

**COLLABORATIVE PRODUCTION
OF USER ORIENTED METADATA
ON EUROSDR GEOMETADATALABS**

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Spatial Data Quality Workshop

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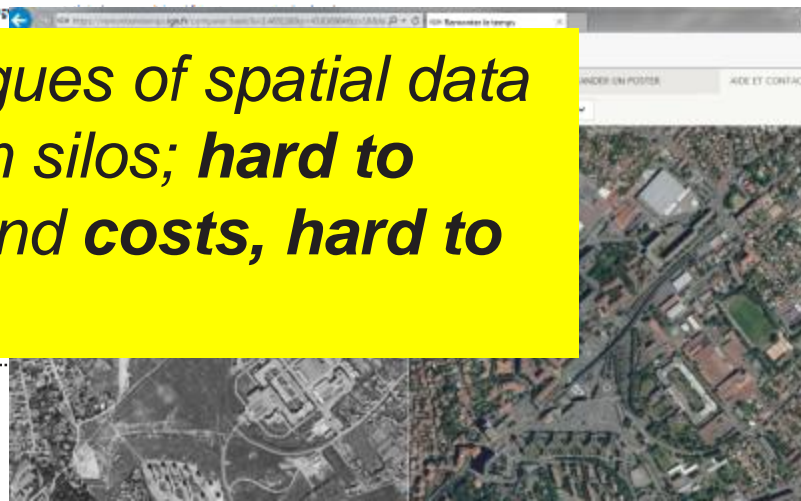
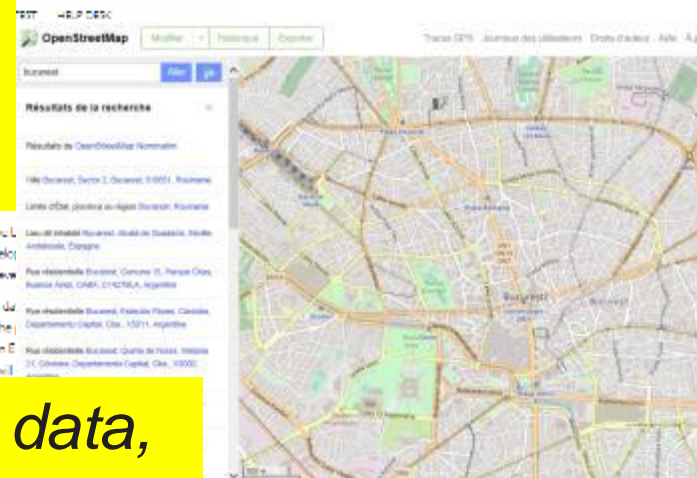


CONTEXT :
USER ACCESS TO
GEOGRAPHICAL DATA SETS

*Lots of technologies
Need for additional resources to
process the raw data*

*« Fast » evolving context, new data,
new data products, new portals, new
licences... new processing methods...*

*Portals and catalogues of spatial data
are still too much in silos; hard to
assess benefits and costs, hard to
compare solutions*



NEED FOR USER-ORIENTED CATALOGUES

How to find something (geodata) when you don't know exactly what you are looking for and what are the criteria you should consider...



Effectuez une recherche sur Google ou saisissez une URL





GEOMETADATALABS.EU

OUR MOTIVATION (EUROSDR COMMISSION 4)

To contribute to user-oriented catalogues study and design, and more precisely to the study of knowledge and metadata necessary to :

- Connect resources registries with a query model meaningful for users
- Compare resources relevance from a given user perspective
- Make recommendations to users
- Promote technology neutrality

