

# Session #2:

# Advanced semiology

# External sources

# Download TP data

1. [Data to download](#)
2. Unzip the directory to a working directory
3. Open TP2 File

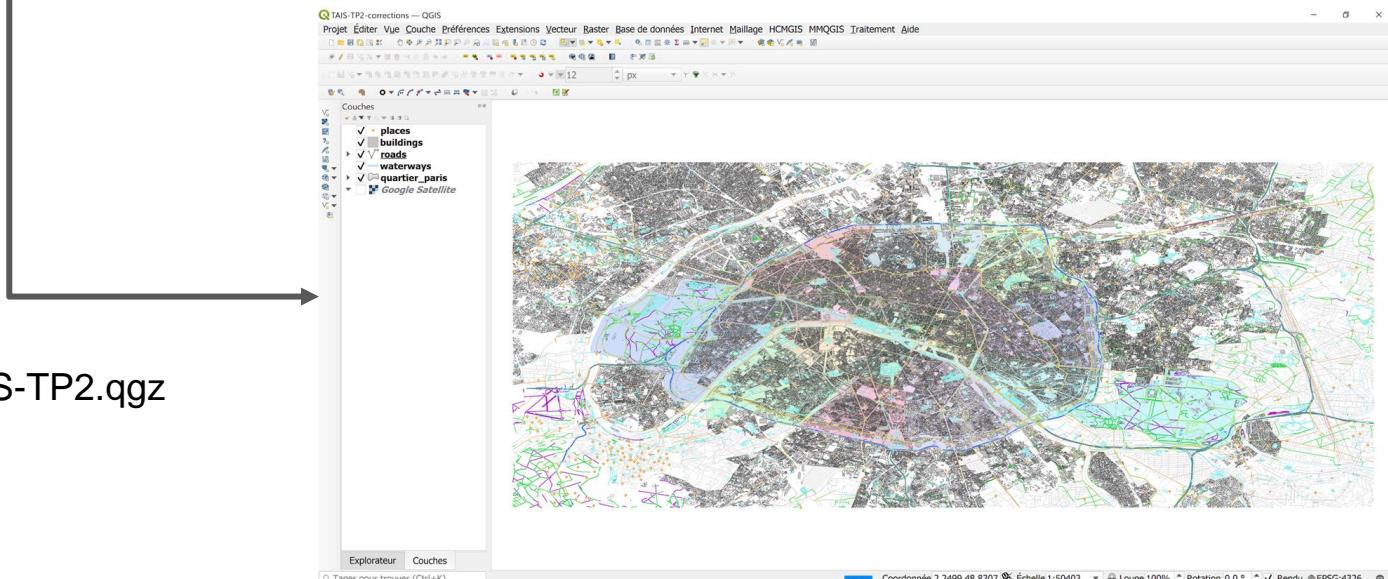
naire_TAIS > 2020-2021 > TP2		▼	↻	Rechercher dans : TP2
Nom	Modifié le	Type		
carto	29/10/2020 11:05	Dossier de fichiers		
data	06/11/2020 15:44	Dossier de fichiers		
export	29/10/2020 11:05	Dossier de fichiers		
TAIS-TP2.qgz	06/11/2020 15:52	QGIS Project		

# Objectives of the TP

- [Download data](#)
- Coordinate systems
- Perform field operations
- Graduated symbology
- Make a table join
- Produce thematic maps

# Open Qgis project file

temp > seminaire_TAIS > 2020-2021 > TP2			
Nom	Modifié le	Type	Taille
carto	29/10/2020 11:05	Dossier de fichiers	
data	06/11/2020 15:44	Dossier de fichiers	
export	29/10/2020 11:05	Dossier de fichiers	
TAIS-TP2.qgz	06/11/2020 15:52	QGIS Project	21 Ko
TAIS-TP2-corrections.qgz	06/11/2020 15:52	QGIS Project	22 Ko



Open Qgis project file TAIS-TP2.qgz

# Shape of Paris ? - Coordinate system

TAIS-TP2-corrections — QGIS

Projet Éditer Vue Couche Préférences Extensions Vecteur Raster Base de données Internet Maillage HCMGIS MMQGIS Traitement Aide

Couches

- ✓ places
- ✓ buildings
- ✓ roads
- ✓ waterways
- ✓ quartier\_paris
- Google Satellite

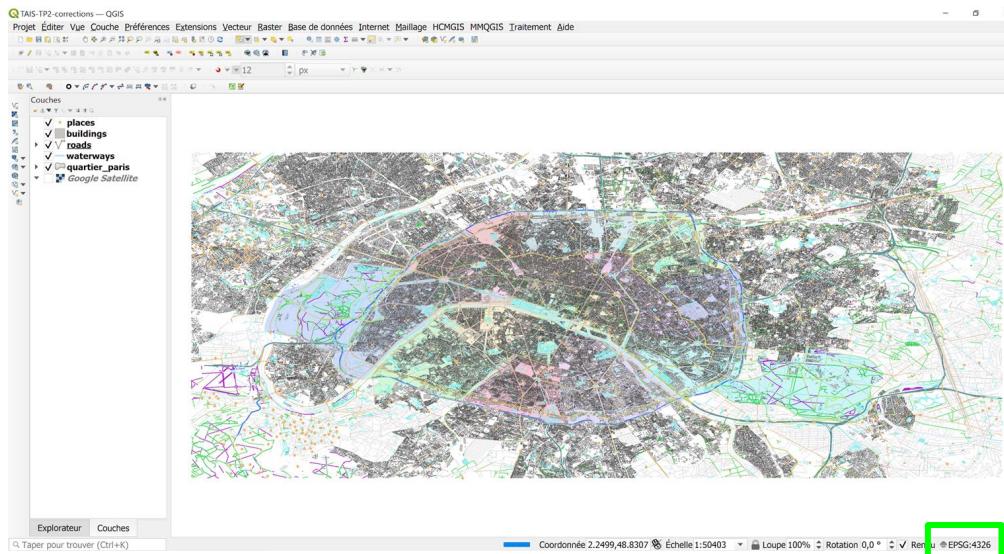
Explorateur Couches

5

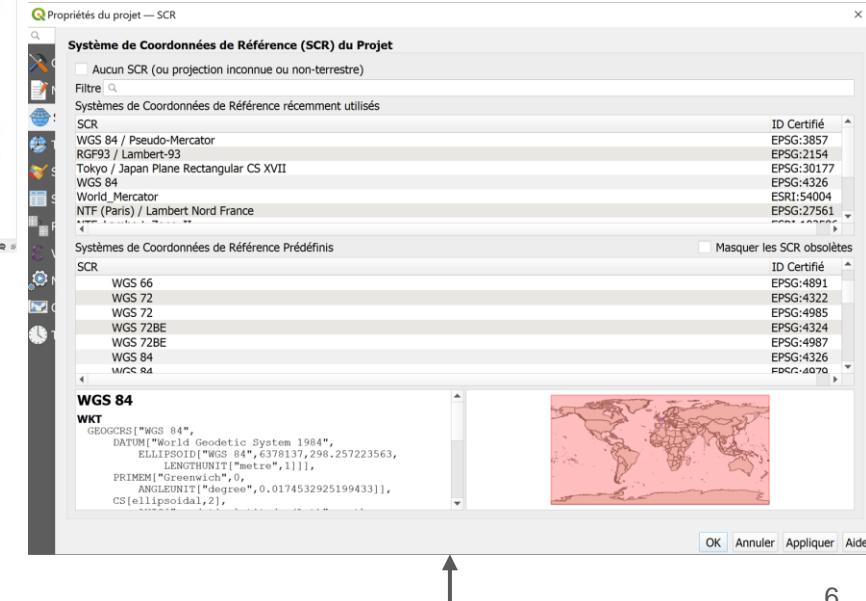
Taper pour trouver (Ctrl+K)

Coordonnée 2.2499,48.8307 Échelle 1:50403 Loupe 100% Rotation 0,0 ° Rendu EPSG:4326

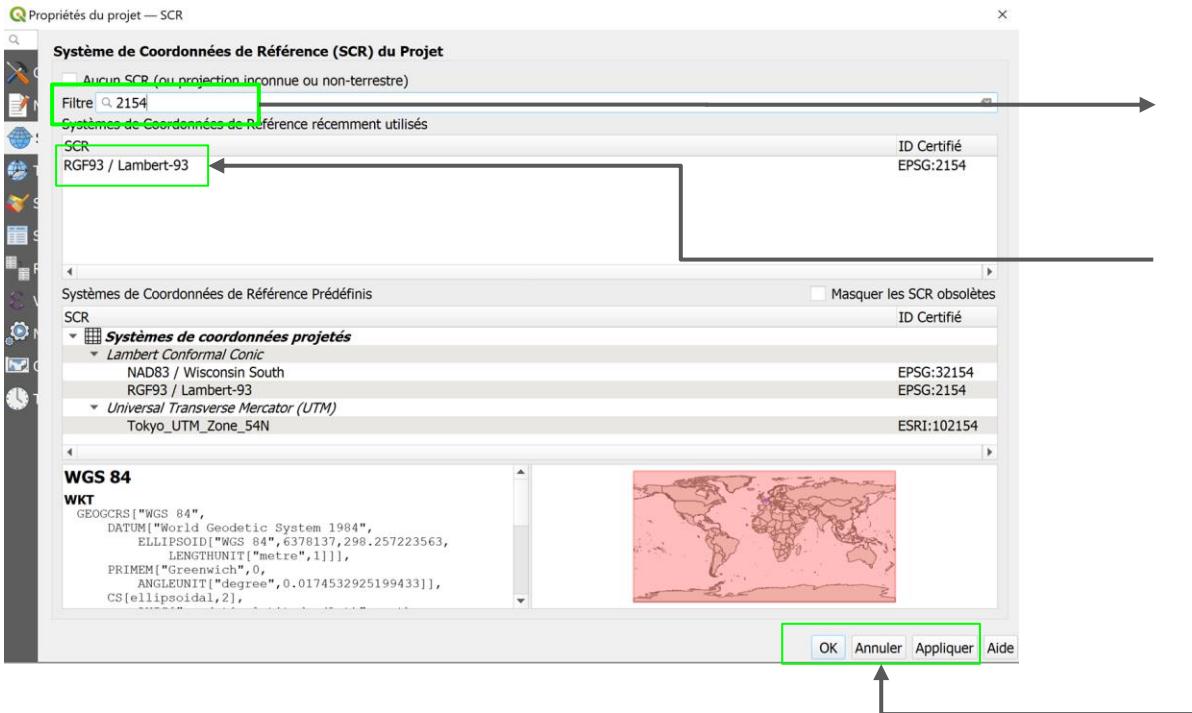
# Reference Coordinate Systems interface



