European irrigation Association

Spring Irrigation Forum

19 April 2024

Quality Irrigation Water Savings
EUROPEAN IRRIGATION ASSOCIATION

The housekeeping rules for a smooth Forum

The event is recorded and will be shared

Please present your full name and your organisation properly

Please mute your microphones while you not participating

Please use the chat box for questions and comments

If you can, turn on your camera on so we can see each other

The housekeeping rules : **EIA Code of Conduct**

- EIA believes it is important that its activities are at all times carried out in accordance with the applicable law, especially competition law.
- EIA believes that business shall be conducted in an atmosphere of free competition, i.e. based on price and quality.
- The Code of Conduct aims at providing clear rules to EIA's members, thus reducing the risk of improper conduct and consequently of fines being imposed.
- This Code of Conduct shall be binding on all members as well as all other participants when taking part in EIA activities.

Agenda for this forum

14:00 -14:20	**Opening** **Introduction**	Moshi Berenstein/ EIA President
14:20 -14:30	**Welcome & introduction of New Members**	Fleur Martin/ EIA Communication Officer
14:30 -15:00	**Guest speaker** **Rainwater harvesting : increasing the cooling power of urban trees to combat urban heat islands**	Abdelkader Bensaoud / Hydrasol
15:00 -15:20	**Innovation and Technology session** **Irrigation management : recent evolution of tensiometry to face climate change. Presentation and exemples**	Xavier Eftimakis / Challenge Agriculture
15:20 - 15:40	**Open session for Q&A**	

What’s new in the association

1. Sustainable irrigation in the European Taxonomy
2. EIA Workplan 2024 : continue towards sustainable irrigation
3. EIA participation in the submission of European projects under the climate priority/ HORIZON Europe call
4. Changes in Secretariat services and new services proposed to EIA members by Aliénor

Addressing Sustainability in the framework of the European Taxonomy

- After many months of work, with the engagement of EIA experts, on December 15, 2023, the EIA has finalized the Position Paper **"Sustainable Irrigation – Focus on the framework of the EU Taxonomy"**.

- Within this paper we officially submitted the identified economic activities and technical criteria drafted to measure the potential contribution of the irrigation sector to the environmental objectives defined by the EU Taxonomy.

- The objectives of the EIA Position paper is to highlight the potential enabling role of irrigation itself and for its value chain's sustainable transition and to:

  - (i) Identify the economic activities and technical criteria useful to measure the contribution of the irrigation sector to the sustainable transition;
  - (ii) Advocate to EU Institutions in support of the irrigation sector's sustainability contribution;
  - (iii) Create a technical guide for irrigation companies on how to apply the EU Taxonomy.

Addressing Sustainability in the framework of the European Taxonomy

- Our aim is not only to integrate Sustainable Irrigation within the European framework, but also to provide a univocal basis for measuring and improving the performance of our value chain and foster the sector's sustainable transition.
- We are eagerly awaiting the European Commission's response.
- In parallel we continue this journey to advance the notion of sustainable irrigation. On February 9, 2024, the EIA held an open Webinar to present the results achieved and future direction for the sector
- Special thanks the many participants and to the companies that took part in the 2023 Fund-raising campaign for this project. We couldn't have done it without you all!

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FAPPAC Fédération des Associations pour la Promotion des Projets Agricoles Collectifs RAIN BIRD SOLEM Urbasense® La Ville, la Nature, l'Homme INAQUA LINDSAY™

Project follow up and further activities for 2024

The project issued 5 recommendations addressing the 5 main Stakeholders :

1. IRRIGATION COMPANIES: use Sustainable concept and criteria in products and production
2. END-USERS & VALUE CHAIN: apply sustainable practices until the consumer
3. INTERNATIONAL INSTITUTIONS: consider irrigation within regulations
4. RESEARCHERS AND STANDARDS: designing tools aimed at measuring sustainability
5. FINANCIAL SECTOR: to reward the sector's enabling contribution to sustainability

Project follow up and further activities for 2024

To continue the EIA work around Sustainable Irrigation within the European framework we will focus on:

1. Strengthen the Association's position as the voice of the irrigation sector towards different stakeholder categories.
2. Follow up the evolution of Position Paper answering eventual questions and comments coming from the EU Institutions

Phase	Activity	Apr	May	Jun	Jul	Aug	Sep	Oct
1. Kick-off	Meeting with the PT to share the information and work plan							
2. Communication Plan	Editorial plan and monitoring KPIs for each channel							
	Meeting with the PT to share the editorial plan							
3. Content creation	Content development							
	Share and review by the PT							
4. Key stakeholders	Scouting of key bodies/people for EIA's lobbying activities							
5. Monitoring	Meetings with the PT, when needed							
6. EC Follow up	Analyse EC comments and support with the response							

EIA participates in the submission of HORIZON-Europe projects

- The EIA and some members are involved in several application of European projects under the climate priority/ HORIZON-Europe Innovation Actions:
    1. The first application was submitted on February 2024 under the name **JOICE** - Joint Optimization of Irrigation and Control of Erosion. It is a call for Improving irrigation practices and technologies in agriculture.
    2. The second project submitted to the same call under the name "**Newrrigation**" and is proposing a promising departure from conventional approaches to more of a collaborative partnership, and socioeconomic evaluations by developing efficient management of water resources. It involves innovative irrigation techniques and tools that could be applied in different scenarios of water scarcity to adapt to climate change.
- Both projects look promising. The EIA is engaged in both, and we hope to win this opportunity to demonstrate our place in the eco system of water management and effective irrigation in Europe.

Changes in Secretariat and new services to EIA members by Aliénor

- At the end of 2023, The BOD has decided to seek for additional tools and services to support our continuous growth
- Part of this decision was the implementation of new engagement between Aliénor and the EIA.
- Aliénor is a Brussels-based policy and communication agency experts in EU's policy decisions, providing tailor made solutions, lobbying, experts in many areas which are relevant to the progression of the association.
- The main objective of this engagement is to provide the EIA members with regular information on any legislative and political development relating to the EIA topic of interest (water, reused, agriculture, green cities, plastics etc.)

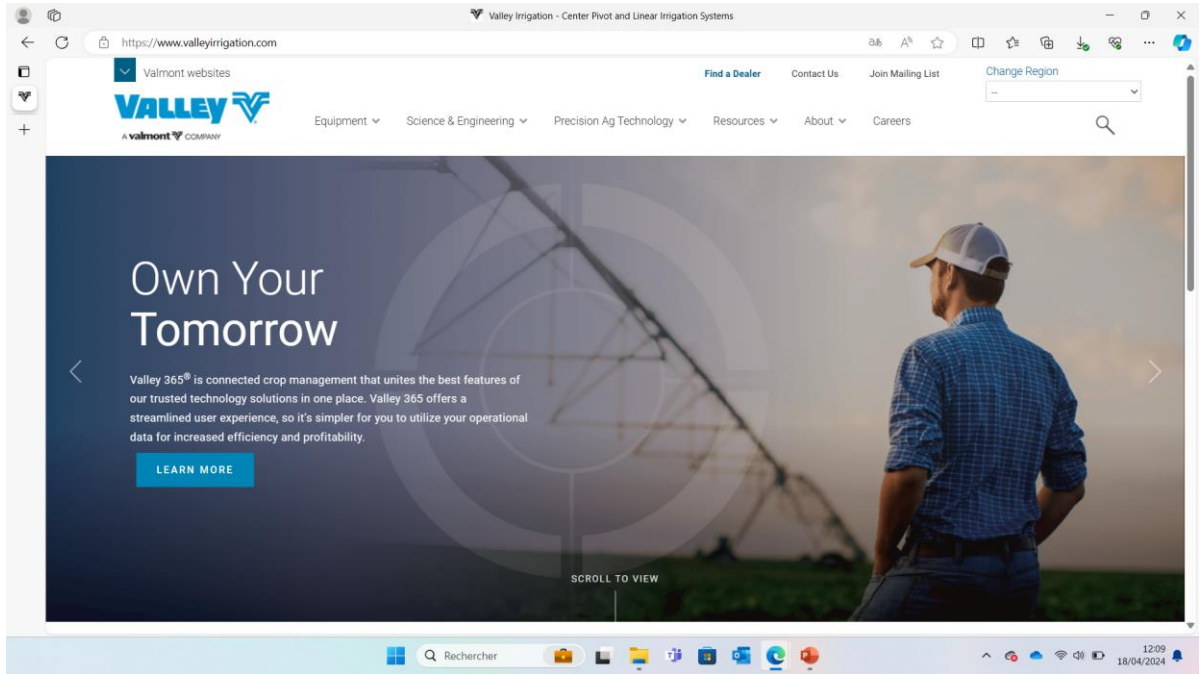
Quality Irrigation Water Savings
EUROPEAN IRRIGATION ASSOCIATION