OUR APPROACH

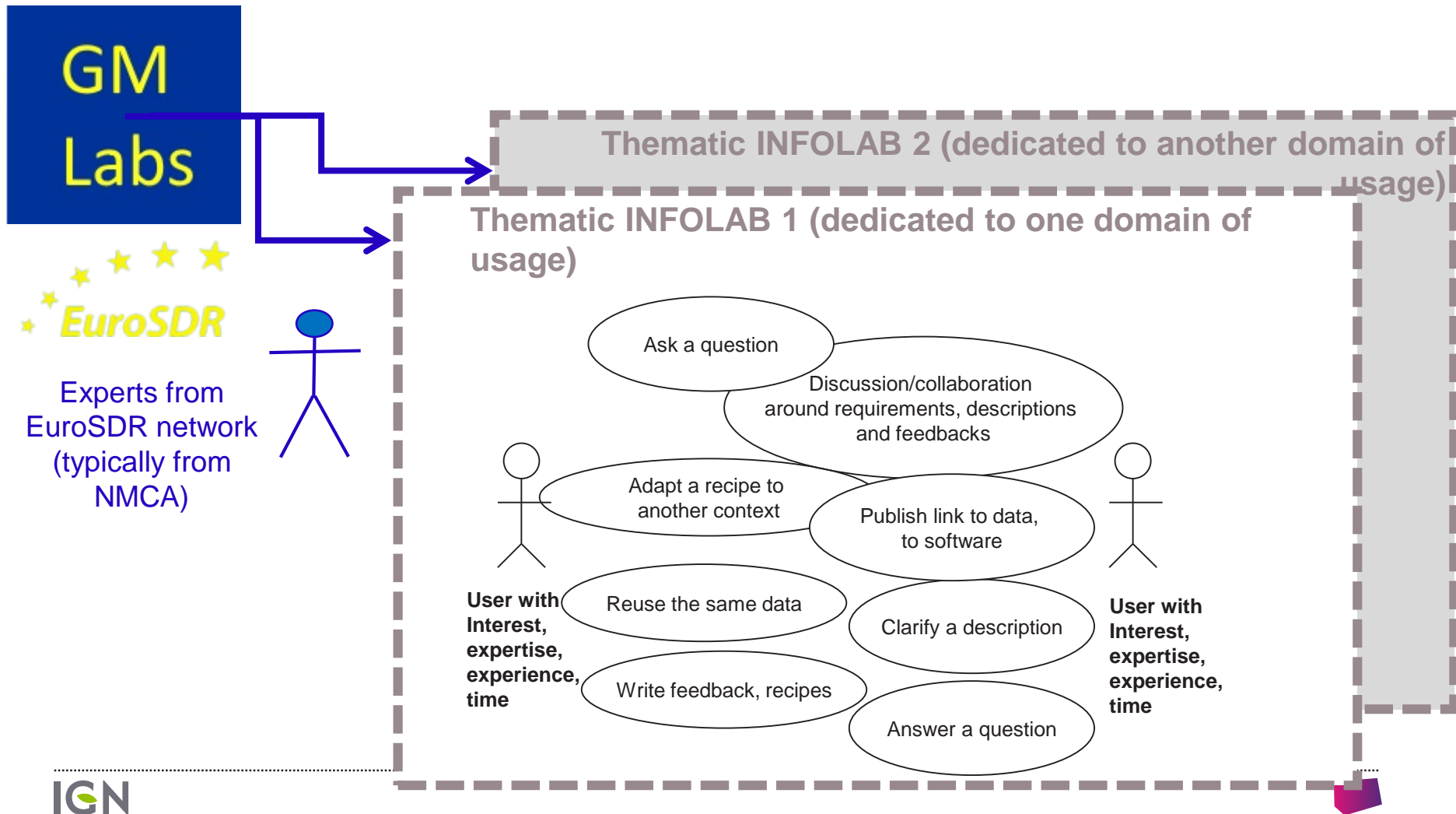
Focus on one “domain of usage” (same usage but in different European places) at a time.

Integrate with existing metadata and catalogues.

