

PÆNDORA

Geoclimate

Un logiciel pour produire des indicateurs géographiques pour l'étude du climat urbain et analyser les caractéristiques d'un territoire

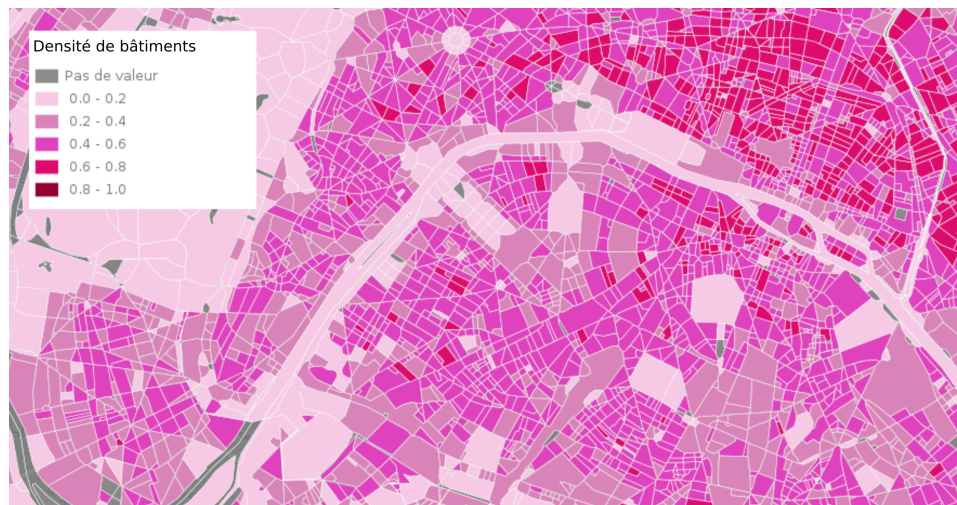
E.Bocher, J. Bernard, E. Le Saux, G. Petit, F. Leconte - LAB-STICC, CNRS, 2021



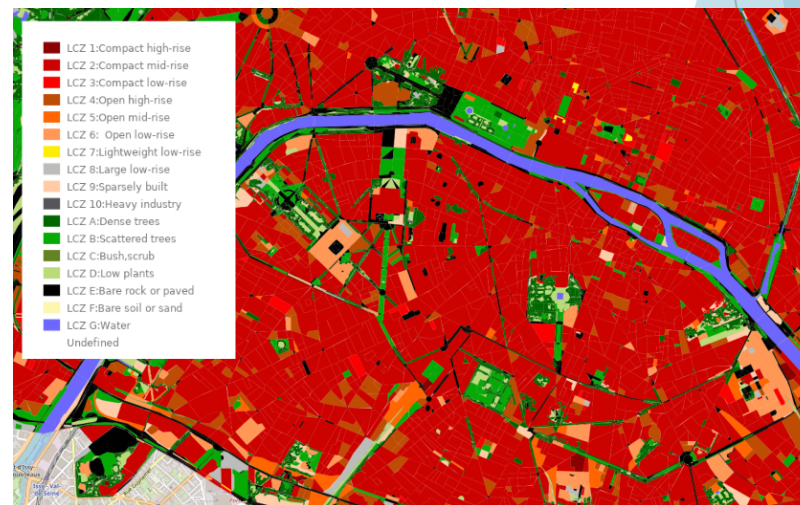
Qu'est ce que GeoClimate ?

Un logiciel pour produire des **indicateurs géographiques** afin de caractériser les spécificités d'un territoire, de manière **automatique, reproductible** et à des **échelles spatiales suffisantes** pour restituer la complexité des éléments qui structurent un territoire.

Cartographie des densités de bâtiments



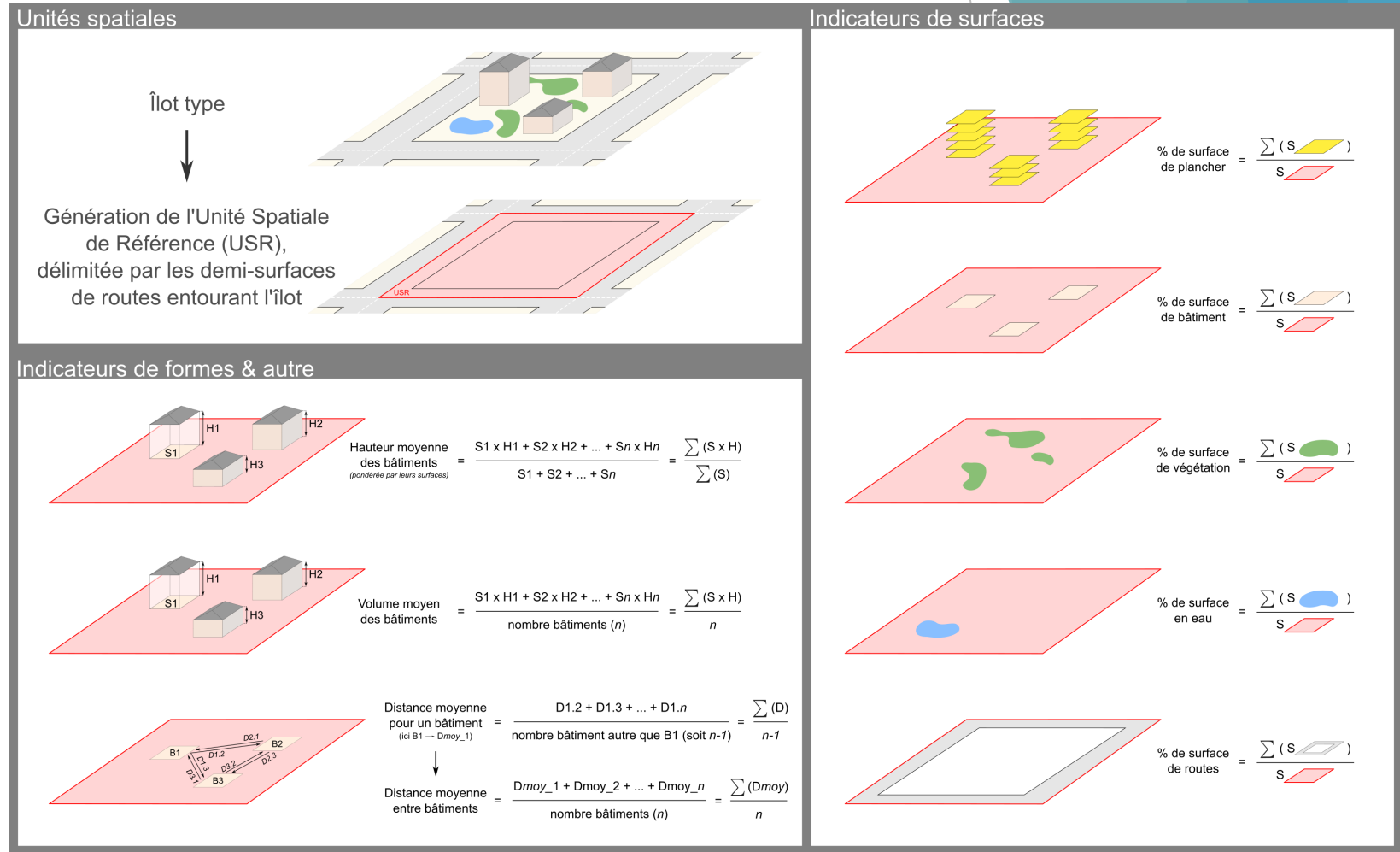
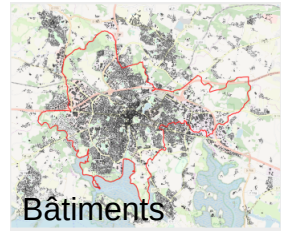
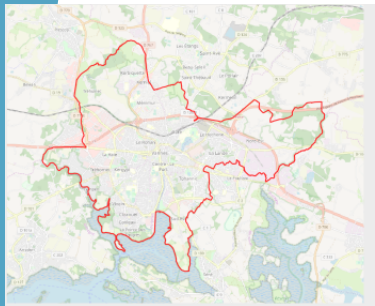
Cartographie des zones climatiques locales



