FROM SKY TO GROUND

SCIENCE IN THE SEMI-ARID

Mission Data Box

MISSION: Decode environment via NASA technology
METHOD: Citizen Science & 3D Modeling
LOCATION: Seridó Potiguar, Brazil
STATUS: Mission Report // Data Analyzed

A NASA GLOBE Project by students at EECCAM, Caicó-RN

OUR LAB: THE SERIDÓ POTIGUAR

REGION:

Semi-arid Caatinga biome.

CONDITIONS:

High temperatures.
Water scarcity.
Intense sunlight.

THE CHALLENGE:

How do we manage resources in a vulnerable climate?

THE GOAL:

Understand the system to protect it.

CONNECTING TO THE WORLD

Global Protocols. Local Action.

TOOL: GLOBE Observer App
PROTOCOL: Systematic collection of environmental data
NETWORK: Contributing local data to a global NASA database
ROLE: Citizen Scientists

MISSION LOG 1: EYES ON THE SKY

ANALYSIS: V-4.2

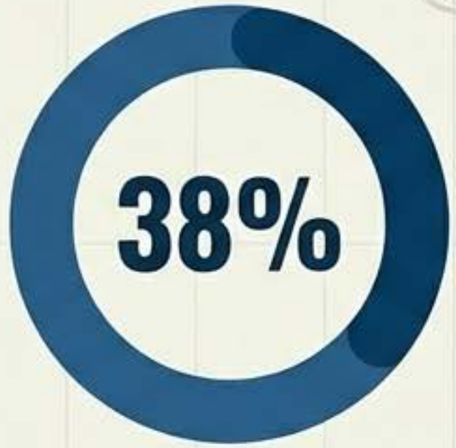
OBSERVATION

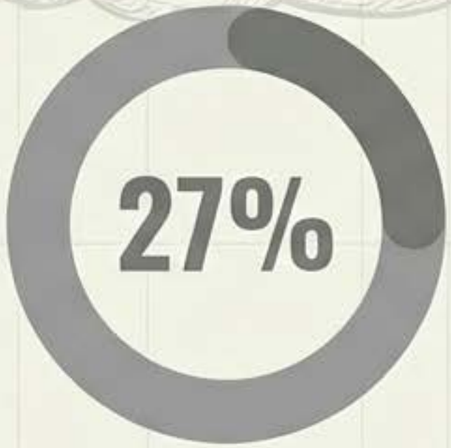
12 Days of Tracking.

DATA POINT: D3-14

FINDINGS

CORRELATION: POS





CUMULUS
(Fair Weather)

CIRRUS
(High Altitude)

CORRELATION: POS

INSIGHT

Prevalence of clouds associated with heat and low humidity. Stratocumulus appeared only during thermal transitions.

MISSION LOG 2: DIGGING DEEPER

LOCATION A: SCHOOL

TEXTURE: Sandy
pH: 6.4 (Acidic)
MOISTURE: Low (7.2%)

LOCATION B: RIVER BARRA NOVA

TEXTURE: Loamy-sand
pH: 6.7
MOISTURE: Higher (11.5%)

GLOBE Observer

CONCLUSION: Proximity to water changes soil chemistry and moisture retention.