Click on EPSG:4326 at the bottom right  
to open the SCR window  
(Reference Coordinate System)



# Shape of Paris?



1. In Filter, type 2154 to show below RGF93 / Lambert-93.
2. Select in SCR RGF93 / Lambert-93
3. Click Apply / Ok

# Assignment of an SCR - local projection



4326 = geographical coordinates  
World Coordinate System  
longitude, latitude  
expressed in degrees

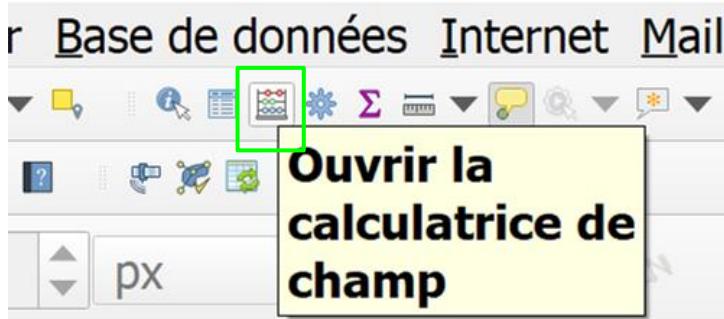
2154 = map coordinate system  
specific to France  
X,Y  
expressed in metres

# Make operations on the fields

The GIS makes it possible to make representations but above all it is possible to automate operations on the fields of the attribute table.

This is possible via the field calculator.

We will work on the roads layer (so we must select roads).



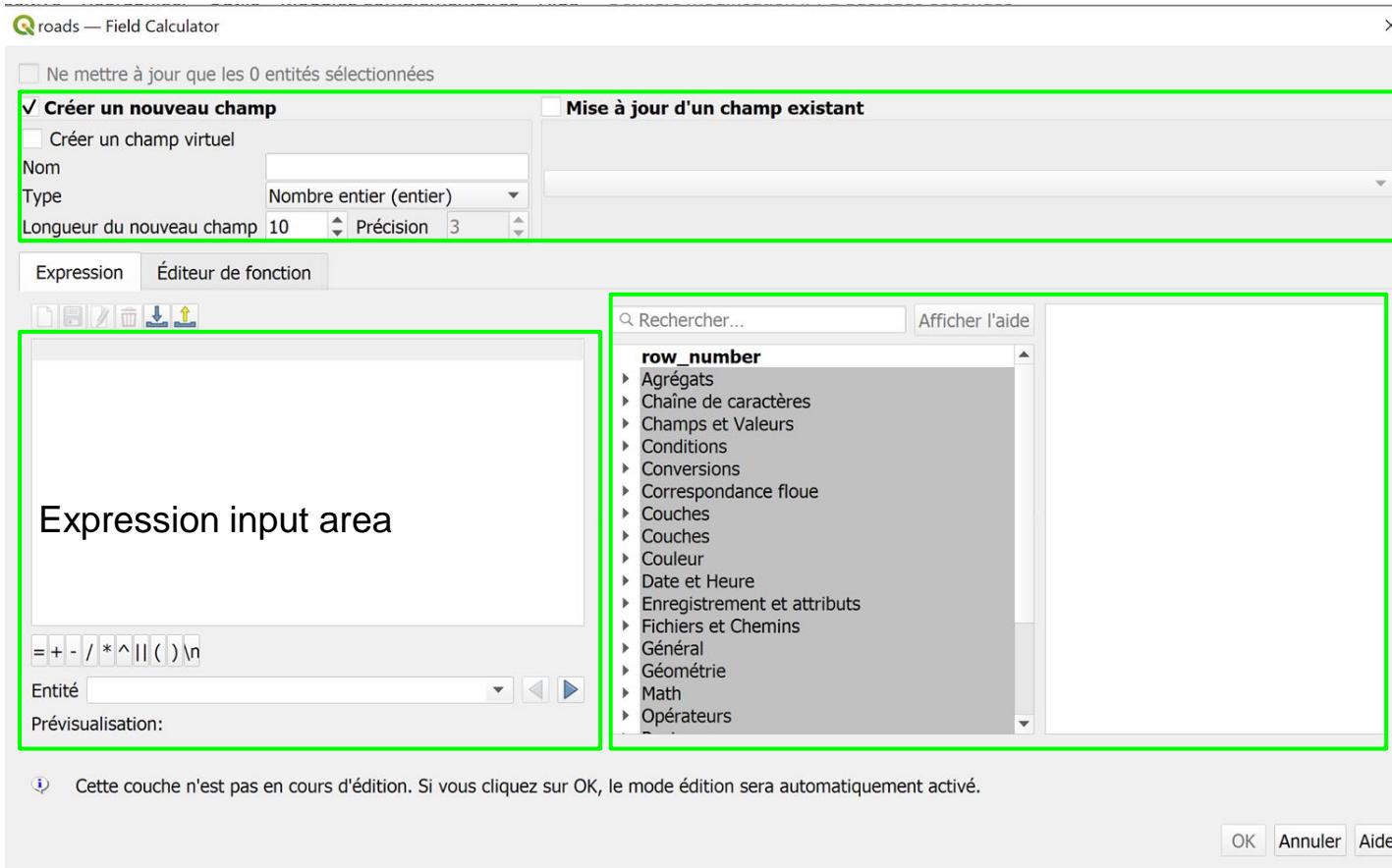
Then either "Open Field Calculator" in the icons under the menu

A screenshot of the QGIS attribute table for the "roads" layer. The table has columns for "osm\_id", "name", and "tertiary". The first row shows values 2569, NULL, and tertiary respectively. The "name" column header is highlighted with a green box. To the right of the table, there's a toolbar with icons, and one of the icons is highlighted with a green box, with a tooltip saying "Ouvrir la calculatrice de champ (Ctrl+I)".

	osm_id	name	tertiary
1	2569	NULL	tertiary

Then either in the attribute table (right-click on the roads layer) then in the icons "Open the field calculator (Ctrl+I)"

# The field calculator



Area of assignment of the value that will be calculated: a new field or the update of an existing field

Possible operations are called functions. They are classified by calculation themes

One can search for a function in the area above.

Documentation is displayed on the right when a function is chosen

# Calculation of road lengths

Let's create a new field:

Name: long

Type: Decimal number

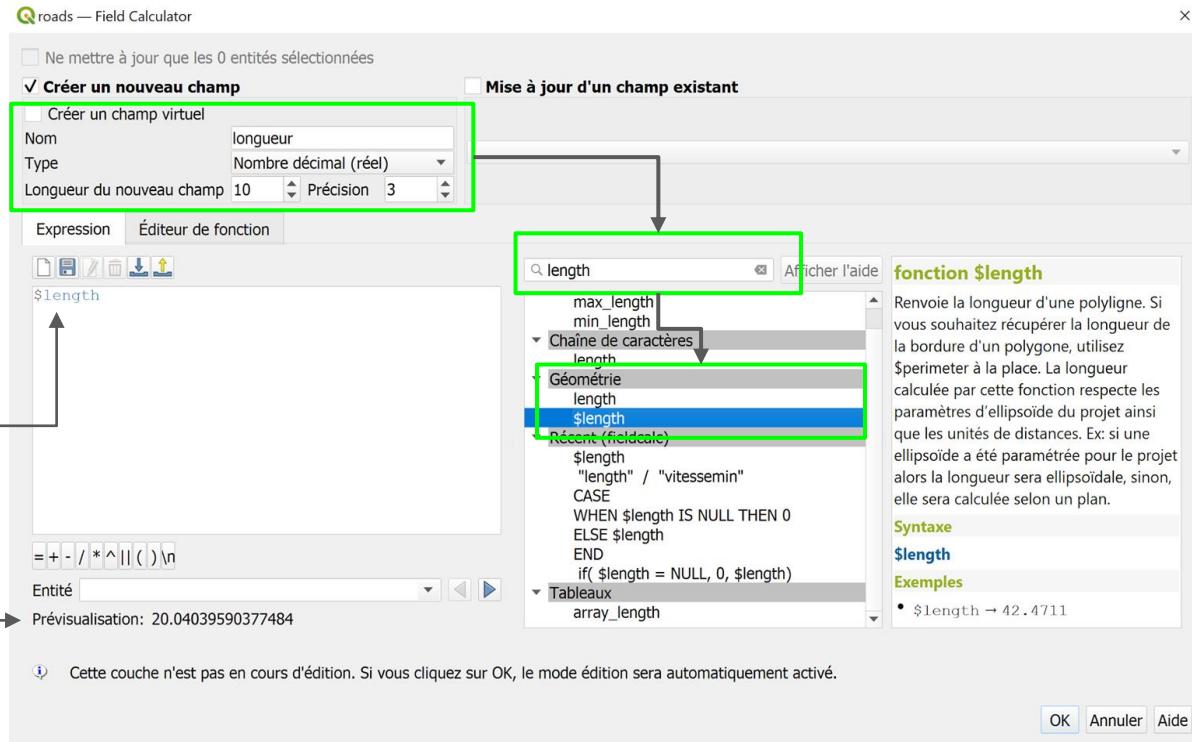
Length: 10, accuracy: 3

In the search box, type length

Select \$length from the Geometry category.