Comment fonctionne GeoClimate ?

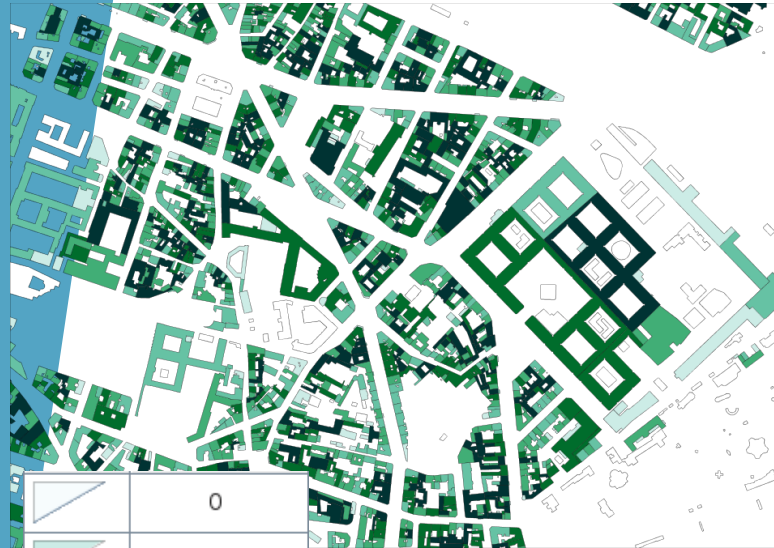
Calcul des unités spatiales et des indicateurs

Alimentation avec des données géographiques



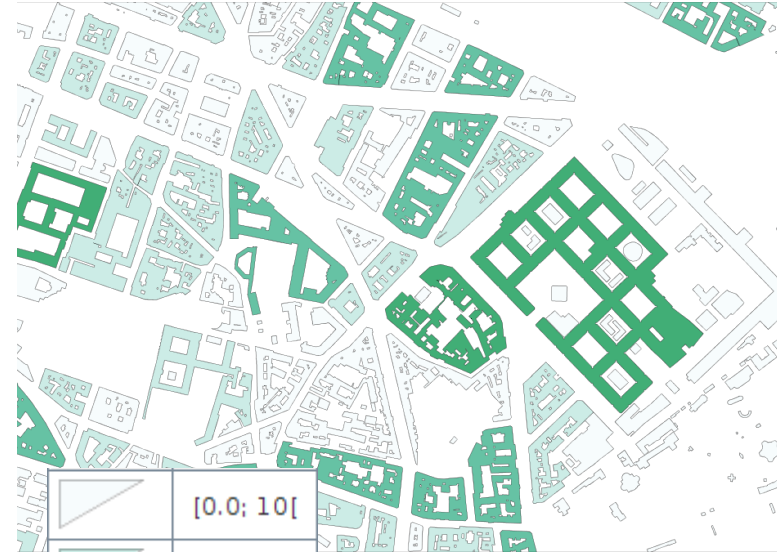
Comment fonctionne GeoClimate ?

Nombre de bâtiments limitrophes
(unité)



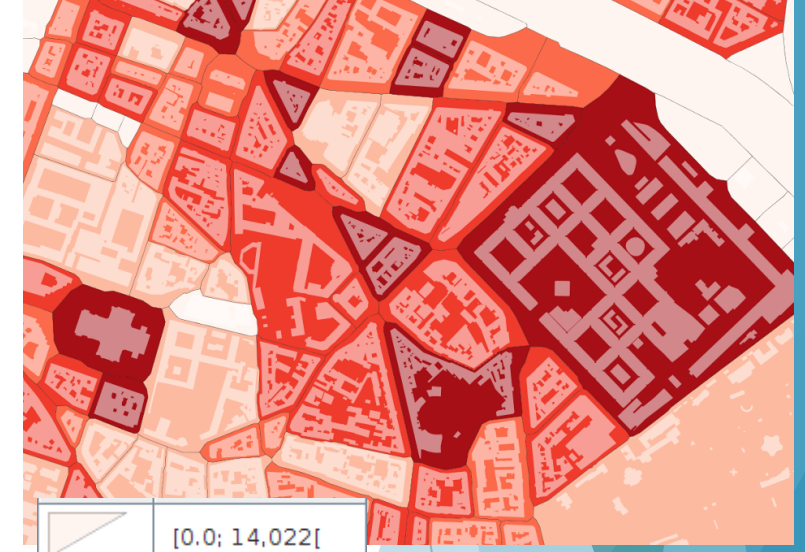
	0
	1
	2
	3
	4
	≥ 5

Fraction de surface de cours par blocs
(%)



