Has Rennes a heat island? From sensors and climate models to remote sensing and ecology issues.
Xavier Foissard, Alban Thomas, Jean Nabucet, Hervé Quénéol, Vincent Dubreuil, Solène Croci

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Has Rennes a heat island? From sensors and climate models to remote sensing and ecology issues.

Foissard X., Thomas A., Nabucet J., Quéné H., Dubreuil V., and Croci S.
CNRS, Université de Rennes 2, UMR LETG, Place du Recteur Henri Le Moal, 35043 Rennes Cedex, France.

Climate & Remote sensing

This sensors network was also used to model the local climate at fine scale based on remote sensing data analysis in 2D and 3D.

Network of sensors

Air temperature is monitored in Rennes city (Brittany, France, CNRS Zone Atelier Armorique) with 1st measures in 2003.

Our network: ~20 permanent weather stations (+ temporary mobile sensors)

Data collected using cheap nanocomputers

An open-source application to
https://bitbucket.org/thomas_a/rpi_meteo/
• check weather station’s state
• re-configure station
• gather & store data
• Send data to FTP & website
→ improve data quality

Stations throughout the city to illustrate different neighborhood: center, residences, suburban, parks...

Watch out: https://osur.univ-rennes1.fr/meteo_rennes/

Linking the UHI observations and the land-use context.

• Spatial variability
Multi-criteria method for a spatial modelling of the UHI

Data acquisition
In each of the 19 woods distributed from the town-centre to the rural surroundings:
1 Tinytag for air temperature
2m high
6 pitfall traps collected every 5 days from May to July 2013

Climate & Urban biodiversity

Ecologists and climatologists now explore together the effects of the UHI on carabid beetles species.

Effect on Carabid beetles communities

Species richness decreases with higher temperatures (R²=0.704, p<0.001).

Effect of one species: Pterostichus madidus

P. madidus seems to be active earlier in urban woods than in rural ones (R²=0.29.8, p<0.0011) ⇒ Link with climate is being analyzed.