Welcome new members

We are very pleased to welcome 3 new members in the association since our latest forum, in November

We now have 84 members

The Leader in Precision Irrigation®



Valmont

Contact for EIA :

Adrian Cliffe

Email :adrian.cliffe@valmont.com

Adrian Cliffe is a seasoned leader with extensive experience in driving international sales and operations for tech products. Currently serving as Senior Director for International Sales & Operations at Valmont Industries, Inc., Adrian leverages over a decade of expertise across various roles within the company.

With a strong background in sales, Adrian has consistently achieved and exceeded revenue targets, demonstrating a keen ability to identify market trends and capitalize on emerging opportunities. He has successfully spearheaded regional and global sales strategies, fostering significant business growth while ensuring alignment with organizational objectives.

Adrian's leadership extends to operational excellence, where he has effectively managed cross-office coordination, implemented lean and agile methodologies, and streamlined processes to maximize efficiency and profitability. His strategic vision has led to the successful expansion into new markets, including Eastern and Western Europe, and the development of innovative products with global appeal.

Throughout his tenure at Valmont Industries, Adrian has been instrumental in driving continuous improvement initiatives, fostering a culture of innovation and proactive problem-solving. His commitment to talent development has resulted in the establishment of impactful intern programs and the cultivation of high-performing teams across regions.

In his current role, Adrian is responsible for supporting the international deployment of monitoring and control products under the Valley and AgSense brands. He collaborates closely with regional management, product development, and sales teams to drive growth and ensure the successful implementation of technology objectives. Adrian's leadership style is characterized by influence-based approach, collaboration, and a relentless pursuit of excellence.

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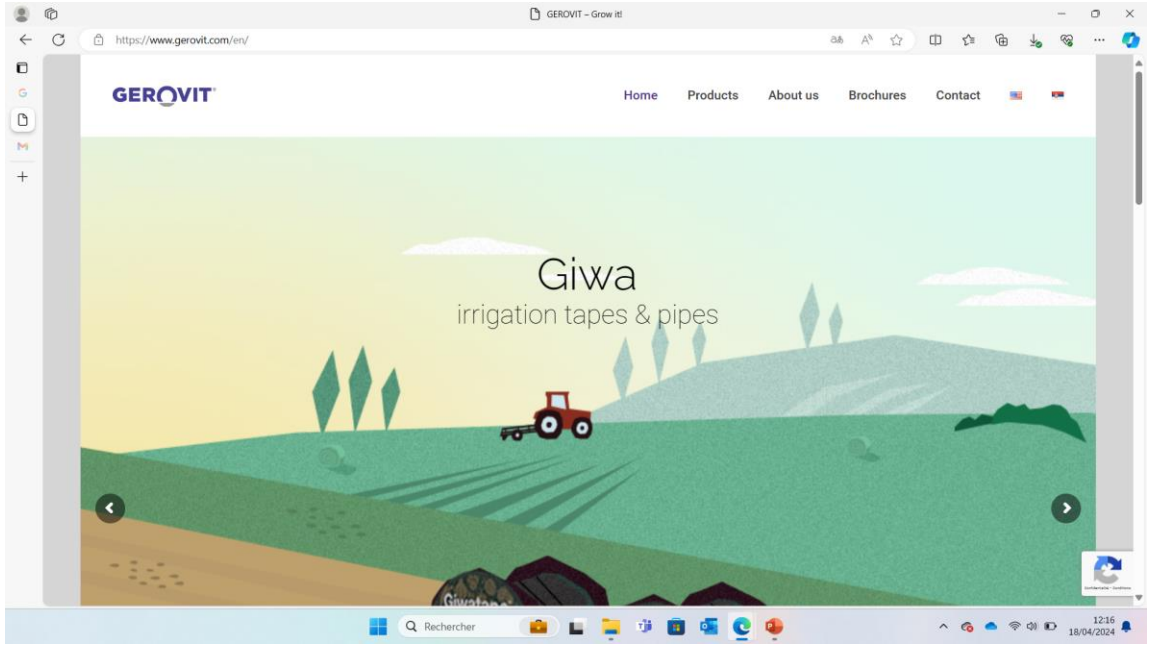

Gerovit

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Our members


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EIA SPRING IRRIGATION FORUM – April 19, 2024

Stormwater recovery : increasing the cooling power of trees in cities to combat UHIs effects

Case study at the Métropole de Lyon

RUE GARIBALDI

RUE RECAMIER

RUE VAUBAN

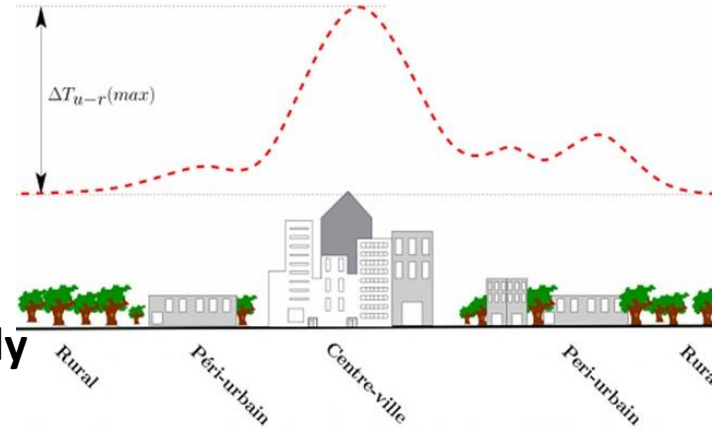
Abdelkader Bensaoud (Hydrasol)

April 19, 2024

CONTENT

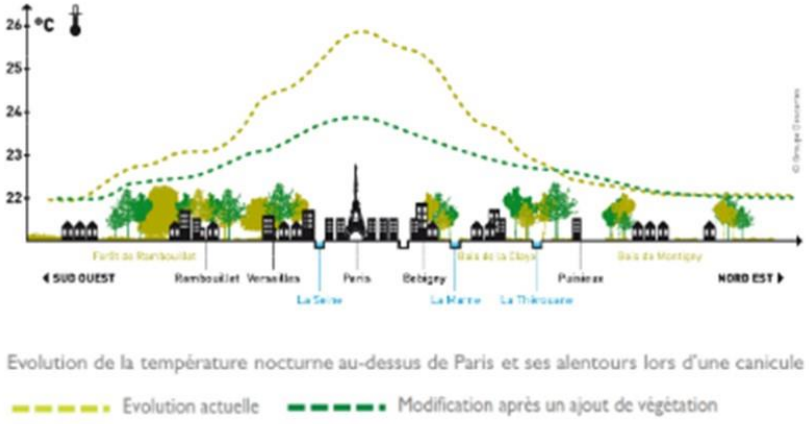
1- Urban Heat Island – Definition and Causes

- **UHI refers to the observed temperature difference between a city and its less urbanized peripheral environment**



UHI is a public health issue:

A physical climatic phenomenon that negatively affects the health and well-being of urban dwellers during heat waves



Evolution de la température nocturne au-dessus de Paris et ses alentours lors d'une canicule