	[0,0; 10[
	[10; 20[
	[20; 30[
	[30; 45[
	[45; +∞[

Hauteur moyenne des bâtiments par USR
(m)



	[0,0; 14,022[
	[14,022; 17,14[
	[17,14; 19,48[
	[19,48; 22[
	[22; +∞[

> 100 indicateurs

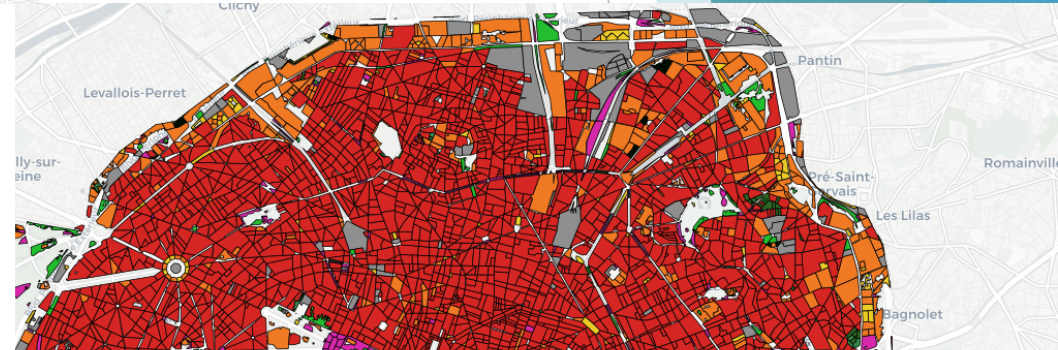
Comment fonctionne GeoClimate ?

- LCZ 1: Compact high-rise
- LCZ 2: Compact mid-rise
- LCZ 3: Compact low-rise
- LCZ 4: Open high-rise
- LCZ 5: Open mid-rise
- LCZ 6: Open low-rise
- LCZ 7: Lightweight low-rise
- LCZ 8: Large low-rise
- LCZ 9: Sparsely built
- LCZ 10: Heavy industry
- LCZ A: Dense trees
- LCZ B: Scattered trees
- LCZ C: Bush, scrub
- LCZ D: Low plants
- LCZ E: Bare rock or paved
- LCZ F: Bare soil or sand
- LCZ G: Water

