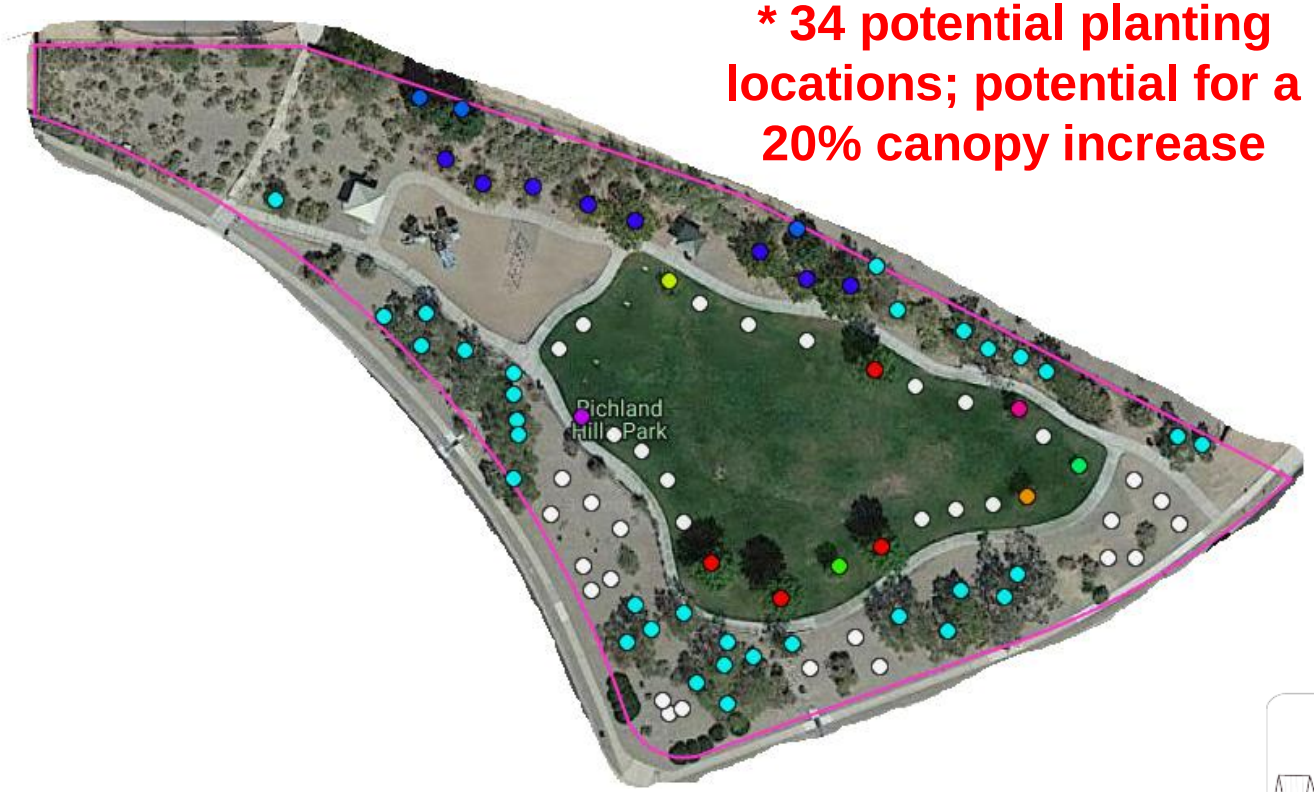
3%

0% 4 8 12 16 20

Parks: Richland Hills	
Urban Tree Canopy (2011)	0%
Urban Tree Canopy (2016)	0%
Urban Tree Canopy (2018)	9%
Urban Tree Canopy (2020)	17%
Tree Canopy Change (2011-2016)	0%
Tree Canopy Change (2011-2018)	9%
Tree Canopy Change (2011-2020)	17%
Tree Canopy Change (2016-2020)	17%
Tree Canopy Change (2018-2020)	8%
Tree Canopy Change (2016-2018)	9%
Total Possible Planting Area	58%
Hypothetical Canopy	27%
Trees needed	14

Richland Park Planting Plan

- Desert willow 62.3%
- Honeylocust 15.1%
- Arizona ash... 7.5%
- Eastern red... 5.7%
- Purple Leaf ... 1.9%
- Bur oak 1.9%
- Black locust 1.9%
- Callery pear,... 1.9%
- Common c... 1.9%



*** 34 potential planting locations; potential for a 20% canopy increase**

- Arizona ash, Velvet ash (4)
- Black locust
- Bur oak
- Callery pear, Bradford Pear
- Common chokecherry
- Desert willow (33)
- Eastern red cedar (3)
- Honeylocust (8)
- Invalid Label
- Purple Leaf Plum
- Not Specified (34)

- 54 existing trees inventoried

The Nature Conservancy

Climate-Ready Trees for Albuquerque

Albuquerque Volunteer Inventory

- Downtown Albuquerque Volunteer Tree Inventory
  - 2,917 Trees / Possible Planting Sites

Statu
s

- Alive (1,794)
- Dead (25)
- Possible Planting with Concrete Removed (483)
- Proposed Site - Large (37)
- Proposed Site - Medium (117)
- Proposed Site - Small (420)
- Stump (41)

Thank you

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Session 2.1: Modern Times: Promoting innovation, new technologies and future visions for inclusive urban forests

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World Forum on Urban Forests