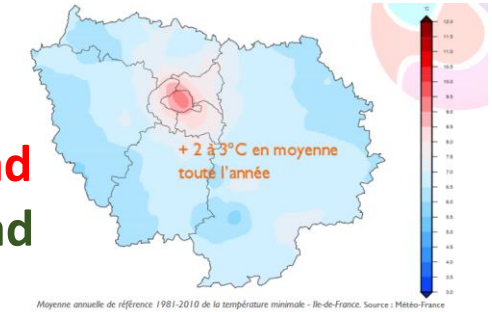
Evolution actuelle — Modification après un ajout de végétation

ΔT (Paris) = +8°C in 2003

In France :

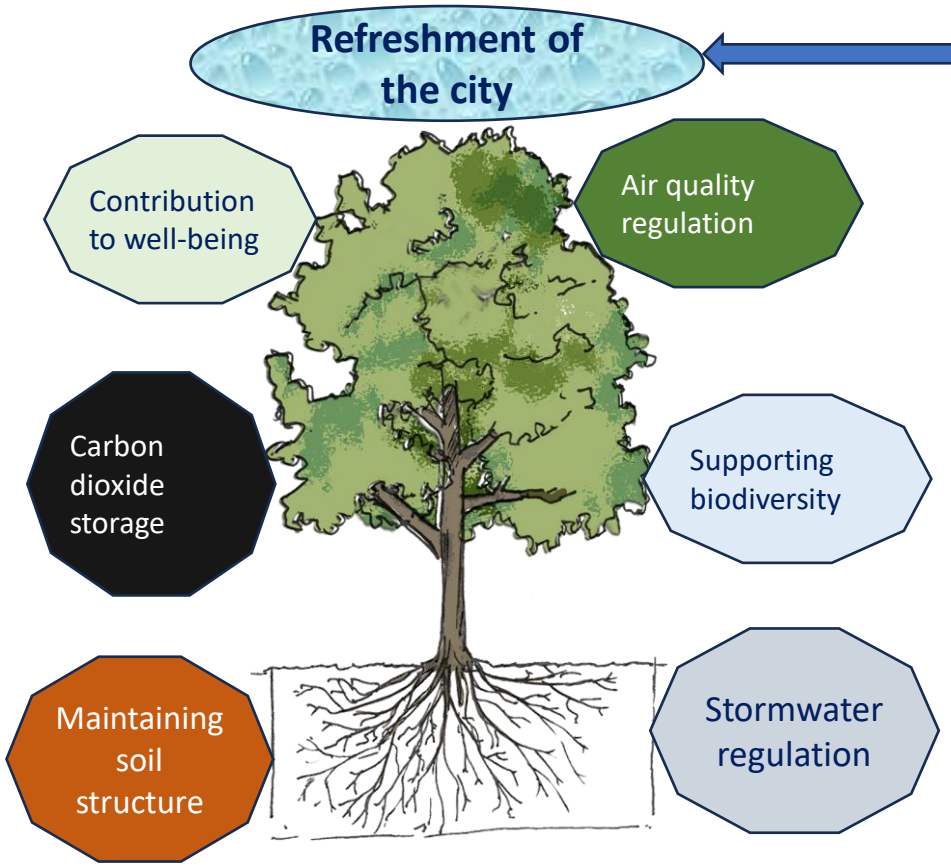
2003 :**20,000 dead**

2022 :**11,000 dead**



Main causes: Loss of vegetation and decrease of water in the city

2 - Urban heat island – The urban tree as a means of control



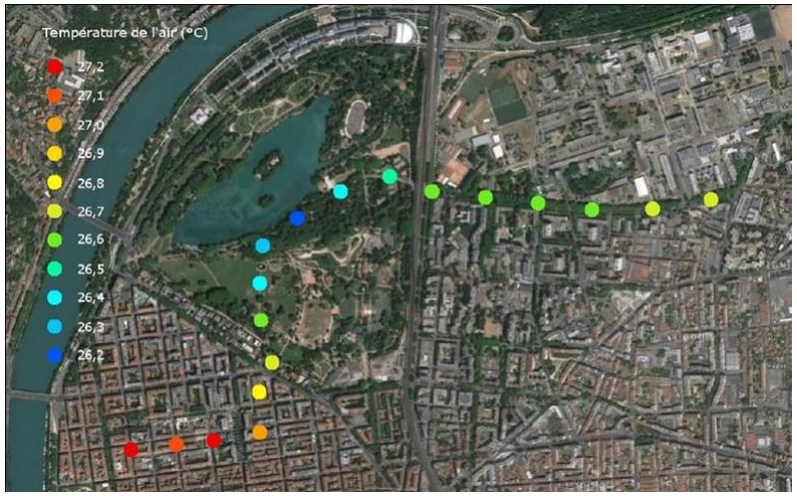
Among the many services provided by vegetation in cities, climate cooling is essential to combat the effects of urban heat islands (UHIs)

Trees are therefore very interesting in the city to cool the atmosphere through evapotranspiration. In order to have a real effect, they **need a sufficient supply of water**. However, the urban situation is often responsible for a decrease in water resources.

3 – COOL ISLANDS – The essential water resource

VEGETATION + WATER = **COOL ISLANDS**

Variation in ambient temperature depending on the presence of vegetation and water



- SOLUTIONS BUILT ON RESILIENCE

Climate change → *Effect* → *Solutions*

More frequent periods of :

- **Heat wave and drought**
- **Intense and violent rains**

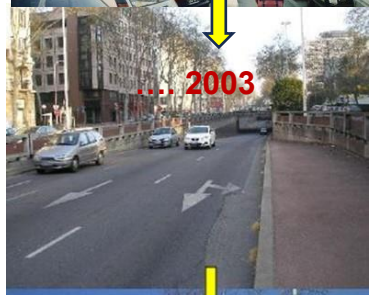
Water stress in plants

Runoff and flooding

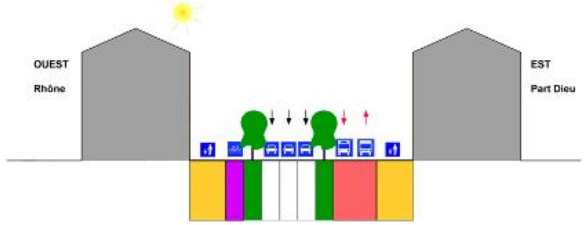
Adapted plant species

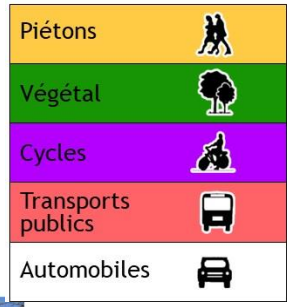
Stormwater recovery and reuse

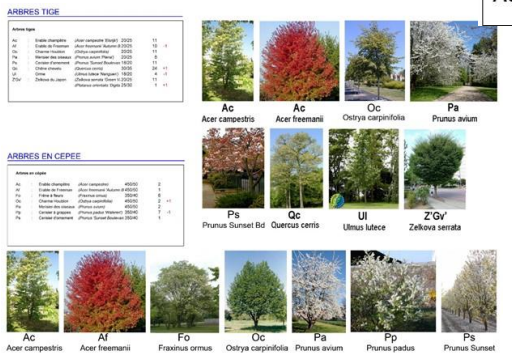
3 – RUE GARIBALDI LYON 3ème – ICU CONTROL PROJECT



