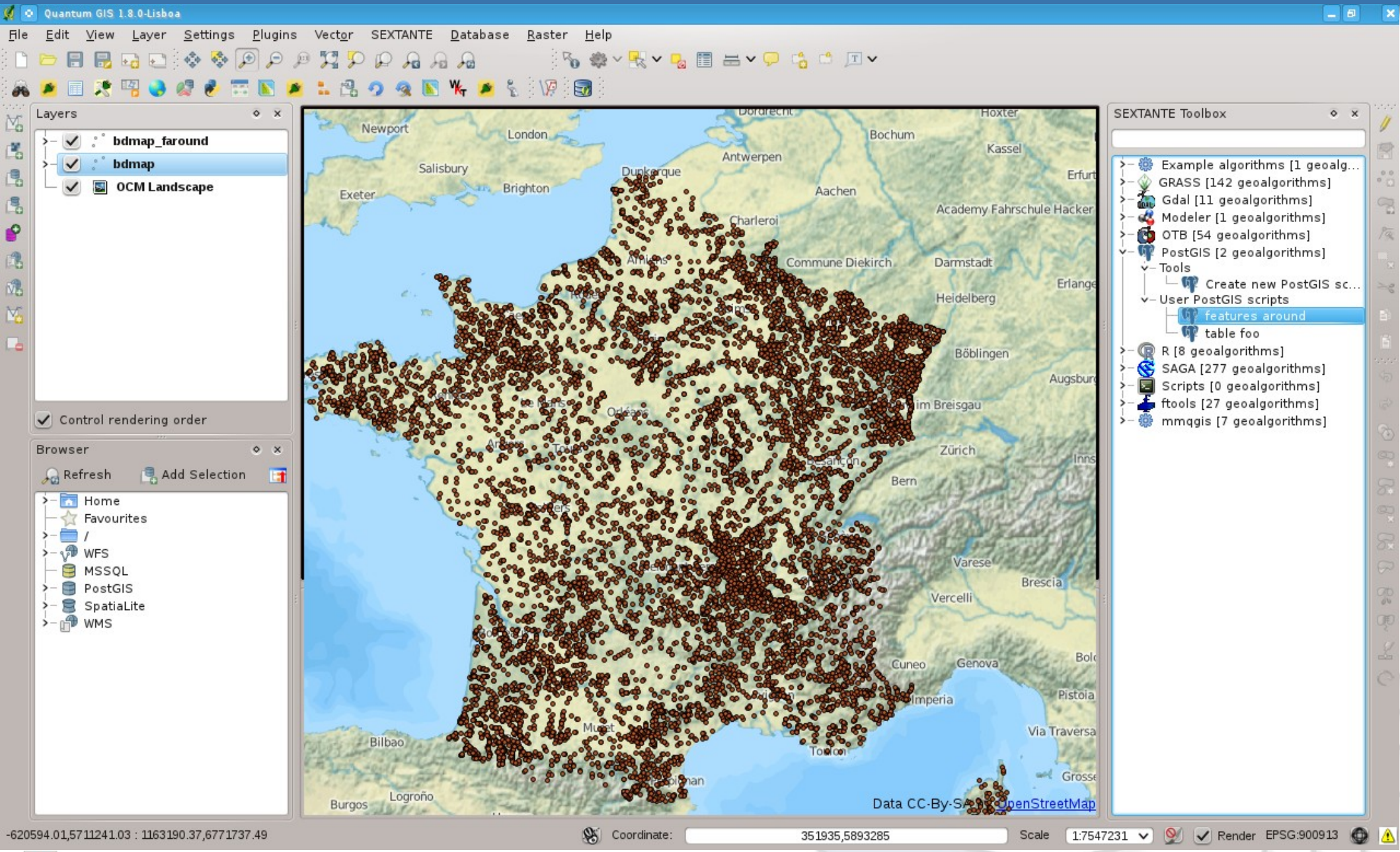
FOSS4G CEE 2012

Efficiently using PostGIS with QGIS

Vincent Picavet – Oslandia

OSLANDIA

Quantum GIS


Quantum GIS 1.8.0-Lisboa
File Edit View Layer Settings Plugins Vector SEXTANTE Database Raster Help
Layers
bdmap_faround
bdmap
OCM Landscape
Control rendering order
Browser
Refresh
Add Selection
Home
Favourites
/
WFS
MSSQL
PostGIS
SpatiaLite
WMS
SEXTANTE Toolbox
Example algorithms [1 geoalg...
GRASS [142 geoalgorithms]
Gdal [11 geoalgorithms]
Modeler [1 geoalgorithms]
OTB [54 geoalgorithms]
PostGIS [2 geoalgorithms]
Tools
Create new PostGIS sc...
User PostGIS scripts
features around
table foo
R [8 geoalgorithms]
SAGA [277 geoalgorithms]
Scripts [0 geoalgorithms]
ftools [27 geoalgorithms]
mmqgis [7 geoalgorithms]
Data CC-By-SA OpenStreetMap
-620594.01,5711241.03 : 1163190.37,6771737.49
Coordinate:
351935,5893285
Scale
1:7547231
Render
EPSG:900913

Quantum GIS

- FOSS Desktop GIS
- 2002 Gary Sherman, PostGIS viewer
- 2004 OSGeo project
- 2009 Version 1.0
- 2011 1.7.0
- 2012 1.8.0
- GIS platform to view, edit, analyze
  - Python plugins
  - Custom applications

PostGIS

- FOSS Spatial database
  - PostgreSQL addon
- 2001 Refractions Research
- 2006 Version 1.0
- 2011 Version 1.5.3
- OGC SFS, SQL/MM
- 2012 Version 2.0
  - Raster support
  - Topology

Quantum GIS PostGIS support

- Native support
  - Load tables & views
  - Edit and update
  - Offline editing
- 3d-party plugins
  - Dynamic querying
  - Versionning
  - Database management
  - Raster in db

QGIS Native support

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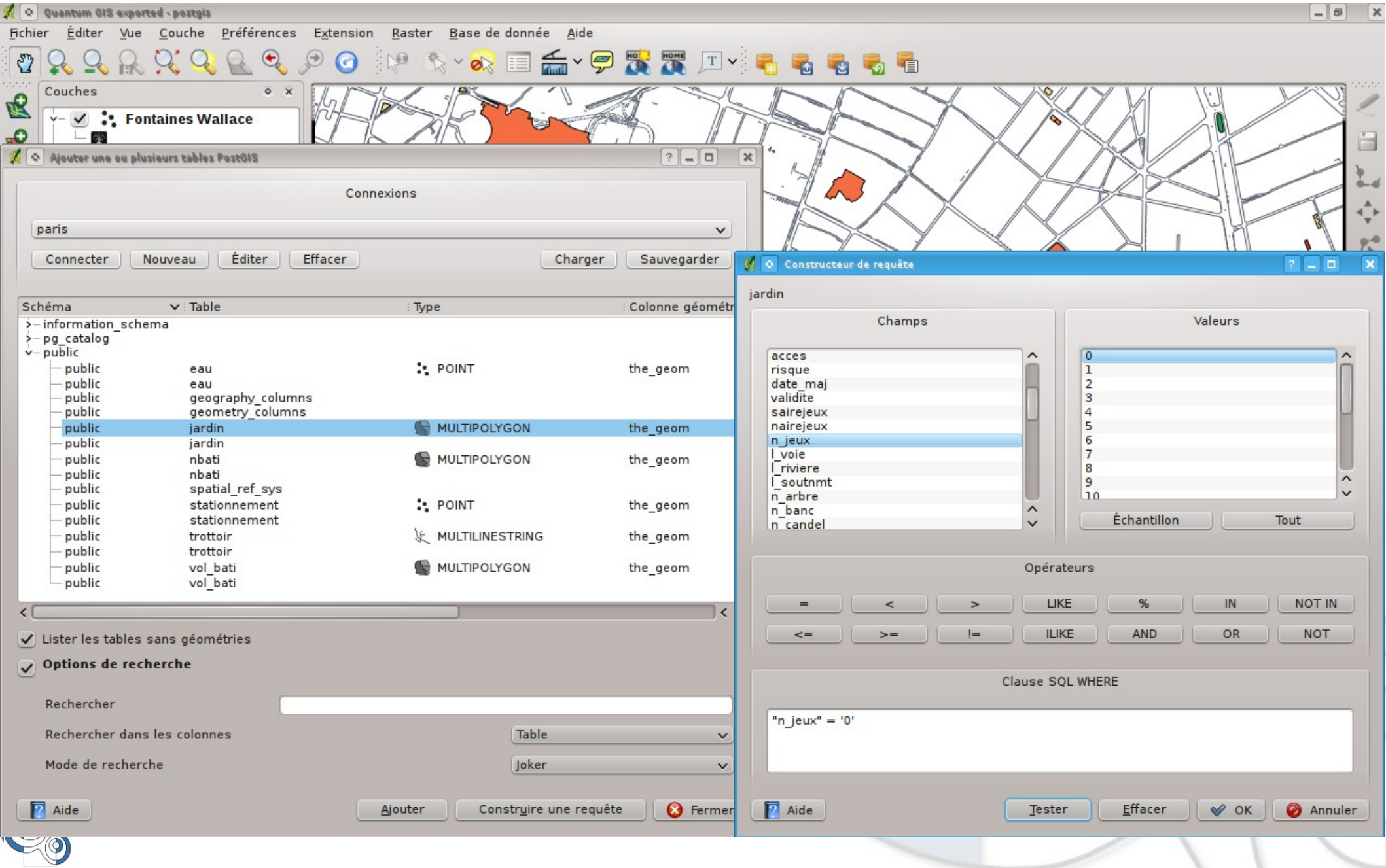
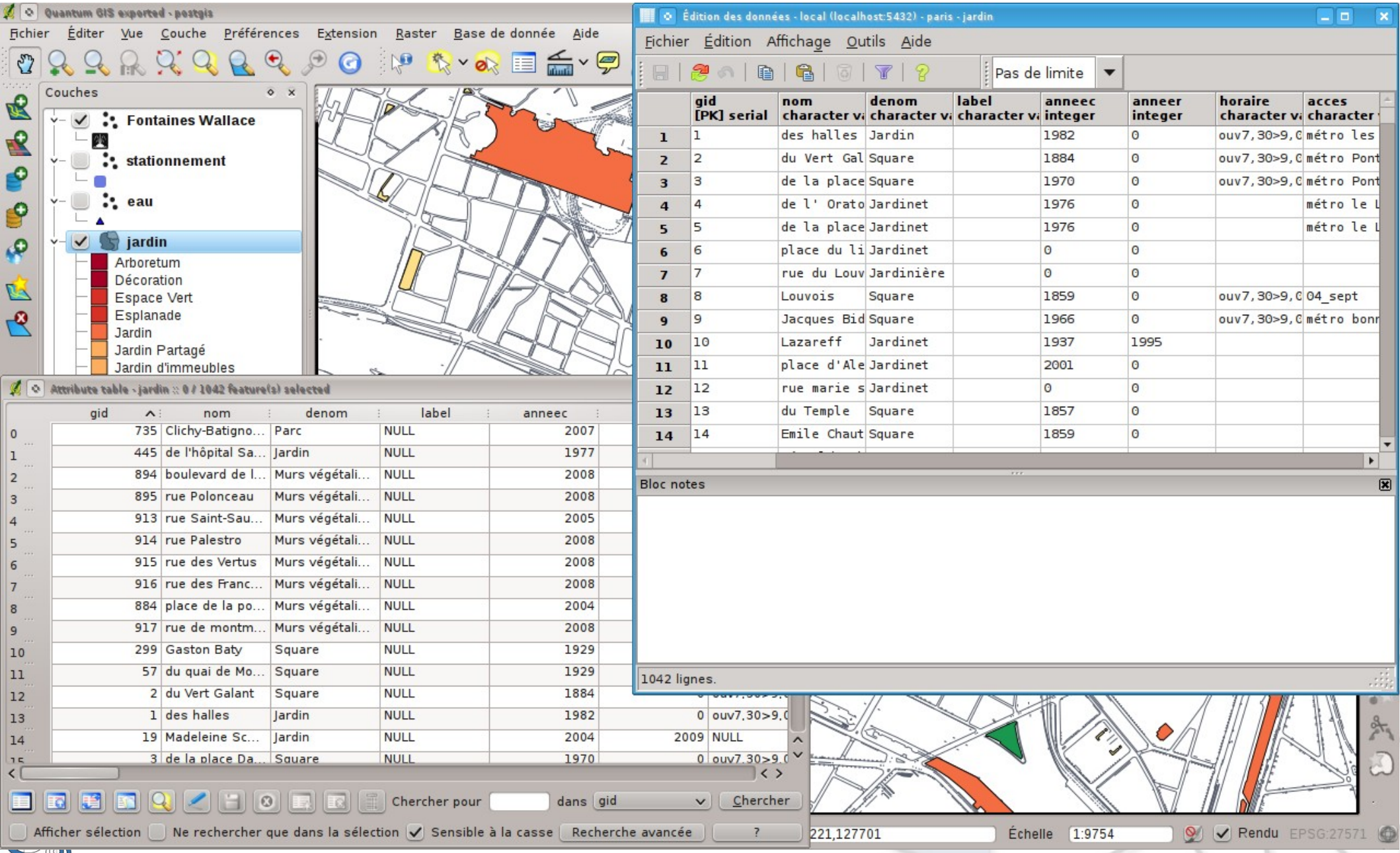
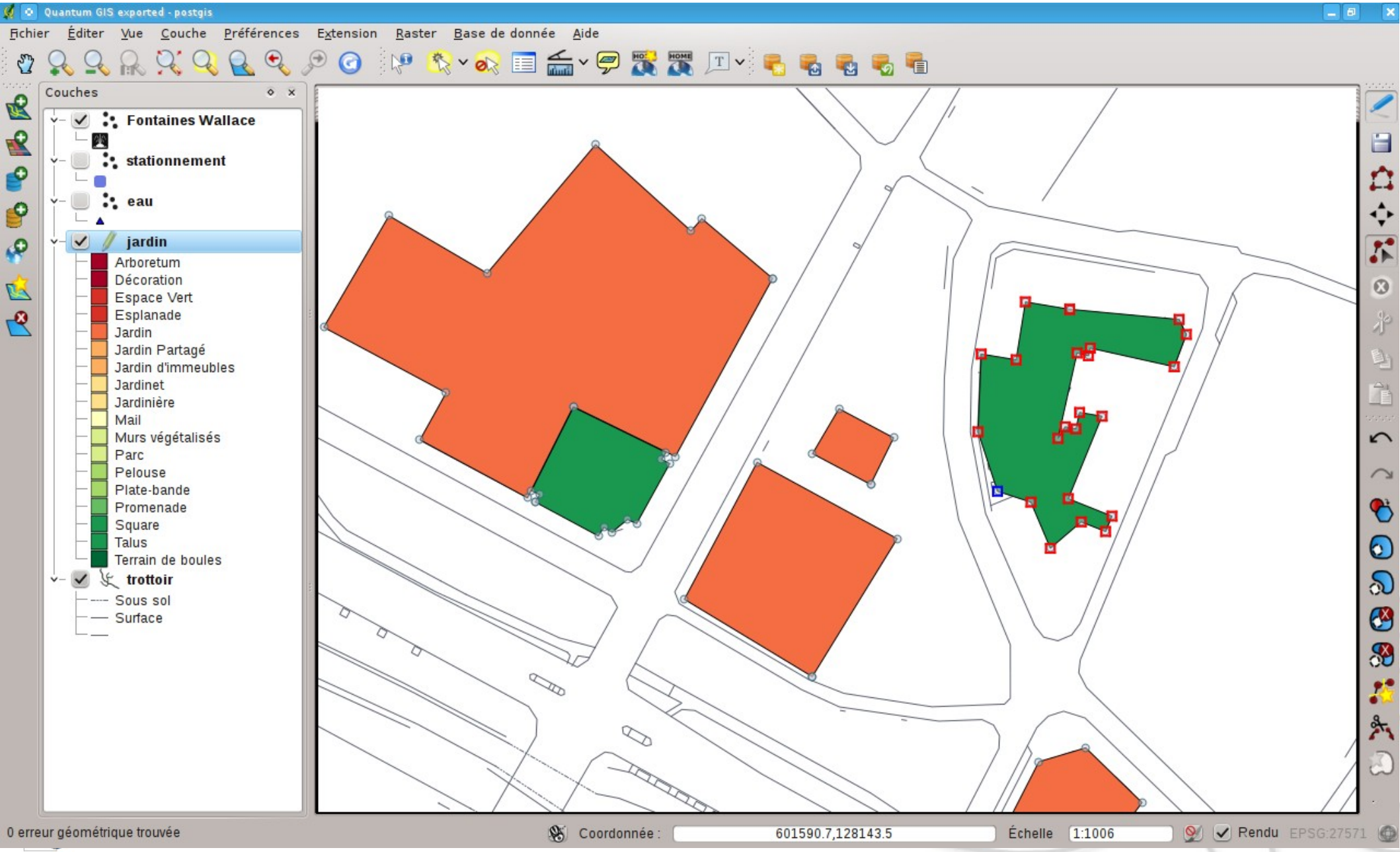
Native support : open