Double-clicking length allows you to pass it in Expression

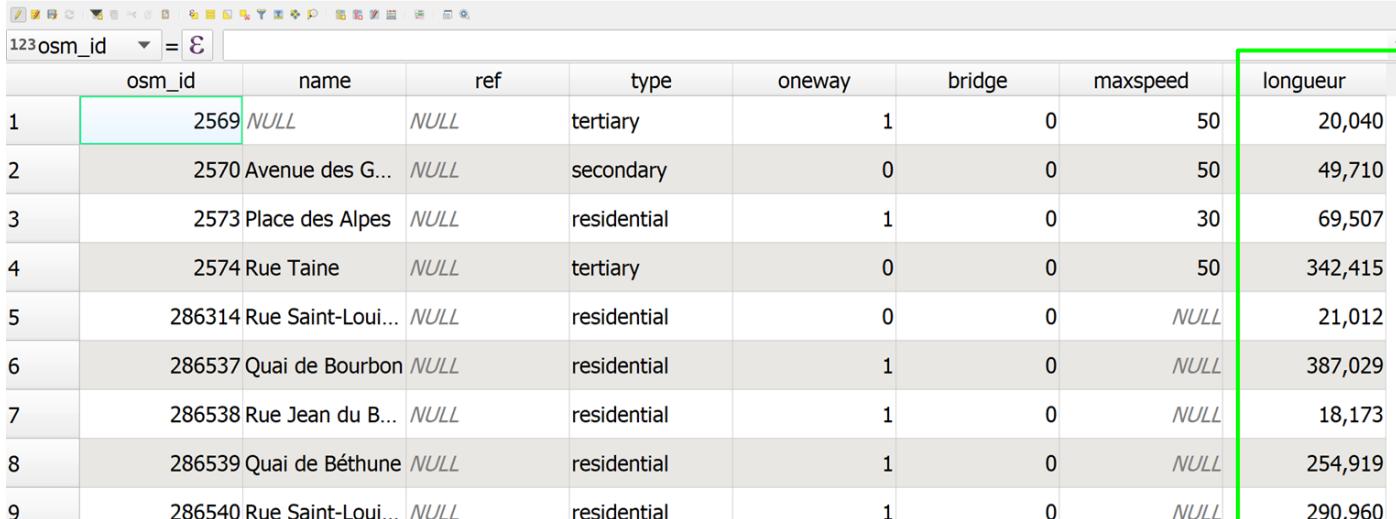
The preview ensures that the function is correct.



Click Ok

# Calculation of road lengths

roads — Features Total: 78265, Filtered: 78265, Selected: 0



The screenshot shows the QGIS attribute table for the 'roads' layer. The table has 9 rows and 8 columns. The columns are: osm\_id, name, ref, type, oneway, bridge, maxspeed, and longueur. A green box highlights the 'longueur' column. An arrow points from the text below to this green box.

osm_id	name	ref	type	oneway	bridge	maxspeed	longueur
1	2569	NULL	NULL	tertiary	1	0	50 20,040
2	2570 Avenue des G...	NULL	secondary	0	0	50	49,710
3	2573 Place des Alpes	NULL	residential	1	0	30	69,507
4	2574 Rue Taine	NULL	tertiary	0	0	50	342,415
5	286314 Rue Saint-Loui...	NULL	residential	0	0	NULL	21,012
6	286537 Quai de Bourbon	NULL	residential	1	0	NULL	387,029
7	286538 Rue Jean du B...	NULL	residential	1	0	NULL	18,173
8	286539 Quai de Béthune	NULL	residential	1	0	NULL	254,919
9	286540 Rue Saint-Loui...	NULL	residential	1	0	NULL	290,960

It can be seen that the attribute table has been enriched by a new length column.

# Exercise: calculating the travel time of a street

1. We will first calculate the speed of travel on the streets.

	osm_id	name	ref	type	oneway	bridge	maxspeed	longueur
1	2569	NULL	NULL	tertiary	1	0	50	20,040
2	2570	Avenue des G...	NULL	secondary	0	0	50	49,710
3	2573	Place des Alpes	NULL	residential	1	0	30	69,507
4	2574	Rue Taine	NULL	tertiary	0	0	50	342,415
5	286314	Rue Saint-Loui...	NULL	residential	0	0	NULL	21,012
6	286537	Quai de Bourbon	NULL	residential	1	0	NULL	387,029
7	286538	Rue Jean du B...	NULL	residential	1	0	NULL	18,173
8	286539	Quai de Béthune	NULL	residential	1	0	NULL	254,919

But we see that some objects have a NULL attribute for the maxspeed field. NULL implies that the value is not known.

# Exercise: calculating the travel time of a street

2. We will therefore create an intermediate field that makes it possible to obtain average speeds for all streets with the following algorithm:

if maxspeed is not NULL then speed = 0.8 x maxspeed

if maxspeed is NULL then we set the speed at 50 (km/h) x 0.7

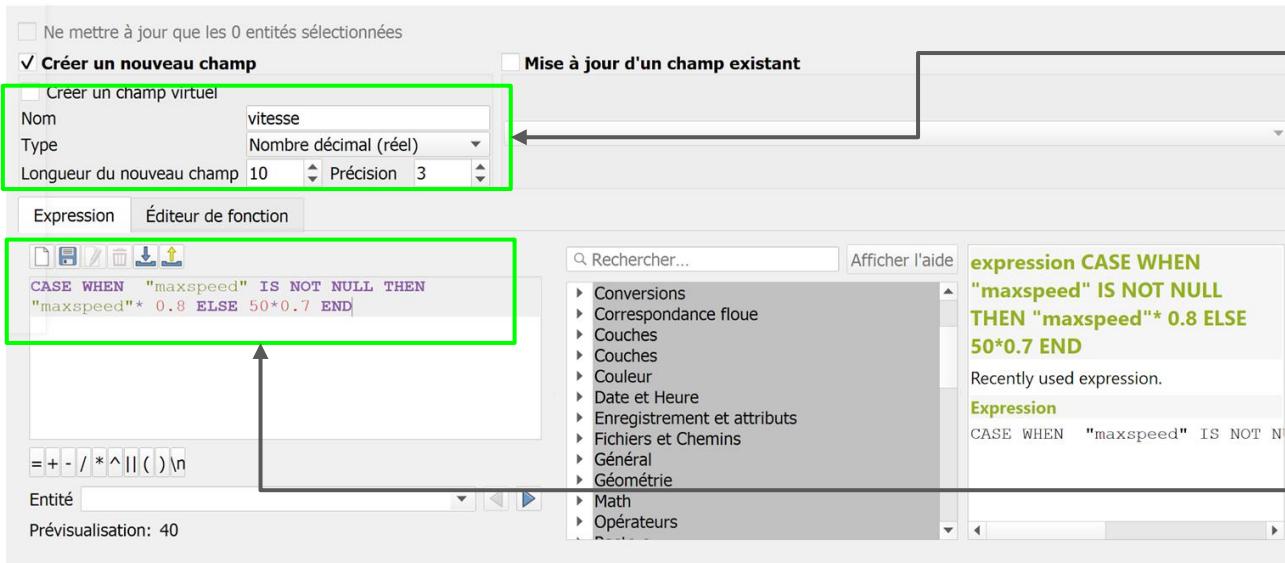
Ne mettre à jour que les 0 entités sélectionnées

Crée un nouveau champ  Mise à jour d'un champ existant

Crée un champ virtuel

Nom: vitesse  
Type: Nombre décimal (réel)  
Longueur du nouveau champ: 10      Précision: 3

Expression    Éditeur de fonction



```
CASE WHEN "maxspeed" IS NOT NULL THEN
      "maxspeed"* 0.8 ELSE
      50*0.7 END
```

Entité:  Prévisualisation: 40

Rechercher... Afficher l'aide

- Conversions
- Correspondance floue
- Couches
- Couches
- Couleur
- Date et Heure
- Enregistrement et attributs
- Fichiers et Chemins
- Général
- Géométrie
- Math
- Opérateurs

expression CASE WHEN  
"maxspeed" IS NOT NULL  
THEN "maxspeed"\* 0.8 ELSE  
50\*0.7 END

Recently used expression.

Expression

CASE WHEN "maxspeed" IS NOT N

3. Create a speed field
4. Enter the following expression:

```
CASE WHEN "maxspeed" IS NOT NULL
      THEN "maxspeed"* 0.8
      ELSE 50*0.7
      END
```

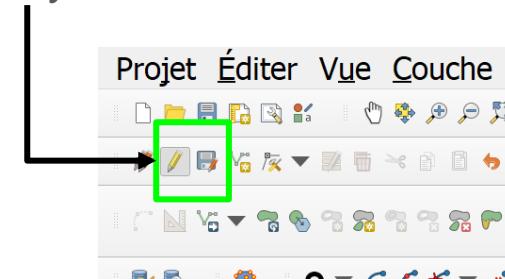
# Exercise: calculating the travel time of a street

5. Clicking Ok gets a new speed field.

	maxspeed	longueur	vitesse
0	50	20,040	40,000
0	50	49,710	40,000
0	30	69,507	24,000
0	50	342,415	40,000
0	NULL	21,012	35,000
0	NULL	387,029	35,000
0	NULL	18,173	35,000

6. Exercise: calculate a new field named time (in m/s) that would give the travel time of a street knowing the length of the street and its speed.