MISSION LOG 3: MEASURING LIFE

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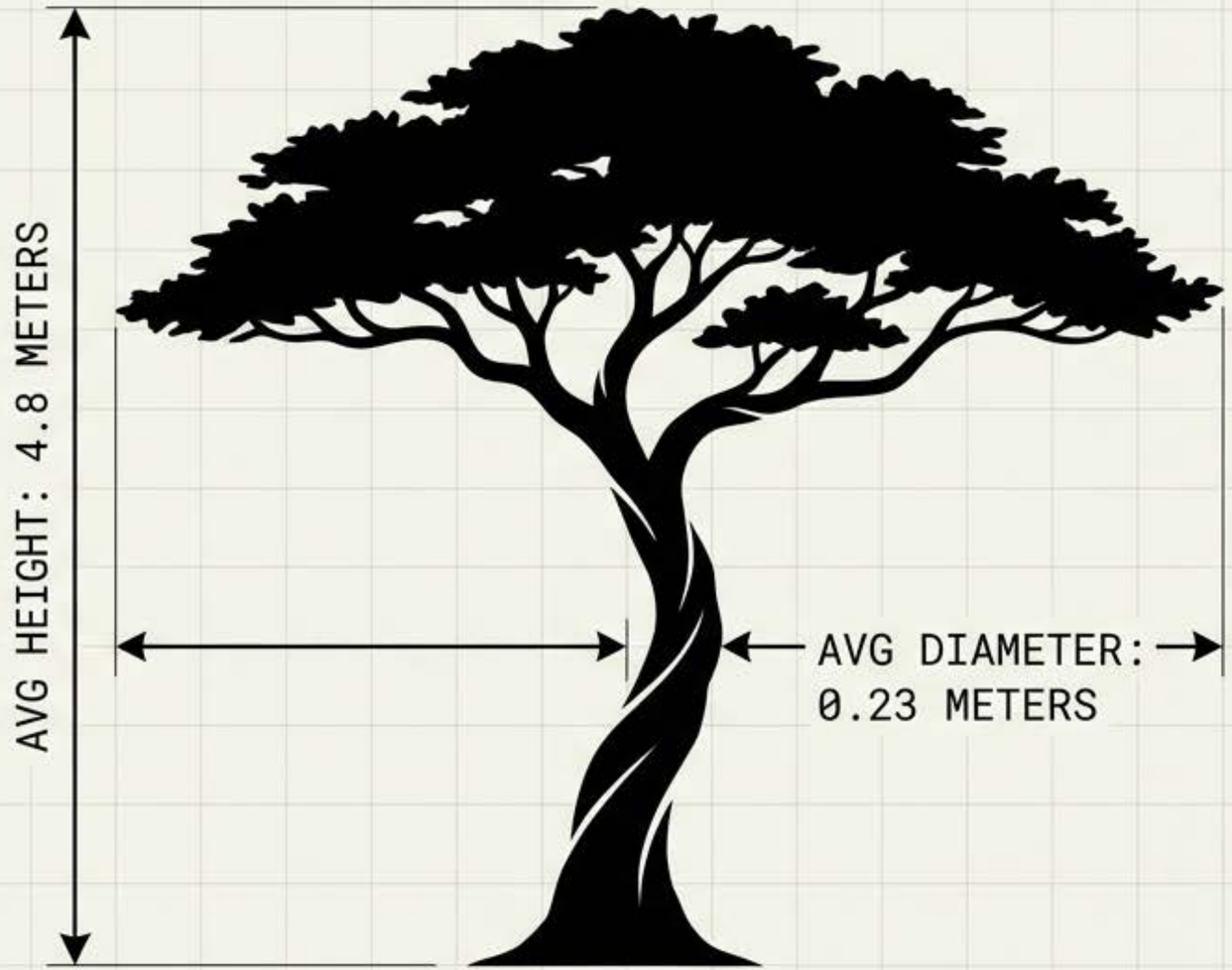
(0, 00, 0-9)



TARGET SPECIES:

- *Ziziphus joazeiro* (Juazeiro)
- *Prosopis juliflora* (Algaroba)
- *Spondias tuberosa* (Umbuzeiro)

ANALYSIS:

Medium-sized vegetation adapted to resist drought and high heat.

DATA POINT: D3-21

DATA POINT: D3-21

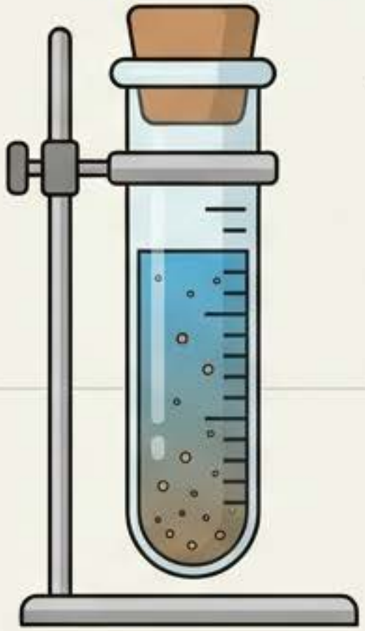
MISSION LOG 4: WATER QUALITY CHECK

SCHOOL RESERVOIR

Cleanest
pH 6.8
Turbidity 2.5 NTU

WELL

pH 6.4
Turbidity 4.2 NTU



RIVER CANAL

High Turbidity
pH 6.2
Turbidity 5.8 NTU

REAL-WORLD SCIENCE: Monitoring pH and turbidity allows us to track pollution levels.

MAKING SCIENCE TANGIBLE

ABSTRACT DATA | **PHYSICAL CONSTRUCTION** | **UNDERSTANDING**

MISSION NOTE:
TANGIBILITY = UNDERSTANDING

- **THE CHALLENGE:** Data tables can be hard to visualize.
- **THE SOLUTION:** Building 3D Maquetes.
- **MATERIALS:** Recyclables, clay, paint, and cardboard.
- **GOAL:** Represent the 4 Spheres in a physical space.

DATA POINT: D3-23

THE MODELS: FROM DATA TO ART

MISSION NOTE

Atmosphere Model: Visualizing altitude and cloud types.

Landscape Model: Visualizing the river bank vs. dry land.

RESULT: A tool for synthesis and communication.

- DATA POINT: I35

MISSION NOTE
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DATA POINT:
D3-24

SCIENCE FOR EVERYONE

LISTENING

TACTILE

INCLUSION FOCUS: Integrating students targeted by special education.