Native support : attributes



Native support : edit



QGIS Browser

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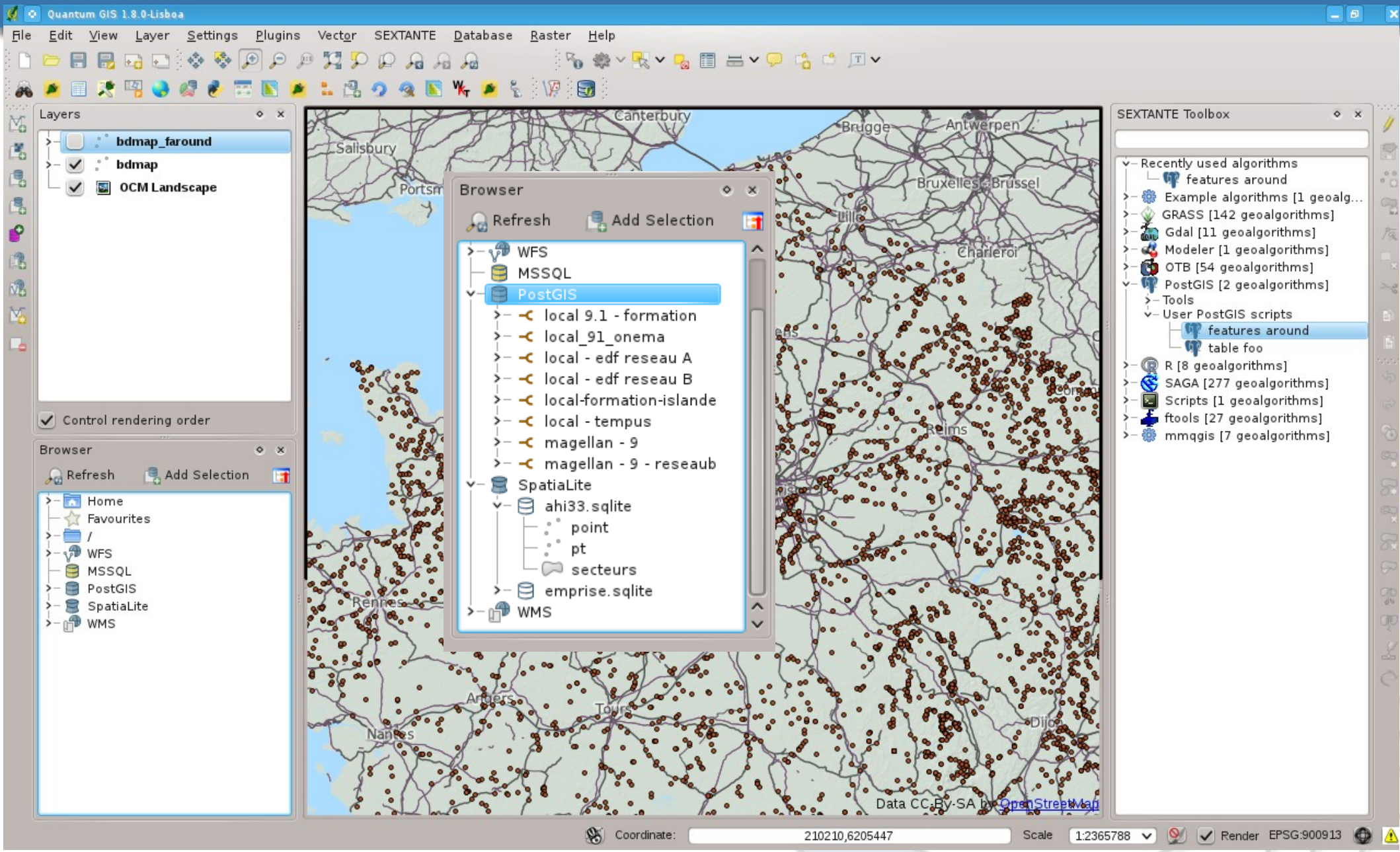
QGIS Browser



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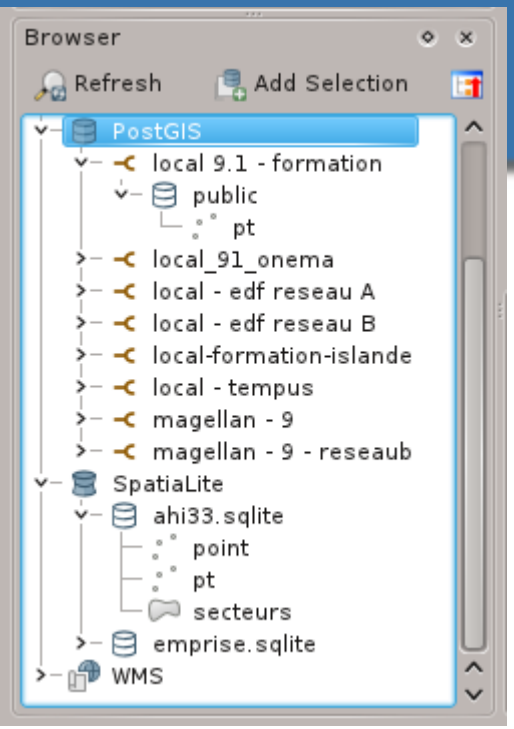
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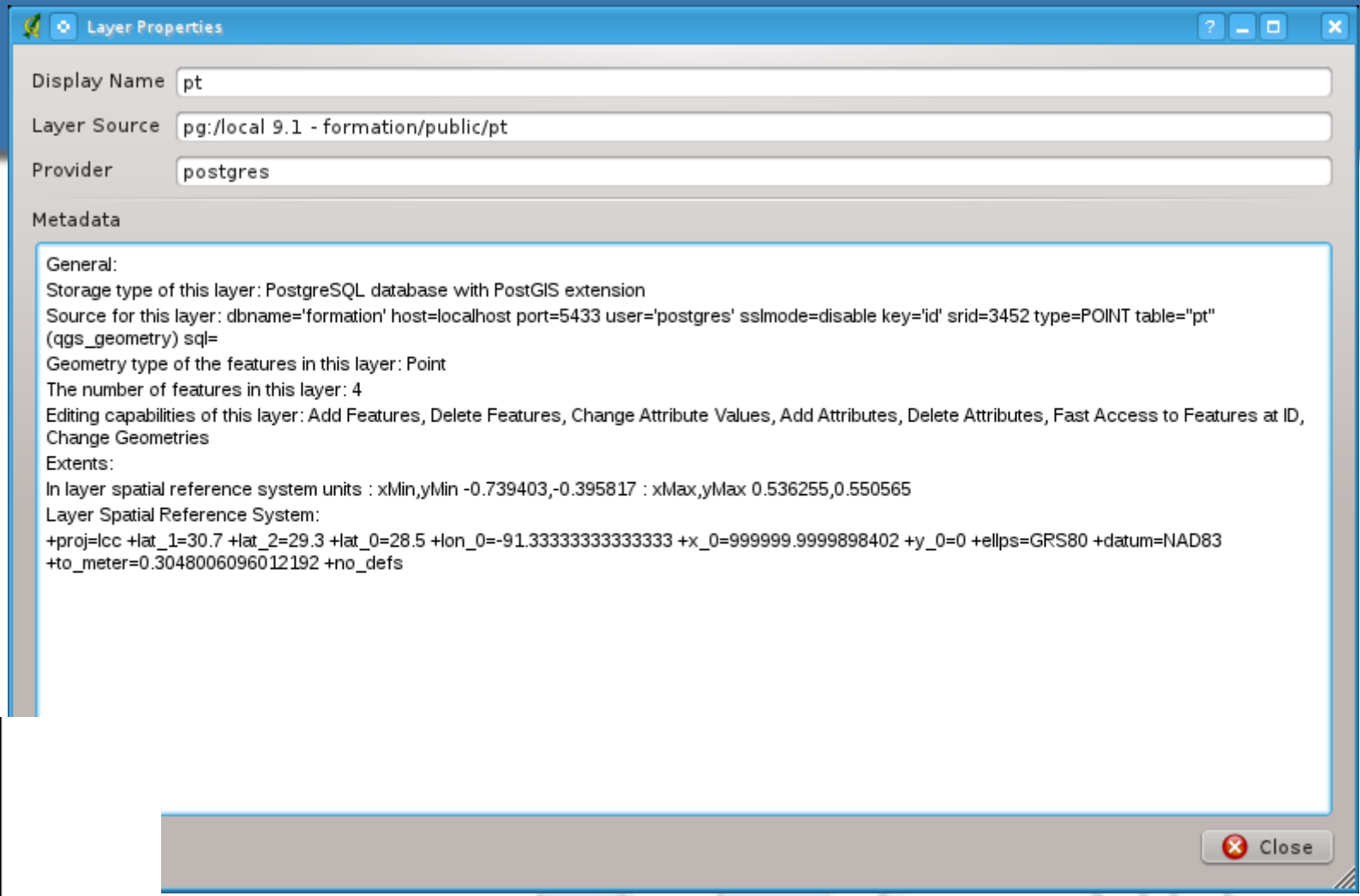
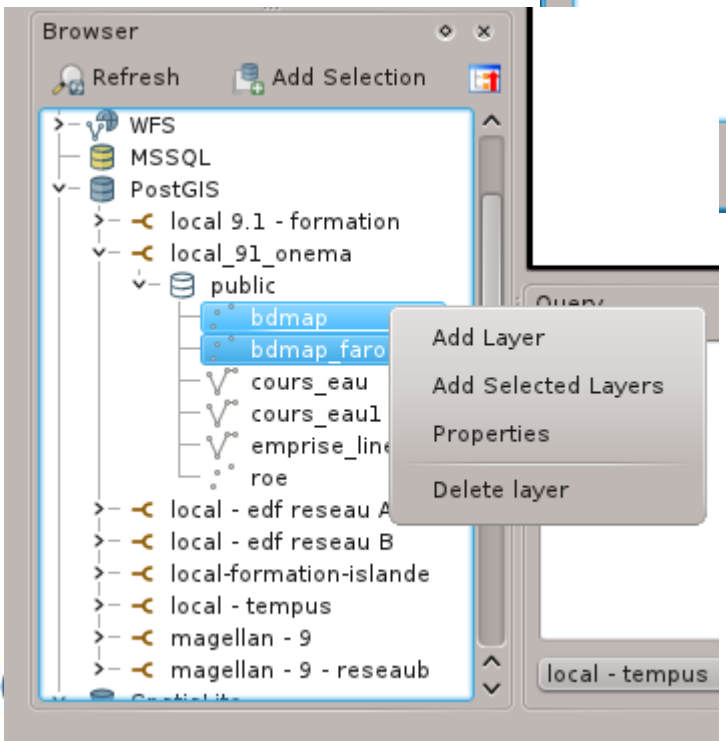
WMS