7. When the calculations are complete, the changes to the road layer must be recorded.



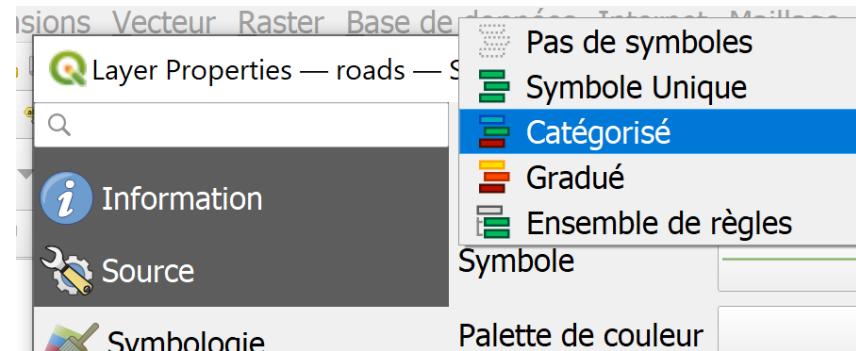
# Towards a graduated symbology

Reminders (go to the Layer Properties / Symbology menu):

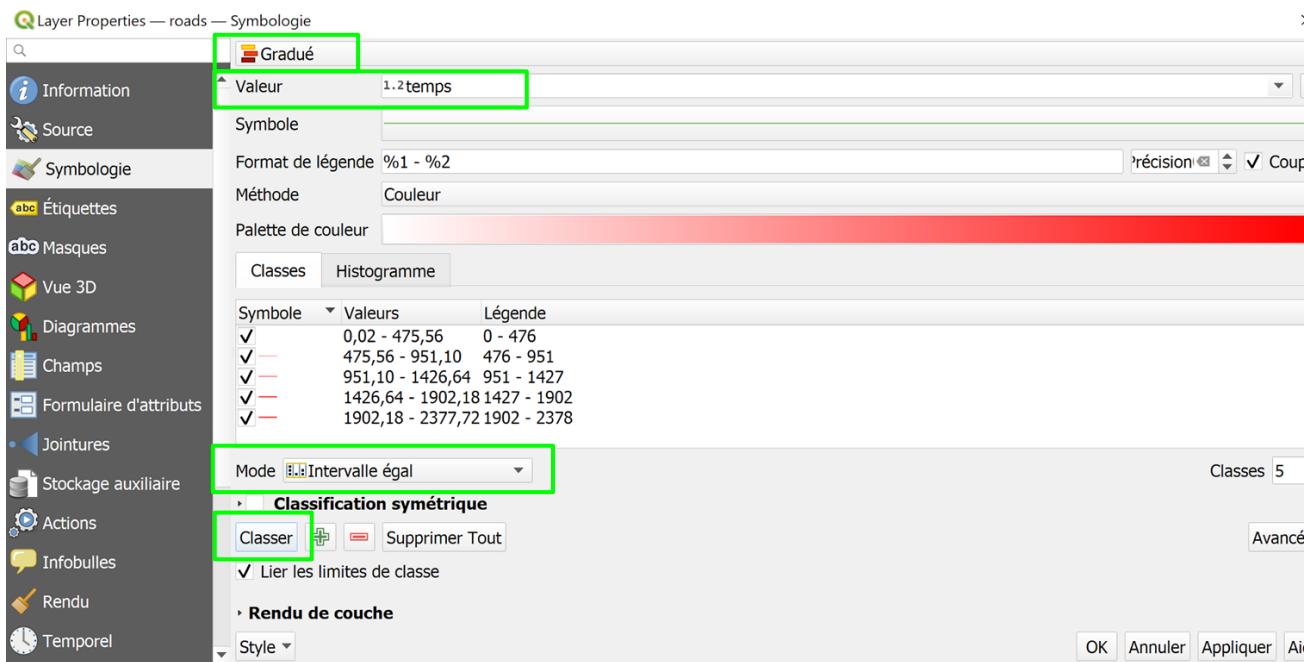
Unique symbol, all objects will have the same shape.

Categorized, symbols differ according to the attributes of a field = qualitative representation.

Graduated, the representation will adapt to numerical values = quantitative representation



# Parameters of a graduated symbology



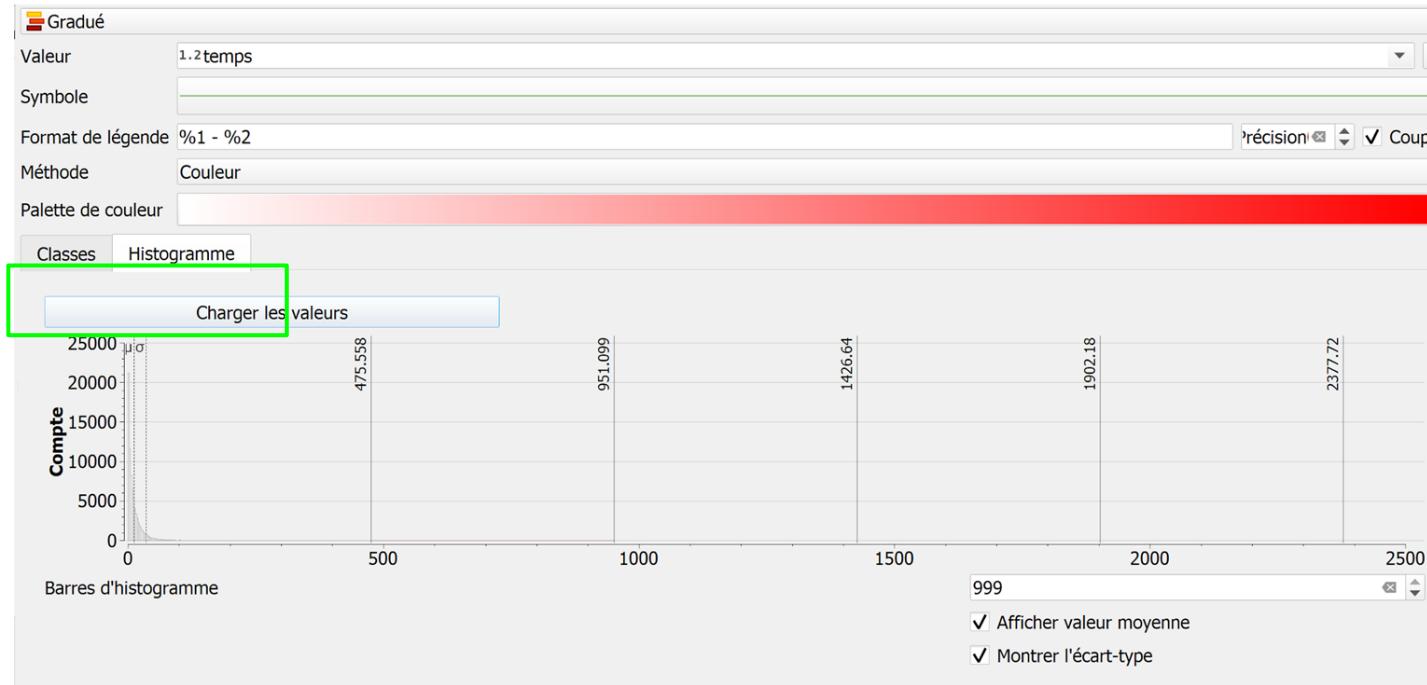
Let's apply the following parameters: 1. Choose Graduated from the symbology choice menu, 2. Select the time field as the value, 3. Choose the representation mode Equal interval, 4. Click on Classify

# Visualization of a graded symbology



Let's apply the following parameters: 1. Choose Graduated from the symbology choice menu, 2. Select the time field as the value, 3. Choose the representation mode Equal interval, 4. Click on Classify

# Understand the different modes of representation

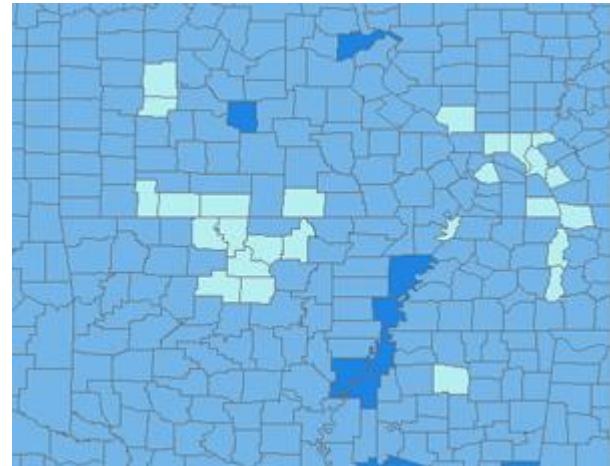


Change representation modes in the Classes menu and load values into Histogram for equal intervals, equal sizes, and natural breaks modes

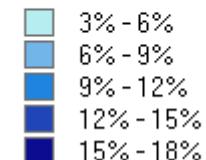
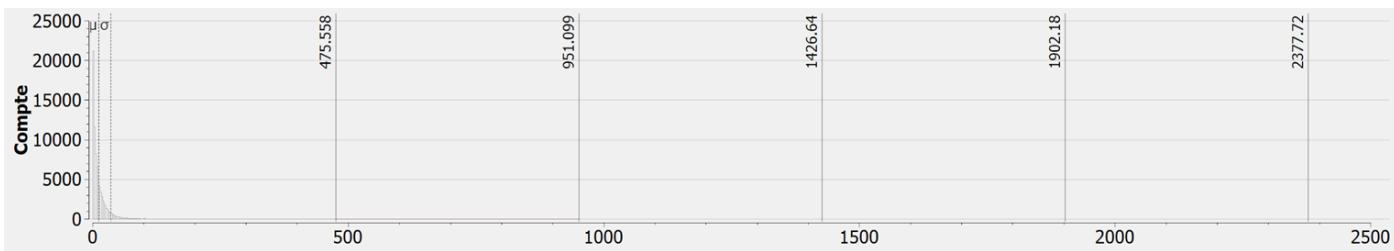
# Equal interval mode

Equal intervals divide the attribute value range into subranges of the same sizes. This allows you to specify the number of intervals, and QGis automatically determines class interrupts based on the range of values. For example, if you specify three classes for a field with values ranging from 0 to 300, QGis will create three classes with ranges 0-100, 101-200, and 201-300.

Equal intervals are particularly suitable for familiar data ranges, such as percentages and temperatures. This method highlights the amount of an attribute value relative to other values.