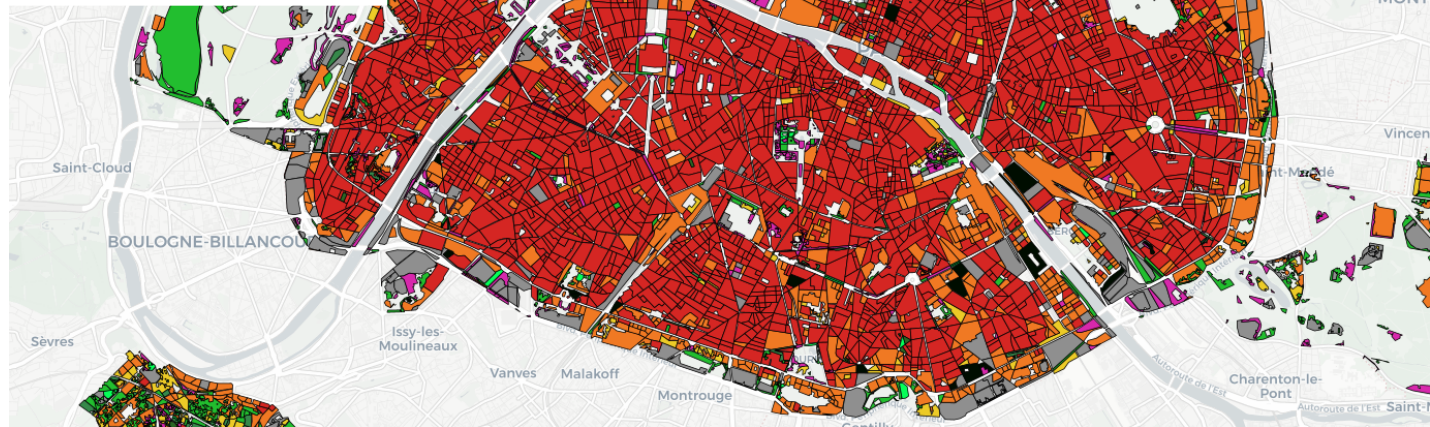


Classification des USR selon le type de tissu urbain

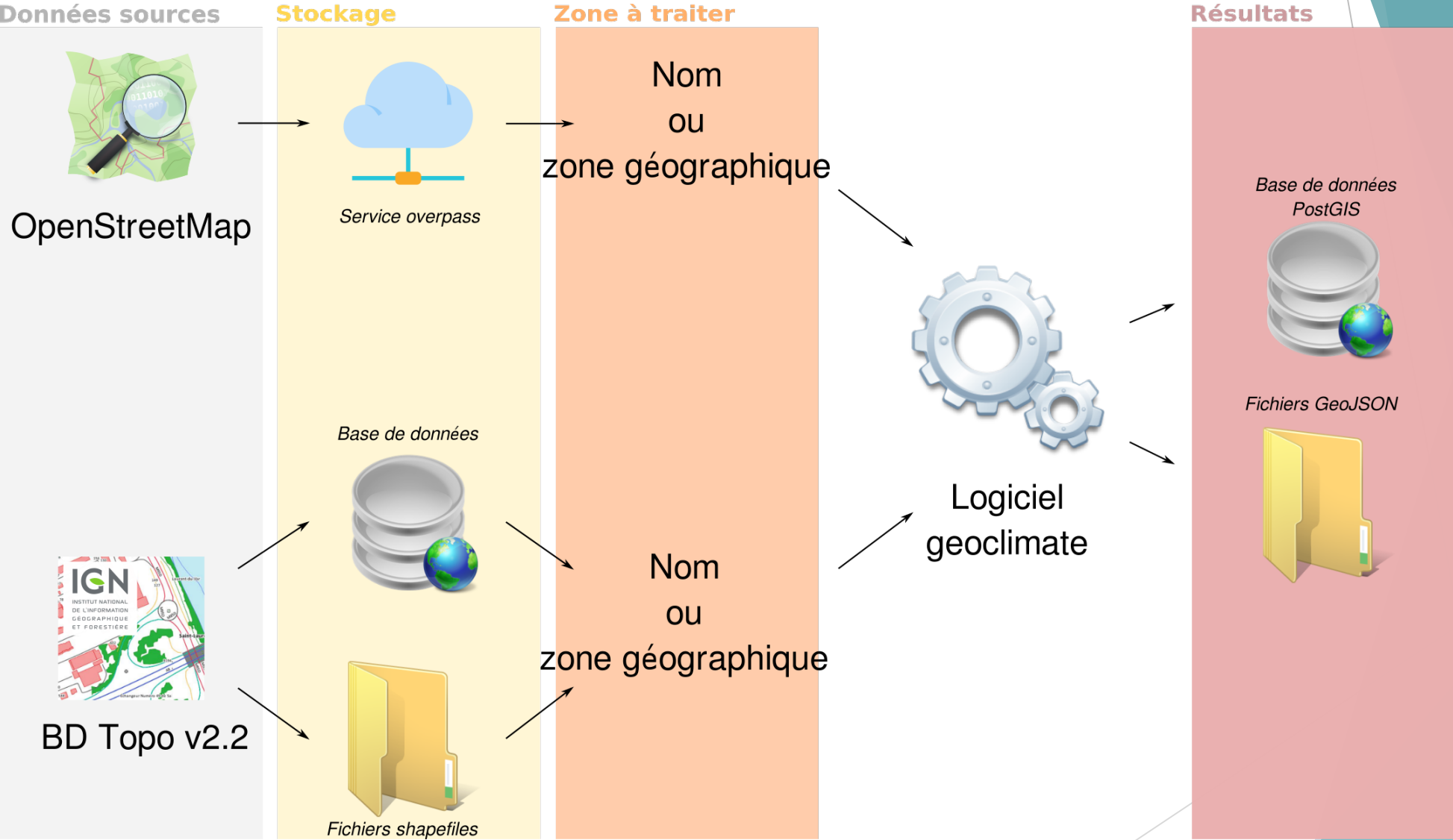
- Industrial building
- High rise building
- Linear building on closed urban island
- Linear building on open urban island
- Detached building
- Informal building
- Row house on closed island
- Row house on open island
- Detached house
- Semi-detached house
- Undefined



Classification des USR selon le type zone climatique locale



Source de données d'entrée de GeoClimate ?

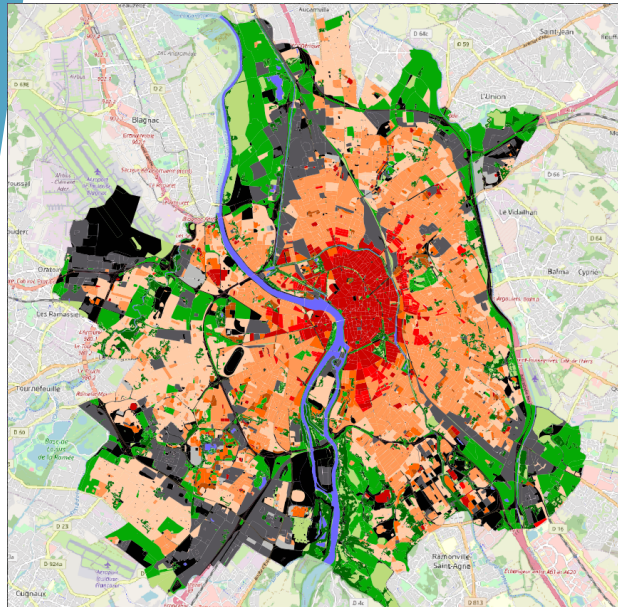


Applications de GeoClimate

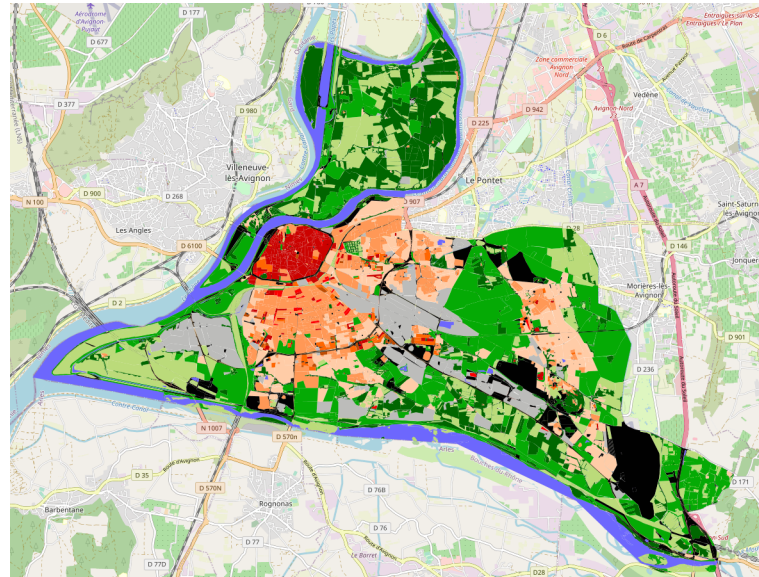
- Plus de 1 000 communes avec la BDTopo v2.2
- Expérimenté sur l'ensemble d'OSM Europe