A new hierarchy of land use

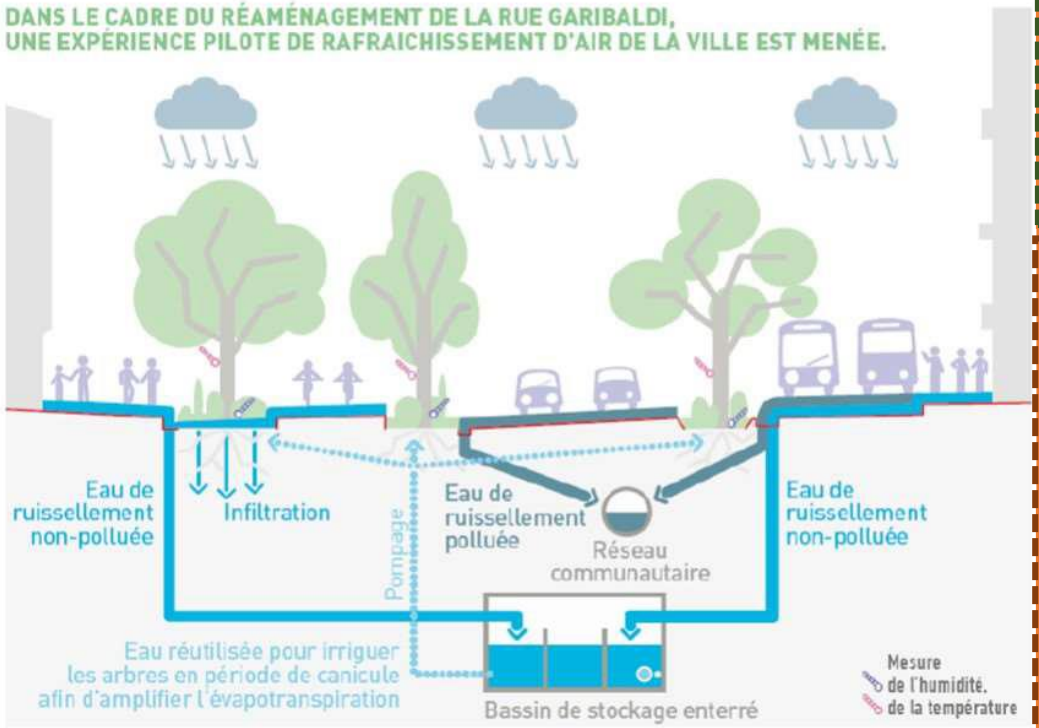






3 – RUE GARIBALDI – Urban project supporting innovation and research

- **Stormwater recovery and storage in a tank with a capacity of 550 m3**



Watered sections 1 and 2

Zone S1 :

Rue Bonnel – Rue Dunoir

ARBRE N°66

Zone S2 :

Rue Dunoir – Rue Servient

ARBRE N°75

Unwatered Sections 3-4

Zone S3 :

Rue Servient – Rue la Part-Dieu

ARBRE N°85

Zone S4 :

Rue la Part-Dieu – Rue Mazenod

ARBRE N°94

lighting mast - weather sensor system

3 – RUE GARIBALDI - PROTOCOL – INSTRUMENTATION

- **Instrumentation to measure water transfers in the "Soil-Tree-Atmosphere" continuum,**

Connection of several sensors directly implanted on the electronic board

waterproof box

Hygrometry (accuracy ±1.5%) and external temperature (accuracy ±0.1°C).

Black globe for Radiant Temperature or Surface Temperature (estimated accuracy 0.5°C).

Anemometer for measuring wind speed (maximum speed by counting pulses every 30 seconds and average speed over time equal to the measurement step).

LVDT Microdendrometer (estimated accuracy 1µm)

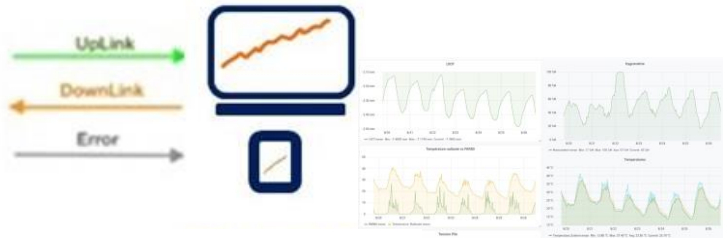
Tensiometer probe (estimated accuracy± 5cBars)