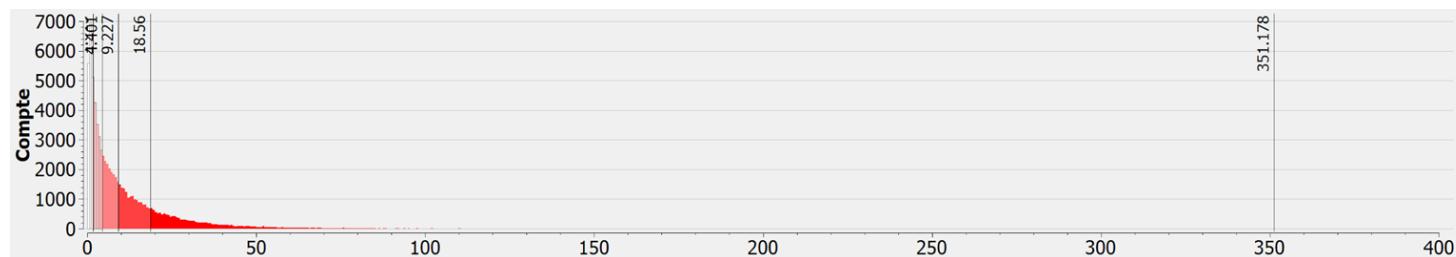
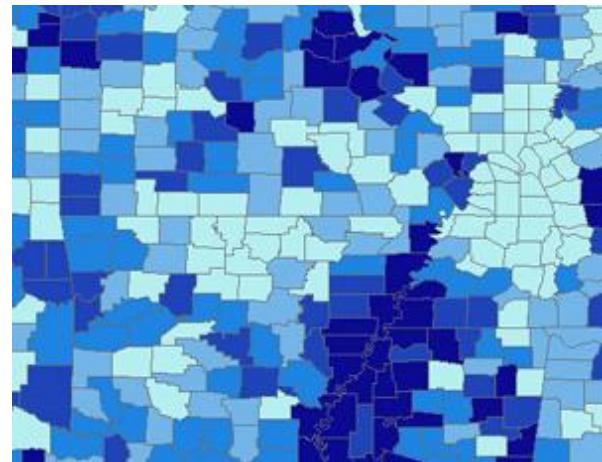
Percent Population  
Under 5



# Equal number mode - quantiles

Each class contains an equal number of entities. A classification of equal numbers is well suited to linearly distributed data. Equal sizes assign the same number of data values to each class. There are no empty classes or classes with too few or too many values.

Because features are grouped into equal numbers in each class using the Equal Numbers classification, the resulting map is often misleading. Sometimes similar entities are placed in adjacent classes or entities with very different values are in the same class. You can minimize this distortion by increasing the number of classes.



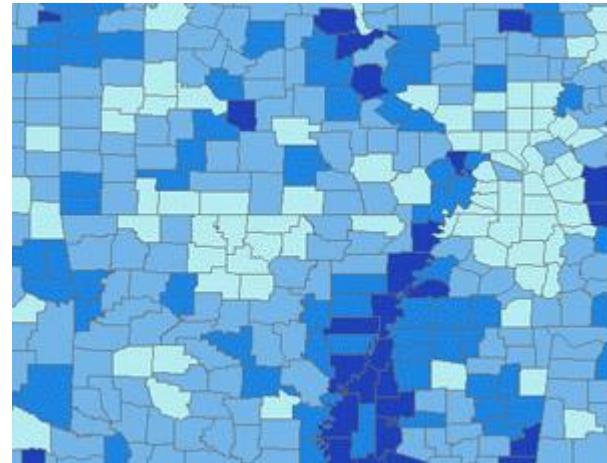
Percent Population  
Under 5

- 2.7% - 6.3%
- 6.3% - 6.8%
- 6.8% - 7.2%
- 7.2% - 7.8%
- 7.8% - 18%

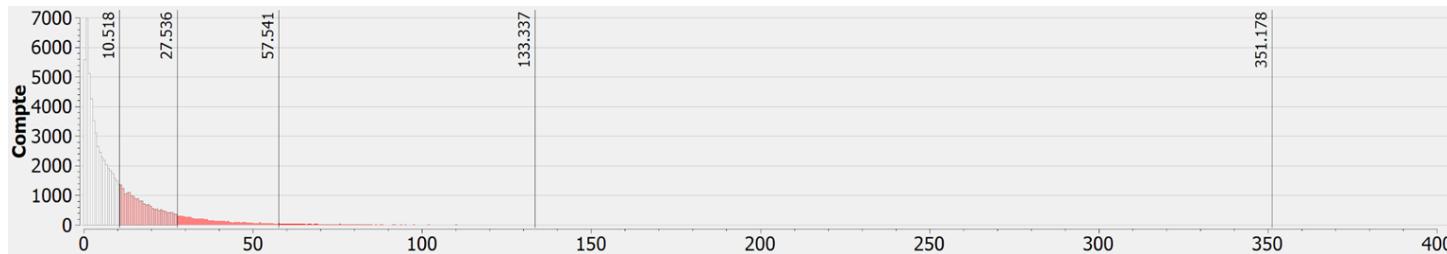
# Mode of representation by natural breaks

Natural threshold classes are based on the natural groupings inherent in the data. Class interrupts are identified as those that best group similar values and optimize differences between classes. Entities are divided into classes whose boundaries are defined where there are large differences in data values.

Natural thresholds are data-specific classifications and are not suitable for comparing multiple maps created from different underlying information.



Percent Population Under 5



3% - 6%
6% - 7%
7% - 8%
8% - 10%
10% - 18%

# Test the different modes of representation



Equal intervals

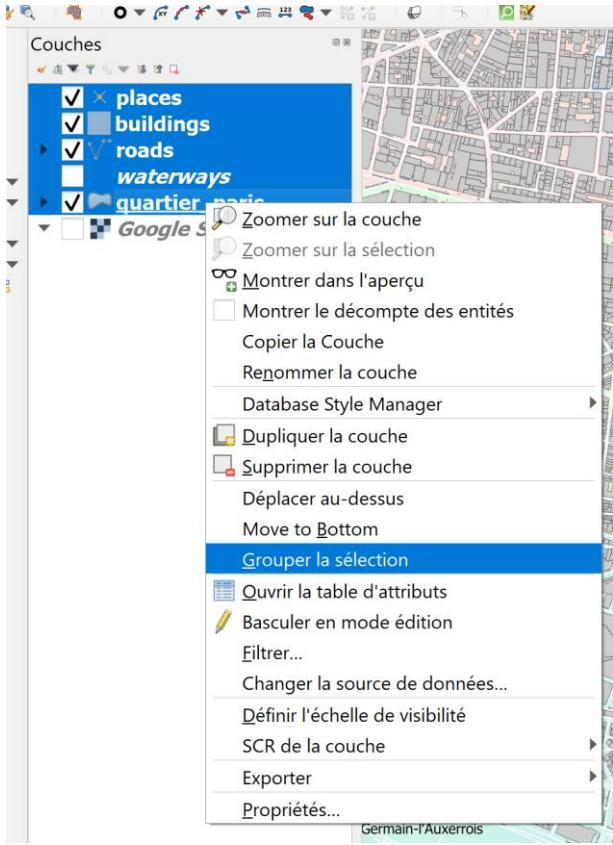


Quantiles



Natural breaks

# Group layers by theme



Select all layers, except the Google layer, right-click on the selection, group the selection and give a name: "osm/topography".

# Thematic map exercises

Couches

- osm/topographie
  - places
  - buildings
  - roads
  - waterways
  - quartier\_paris
- Google Satellite

Épingler à Copier Coller Accès rapide Presse-papiers Organiser Nouveau dossier Renommer Propriétés Inverser la sélection Nouveau Ouvrir Sélectionner Rechercher dans : Contours\_IRIS

TP2 carto data ign Contours\_IRIS Nom Modifié le Type

- CONTOURS-IRIS-IDF.cpg 07/11/2020 08:59 Fichier CPG
- CONTOURS-IRIS-IDF.dbf 07/11/2020 08:59 Classeur OpenCF
- CONTOURS-IRIS-IDF.prj 07/11/2020 08:59 Fichier PRJ
- CONTOURS-IRIS-IDF.shp 07/11/2020 08:59 Fichier SHP
- CONTOURS-IRIS-IDF.shx 07/11/2020 08:59 Fichier SHX

1. Upload file  
TP2/data/ign/Contours\_IRIS/Contours\_IRIS-IDF.shp

Couches

- CONTOURS-IRIS-IDF
- base-ic-evol-struct-pop-2
  - osm/topographie
    - places
    - buildings
    - roads
    - waterways
    - quartier\_paris
  - Google Satellite

Épingler à Copier Coller Accès rapide Presse-papiers Organiser Nouveau dossier Renommer Propriétés Inverser la sélection Nouveau Ouvrir Sélectionner Rechercher dans : insee

seminaire\_TAIS Nom Modifié le Type

- base-ic-evol-struct-pop-2016\_Paris.csv 08/11/2020 20:00 Fichier CSV Micro...

2. Upload file  
TP2/data/insee/base-evol-struct....dbf

# Iris (statistical and administrative areas): IGN / INSEE co-production

Iris blocks have been defined by INSEE and IGN for census purposes. Municipalities with at least 10,000 inhabitants and most municipalities with 5,000 to 10,000 inhabitants are divided into IRIS. This division, the basic link for the dissemination of infra-municipal statistics, constitutes a division of the territory of these municipalities into "districts" whose population is of the order of 2,000 inhabitants.