Layer Properties
Display Name
pt
Layer Source
pg:/local 9.1 - formation/public/pt
Provider
postgres
Metadata
General:
Storage type of this layer: PostgreSQL database with PostGIS extension
Source for this layer: dbname='formation' host=localhost port=5433 user='postgres' sslmode=disable key='id' srid=3452 type=POINT table="pt" (qgs_geometry) sql=
Geometry type of the features in this layer: Point
The number of features in this layer: 4
Editing capabilities of this layer: Add Features, Delete Features, Change Attribute Values, Add Attributes, Delete Attributes, Fast Access to Features at ID, Change Geometries
Extents:
In layer spatial reference system units : xMin,yMin -0.739403,-0.395817 : xMax,yMax 0.536255,0.550565
Layer Spatial Reference System:
+proj=lcc +lat_1=30.7 +lat_2=29.3 +lat_0=28.5 +lon_0=-91.33333333333333 +x_0=999999.9999898402 +y_0=0 +ellps=GRS80 +datum=NAD83 +to_meter=0.3048006096012192 +no_defs
Close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Add Selection
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Add Layer
Add Selected Layers
Properties
Delete layer
local - tempus

Using PostGIS through webservices

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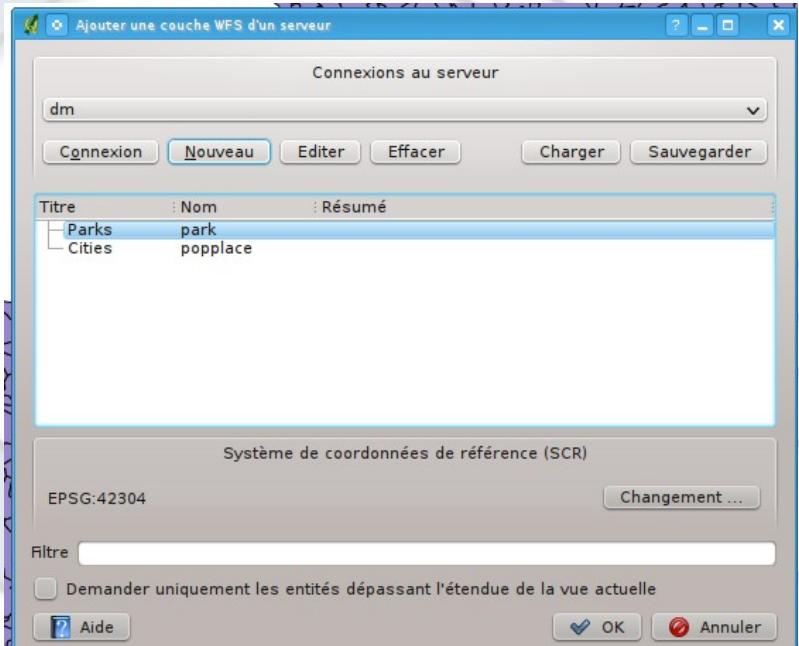
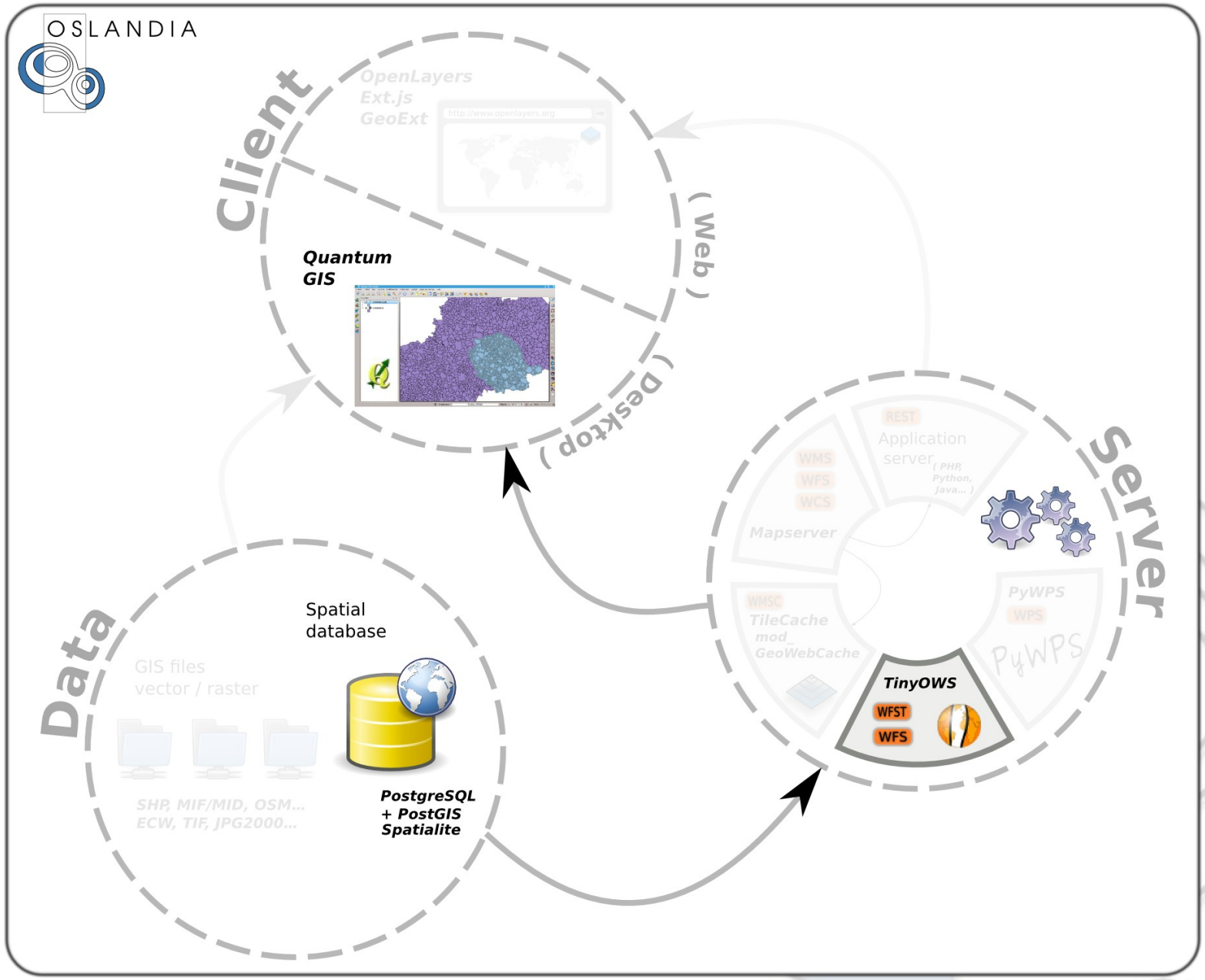
Native support : WFS-T

- Web Feature Service - Transactional
  - Access to feature level
  - Read and write
  - WFS server needed (TinyOWS, GeoServer)
- HTTP level rights management
- Interoperability
- Web-based infrastructure



Native support : WFS-T



Using views

Native support : load & edit view

- Views = tables
- Edit ← updatable view

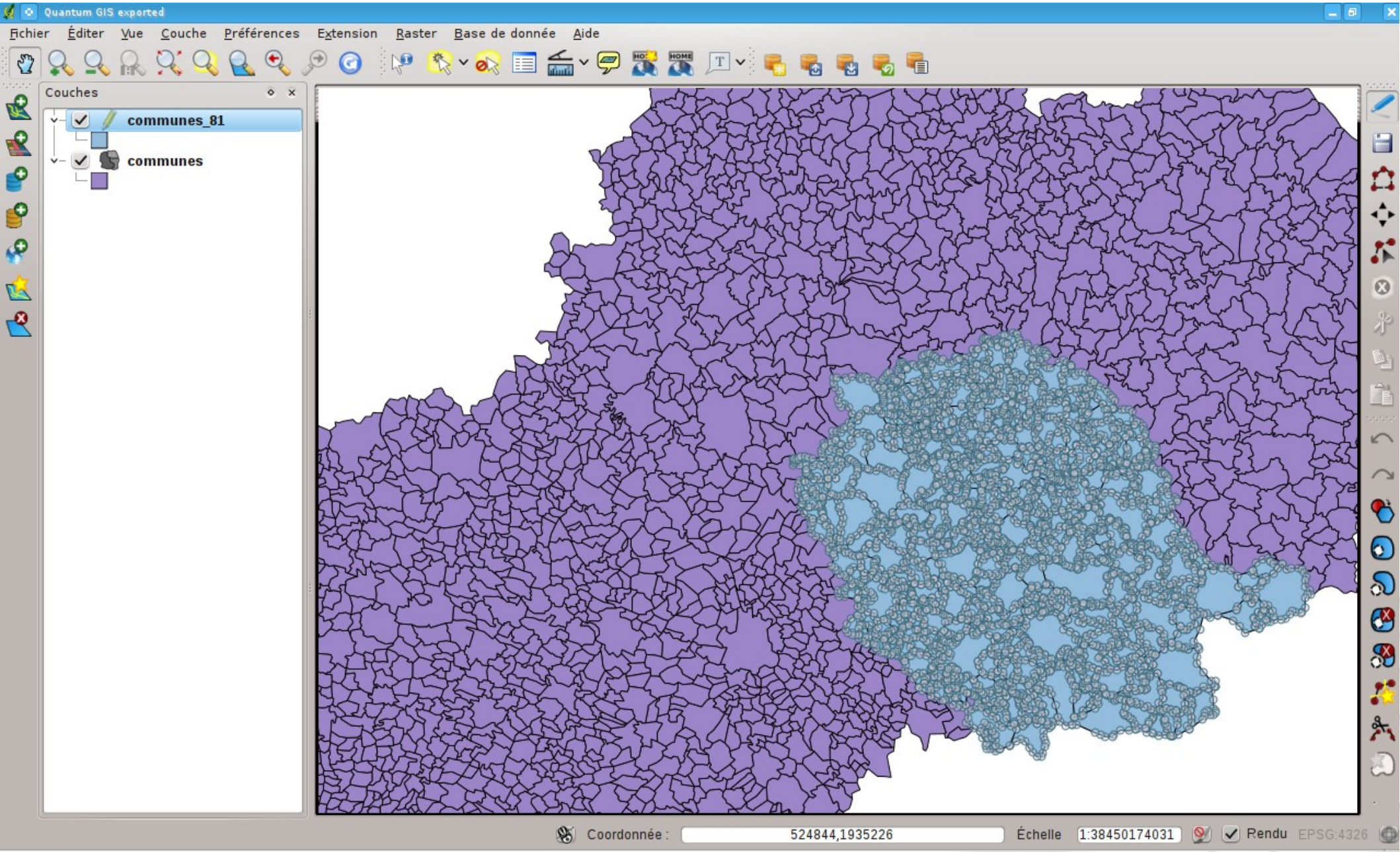
```
drop view if exists communes_81;
create view communes_81 as select * from communes where depart = '81';

create rule communes_81_ins as
    on insert to communes_81
    do instead
        insert into communes
        values(NEW.gid, NEW.code_insee, NEW.commune, NEW.popsdc, NEW.km2, NEW.canton, NEW.depart, NEW.zrr, NEW.the_geom);

create rule communes_81_upd as
    on update to communes_81
    do instead
        update communes
        set
                gid = NEW.gid, code_insee = NEW.code_insee, commune = NEW.commune,
                popsdc = NEW.popsdc, km2 = NEW.km2, canton = NEW.canton, depart = NEW.depart, zrr = NEW.zrr, the_geom = NEW.the_geom
        where gid = OLD.gid;

create rule communes_81_del as
    on delete to communes_81
    do instead
        delete from communes where gid = OLD.gid;
```