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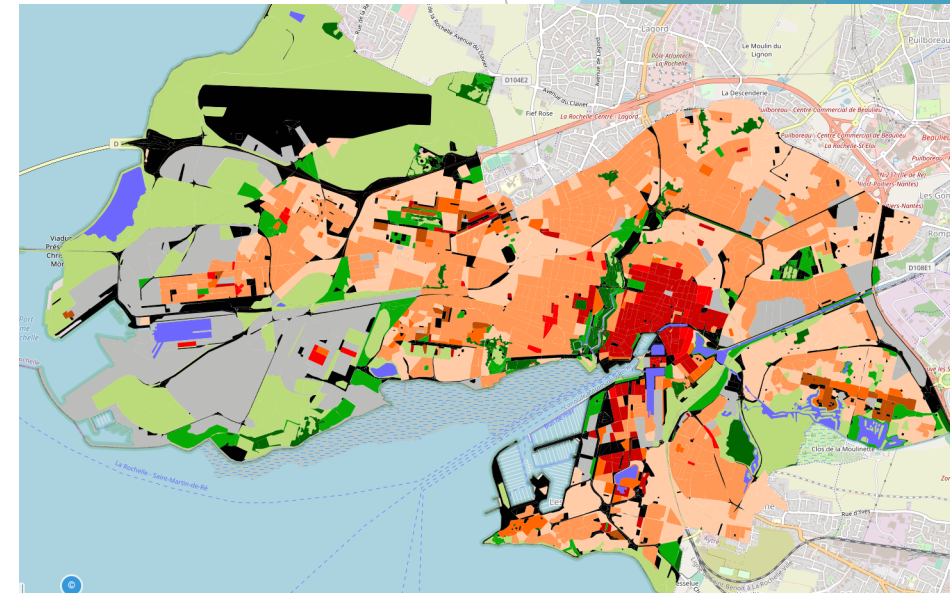
Toulouse



Avignon



La Rochelle



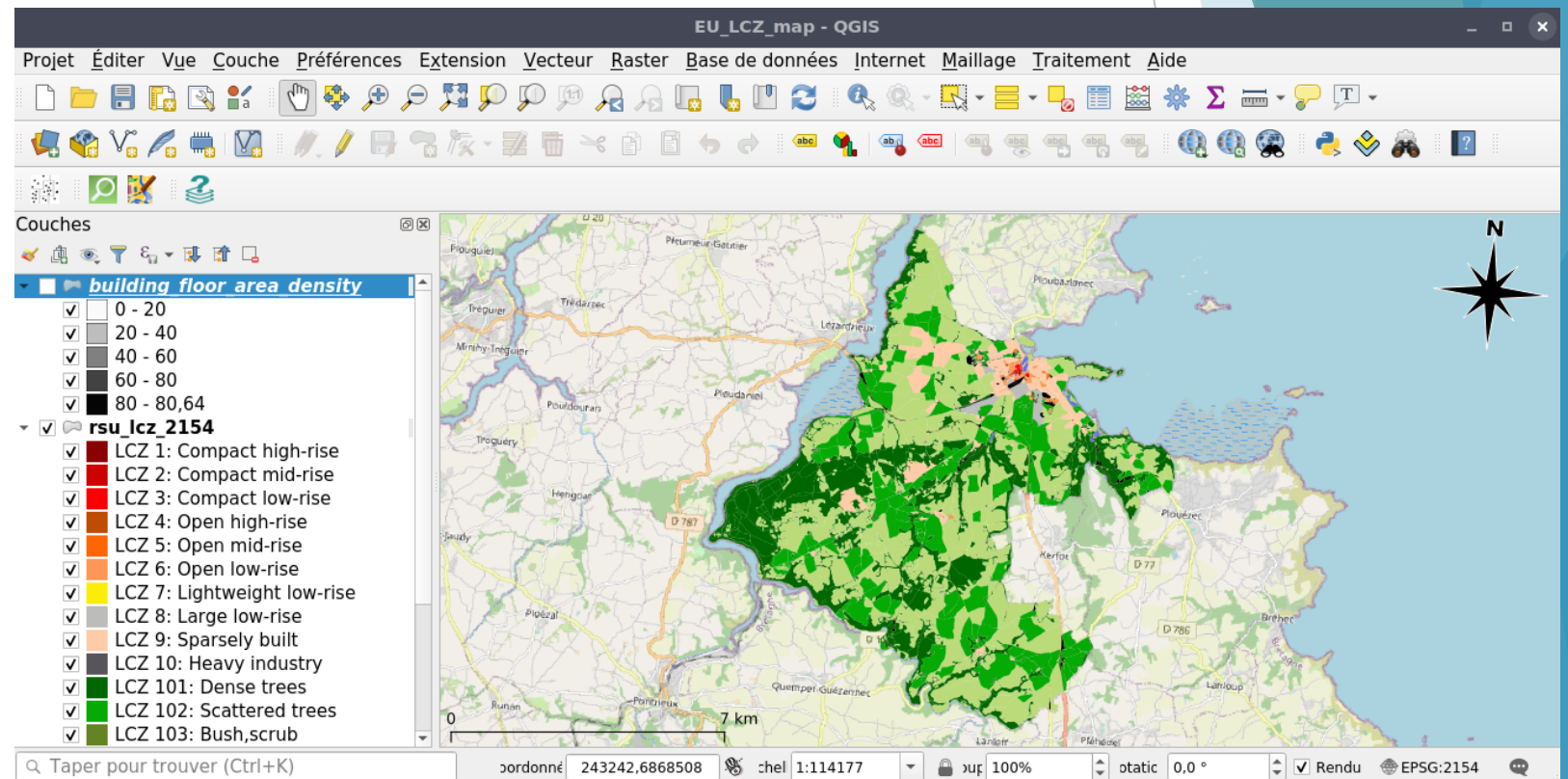
Comment utiliser GeoClimate ?

Se pilote en ligne de commandes. L'utilisateur doit définir

- l'emplacement de ses données,
- les indicateurs qu'il souhaite calculer,
- le mode de sortie (fichier plat ou base de données spatiales).

```
ebocher@tregor:~/Téléchargements$ java -jar Geoclimate.jar -h
Usage: Geoclimate [-hv] -f=<configFile> [-w=<workflow>]
Simple command line tool to run Geoclimate algorithms
-w=<workflow>      Name of workflow : OSM (default) or bdbtopo_v2.2
-f=<configFile>    The configuration file used to set up the workflow
-h, --help        Show this help message and exit.
-V, --version     Print version information and exit.
```

Visualisation des indicateurs géographiques dans QGIS



Où trouver de la documentation sur GeoClimate ?

Un logiciel libre de droit et d'usage développé par le laboratoire Lab-STICC (Vannes)

<https://github.com/orbisgis/geoclimate>

Une documentation en ligne

Le code informatique accessible

Home

jeremy-b edited this page on 29 Jun · 11 revisions

Welcome to the GeoClimate wiki documentation!

