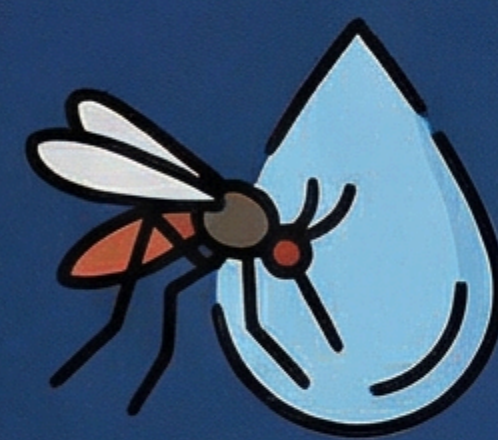


(RE)ACTIONS OF THE EARTH SYSTEM: Dengue Surveillance Through Citizen Science

Dengue Surveillance Through Citizen Science in Ji-Paraná, Rondônia, Brazil (2025)

Student-Led Research: Conducted at Escola Estadual de Ensino em Tempo Integral
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The Problem



DENV-3 Serotype Reintroduction Alert

The combination of high viral circulation and vector density in 2025 created a scenario of expanded epidemic risk.

Traditional Reactive Surveillance Gaps

Existing systems lack predictive tools that integrate high-quality climate data with local field reality.

The Method (Integration of Data Sources)



5-Week Weekly Monitoring

Monitoring conducted from 07/09 to 11/10/2025 across 9 neighborhoods with diverse environments (backyards, vacant lots, streams).

GLOBE Mosquito Habitat Mapper (MHM)

Used for field larval collection and identification by the school community.

INMET & NASA Earth System Data Explorer

Sources for standardized atmospheric series and daily meteorological data to calculate weekly averages.

Key Findings (Statistical Breakdown)



86
LARVAE
DETECTED

Distribution by neighborhood: Urupá (26.7%), Boa Esperança (24.4%), and JK (18.6%). Urupá was identified as the most critical point.

$r = +0.52$
Correlation

Rainfall positively correlates with larvee density; total rain reached 89.09mm with a Week 3 peak of 37.20mm.

$r = -0.63$
Correlation

Temperature negatively correlates with density; the optimal thermal window observed was between 26.77°C and 29.18°C.



Impact (Weekly Risk Dashboard)



Predict Vector Surges After Rainfall

Use climatic signals to anticipate larval infestation and plan post-rain blockades.

✓ Target Interventions in Critical Neighborhoods

Prioritize resource allocation for neighborhoods like Urupá and Boa Esperança based on live data.

✓ Optimize Health Resource Allocation

Adjust educational campaigns and home visits during the specific weeks identified as high-risk.

Conclusion

Student-Led Innovation

A low-cost, replicable surveillance system combining citizen science with official climate data enables proactive dengue prevention.

Local Governance

The study confirms that schools can play a leading role in regional health surveillance and predictive modeling.