Native support : load & edit view

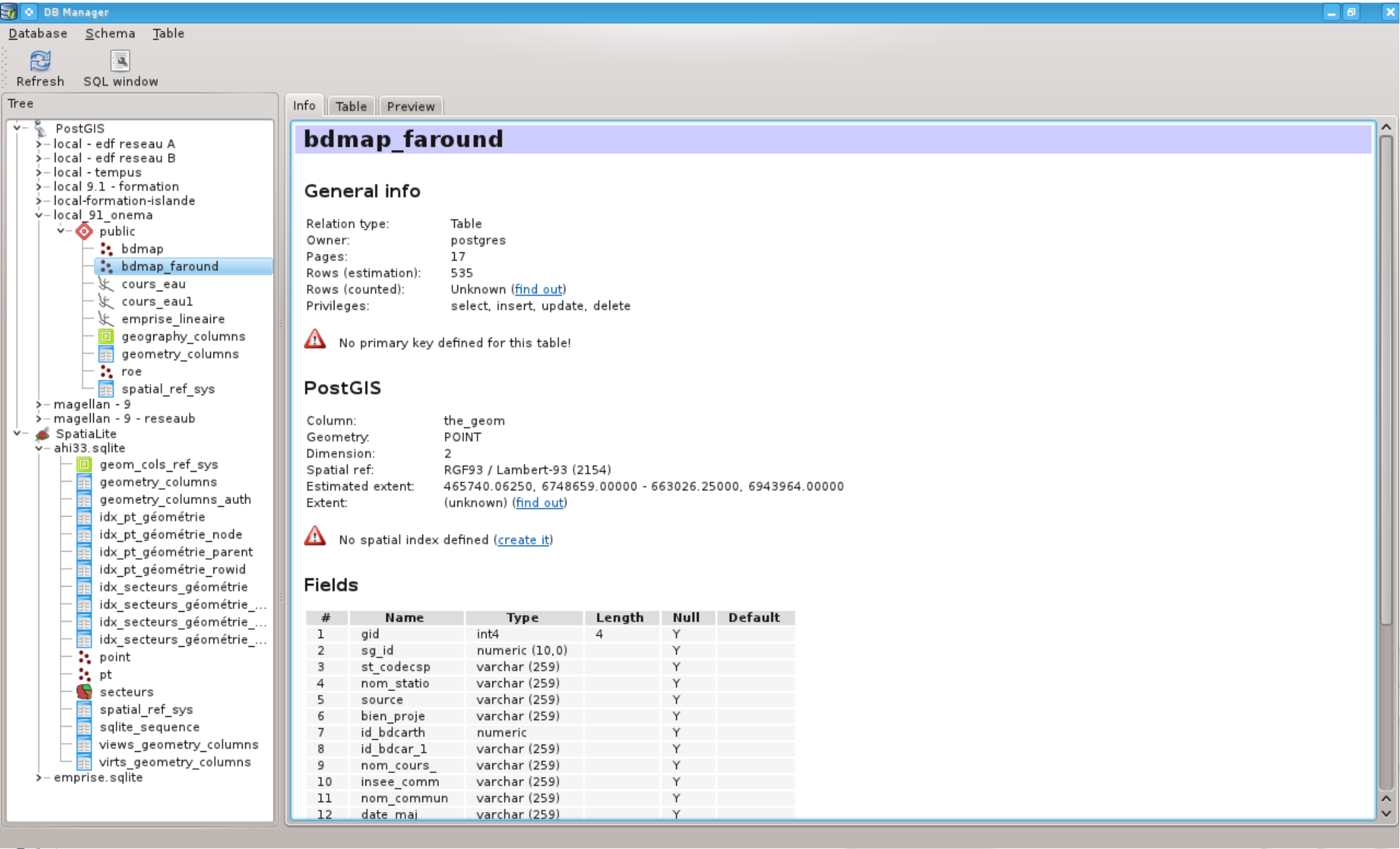


Native support : updatable views

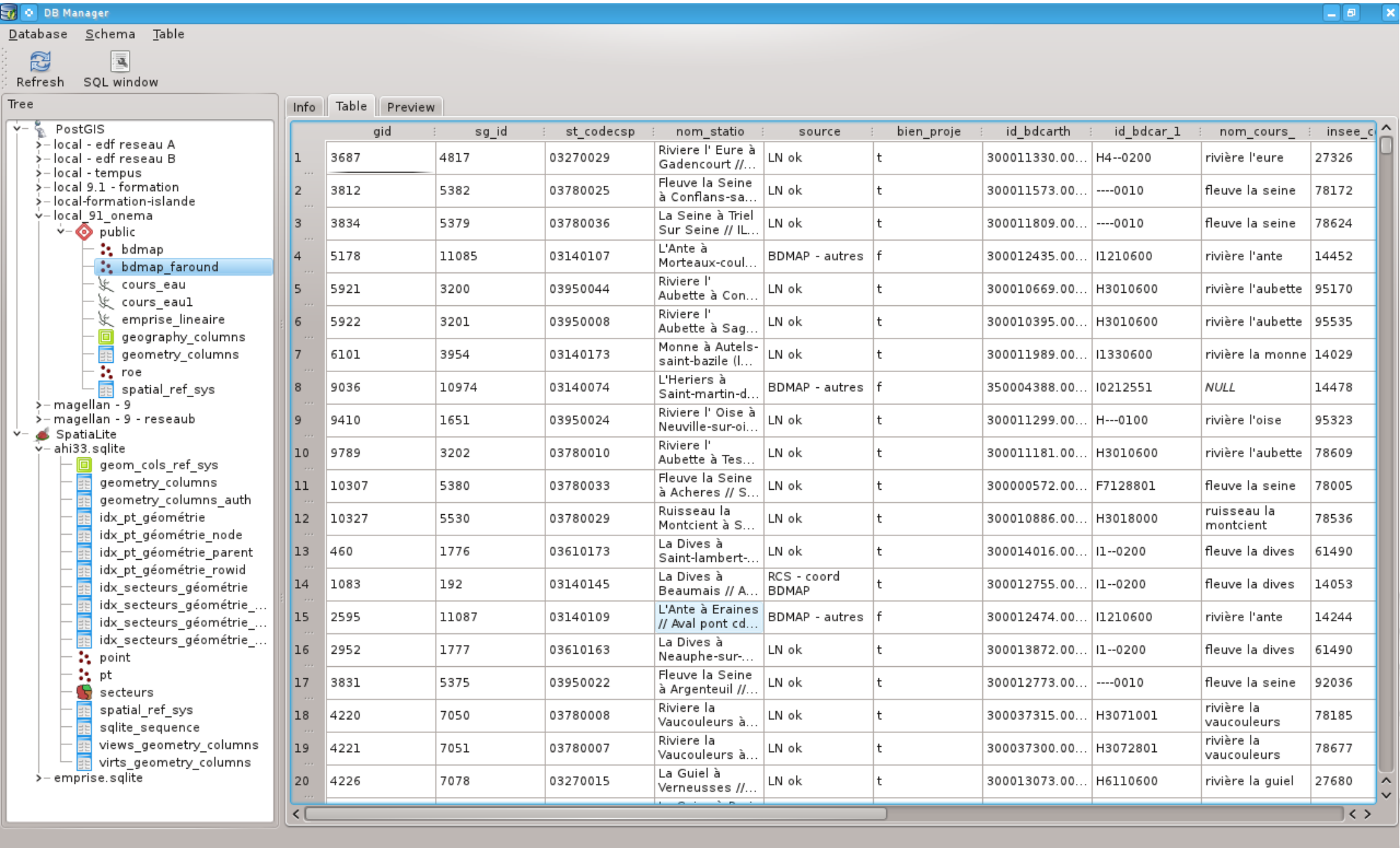
- Use PostgreSQL rights
  - Manage roles
  - Avoid conflicts
- No need for middle-tier software
- View creation can be automated
  - Pl/pgSQL