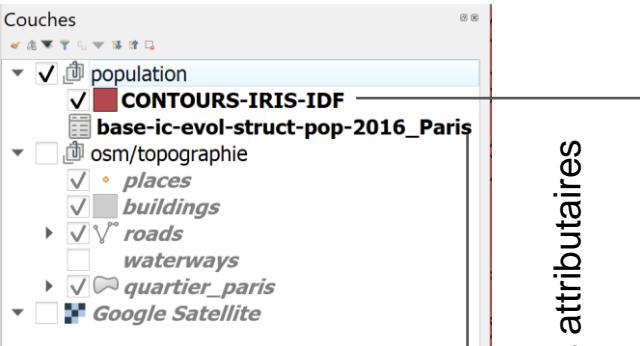


IGN -> geometric data

INSEE -> statistical data

IRIS	REG	DEP	UU2010	COM	LIBCOM	TRIRIS	GRD_QUART	LIBIRIS	TYP_IRIS	MODIF_IRIS	LAB_IRIS	P16_POP
751010101	11	75	851	75101 Paris 1er Arro	750011	7510101 Saint-Germain H			0	1	976	
751010102	11	75	851	75101 Paris 1er Arro	750011	7510101 Saint-Germain A			0	3	185	
751010103	11	75	851	75101 Paris 1er Arro	750011	7510101 Saint-Germain A			0	3	237	
751010104	11	75	851	75101 Paris 1er Arro	750011	7510101 Saint-Germain A			0	3	3	
751010105	11	75	851	75101 Paris 1er Arro	750011	7510101 Saint-Germain A			0	3	0	
751010199	11	75	851	75101 Paris 1er Arro	750011	7510101 Seine et Berges D			0	3	0	
751010201	11	75	851	75101 Paris 1er Arro	750021	7510102 Les Halles 1 H			0	1	2022	
751010202	11	75	851	75101 Paris 1er Arro	750021	7510102 Les Halles 2 H			0	1	1702	
751010203	11	75	851	75101 Paris 1er Arro	750021	7510102 Les Halles 3 H			0	1	2377	
751010204	11	75	851	75101 Paris 1er Arro	750021	7510102 Les Halles 4 H			0	2	2204	
751010205	11	75	851	75101 Paris 1er Arro	750021	7510102 Les Halles 5 A			0	3	0	
751010206	11	75	851	75101 Paris 1er Arro	750021	7510102 Les Halles 6 A			0	3	564	
751010301	11	75	851	75101 Paris 1er Arro	750011	7510103 Palais Royal 1H			0	1	2849	
751010302	11	75	851	75101 Paris 1er Arro	750011	7510103 Palais Royal 2A			0	3	121	
751010303	11	75	851	75101 Paris 1er Arro	750011	7510103 Palais Royal 3A			0	3	270	
751010401	11	75	851	75101 Paris 1er Arro	750011	7510104 Place Vendon H			0	1	1291	
751010402	11	75	851	75101 Paris 1er Arro	750011	7510104 Place Vendon A			0	2	1452	
751020501	11	75	851	75102 Paris 2e Arror	750031	7510205 Gallion 1 A			0	3	1018	
751020502	11	75	851	75102 Paris 2e Arror	750031	7510205 Gallion 2 A			0	3	246	
751020503	11	75	851	75102 Paris 2e Arror	750031	7510205 Gallion 3 A			0	3	192	
751020601	11	75	851	75102 Paris 2e Arror	750031	7510206 Vivienne 1 H			0	1	1732	
751020602	11	75	851	75102 Paris 2e Arror	750031	7510206 Vivienne 2 A			0	2	1314	
751020701	11	75	851	75102 Paris 2e Arror	750041	7510207 Mail 1 H			0	1	1702	
751020702	11	75	851	75102 Paris 2e Arror	750041	7510207 Mail 2 H			0	1	1823	
751020703	11	75	851	75102 Paris 2e Arror	750041	7510207 Mail 3 H			0	1	2012	
751020704	11	75	851	75102 Paris 2e Arror	750031	7510207 Mail 4 A			0	3	845	

# Visualizing attribute tables



1. Create a population group, containing the CONTOURS-IRIS and base-ic layers

Visualiser les tables attributaires

	INSEE_COM	NOM_COM	IRIS	CODE_IRIS	NOM_IRIS	TYP_IRIS
1	93045	Les Lilas	0103	930450103	L'Eglise	H
2	95197	Deuil-la-Barre	0107	951970107	Galathée Centre	H
3	95018	Argenteuil	1001	950181001	Cité Jardin d'O.	H
4	78361	Mantes-la-Jolie	0114	783610114	Zac Henry Iv	H
5	95427	Montmagny	0102	954270102	La Plante des	D
6	78138	Chanteloup-les...	0101	781380101	Le Bois Village	H
7	95277	Gonesse	0302	952770302	Saint-Blin Tulipe	H
8	75120	Paris 20e Arron...	8002	751208002	Charonne 2	H
9	78255	Frenneuse	0000	782550000	Frenneuse	Z
10	75119	Paris 19e Arron...	7520	751197520	Amérique 20	H
11	75114	Paris 14e Arron...	5506	751145506	Petit Montrouge	H
12	78644	La Verrière	0101	786440101	Bois de l'Étang	H
13	91017	Angervilliers	0000	910170000	Angervilliers	Z
14	92024	Clichy	0403	920240403	Klock	H
15	78567	Saint-Martin-la...	0000	785670000	Saint-Martin-la... 2	Z
16	91631	Varennes-Jarcy	0000	916310000	Varennes-Jarcy	Z
17	78621	Trappes	0106	786210106	Carco Marot d...	H
18	75116	Paris 16e Arron...	6410	751166410	Chaillot 10	A
19	94068	Saint-Maur-de...	0102	940680102	Adamville 2	H

The CODE\_IRIS format = INSEE\_COM + IRIS

For example, for IRIS L'église dans la commune des Lilas, we have:  
93045 | 0103 = 930450103

	IRIS	REG	DEP	UU2010	COM	LIBCOM	TRIRIS
1	751020704	75	00851	75102	Paris 2e Arron...	750091	
2	751020801	11	75	00851	75102	Paris 2e Arron...	750051
3	751020702	11	75	00851	75102	Paris 2e Arron...	750041
4	751020703	11	75	00851	75102	Paris 2e Arron...	750041
5	751062102	11	75	00851	75106	Paris 6e Arron...	750231
6	751062103	11	75	00851	75106	Paris 6e Arron...	750231
7	751052099	11	75	00851	75105	Paris 5e Arron...	750221
8	751062101	11	75	00851	75106	Paris 6e Arron...	750231
9	751052004	11	75	00851	75105	Paris 5e Arron...	750221
10	751052005	11	75	00851	75105	Paris 5e Arron...	750211
11	751052002	11	75	00851	75105	Paris 5e Arron...	750211
12	751052003	11	75	00851	75105	Paris 5e Arron...	750221
13	751062301	11	75	00851	75106	Paris 6e Arron...	750251
14	751062302	11	75	00851	75106	Paris 6e Arron...	750251
15	751062204	11	75	00851	75106	Paris 6e Arron...	750241
16	751062205	11	75	00851	75106	Paris 6e Arron...	750241

This format is identical to that of the IRIS field of the INSEE table

# To a join operation

CONTOURS-IRIS-IDF — Features Total: 5262, Filtered: 5262, Selected: 0

	INSEE_COM	NOM_COM	IRIS	CODE_IRIS	NOM_IRIS
1	75101	Paris 1er Arro...	0101	751010101	Saint-Germain l'Auxerrois 1
2	75101	Paris 1er Arro...	0102	751010102	Saint-Germain l'Auxerrois 2
3	75101	Paris 1er Arro...	0103	751010103	Saint-Germain l'Auxerrois 3
4	75101	Paris 1er Arro...	0104	751010104	Saint-Germain l'Auxerrois 4
5	75101	Paris 1er Arro...	0105	751010105	Tuileries
6	75101	Paris 1er Arro...	0199	751010199	Seine et Berges
7	75101	Paris 1er Arro...	0201	751010201	Les Halles 1
8	75101	Paris 1er Arro...	0202	751010202	Les Halles 2
9	75101	Paris 1er Arro...	0203	751010203	Les Halles 3
10	75101	Paris 1er Arro...	0204	751010204	Les Halles 4
11	75101	Paris 1er Arro...	0205	751010205	Les Halles 5
12	75101	Paris 1er Arro...	0206	751010206	Les Halles 6
13	75101	Paris 1er Arro...	0301	751010301	Palais Royal 1
14	75101	Paris 1er Arro...	0302	751010302	Palais Royal 2
15	75101	Paris 1er Arro...	0303	751010303	Palais Royal 3
16	75101	Paris 1er Arro...	0401	751010401	Place Vendome 1
17	75101	Paris 1er Arro...	0402	751010402	Place Vendome 2
18	75102	Paris 2e Arron...	0501	751020501	Gaillon 1
19	75102	Paris 2e Arron...	0502	751020502	Gaillon 2
20	75102	Paris 2e Arron...	0503	751020503	Gaillon 3
21	75102	Paris 2e Arron...	0601	751020601	Vivienne 1

Montrer toutes les entités

This table contains the geometric shapes

base-ic-evol-struct-pop-2016\_Paris — Features Total: 992, Filtered: 992, Selected: 0

IRIS	LIBIRIS	P16_POP	P16_POP0002	P16_POP0305	P16_POP0610	P16_POP1117	P16_POP1824	P16_POP2539	P16_POP
1 751010101	Saint-Germain l'Auxerrois 1	976	39	22	41	72	108	219	213
2 751010102	Saint-Germain l'Auxerrois 2	185	0	0	0	3	26	32	44
3 751010103	Saint-Germain l'Auxerrois 3	237	10	6	15	11	14	51	40
4 751010104	Saint-Germain l'Auxerrois 4	3	0	0	0	0	0	2	1
5 751010105	Tuileries	0	0	0	0	0	0	0	0
6 751010199	Seine et Berges	0	0	0	0	0	0	0	0
7 751010201	Les Halles 1	2022	34	29	66	90	206	574	498
8 751010202	Les Halles 2	1702	63	50	98	40	157	495	353
9 751010203	Les Halles 3	2377	47	42	91	135	293	613	546
10 751010204	Les Halles 4	2204	82	50	89	162	223	567	506
11 751010205	Les Halles 5	0	0	0	0	0	0	0	0
12 751010206	Les Halles 6	564	10	10	18	29	37	197	117
13 751010301	Palais Royal 1	2849	65	58	121	140	281	687	563
14 751010302	Palais Royal 2	121	0	3	4	10	6	39	32
15 751010303	Palais Royal 3	270	3	6	18	21	3	56	68
16 751010401	Place Vendome 1	1291	27	37	84	81	82	284	277
17 751010402	Place Vendome 2	1452	29	26	32	82	149	404	309
18 751020501	Gaillon 1	1018	21	32	33	74	128	235	255
19 751020502	Gaillon 2	246	6	6	8	5	13	89	44
20 751020503	Gaillon 3	192	5	4	2	5	28	68	35
21 751020601	Vivienne 1	1732	46	52	99	137	139	449	479