GeoClimate is an opensource geospatial toolbox to compute a set of climate related parameters describing a territory (morphological indicators such as Sky View Factor, urban classifications such as Local Climate Zones, etc.).

GeoClimate uses vector-based inputs. Specific workflows have been developed to automatically use [OpenStreetMap](#) and the French [BD Topo 2.2 version](#) databases but the algorithms are data independent, thus allowing the user to connect any vector-based dataset.

GeoClimate is developed in [Groovy](#) language.

Open-source philosophy

It can be freely used either for research and education, as well as by experts in a professional use.

GeoClimate is distributed under [LGPL 3](#) license by the DECIDE GIS team of the Lab-STICC (CNRS).

You are welcome:

- to contribute to GeoClimate please visit the code source repository : <https://github.com/orbisgis/geoclimate>
- to contact members of the team, use the email info@orbisgis.org or let an issue : <https://github.com/orbisgis/geoclimate/issues>

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Home

Introduction

Processing steps

Data

- Input data
 - Zone layer
 - Building layer
 - Road layer
 - Railway layer
 - Vegetation layer
 - Water layer
 - Impervious layer
- Output data
 - Building indicators

The screenshot shows the GitHub repository for GeoClimate. At the top, it indicates the current branch is 'master', with 5 branches and 2 tags. A 'Go to file' button and a 'Code' button are visible. The main content is a list of recent commits, including a merge pull request by 'ebocher' and several other updates to workflows, docs, and data files. On the right side, there is an 'About' section describing GeoClimate as a geospatial processing toolbox for environmental and climate studies, with tags for 'environment', 'gis', and 'climate-change'. Below that, it shows the 'Readme', 'License' (LGPL-3.0), 'Releases' (GeoClimate 0.0.1, Latest, 26 days ago), and 'Packages' (No packages published) sections. At the bottom right, it lists 'Contributors' (10).

Que retenir de GeoClimate ?

- Un logiciel pour produire automatiquement des indicateurs spatialisés en utilisant des données géographiques d'usage courant
- Un logiciel libre de droit et d'usage
- Des indicateurs qui peuvent être mobilisés pour appréhender les particularités d'un territoire (diagnostic)

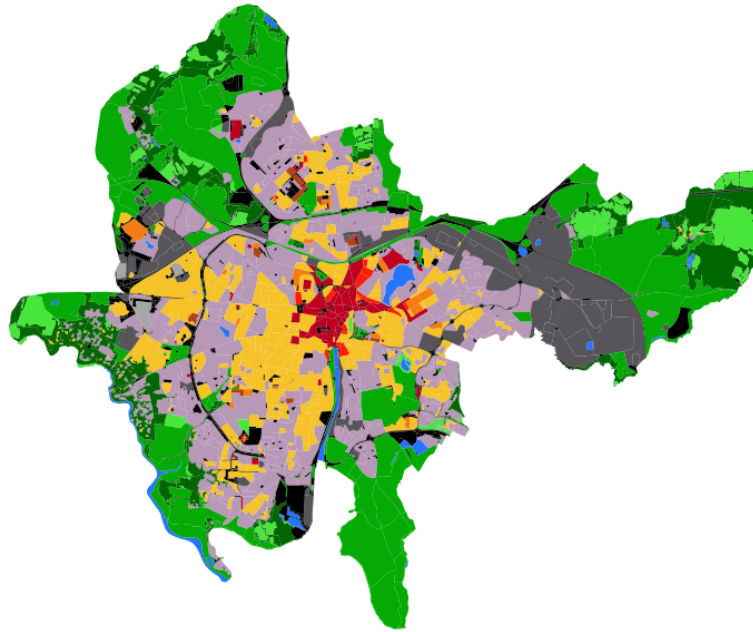
Quelles évolutions ?

- Intégration de la BDTopo v3 comme source de données.
- Réflexion pour la mise en place d'un système de gestion de scénarii d'aménagements.
- Dispositif collaboratif pour valider les résultats de GeoClimate.

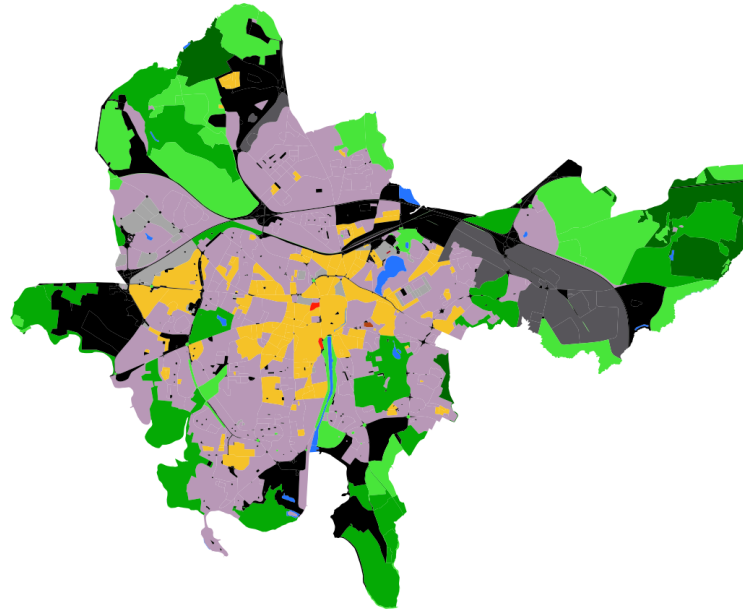
Des questions ?