DB Manager

DB Manager plugin

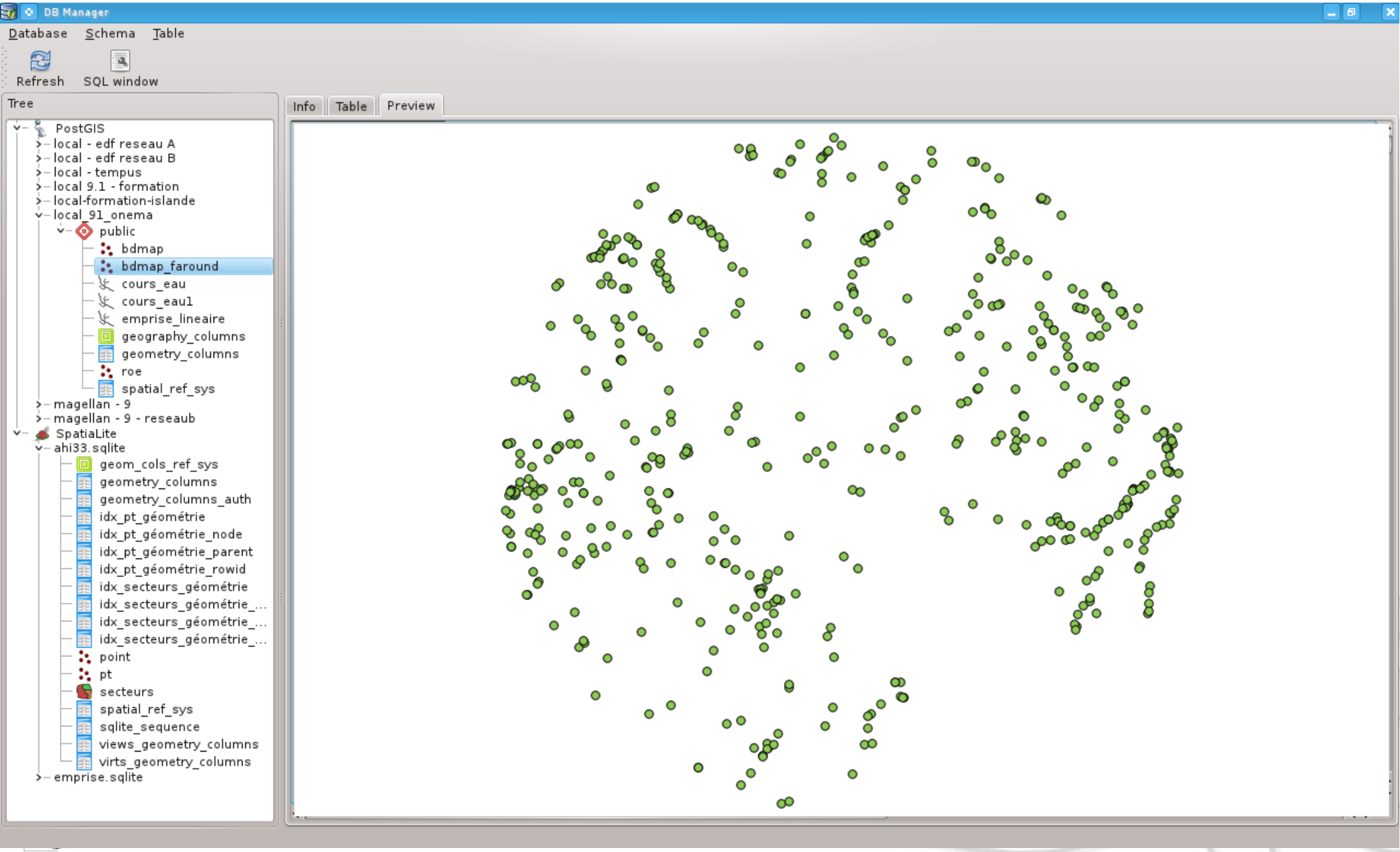


DB Manager plugin

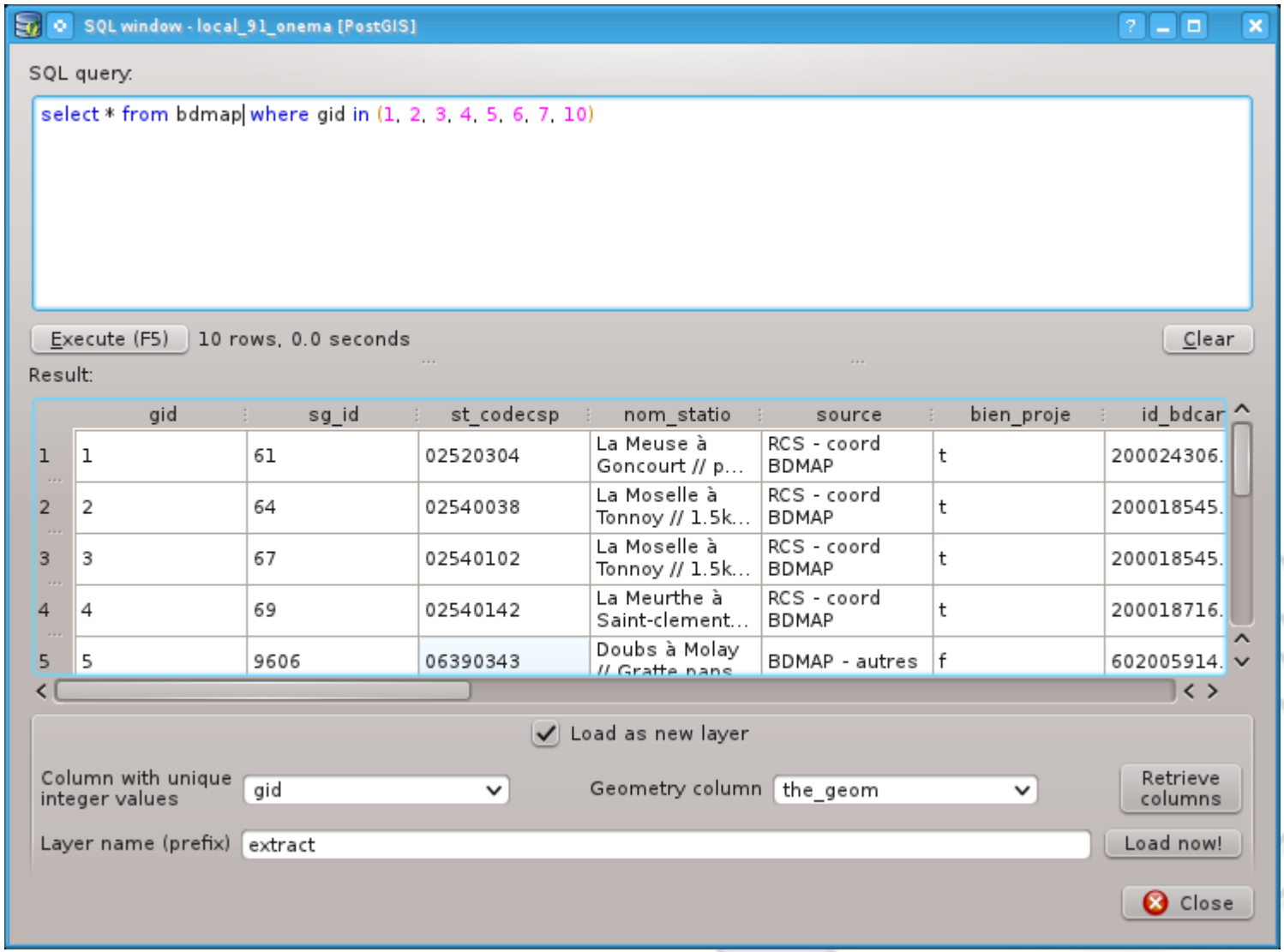


	gid	sg_id	st_codecsp	nom_statio	source	bien_proje	id_bdcarth	id_bdcar_1	nom_cours_	insee_c
1	3687	4817	03270029	Riviere l' Eure à Gadencourt //...	LN ok	t	300011330.00...	H4--0200	rivière l'eure	27326
2	3812	5382	03780025	Fleuve la Seine à Conflans-sa...	LN ok	t	300011573.00...	----0010	fleuve la seine	78172
3	3834	5379	03780036	La Seine à Triel Sur Seine // IL...	LN ok	t	300011809.00...	----0010	fleuve la seine	78624
4	5178	11085	03140107	L'Ante à Morteaux-coul...	BDMAP - autres	f	300012435.00...	I1210600	rivière l'ante	14452
5	5921	3200	03950044	Riviere l' Aubette à Con...	LN ok	t	300010669.00...	H3010600	rivière l'aubette	95170
6	5922	3201	03950008	Riviere l' Aubette à Sag...	LN ok	t	300010395.00...	H3010600	rivière l'aubette	95535
7	6101	3954	03140173	Monne à Autels-saint-bazile (I...	LN ok	t	300011989.00...	I1330600	rivière la monne	14029
8	9036	10974	03140074	L'Heriers à Saint-martin-d...	BDMAP - autres	f	350004388.00...	I0212551	*NULL*	14478
9	9410	1651	03950024	Riviere l' Oise à Neuville-sur-oi...	LN ok	t	300011299.00...	H---0100	rivière l'oise	95323
10	9789	3202	03780010	Riviere l' Aubette à Tes...	LN ok	t	300011181.00...	H3010600	rivière l'aubette	78609
11	10307	5380	03780033	Fleuve la Seine à Acheres // S...	LN ok	t	300000572.00...	F7128801	fleuve la seine	78005
12	10327	5530	03780029	Ruisseau la Montcient à S...	LN ok	t	300010886.00...	H3018000	ruisseau la montcient	78536
13	460	1776	03610173	La Dives à Saint-lambert-...	LN ok	t	300014016.00...	I1--0200	fleuve la dives	61490
14	1083	192	03140145	La Dives à Beaumais // A...	RCS - coord BDMAP	t	300012755.00...	I1--0200	fleuve la dives	14053
15	2595	11087	03140109	L'Ante à Eraines // Aval pont cd...	BDMAP - autres	f	300012474.00...	I1210600	rivière l'ante	14244
16	2952	1777	03610163	La Dives à Neauphe-sur-...	LN ok	t	300013872.00...	I1--0200	fleuve la dives	61490
17	3831	5375	03950022	Fleuve la Seine à Argenteuil //...	LN ok	t	300012773.00...	----0010	fleuve la seine	92036
18	4220	7050	03780008	Riviere la Vaucouleurs à...	LN ok	t	300037315.00...	H3071001	rivière la vaucouleurs	78185
19	4221	7051	03780007	Riviere la Vaucouleurs à...	LN ok	t	300037300.00...	H3072801	rivière la vaucouleurs	78677
20	4226	7078	03270015	La Guiel à Verneusses //...	LN ok	t	300013073.00...	H6110600	rivière la guiel	27680