Montrer toutes les entités

Données statistiques

This table does not contain geometric shapes but contains statistical data

# Perform a table join operation

1. We can ensure that the objects represent the same space. Indeed, the CONTOURS\_IRIS layer represents the entire Ile-de-France while the census layer concerns only Paris

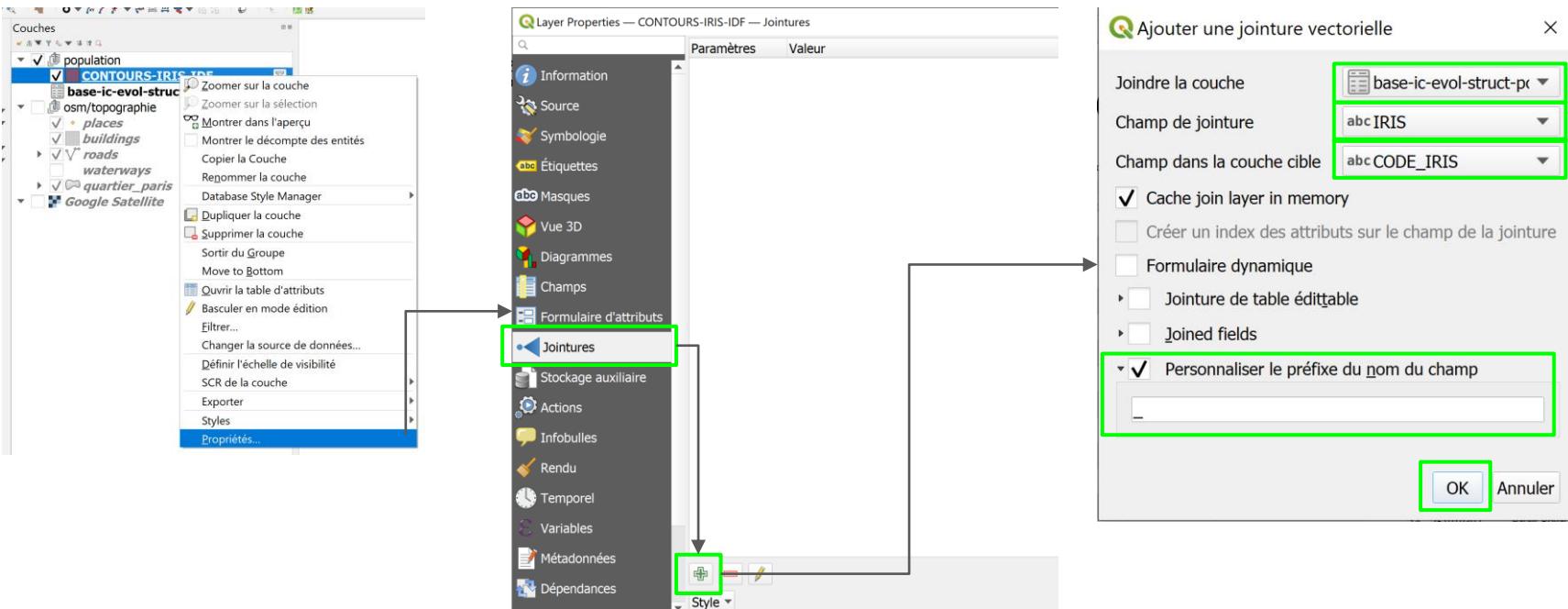
It is therefore necessary to filter the CONTOURS\_IRIS layer so that it represents only Paris.

What is the filter to set up?

(Remember to save the project after filtering!)

# Perform a table join operation

2. Then perform the join with the following procedure:



Right-click/Properties on the CONTOURS\_IRIS layer (the join will therefore be on the table that has the geometry), Joins tab, then click on the greenest to add a join, and set the table "Add a vector join", then click on Ok and Apply / Ok on the Properties window.

# Join result

The result of the join is observed by opening the attribute table of layer CONTOURS\_IRIS.

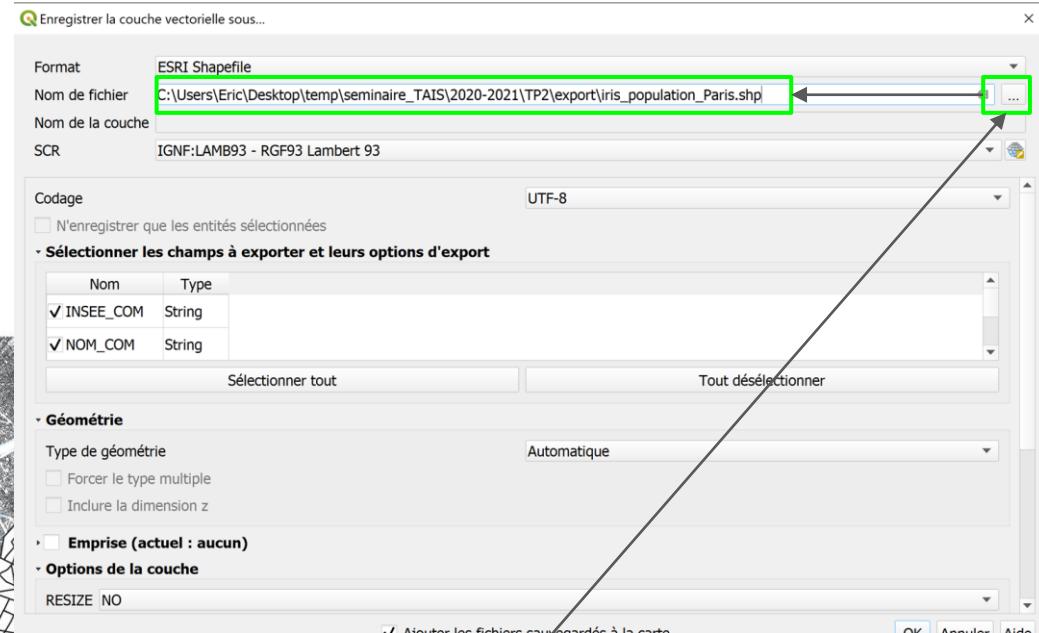
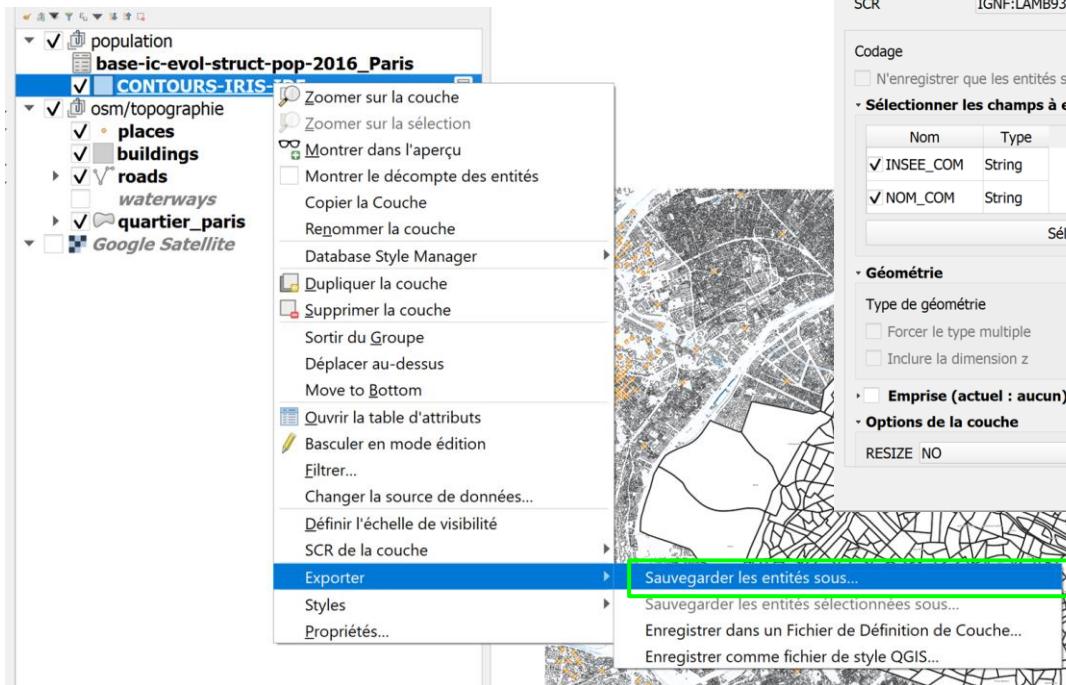
CONTOURS-IRIS-IDF — Features Total: 992, Filtered: 992, Selected: 0																							
	INSEE_COM	NOM_COM	IRIS	CODE_IRIS	NOM_IRIS	TYP_IRIS	_REG	_DEP	_UU2010	_COM	_LIBCOM	_TRIRIS	_GRD_QUART	_LIBIRIS	P16_POP0002	P16_POP0305	P16_POP0610	P16_POP1117	P16_POP1824	P16_POP2539	P16_POP4054	P16_POP5564	P16_PO
1	75113	Paris 13e Arro...	5016	751135016	Gare 16	H	11	75	00851	75113	Paris 13e Arro...	751051	7511350	Gare 16	24	41	82	97	281	247	229	73	24
2	75115	Paris 15e Arro...	5914	751155914	Grenelle 14	H	11	75	00851	75115	Paris 15e Arro...	751421	7511559	Grenelle 14	37	33	80	90	134	350	269	221	266
3	75120	Paris 20e Arro...	8018	751208018	Charonne 18	H	11	75	00851	75120	Paris 20e Arro...	752781	7512080	Charonne 18	99	122	193	315	310	679	605	410	158
4	75105	Paris 5e Arron...	1804	751051804	Jardin des Pla...	H	11	75	00851	75105	Paris 5e Arron...	750181	7510518	Jardin des Pla...	36	65	99	122	277	469	357	267	311
5	75118	Paris 18e Arro...	7206	751187206	Chapelle 6	H	11	75	00851	75118	Paris 18e Arro...	752201	7511872	Chapelle 6	86	149	218	204	218	634	518	306	205
6	75106	Paris 6e Arro...	2199	751062199	Seine et Berge...	D	11	75	00851	75106	Paris 6e Arro...	750231	7510621	Seine et Berge...	0	0	0	0	0	0	0	0	0
7	75118	Paris 18e Arro...	6915	751186915	Grandes Carri...	H	11	75	00851	75118	Paris 18e Arro...	752311	7511869	Grandes Carri...	60	30	121	129	114	435	442	221	272
8	75104	Paris 4e Arro...	1503	751041503	Arsenal 3	H	11	75	00851	75104	Paris 4e Arro...	750111	7510415	Arsenal 3	48	88	136	147	242	468	445	222	208
9	75120	Paris 20e Arro...	7803	751207803	Saint-Fargeau 3	H	11	75	00851	75120	Paris 20e Arro...	752711	7512078	Saint-Fargeau 3	77	91	120	179	158	295	439	220	259
10	75116	Paris 16e Arro...	6120	751166120	Auteuil 20	H	11	75	00851	75116	Paris 16e Arro...	751901	7511661	Auteuil 20	78	56	75	125	109	279	357	180	291
11	75115	Paris 15e Arro...	5727	751155727	Saint-Lambert ...	H	11	75	00851	75115	Paris 15e Arro...	751561	7511557	Saint-Lambert ...	101	56	103	83	186	728	582	389	423
12	75109	Paris 9e Arro...	3603	751093603	Rochechouart 3	H	11	75	00851	75109	Paris 9e Arro...	750451	7510936	Rochechouart 3	66	51	58	97	172	495	378	145	115
13	75111	Paris 11e Arro...	4407	751114407	Sainte-Margue...	H	11	75	00851	75111	Paris 11e Arro...	750821	7511144	Sainte-Margue...	53	41	101	117	187	611	409	245	187
14	75117	Paris 17e Arro...	6808	751176808	Epinettes 8	H	11	75	00851	75117	Paris 17e Arro...	751981	7511768	Epinettes 8	120	83	84	98	350	958	532	316	221
15	75113	Paris 13e Arro...	4905	751134905	Salpetrière 5	H	11	75	00851	75113	Paris 13e Arro...	751031	7511349	Salpetrière 5	62	77	108	107	431	821	477	315	324
16	75105	Paris 5e Arro...	1906	751051906	Val de Grace 6	H	11	75	00851	75105	Paris 5e Arro...	750201	7510519	Val de Grace 6	42	49	84	171	423	503	357	247	320
17	75116	Paris 16e Arro...	6217	751166217	Mutte 17	H	11	75	00851	75116	Paris 16e Arro...	751811	7511662	Mutte 17	88	98	187	272	229	387	585	317	420