Experiment a collaborative platform, interconnected with existing SDI components, to :

- Decompose the process of geodata retrieval and reuse for this usage domain
- For each step, identify missing metadata
- Experiment how missing information can be acquired

EUROSDR GEOMETADATALABS PLATFORM : HOSTING THEMATIC INFOLABS





OUR FIRST THEMATIC INFOLAB : URCLIM INFOLAB



www.urclim.eu

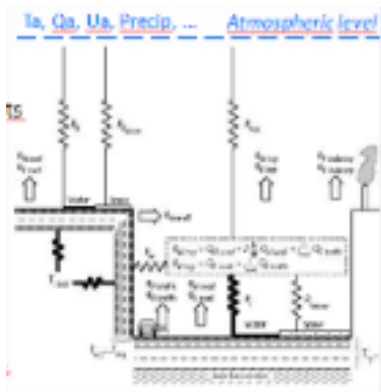


Koninklijk Nederlands
Meteorologisch Instituut
Ministerie van Infrastructuur en Milieu

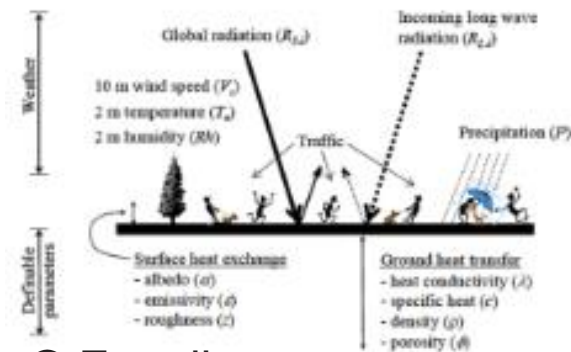
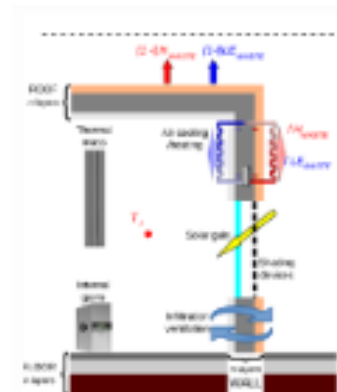


URCLIM DOMAIN OF USAGE : DESIGNING URBAN CLIMATE MODELS

Design canopy models to model **micro-climate phenomena** (urban heat islands, road icing, overflow, air pollution pic) related to meso-climate events (heat waves, intense precipitation, ..).



© Masson (TEB)



© Fortelius

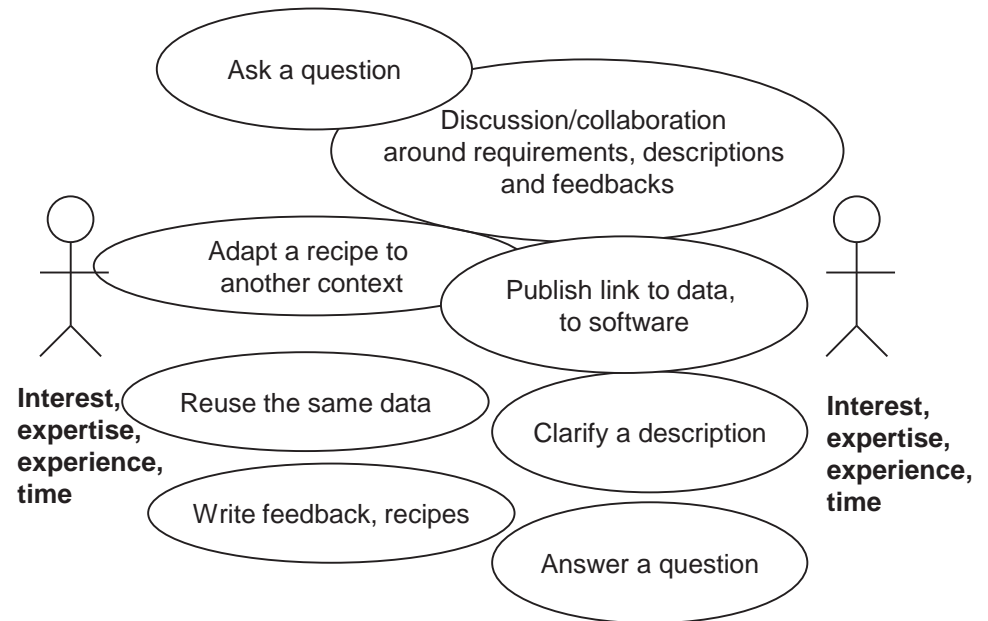
With **reproducible** enough methods across **big cities in Europe** (Toulouse, Ghent&Brussels, The Randstad, Helsinki, Bucarest)