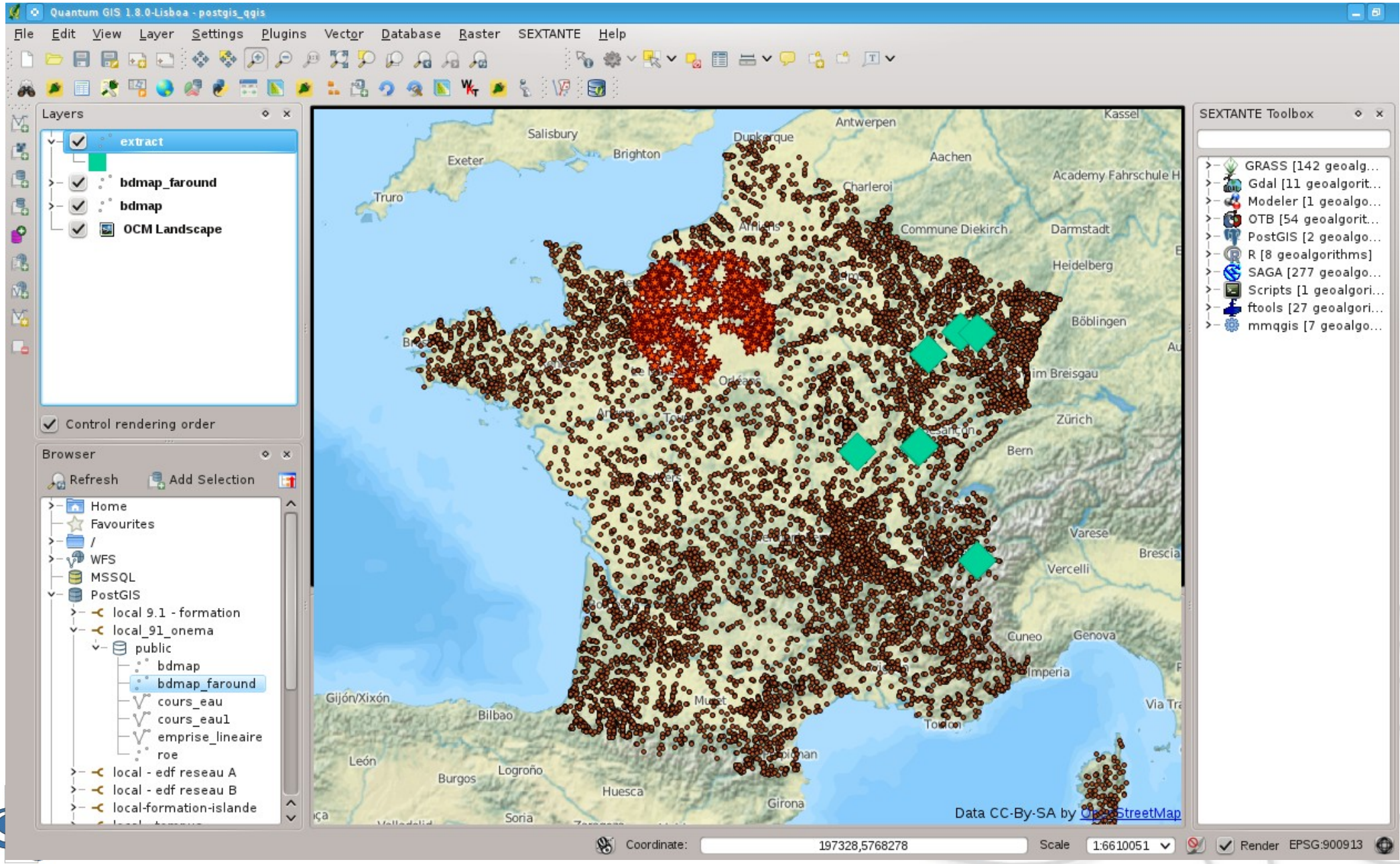
DB Manager plugin



DB Manager plugin



DB Manager plugin



Fast SQL Layer

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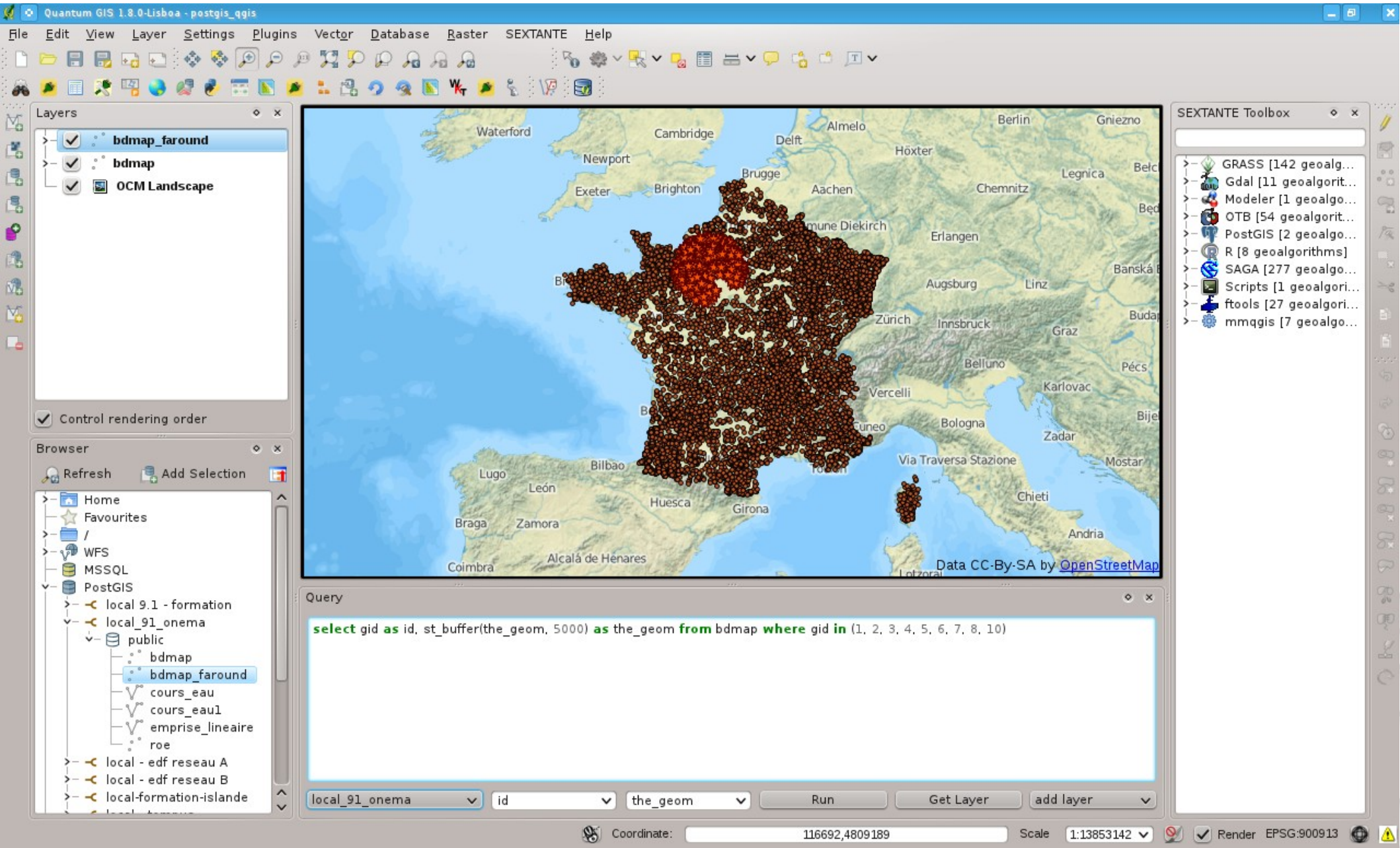
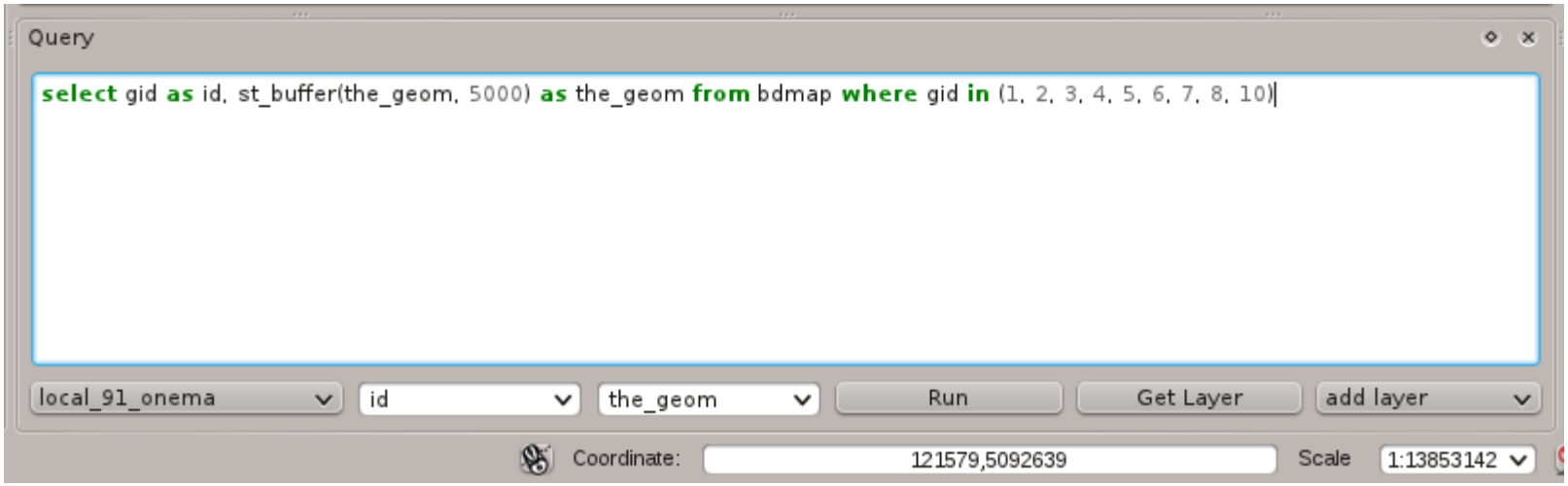
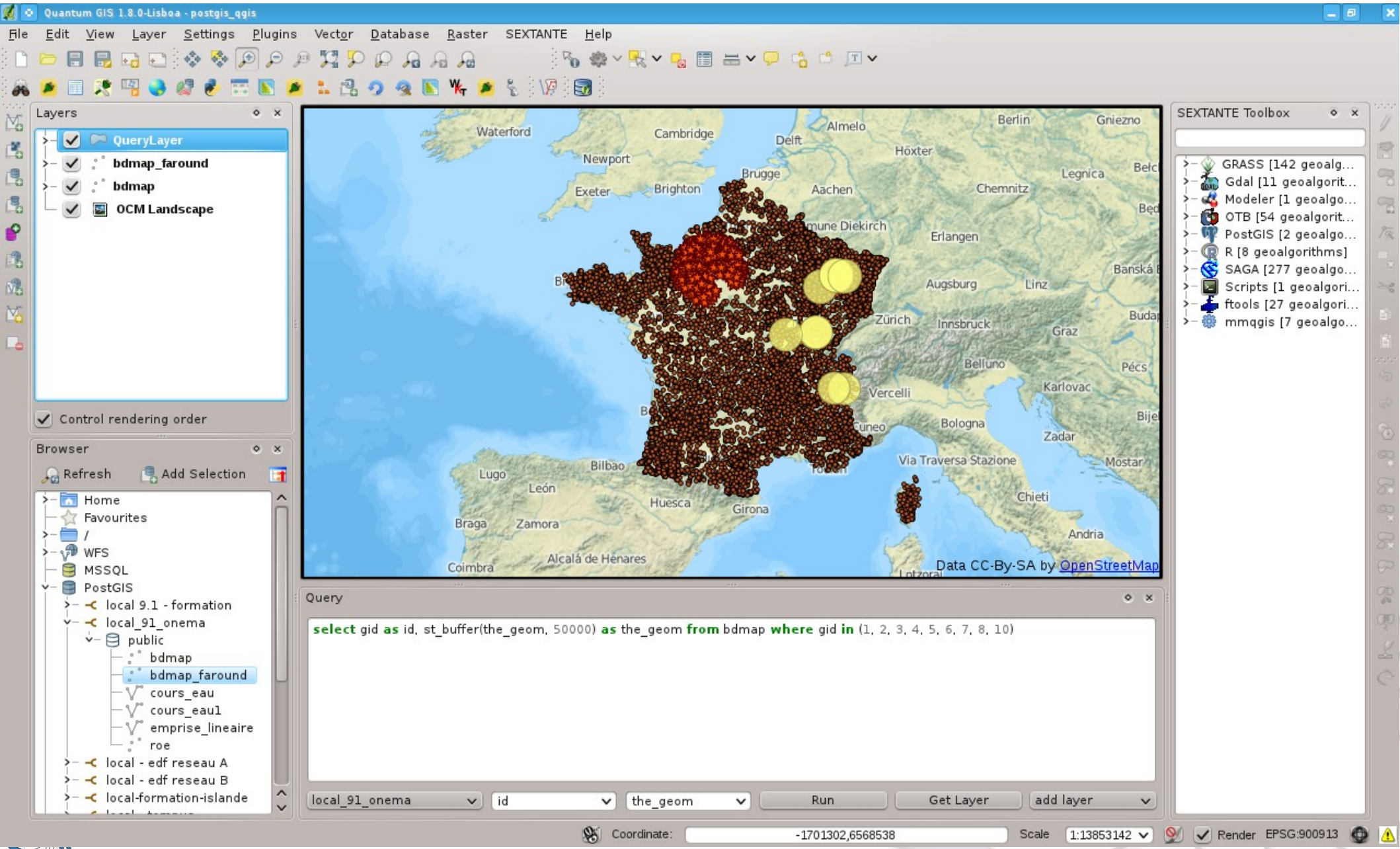
Fast SQL Layer plugin