Data from:  
CONTOURS\_IRIS

Data from:  
base\_evol

# Export the result to a Shapefile

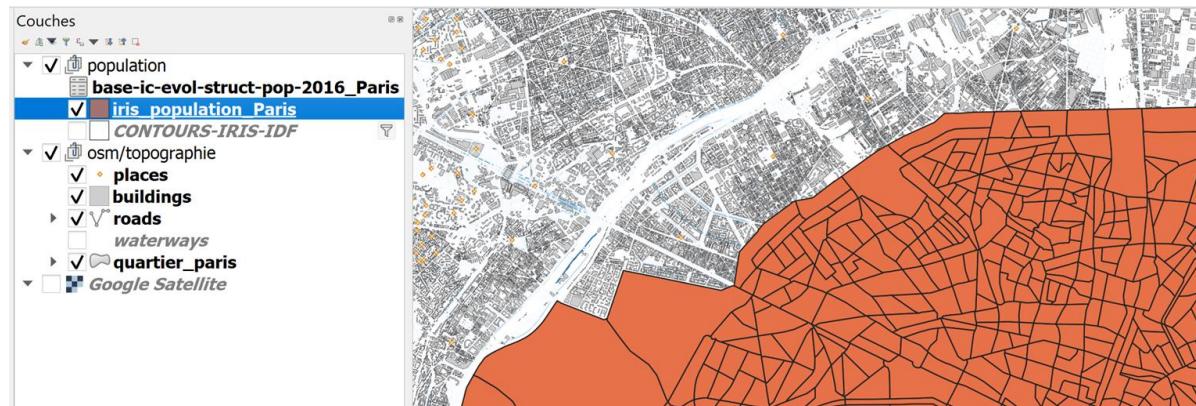
We can now "freeze" the layer: geometry + data, in a new layer  
IRIS\_recensement:



Export to TP2/export folder

# Export the result to a Shapefile

A new "iris\_population\_Paris" layer has appeared in the layer manager.

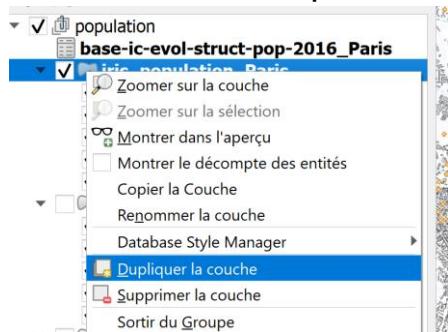


Observe its attribute table.

# Creation of thematic population maps

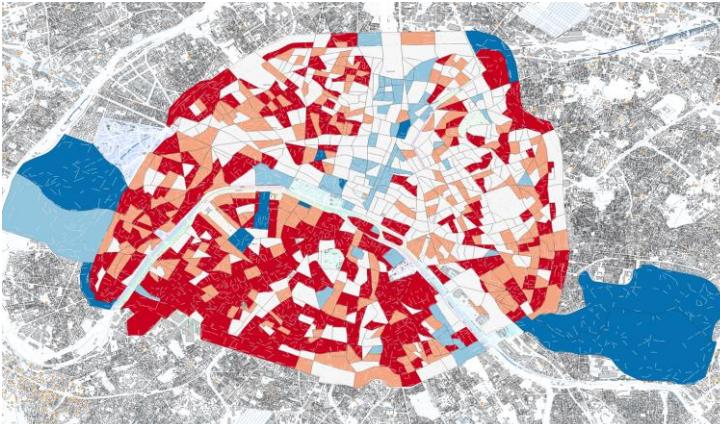
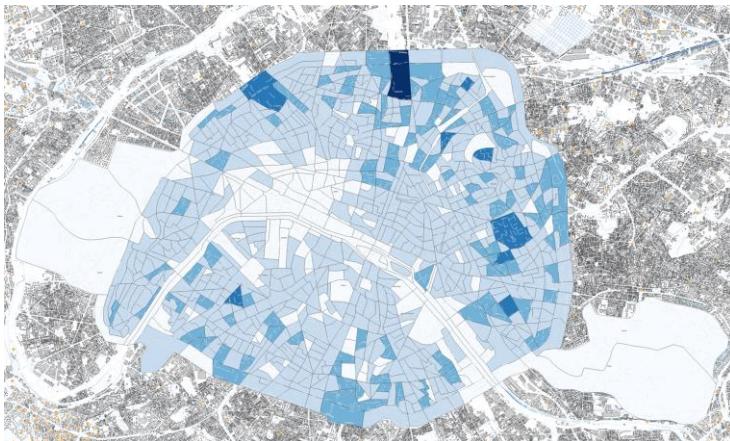
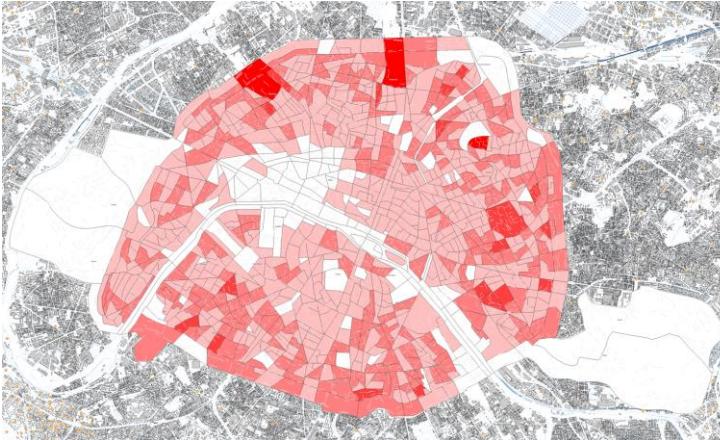
1. Observe the record of the variables of the population table:  
<https://docs.google.com/spreadsheets/d/1VYK0ziaB0jpAoflN5xonTdMhEIQ2IyQ6W5h4U-Zn6CU/edit?usp=sharing>
1. Make several thematic maps:
  - a map of the overall population for all IRIS
  - a map of the female population
  - a map of the male population
  - a map of the sex ratio between men and women

To make these maps, it will be useful to duplicate the layers so that you can multiply the views:



Right-click on the `iris_population_Paris` layer / Duplicate the layer.

# Creation of thematic population maps



# To be continued... TP3?

Other analyses:

- Building density analysis
- Rack counting by IRIS
- aggregate geometric data
- geometric groupings

Export of the maps produced:

- Map production
- Layout
- Export to different formats