- **REAL-TIME DATA ACQUISITION AND SHARING**

Field measurement system

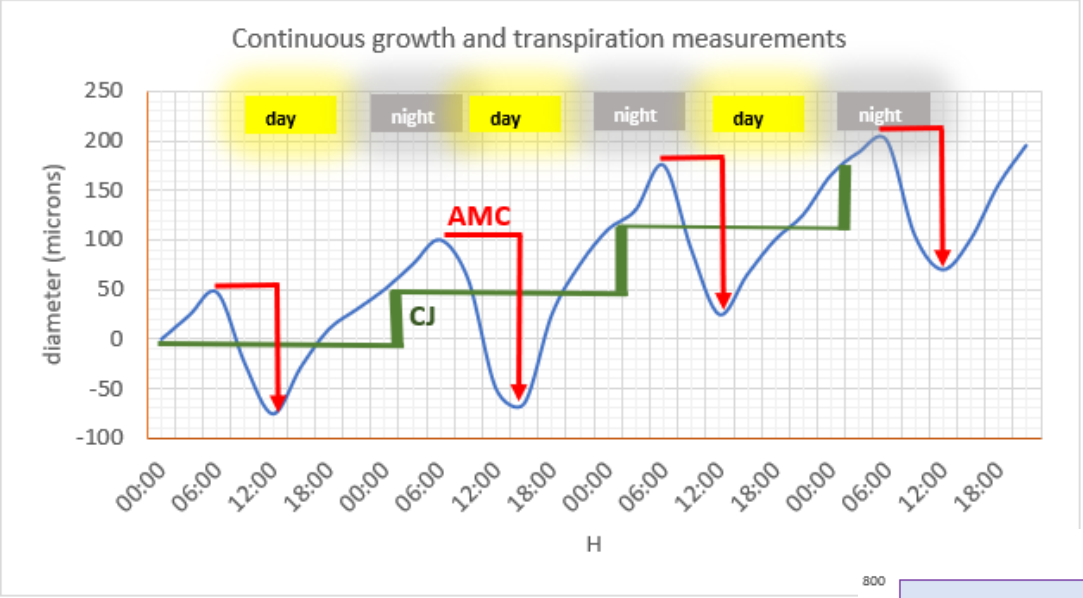
Transmission Sigfox

Sigfox Cloud



Computer, tablet or smartphone with management and monitoring software

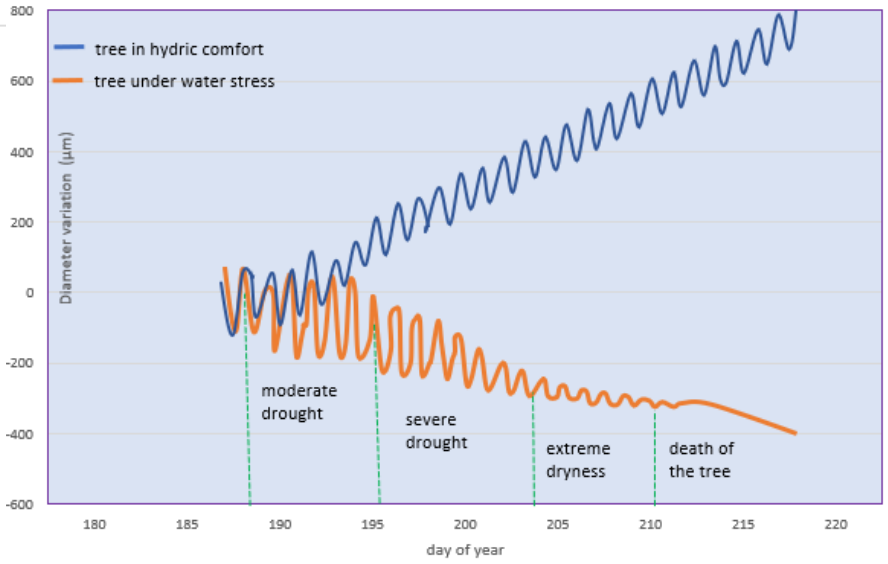
GROWTH AND TRANSPIRATION INDICATORS : MICRODENDROMETRY



Day/Night Cycle

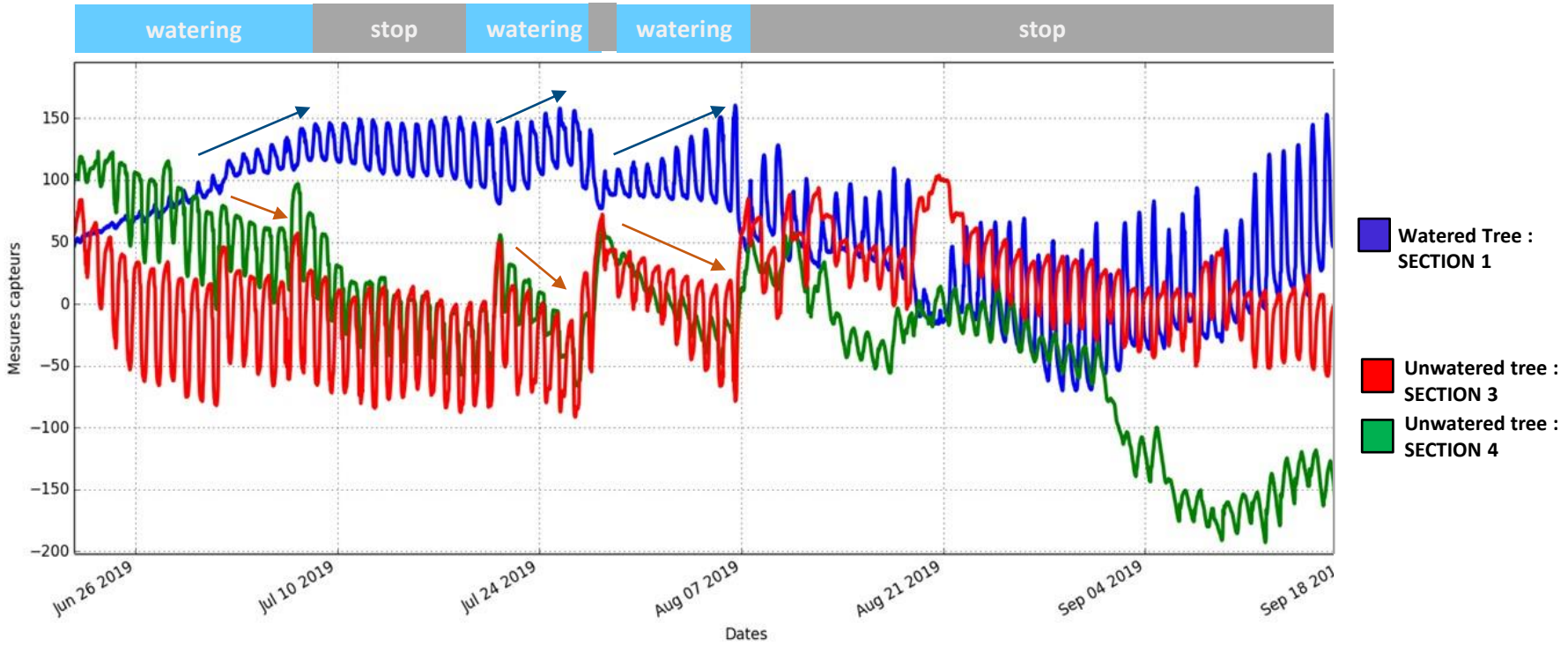
CJ: Daily growth (photosynthesis)

AMC: Maximum Amplitude of Contraction (transpiration)



3 – RUE GARIBALDI – EVALUATION OF COOLING POWER

➢ Effect of watering on daily growth and amplitude of contractions



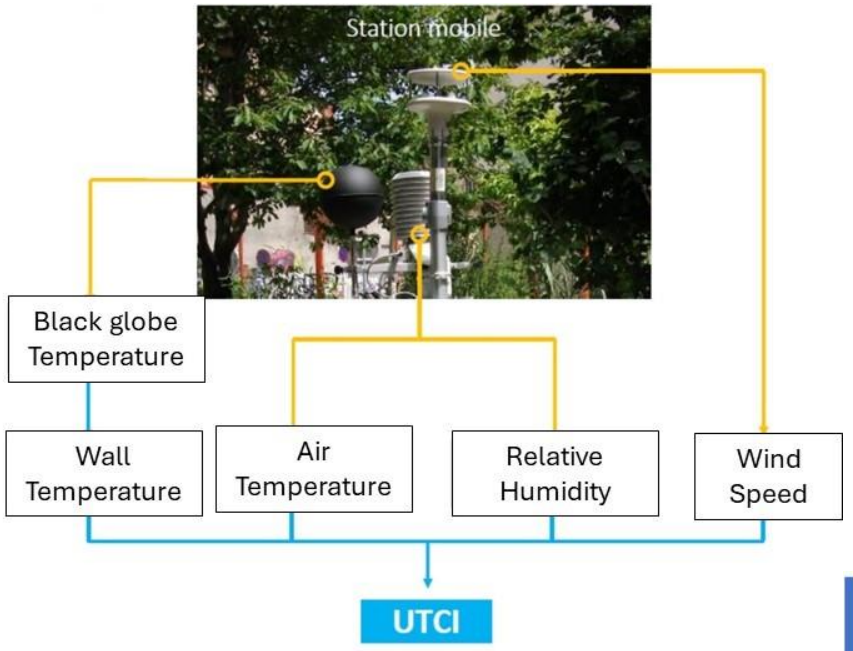
trees in watered sections continue to growth
while trees in non-watered sections decline

COOLING INDICATOR: THERMAL COMFORT (UTCI)

UTCI - Universal thermal climate index

Measurement by sensors

Calculation



The UTCI is calculated using an Excel document using VBA macros. The input parameters are air temperature, relative humidity, air velocity, and black globe temperature.

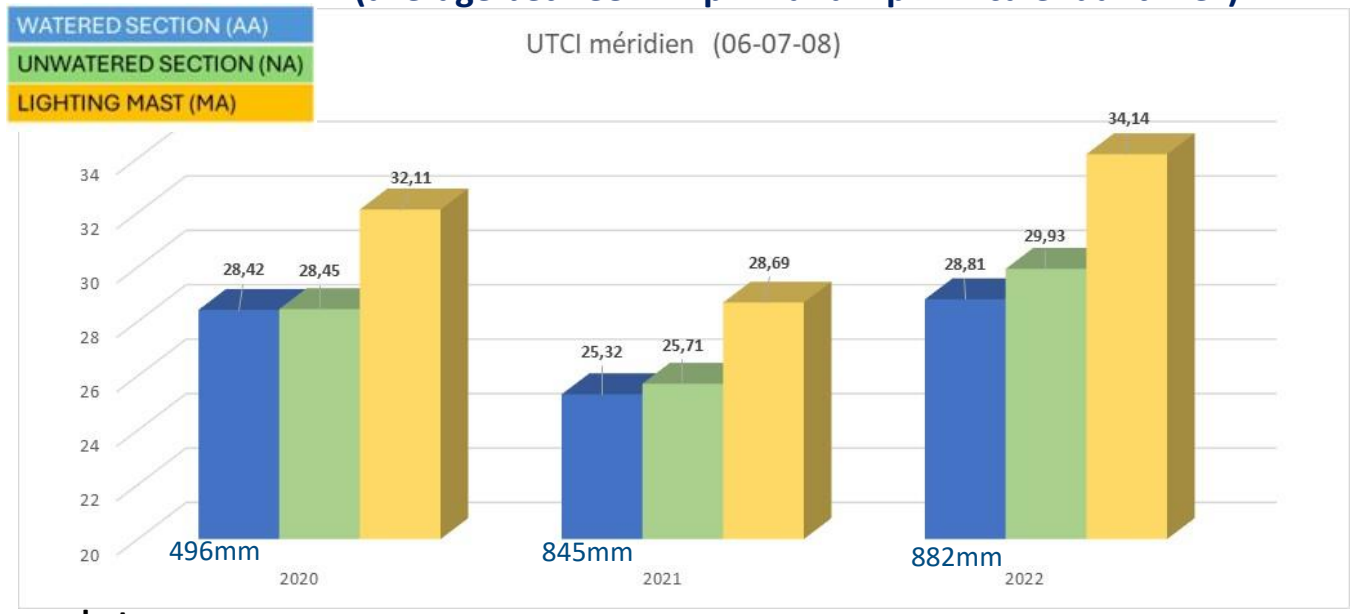
UTCI Scale (°)	STRESS LEVEL
above +46	Extreme Heat Stress
+38 to +46	Very high heat stress
+32 to +38	High Heat Stress
+26 to +32	Moderate heat stress
+9 to +26	No heat stress