METHOD:

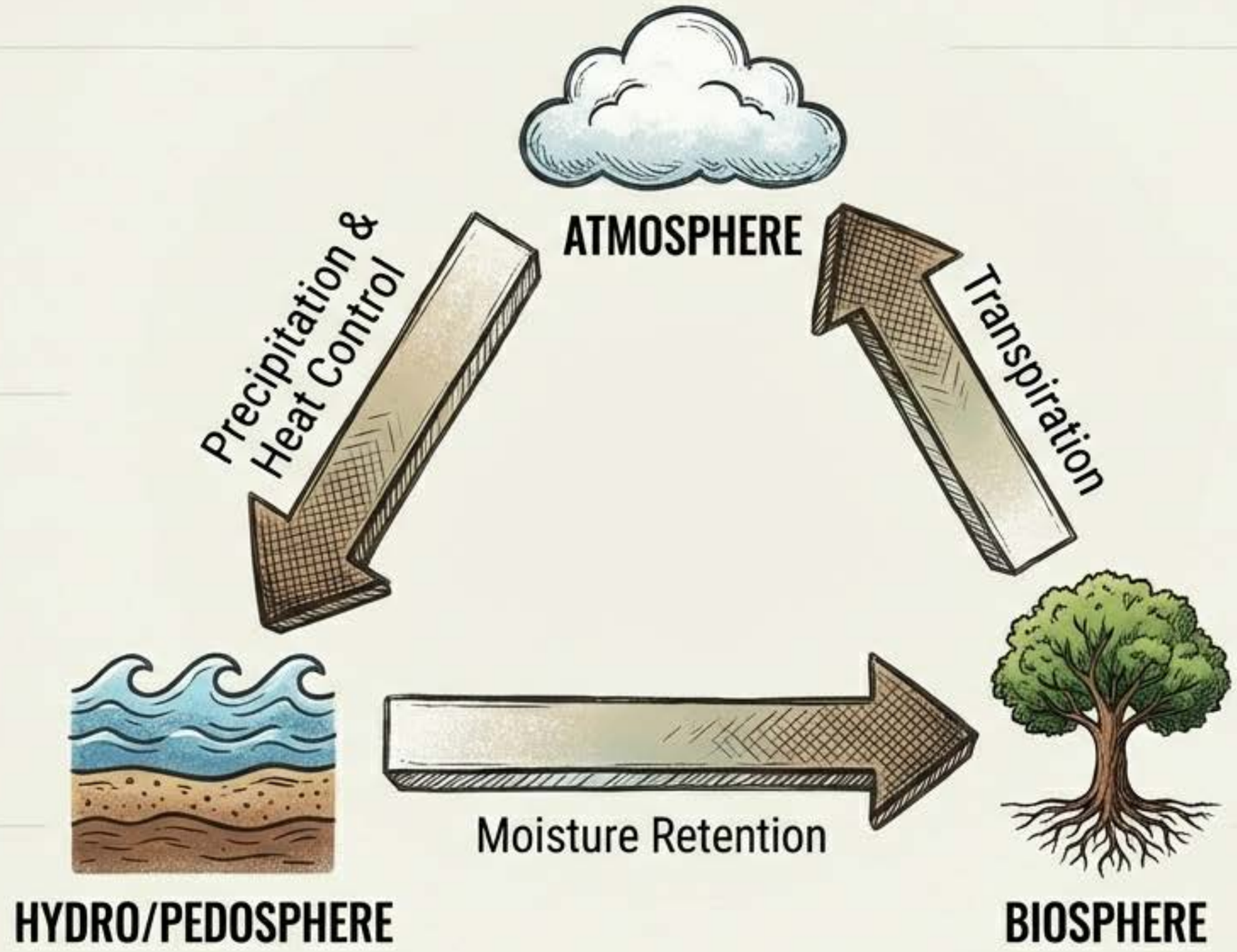
- Tactile textures (cotton clouds, sandy soil).
- Oral descriptions of the environment.

IMPACT: Equal participation. Shared knowledge. Collective Collective ownership of the project.

MISSION NOTE:
Inclusive design = Better science for all.

DATA POINT: D3-24

IT IS ALL CONNECTED



THE BIG PICTURE:
The Earth is one dynamic system.

- FINDING: More trees = More soil moisture.
- TAKEAWAY: We cannot fix the water cycle without protecting the trees.

DATA POINT:
D3-24

OUR COMMITMENT TO THE FUTURE

SDG 4
QUALITY EDUCATION

SDG 13
CLIMATE ACTION

SDG 15
LIFE ON LAND

AGENDA 2030: We are doing our part.

From local learning to global impact.

MISSION NOTE:
Inclusive design = Better science for all.

SHARING OUR VOICE

- ✔ Presented at the 10th DIREC Fair (Caicó-RN)
- ✔ Selected for the National GLOBE Brazil Fair
- ✔ From observers to protagonists

“WE PROTECT WHAT WE UNDERSTAND.”

THE RESEARCH TEAM

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PROJECT: GLOBE Program / NASA

JOIN THE MISSION

DOWNLOAD GLOBE OBSERVER

Science is not just in books. It is outside.

1. OBSERVE.
2. MEASURE.
3. PROTECT.

Become a citizen scientist today.