GeoClimate OSM /BD Topo

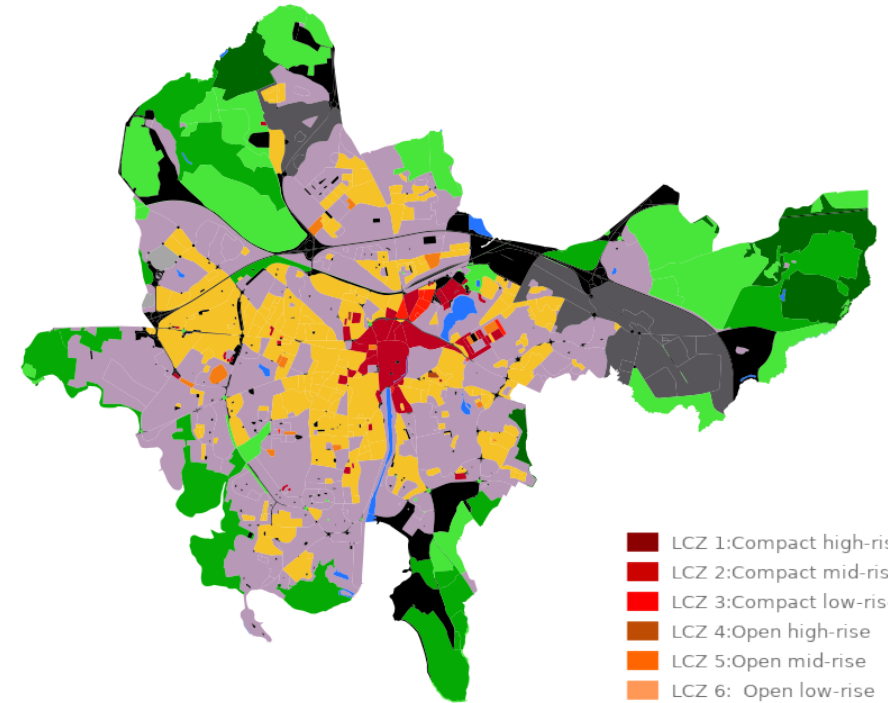
Vannes



BDTOPO



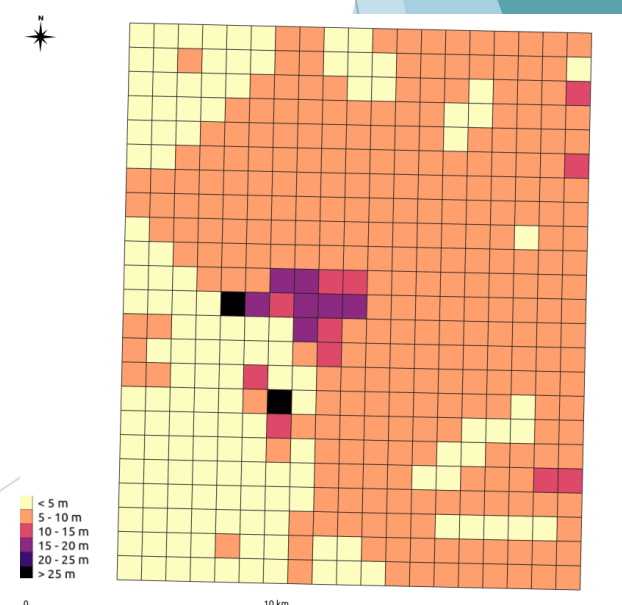
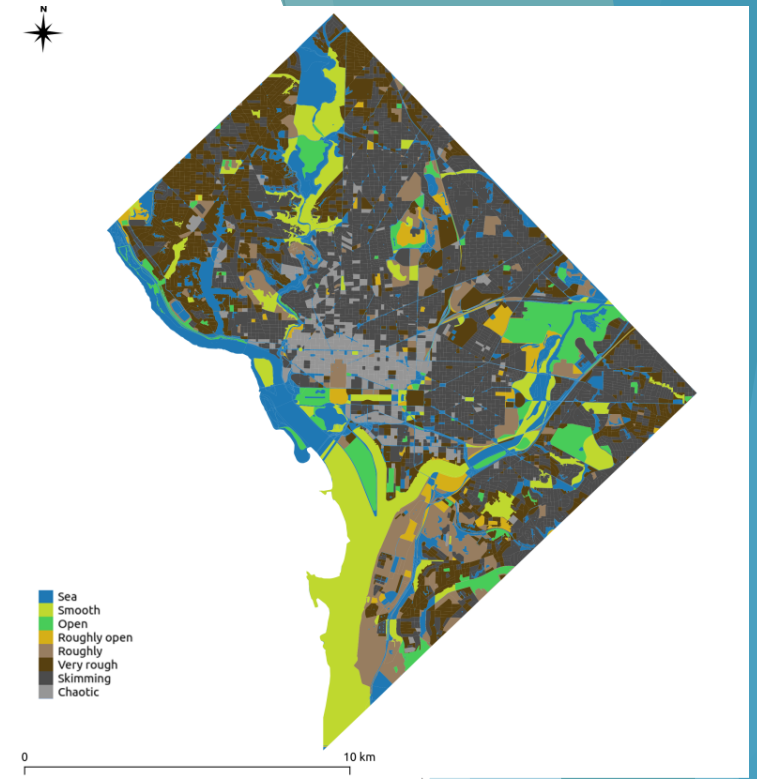
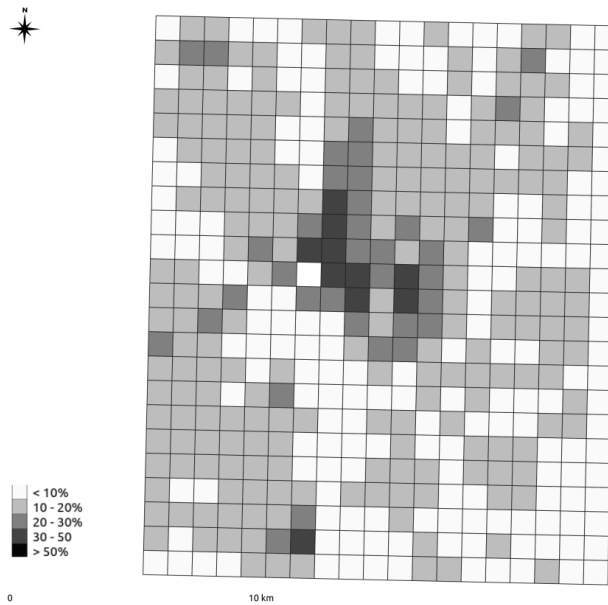
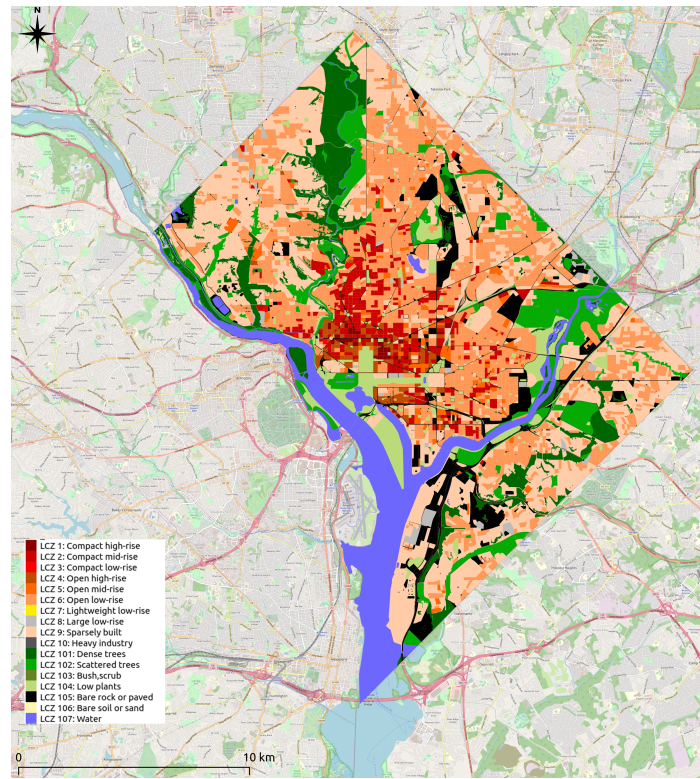
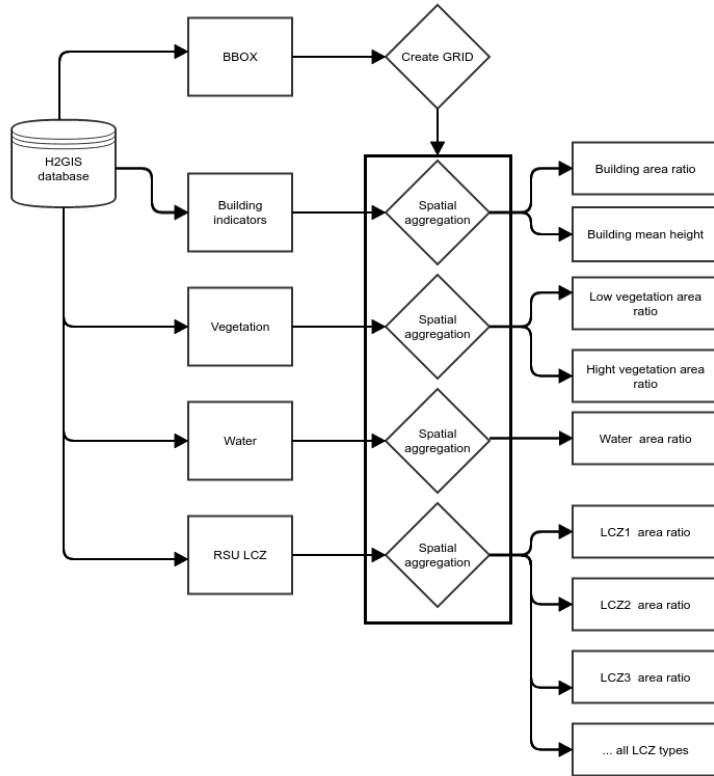
OSM