Fast SQL Layer plugin



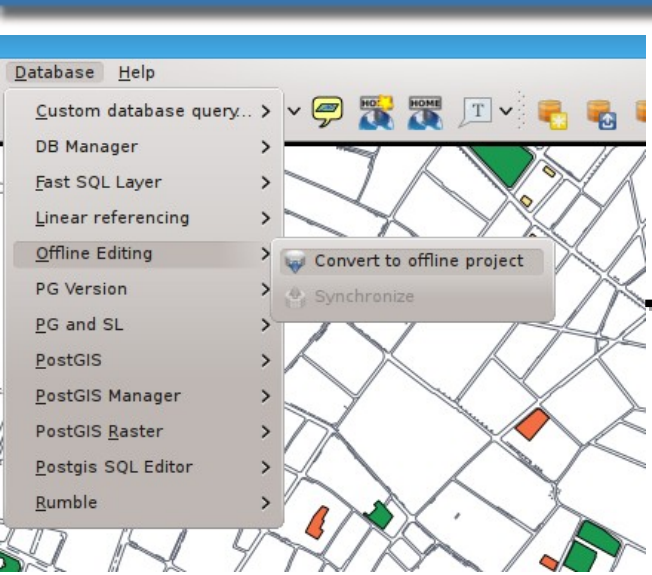
Fast SQL Layer plugin

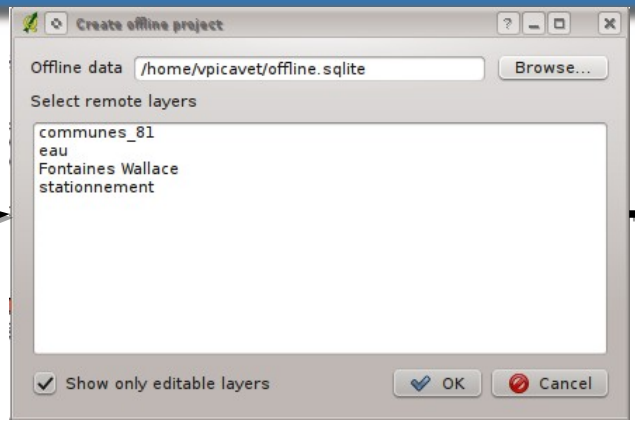


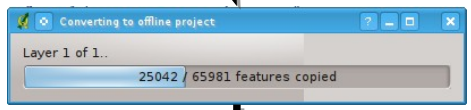
Offline editing

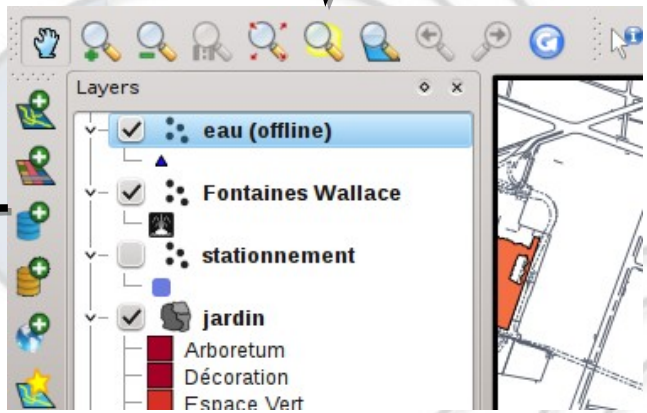
OSLANDIA

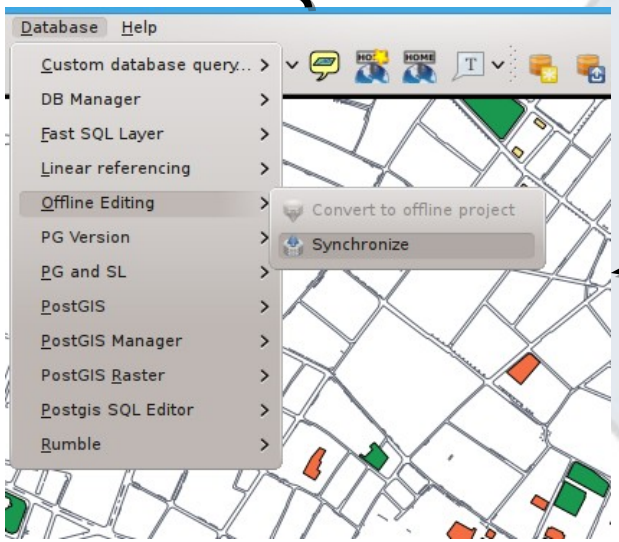
Native support : offline editing

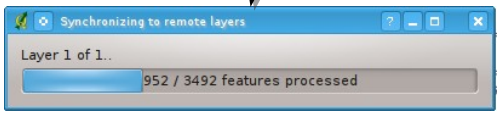












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Native support : offline editing

- Trunk plugin by SourcePole
- Prepare layer
  - → local spatialite database
- Edit locally
- Resynchronize
  - → save to PostGIS
- Full layer
- No conflict management
- → Use with updatable views

Versionning

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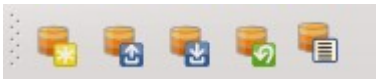
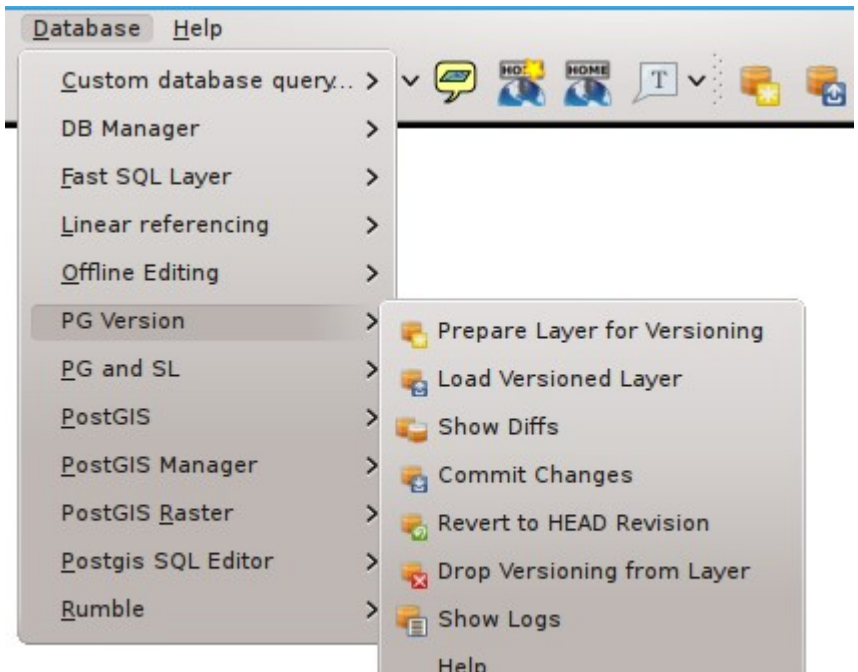
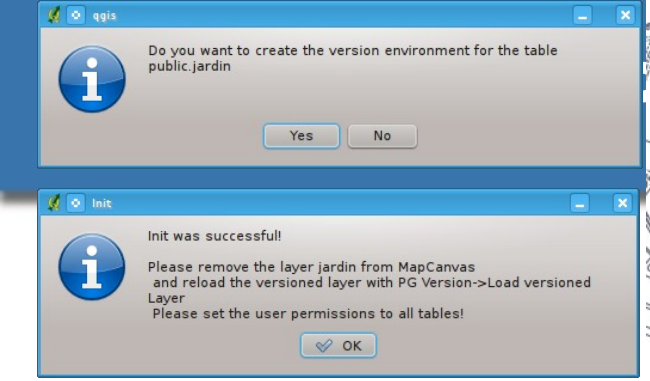
Plugin : pgVersion

- Pl/pgSQL + Python plugin by Horst Duester
- Subversion – like

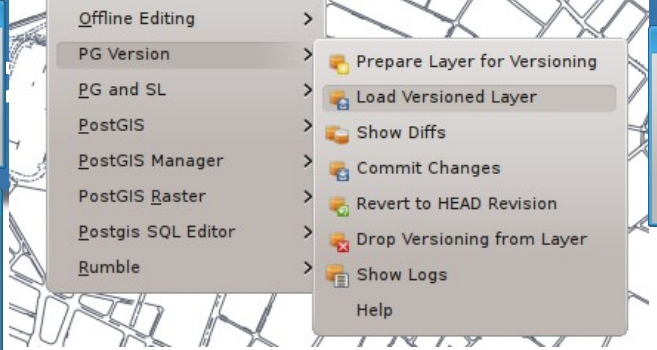


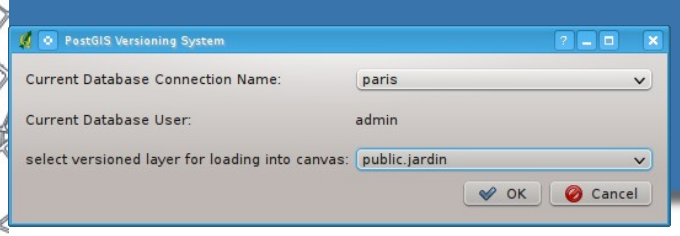
- Conflict management
- Revisions/History management