3 – RUE GARIBALDI – EVALUATION OF COOLING POWER

➢ Effect of watering on cooling during June, July and August of the 2020-21-22 seasons

Meridian Thermal Comfort Index

(average between 12 p.m. and 2 p.m. "calendar time")



UTCI temperature difference between:	2020	2021	2022
unwatered (NA) and watered (AA)	0,03	0,39	1,12
Mast (MA) & Watered (AA)	3,69	3,37	5,33

Significant gain in meridian thermal comfort by watering throughout the summer

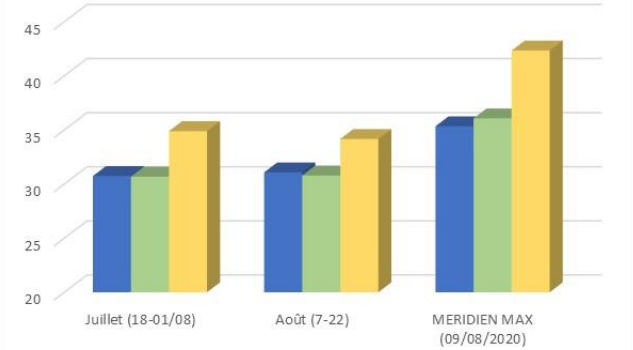
➢ Effect of watering on cooling during heatwaves in 3 seasons

WATERED SECTION (AA)
UNWATERED SECTION (NA)
LIGHTING MAST (MA)

Meridian Thermal Comfort Index

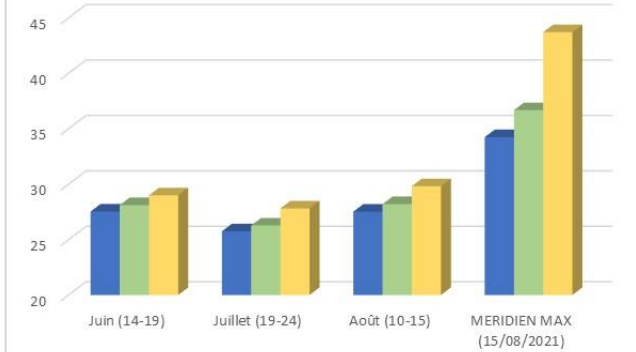
(average between 12 p.m. and 2 p.m. "calendar time")

2020



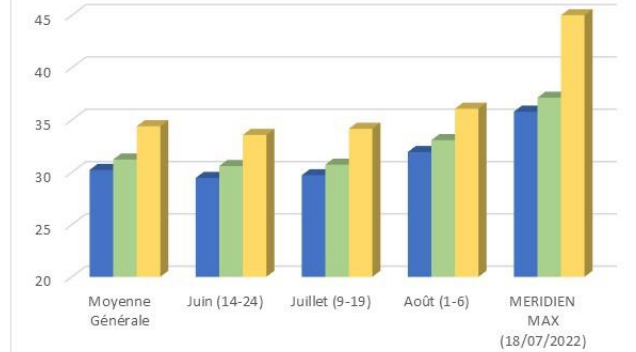
4,15	3,09	7,00

2021



1,46	2,06	2,29	9,46

2022



4,11	4,44	4,14	9,65

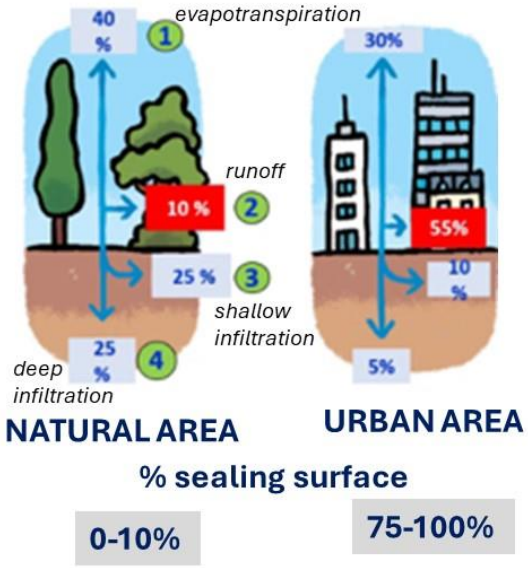
UTCI Temperature Difference Between: **Mast (MA) & Watered (AA)**

Gain in thermal comfort through vegetation and watering up to 9.65°UTC

4 – RUES VAUBAN AND RECAMIER – LIFE ARTISAN PROJECT

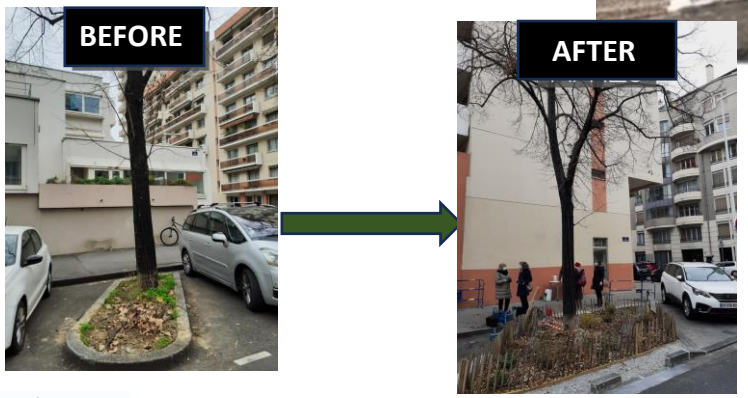
ARTISAN (*Accroître la Résilience des Territoires au changement climatique par l'Incitation aux Solutions d'Adaptation fondées sur la Nature* "Increasing the resilience of territories to climate change by encouraging nature-based adaptation solutions"),

The Métropole de Lyon has been selected as a pilot site on the theme of desealing public space in the city with the aim of cooling the city during heat waves.



1. *Infiltration trench to the tree pit*
2. *Removal of the border to facilitate water collection*
3. *Soil added to green the base of the tree*

STORMWATER TREE CONCEPT



2 trees per site are equipped with the same sensors as for Garibaldi: one stormwater tree and one control tree.

Vauban
(Tilia)





Récamier
(Malus)