REQUIRED INFORMATION TO FEED URBAN CANOPY MODELS

(Masson et al. 2019)

Purpose \ Parameter	<u>Land use/cover classes</u> - meso-scale: at neighborhood scale (e.g. LCZ) - micro-scale: urban elemental objects (e.g. buildings, roads)	<u>Morphology</u> incl. height, building & (im)pervious fractions...	<u>Architecture</u>	<u>Socio-economy & uses</u>	<u>Vegetation description</u> (Type, LAI,...)
At meso-scale					
1km-res NWP & climate models	x (at neighborhood scale)				
100m res NWP	x	x			
Forcing of AQ models	x				
Forcing of & interactive emissions of buildings for AQ models	x	x	x	x	
At micro-scale					
1m-res Building resolving modelling	x (urban objects)	x			Leaf Area Density
Radiative effects, shadows	x	x	Albedo (incl. Windows)		Leaf Area Density
Flow modification	x	x			Leaf Area Density
Development of parameterizations for urban climate processes	x	x	Possibly (e.g. energy balance)	Possibly (e.g. traffic induced turbulence)	Possibly (e.g. pollutants dispersion)
At both micro and meso-scales					
Outdoor heat-stress quantification	x	x	Albedo (incl. Windows)		x
Indoor heat-stress and Energy consumption quantification	x	x	x	x	
CO2 fluxes in urban areas	x	x	x	x	x
Urban hydrology modelling	x	Coverage fractions			x

URCLIM INFOLAB



STEP 1 : USER QUERY

← → ↺ 🏠 ⓘ

geometadatalabs.eu/URCLIMInfoRequirements

📖 ☆ ⚙️ ✍️ 🔗

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URCLIMInfoRequirements

This page is dedicated to express requirements wrt geodata needed by urban climate scientists to run their models, in particular in the context of the project URCLIM. The purpose of this page is to isolate somehow the need of data from existing sources to be as technology neutral as possible. It is a wiki so that there may be discussion -on the page or through the discussion view- about the need to specify it more.

Contents [hide]

- 1 Content : morphology (physical characteristics of the surface of earth in contact with atmosphere)
- 2 Content : architectural properties
- 3 Content : building's use and socioeconomic information
- 4 Content : vegetation description
- 5 Spatial extent, resolution, accuracy
- 6 Temporal extent
- 7 Format
- 8 Other
- 9 Explanation associated on TEB

Content : morphology (physical characteristics of the surface of earth in contact with atmosphere)

- mean building height
- surface of walls in contact with the atmosphere (or the ratio between this quantity and the surface of the area)
- building fraction (surface of buildings seen from above divided by the surface of the area)
- road fractions
- other impervious surfaces fractions
- high vegetation fraction (can be above the other elements)
- low vegetation fraction

Content : architectural properties

- depth, thermal conductivity, heat capacity of each layer of wall (for example for the layer of structural material and for the insulation layer inside or outside).
- the same for roofs
- the same for the inner floors and walls (all packed together)
- albedo and emissivity of walls

GM Labs

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STEP 1 : USER QUERY

➤ User query :

- Technology neutrality is difficult
- Iteration is needed because : what can be described is improving and what the model can process also is evolving
- Lots of ontologies and vocabularies available already, but need for alignements as well as similarity measures to support query extension

STEP 2 : RETRIEVE RESOURCES OF POTENTIAL RELEVANCE AND COMPARE THEM

- For the experience : automatic query of Copernicus catalogue with user criteria :

