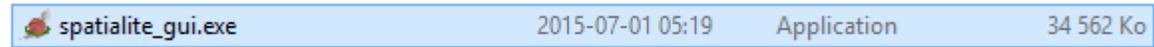


TP2 : SIG et modélisation

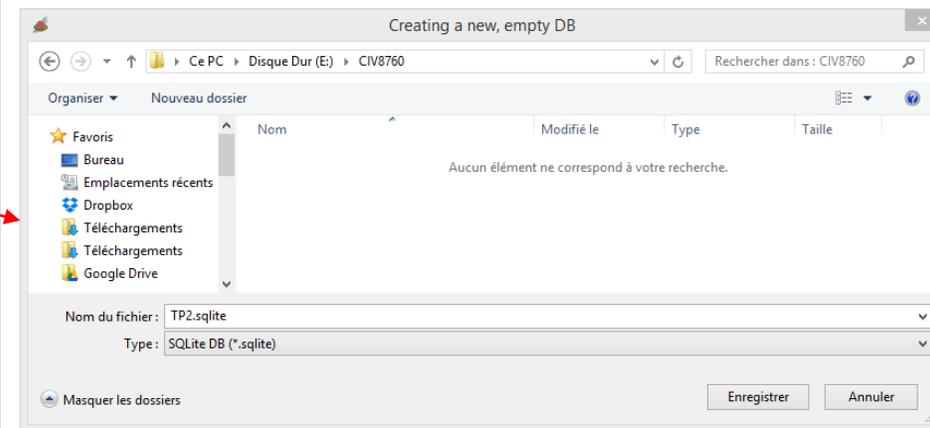
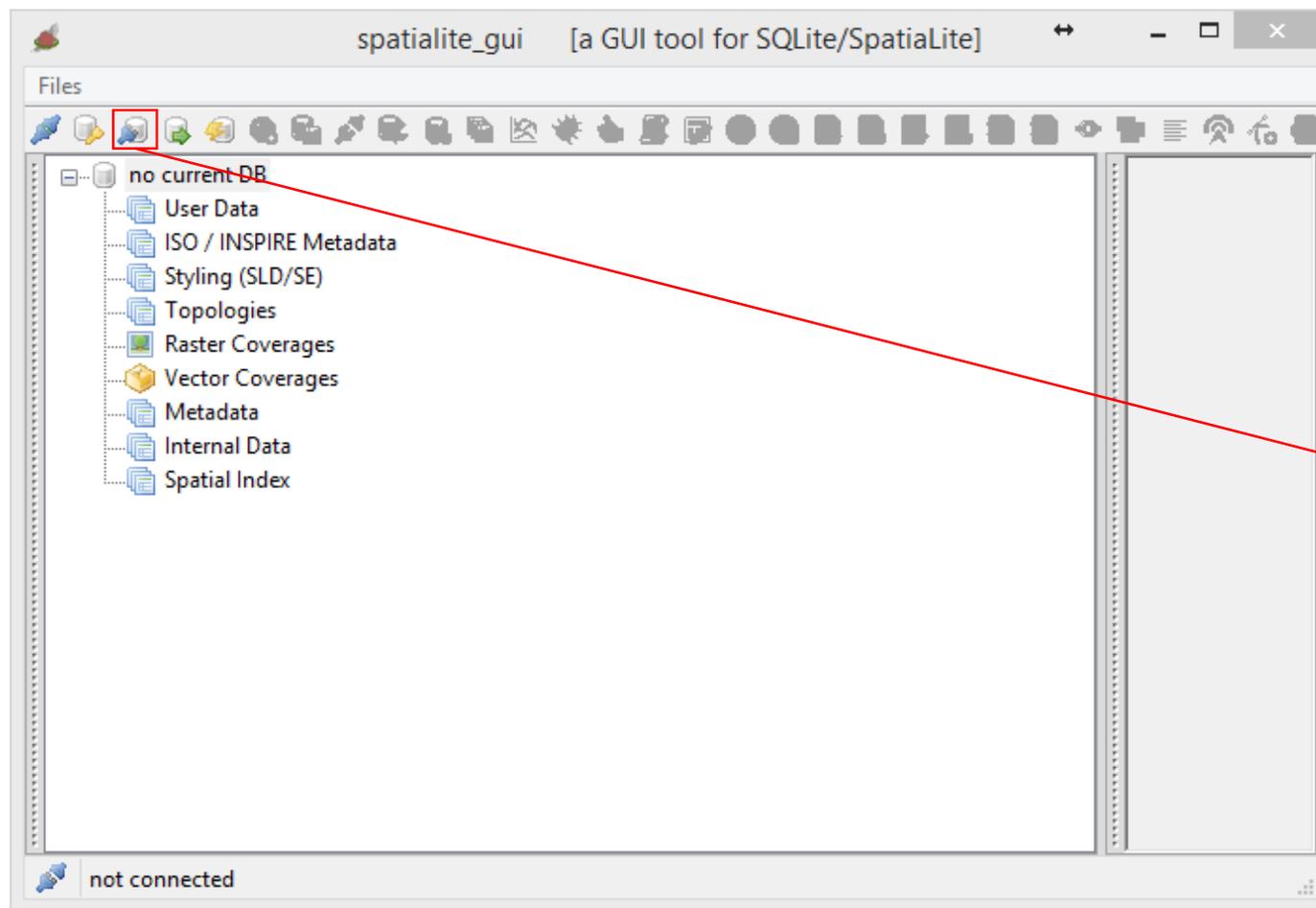
Logiciel utilisé