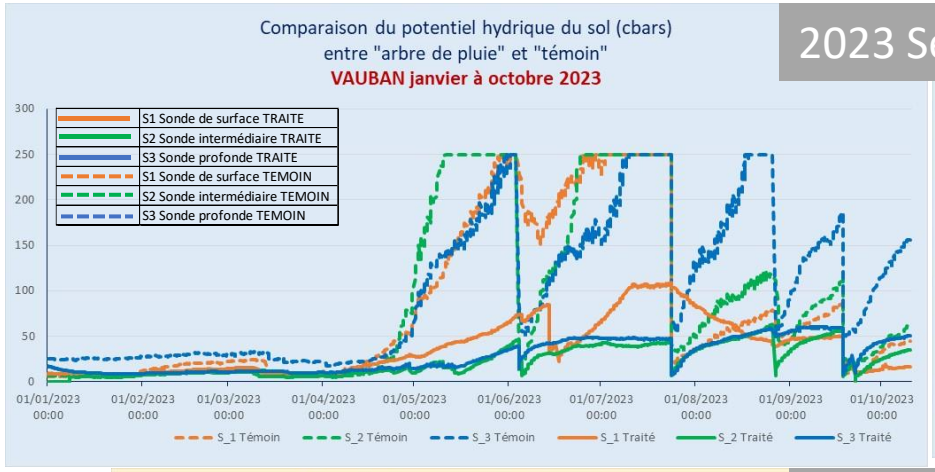




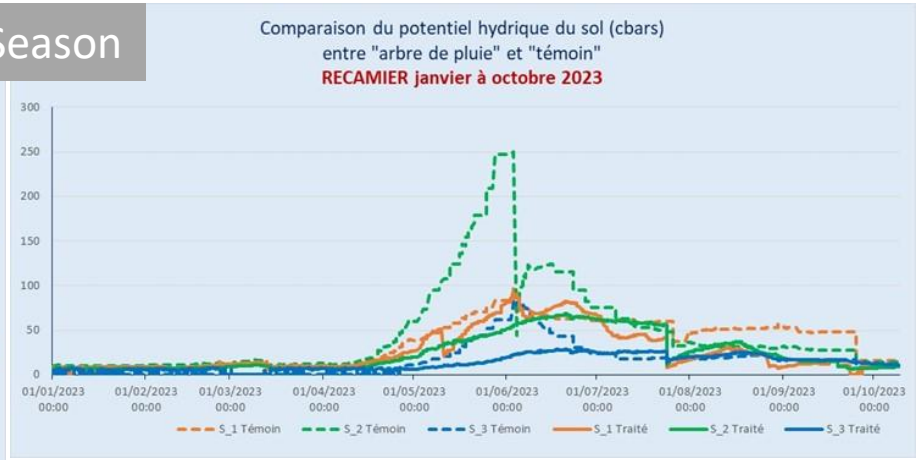
4 – VAUBAN AND RECAMIER – MONITORING SOIL WATER STATUS

- **Soil Water Status Indicator: Water Availability**

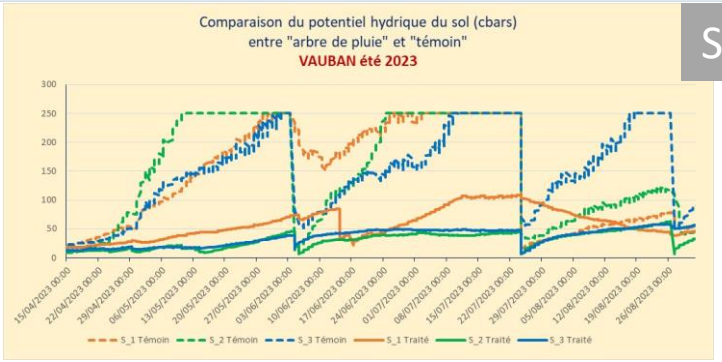
VAUBAN



RECAMIER

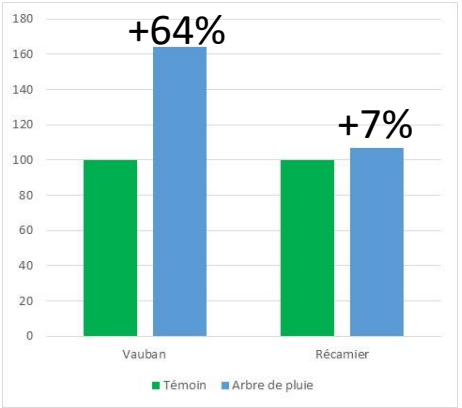


2023 Season



Summer 2023

2023 (*Water reserve from April to October 2023*)



Indicator of the tree's water status: Variations in diameter

Vauban - Control

Growth since April 1, 2022

+0,5mm

+120%

Vauban – Stormwater tree

+1,1mm

Indicator of the tree's water status: Variations in diameter

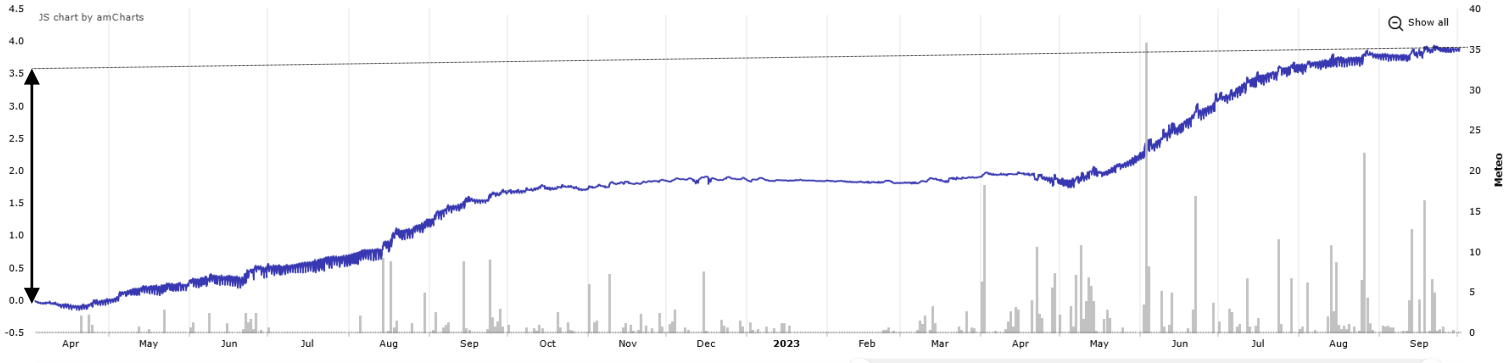
Growth since April 1, 2022

Récamier - Control

+1,2mm

+225%

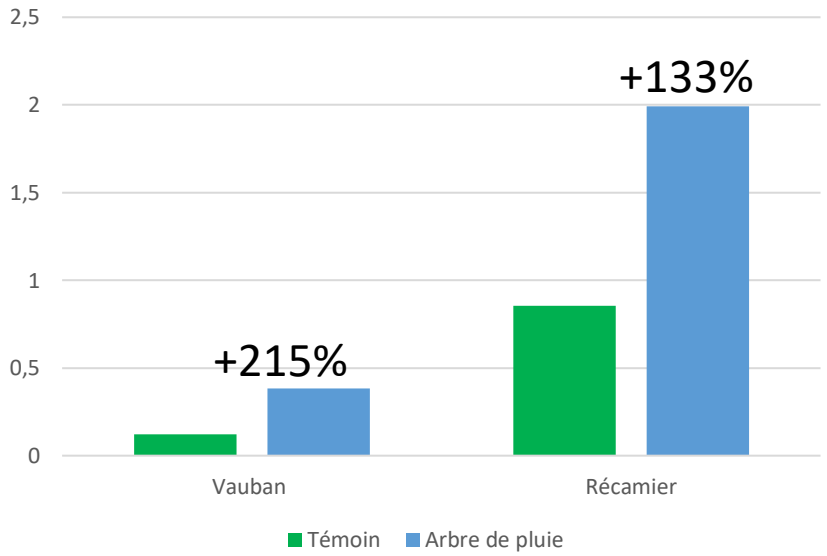
Récamier – Stormwater tree



+3,9mm

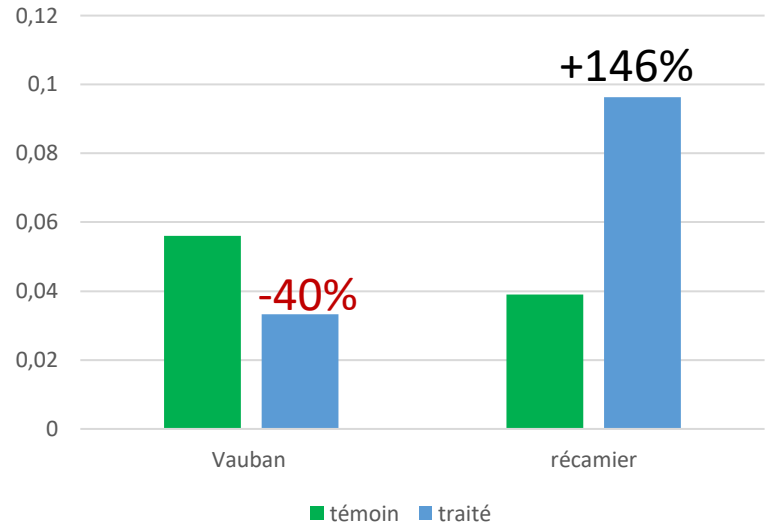
Indicator of the tree's water status: Branch growth and Transpiration

2023 (*Growth from April to October 2023*)