OSM + ML

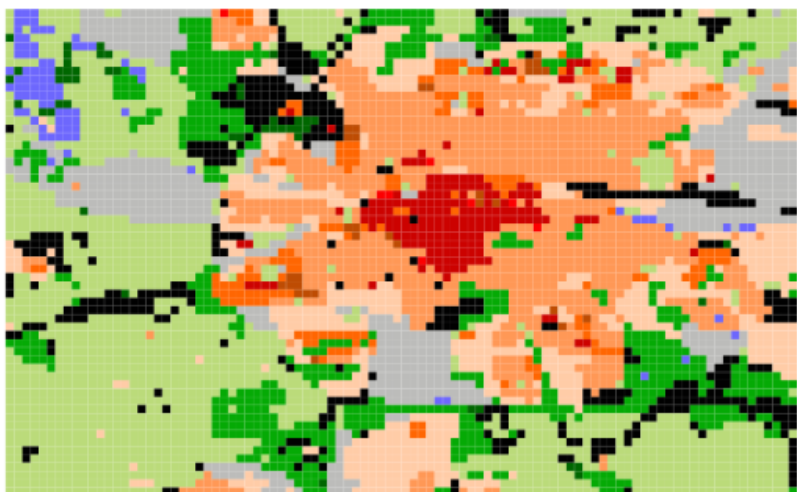
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Washington, DC

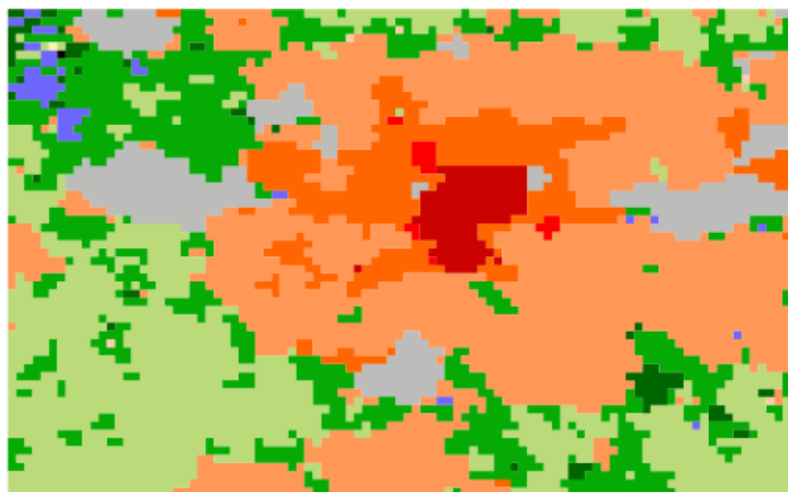




La distribution LCZ rasterisée avec les données OSM de Rennes



Distribution LCZ de WUDAPT pour Rennes



La distribution LCZ rasterisée avec les données BDTopo de Rennes



Local Climate Zones

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 101
- 102
- 103
- 104
- 105
- 106
- 107