- Logiciel utilisé pour faire l'analyse spatiale : Spatialite

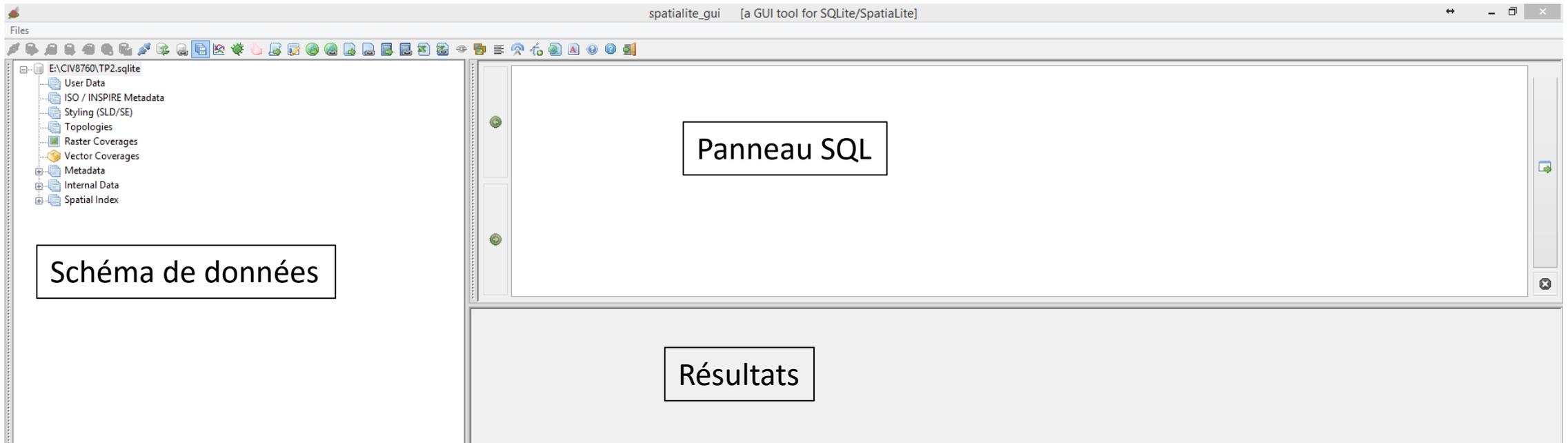


- Le logiciel est un exécutable portable

Création d'une base de données



Import de fichiers



SHP CSV DBF XLS

Import de fichiers (CSV)

Load CSV/TXT

Path: E:\CIV8760\rseau-de-transport-de-longueuil_20131021_1819\stop

Table name: stop_times

First line contains column names

Separators

Text separator: quotes

Double " Single ' None

Column separator

Tab Space

Comma , Colon :

Semicolon ; Other

Custom separator: ,

Decimal separator

Point . Comma ,

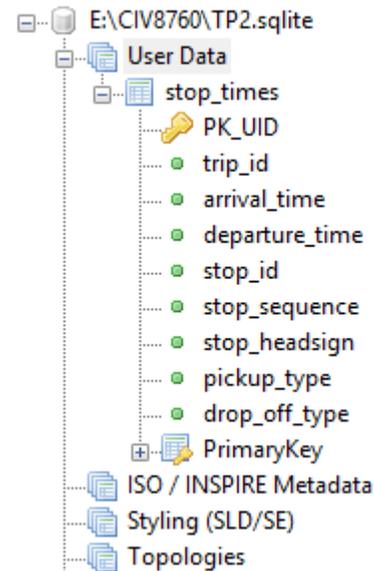
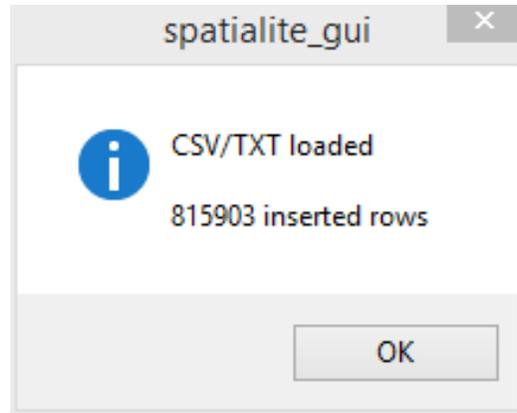
Charset Encoding

CP866	DOS/OEM Cyrillic
CP874	DOS/OEM Thai
CP932	DOS/OEM Japanese
CP936	DOS/OEM Chinese
CP949	DOS/OEM Korean
CP950	DOS/OEM Chinese/Big5
CP1133	Laotian
CP1250	Windows Central Europe
CP1251	Windows Cyrillic
CP1252	Windows Latin 1