The screenshot shows a web browser at the URL geometadatalabs.eu/Category:Georesources. The page features a blue sidebar with the 'GM Labs' logo and a navigation menu including 'Main page', 'Georesources', 'URCLIM Infolab', 'Linked data group', 'Historical and Time Stamped Data Group', 'FAQ', 'Tools', 'Upload file/image', 'Special pages', 'Recent changes', and 'Help'. The main content area is titled 'Category:Georesources' and includes a search bar, a 'Discussion' tab, and a 'Semantic Drilldown[Expand]' button. Below the title, it states 'This category uses the form GeoresourceForm.' and 'The following 80 pages are in this category, out of 80 total.' The resources are listed in alphabetical order under letters A, B, C, and E. The list includes various datasets such as 'Administratives units French territory (LoD1)', 'BD ALTI', 'BD FORET version 2', 'BD ORTHO®', 'Corine Land Cover (CLC) 1990, Version 18.5', 'Corine Land Cover (CLC) 2000, Version 18.5', 'Corine Land Cover (CLC) 2006, Version 18.5.1', 'Corine Land Cover (CLC) 2012, Version 18.5.1', 'Corine Land Cover (CLC) 2018', 'Hillshade derived from EU-DEM version 1.0', 'HRIM HR 2000', 'HRIM HR FalseColour 2006 Cov1', 'HRIM HR FalseColour 2006 Cov2', 'HRIM HR FalseColour 2009 Cov1', 'HRIM HR FalseColour 2012 Cov1', 'HRIM HR FalseColour Cov1 2015', 'HRIM HR TrueColour 2012 Cov2 20m', 'HRIM HR TrueColour 2012 Cov2 5m', 'HRIM VHR TrueColour 2012', 'IGNF BDTOPOr 2-1 OROGRAPHIE', 'IGNF BDTOPOr 2-1 RESEAU ROUTIER', 'IGNF BDTOPOr 2-1 TOPONYMES', 'IGNF BDTOPOr 2-1 TRANSPORT ENERGIE', 'IGNF BDTOPOr 2-1 VEGETATION', 'IGNF BDTOPOr 2-1 VOIES FERREES ET AUTRES', 'IGNF BDTOPOr 2-1 ZONE ACTIVE', 'IGNF EBMr 4-0', and 'IGNF ELF Buildings 1-0'.

Category:Georesources

This category uses the form [GeoresourceForm](#).

[Semantic Drilldown\[Expand\]](#)

Pages in category "Georesources"

The following 80 pages are in this category, out of 80 total.

A

- [Administratives units French territory \(LoD1\)](#)
- [Ancillary data on population estimates by Urban Atlas polygons](#)
- [Aspect derived from EU-DEM version 1.0](#)

B

- [BD ALTI](#)
- [BD FORET version 2](#)
- [BD ORTHO®](#)

C

- [Contours...Iris](#)
- [CORINE Land Cover](#)
- [Corine Land Cover \(CLC\) 1990, Version 18.5](#)
- [Corine Land Cover \(CLC\) 2000, Version 18.5](#)
- [Corine Land Cover \(CLC\) 2006, Version 18.5.1](#)
- [Corine Land Cover \(CLC\) 2012, Version 18.5.1](#)
- [Corine Land Cover \(CLC\) 2018](#)

E

- [Hillshade derived from EU-DEM version 1.0](#)
- [HRIM HR 2000](#)
- [HRIM HR FalseColour 2006 Cov1](#)
- [HRIM HR FalseColour 2006 Cov2](#)
- [HRIM HR FalseColour 2009 Cov1](#)
- [HRIM HR FalseColour 2012 Cov1](#)
- [HRIM HR FalseColour Cov1 2015](#)
- [HRIM HR TrueColour 2012 Cov2 20m](#)
- [HRIM HR TrueColour 2012 Cov2 5m](#)
- [HRIM VHR TrueColour 2012](#)
- [IGNF BDTOPOr 2-1 OROGRAPHIE](#)
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- [IGNF BDTOPOr 2-1 TOPONYMES](#)
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STEP 2 : RETRIEVE RESOURCES OF POTENTIAL RELEVANCE AND COMPARE THEM

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URCLIMGeoresources

This page is UNDER CONSTRUCTION. You may contribute as you wish. It lists Georesources of potential interest to URCLIM based on expressed requirements. The header are proposed based on the requirements expressed on the infolab ([URCLIMInfoRequirements](#)). Sometimes a given resource can fall into several categories.