Increasing the volume of soil and providing extra water by removing unsealing the base of the trees means that they grow better

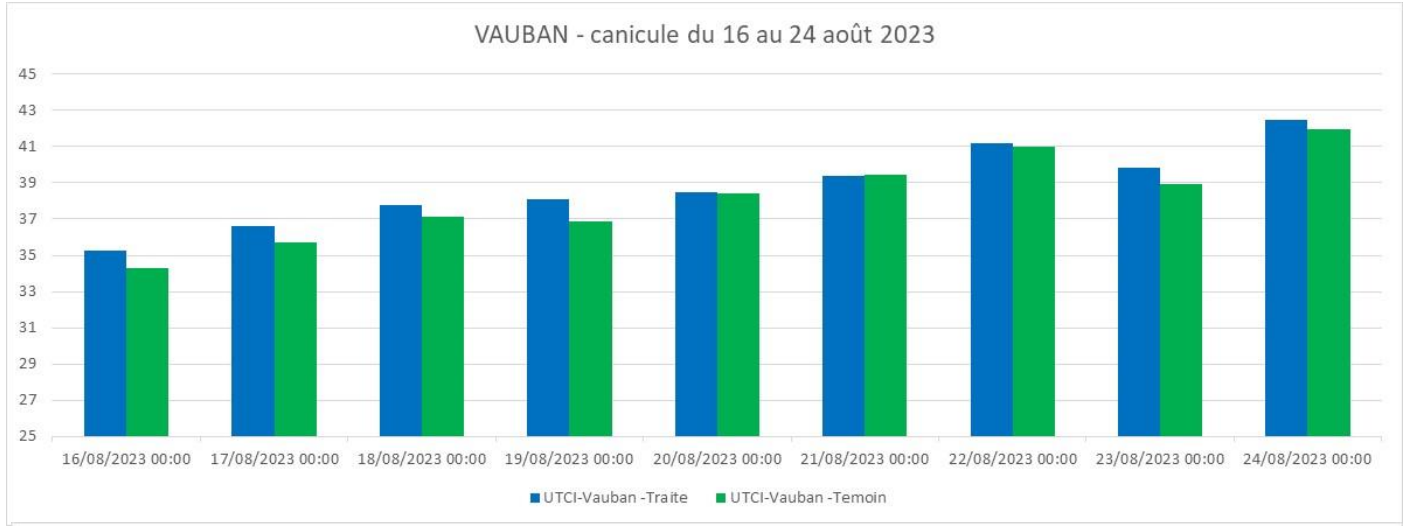
2023 (*Transpiration from April to October 2023*)



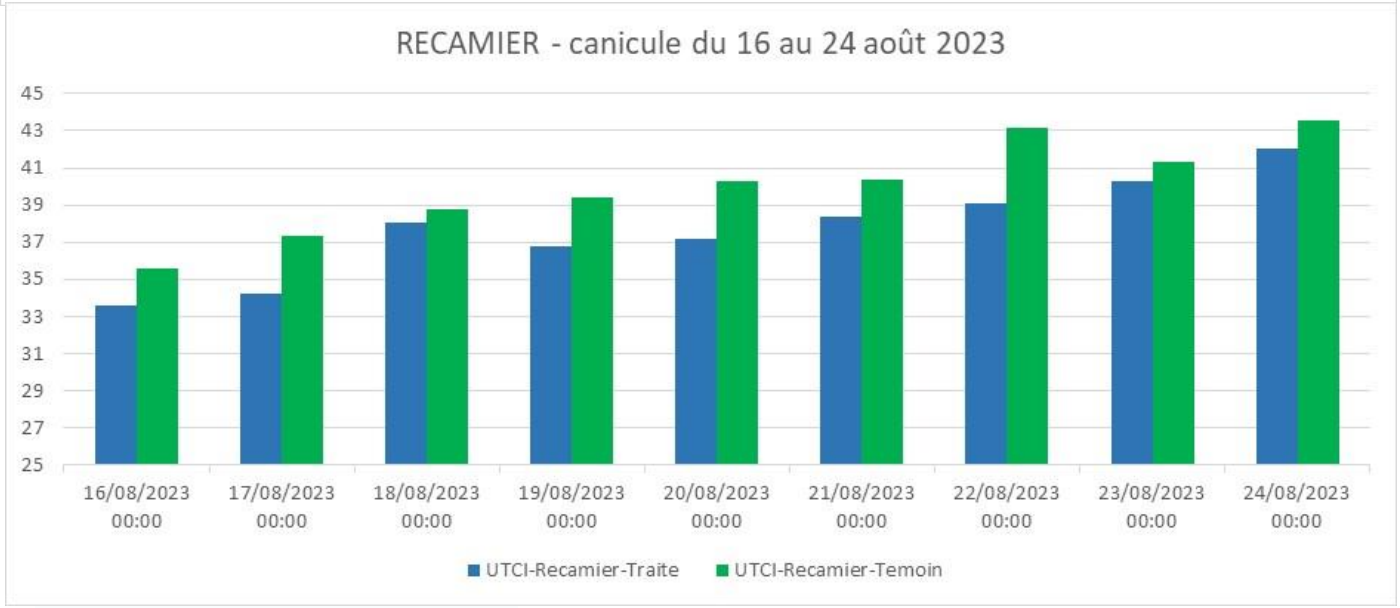
Vauban's stormwater tree receives a lot of water (large impluvium surface) in a soil with low infiltration, which decrease its transpiration,
The soil of Récamier is more stony soil, thus more permeable.

4 – VAUBAN AND RECAMIER – THERMAL COMFORT MONITORING

- **Thermal comfort indicator: Average UTCI difference between stormwater tree and control**



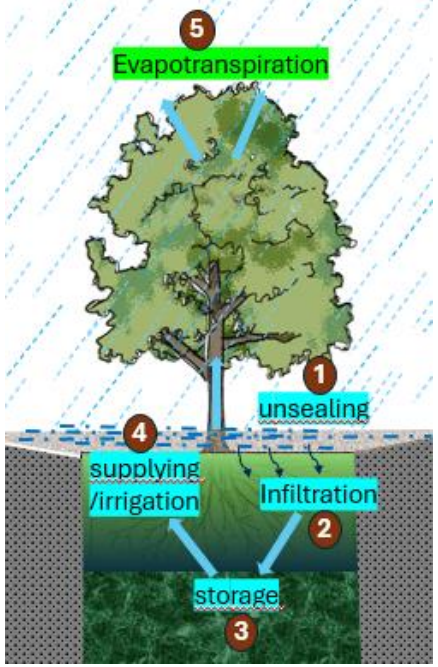
-0,75 °utci



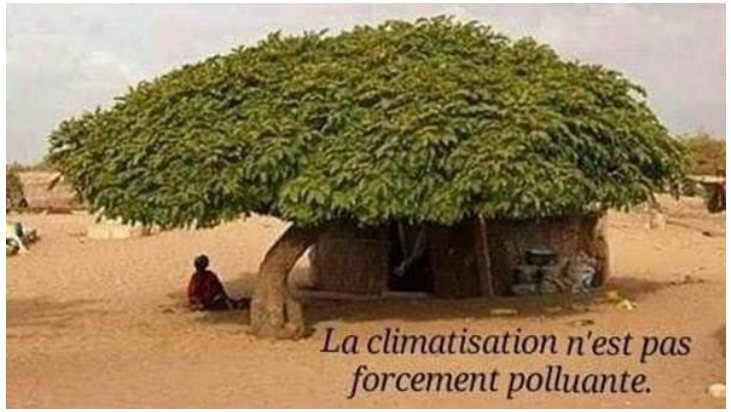
+1,11 °utci

5 - CONCLUSION

- Fighting the effects of UHIs means acting on the triptych WATER/SOIL/VEGETATION



- Incorporate this triptych as an element of landscape design and development in urban planning documents (PLU, etc.) to create cool islands…



Air conditioning is not necessarily polluting

THANK YOU FOR YOUR ATTENTION

Hydrasol
Les racines et l'eau du sol

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