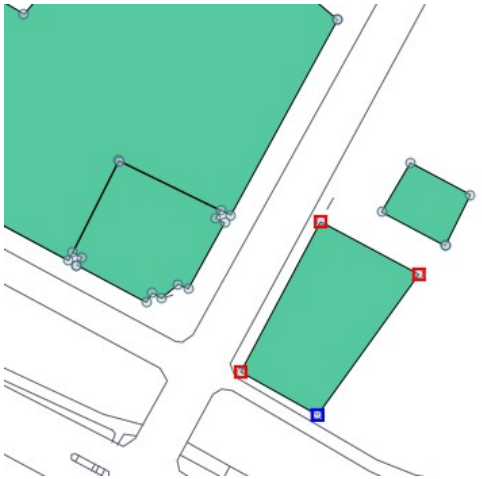


Initialize



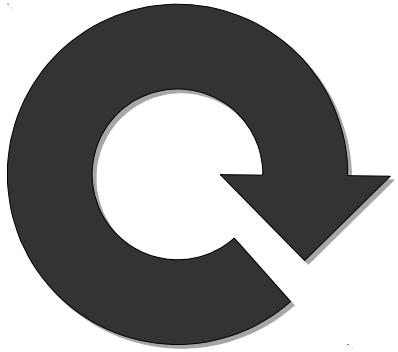


Load layer

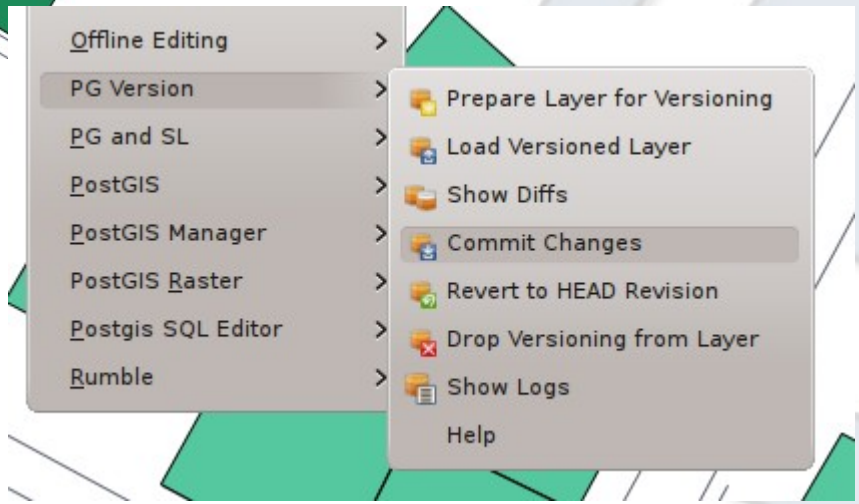


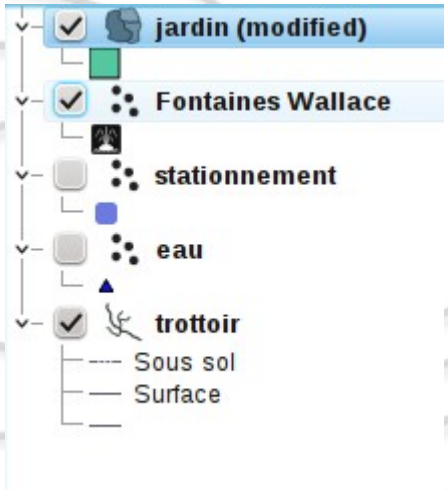
Edit & save layer

Get current and old revisions



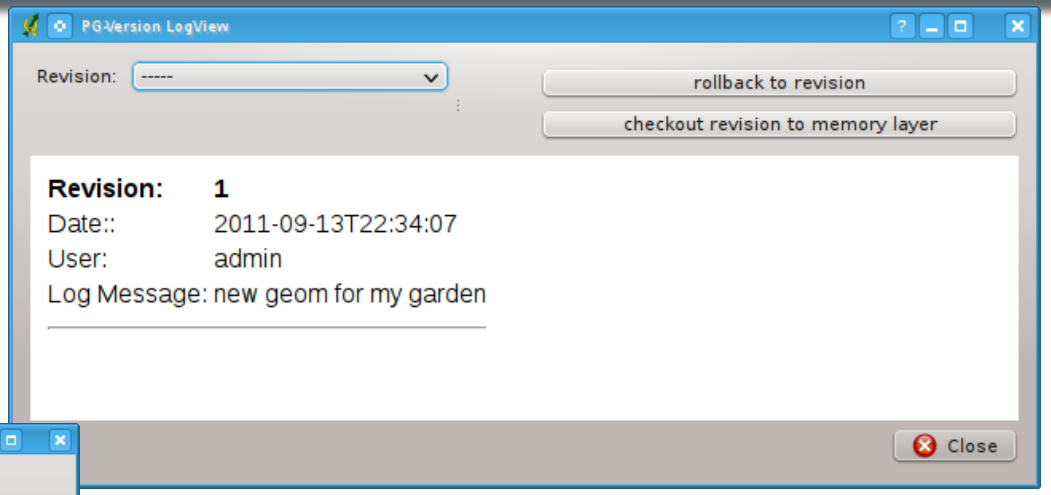
Commit changes



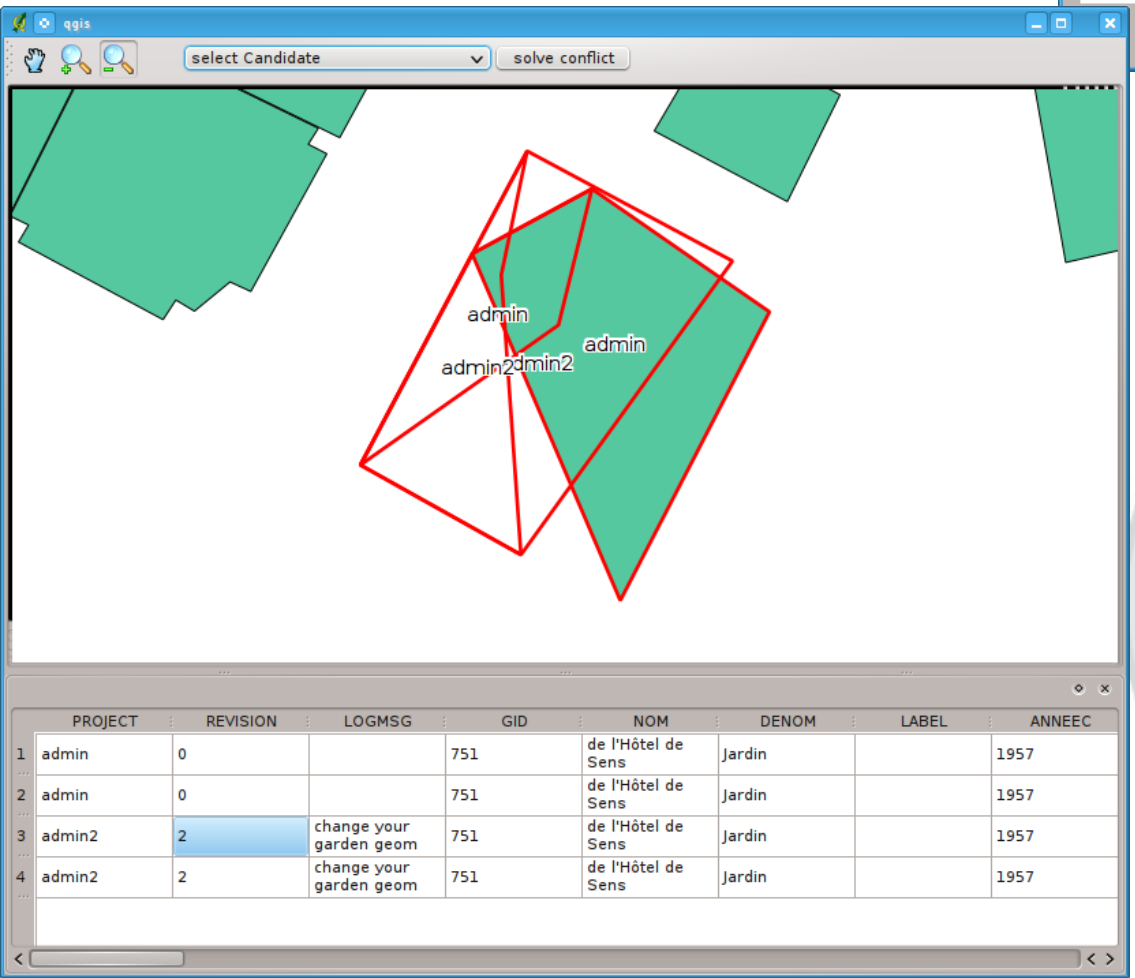


OSLANDIA

Plugin : pgVersion



Revision log



	PROJECT	REVISION	LOGMSG	GID	NOM	DENOM	LABEL	ANNEEC
1	admin	0		751	de l'Hôtel de Sens	Jardin		1957
2	admin	0		751	de l'Hôtel de Sens	Jardin		1957
3	admin2	2	change your garden geom	751	de l'Hôtel de Sens	Jardin		1957
4	admin2	2	change your garden geom	751	de l'Hôtel de Sens	Jardin		1957

Conflict management on commit

PostGIS Raster

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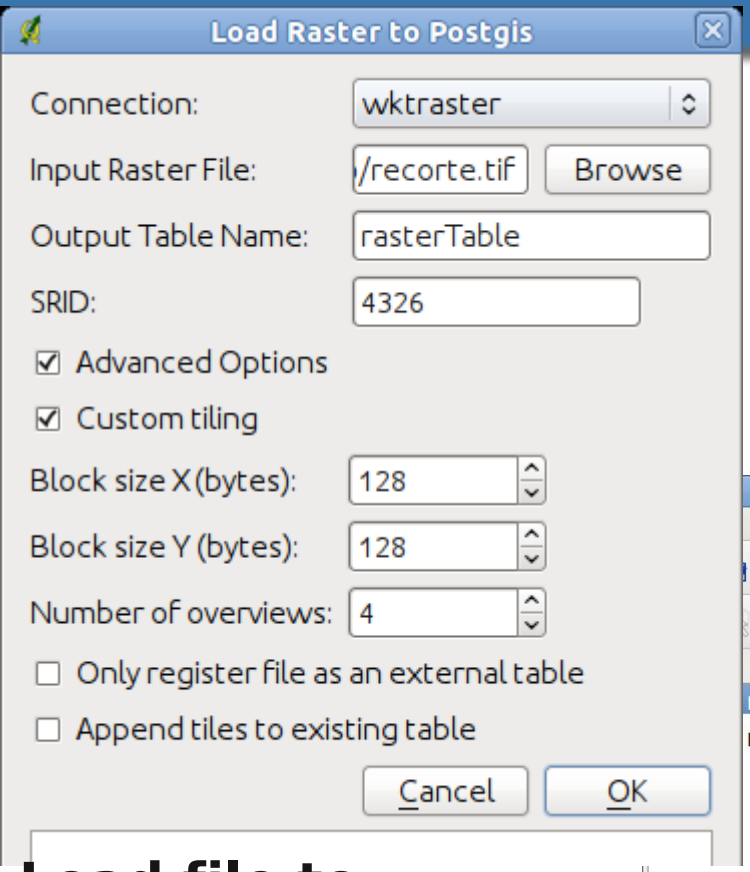
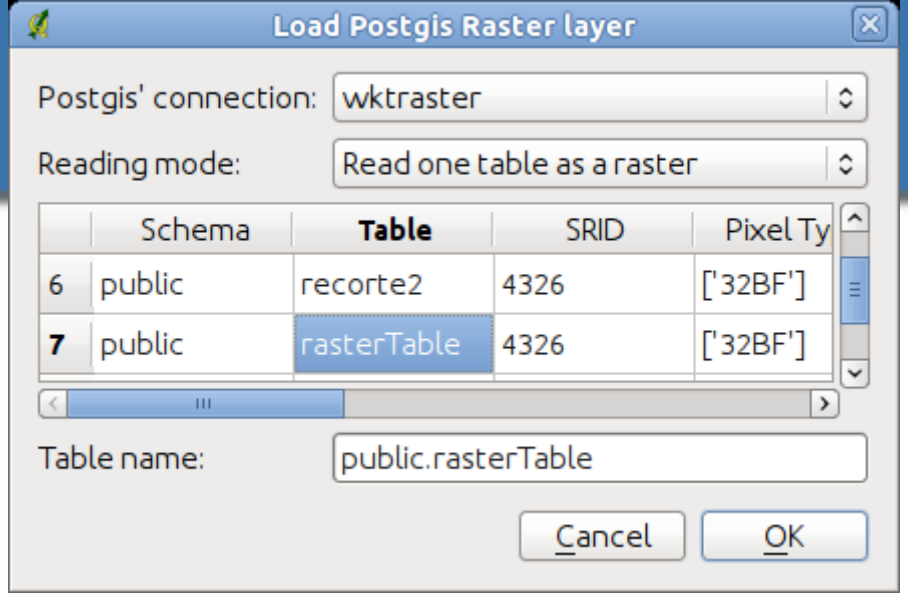
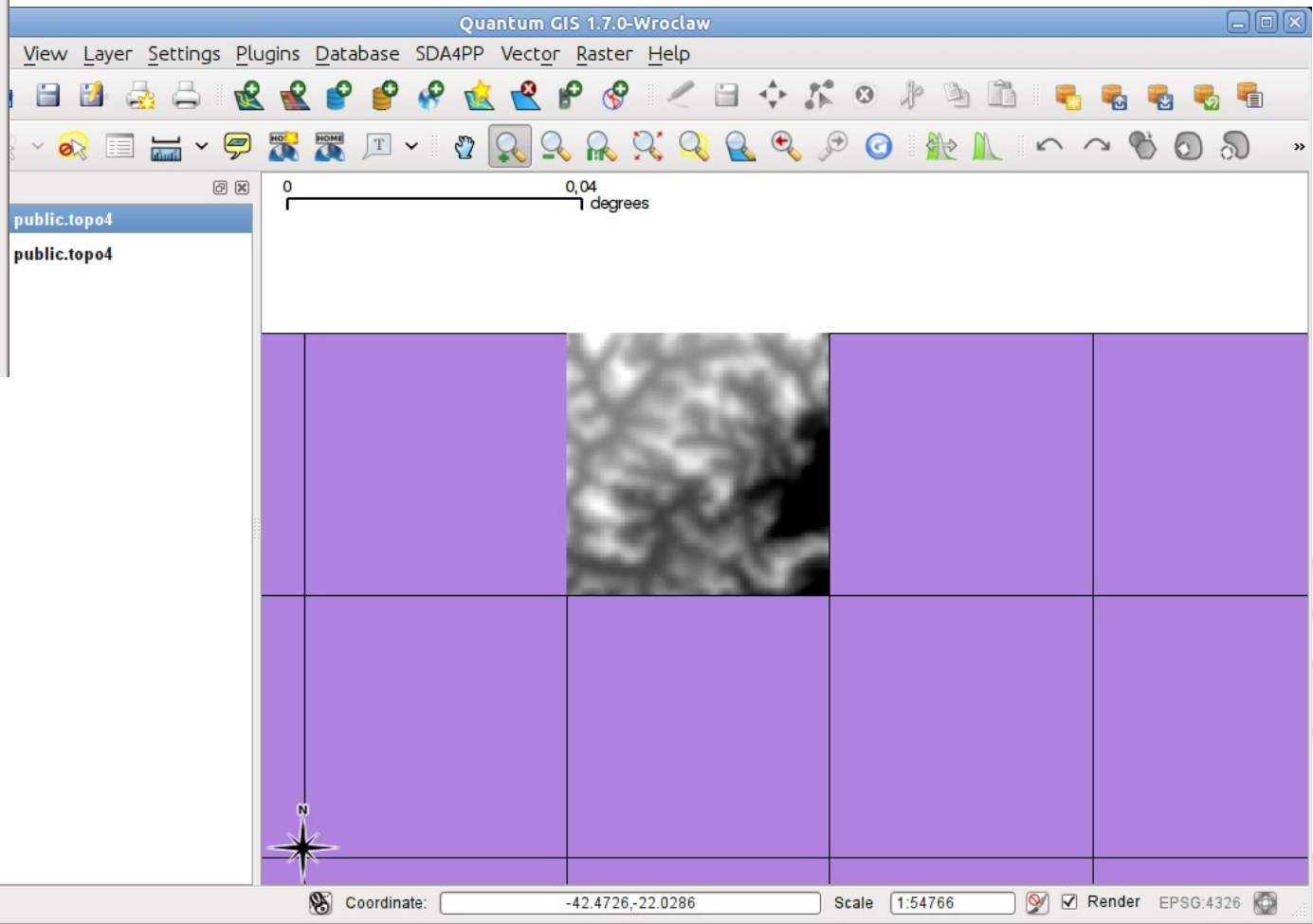
Add PostGIS Raster



Load file to PostGIS Raster

Load PostGIS Raster to QGIS





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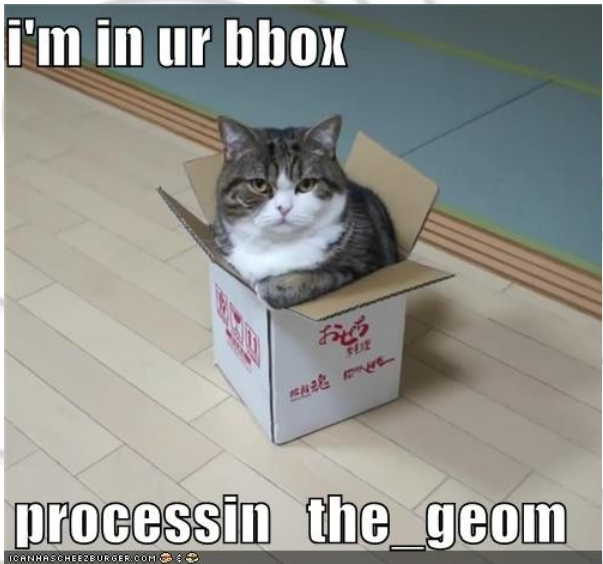
Conclusion

- QGIS and PostGIS play well together !
- Most use cases covered
- More integration work needed
- Sextante framework → ELT
- Lots of plugins
- QGIS dev follows PostGIS dev



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Thanks

Questions ?

Now,

Around a beer or

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