Contents [hide]

1 Taxonomies, Vocabularies

1.1 GEMET

1.2 Wikidata

1.3 OpenStreetMap tags

1.4 DCAT

1.5 PROV-O (W3C)

1.6 Fine-grained classification taxonomies

2 Land cover

2.1 Ecoclimap

2.2 Surfex

2.3 Urban Atlas

2.4 Corine Land Cover

2.5 Copernicus High Resolution Layers (HRL)

2.6 LandCover Belgium 1m 2012

3 Land use

3.1 Urban Atlas

4 (Building) height information

5 Vegetation information

6 Imagery

6.1 French BD Ortho

7 Potential software

Taxonomies, Vocabularies

STEP 2 : RETRIEVE RESOURCES OF POTENTIAL RELEVANCE AND COMPARE THEM

- Retrieve resources of potential relevance and evaluate their relevance :
 - Need to present the relevance (i.e. how it relates to the expressed need for information) and include samples
 - Difficult to evaluate the relevance of a vocabulary
 - Wrt software : describe specific processes rather than the tools
 - Include (cross-references) links to similar input data, similar tools

Note : additional user criteria :

- capacity to get comparable information on at least one other city (these can be comparable research data),

it should be feasible for the user to appropriate the corresponding tools to generate the information layer

STEP 2 : RETRIEVE RESOURCES OF POTENTIAL RELEVANCE AND COMPARE THEM

GeoClimate chain - Gec

geometadatalabs.eu/GeoClimate_chain

Nature of georesource : Software

Data specifications
URL : <https://github.com/orbisgis/geoclimate/>

Link to metadata :

Lineage information :

Condition of access : OpenSource GPL 3

Geographical identifier :

Geographic extent(s) :

Coordinate Reference System :

Description :

The GeoClimate chain is an **inprogress** "program", developed within the URCLIM project, by members of the Lab-STICC (CNRS UMR 6285) french laboratory.

This chain aims at processing geographic data in order to compute geo-indicators, needed by the TEB model.

The following descriptions are (or will be) provided :

- the abstract input model
- the preprocess part, to retrieve OSM data (in progress, will be available as soon as possible)
- the GeoClimate chain (in progress, will be available as soon as possible)

Review list

	Review wording	Review georesource(s)	Review description
Review n°3	Feedback of using geoclimate chain	GeoClimate chain Using Geoclimate to generate urban indicators	<p>My goal is to produce urbain indicators with osm data.</p> <p>It seemed to me the installation neededed to be in developper mode, so you have to write a script and launch it in a console already installed.</p> <p>I din't find an example which shows how to configure a PostGIS connexion. Request data from H2 database is not simple, there is not a lot of documentation.</p> <p>I had to stop temporarily</p>

STEP 3 : EXPLOITATION OF GEODATA

- User capacity to question his results
 - Geodata provenance documentation is key (authorities, technologies)
 - Product specification (what was the targeted *window* of observation), especially complex with some new kind of products (no specification, difficult also to define scope)

CONCLUSION AND FUTURE WORK (1/2)

- Initial problem : contributing to user-oriented catalogues of geodata
- Research question : can a knowledge-based collaborative platform improve the current situation
- Geometadatalabs.eu platform : ~ a metadata sandbox (cf Q-KEN workshop 2017)
- URCLIM infolab : identifying and producing the required metadata to support urban climate scientists access to geodata

CONCLUSION AND FUTURE WORK (2/2)

- On-going : identification of successful collaboration workflows **considering people competences and motivations (incl. motivation to rely on an open infolab)**
- **More advanced query of geonetwork to get visual rendering of retrieved datasets**



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YOUR ATTENTION

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