OK Cancel

```
trip_id,arrival_time,departure_time,stop_id,stop_sequence,stop_headsign,pickup_type,drop_off_type
1_1_R_DI_1601_07_45,07:45:00,07:45:00,4416,0,Windsor,0,1
1_1_R_DI_1601_07_45,07:46:41,07:46:41,3685,551,Windsor,0,0
1_1_R_DI_1601_07_45,07:48:07,07:48:07,1015,1022,Windsor,0,0
1_1_R_DI_1601_07_45,07:48:51,07:48:51,1016,1263,Windsor,0,0
1_1_R_DI_1601_07_45,07:49:24,07:49:24,1017,1443,Windsor,0,0
1_1_R_DI_1601_07_45,07:50:25,07:50:25,1018,1771,Windsor,0,0
1_1_R_DI_1601_07_45,07:51:00,07:51:00,1019,1961,Windsor,0,0
1_1_R_DI_1601_07_45,07:51:36,07:51:36,1020,2238,Windsor,0,0
1_1_R_DI_1601_07_45,07:51:59,07:51:59,1021,2405,Windsor,0,0
1_1_R_DI_1601_07_45,07:52:19,07:52:19,1022,2558,Windsor,0,0
1_1_R_DI_1601_07_45,07:52:40,07:52:40,1024,2711,Windsor,0,0
1_1_R_DI_1601_07_45,07:52:59,07:52:59,1023,2859,Windsor,0,0
1_1_R_DI_1601_07_45,07:53:20,07:53:20,1025,3016,Windsor,0,0
1_1_R_DI_1601_07_45,07:53:43,07:53:43,1026,3186,Windsor,0,0
1_1_R_DI_1601_07_45,07:54:00,07:54:00,1027,3311,Windsor,0,0
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1_1_R_DI_1601_07_45,07:55:27,07:55:27,1029,3722,Windsor,0,0
1_1_R_DI_1601_07_45,07:56:21,07:56:21,1030,3979,Windsor,0,0
1_1_R_DI_1601_07_45,07:57:09,07:57:09,1031,4205,Windsor,0,0
1_1_R_DI_1601_07_45,07:58:00,07:58:00,1032,4443,Windsor,0,0
1_1_R_DI_1601_07_45,07:58:28,07:58:28,1033,4575,Windsor,0,0
1_1_R_DI_1601_07_45,07:58:50,07:58:50,1034,4679,Windsor,0,0
1_1_R_DI_1601_07_45,07:59:44,07:59:44,1035,4933,Windsor,0,0
1_1_R_DI_1601_07_45,08:00:26,08:00:26,1036,5133,Windsor,0,0
1_1_R_DI_1601_07_45,08:01:19,08:01:19,1037,5381,Windsor,0,0
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1_1_R_DI_1601_07_45,08:04:26,08:04:26,1040,6100,Windsor,0,0
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1_1_R_DI_1601_07_45,08:10:09,08:10:09,1049,7747,Windsor,0,0
1_1_R_DI_1601_07_45,08:10:36,08:10:36,1050,7903,Windsor,0,0
1_1_R_DI_1601_07_45,08:11:02,08:11:02,1057,8052,Windsor,0,0
1_1_R_DI_1601_07_45,08:11:21,08:11:21,1051,8166,Windsor,0,0
1_1_R_DI_1601_07_45,08:11:50,08:11:50,1052,8330,Windsor,0,0
1_1_R_DI_1601_07_45,08:12:26,08:12:26,4692,8540,Windsor,0,0
1_1_R_DI_1601_07_45,08:13:29,08:13:29,1054,8899,,0,0
1_1_R_DI_1601_07_45,08:14:00,08:14:00,1055,9077,,1,0
1_1_A_DI_1601_08_15,08:15:00,08:15:00,1055,,0,,1
1_1_A_DI_1601_08_15,08:16:12,08:16:12,1056,383,,0,0
1_1_A_DI_1601_08_15,08:16:37,08:16:37,1058,513,,0,0
1_1_A_DI_1601_08_15,08:16:59,08:16:59,1059,629,,0,0
1_1_A_DI_1601_08_15,08:17:29,08:17:29,1060,788,,0,0
1_1_A_DI_1601_08_15,08:17:59,08:17:59,1061,950,,0,0
```

Import de fichiers (CSV)



- Voir ici pour plus d'information : <https://www.gaia-gis.it/gaia-sins/spatialite-cookbook/html/impexp.html>

Import de fichiers (CSV)

- Autre option : lignes de commande (CLI) versus ce qu'on vient de faire (GUI)

Import de fichiers (SHP)

Load Shapefile

Path: E:\CIV8760\KitEtd_TP2_Confidentiel\KitEtd_tp2_B_Confidentiel

Table name: s65_mtmNad83

GeomColumn name: Geometry

SRID: 32188

Charset Encoding

CP866	DOS/OEM Cyrillic
CP874	DOS/OEM Thai
CP932	DOS/OEM Japanese
CP936	DOS/OEM Chinese
CP949	DOS/OEM Korean
CP950	DOS/OEM Chinese/Big5
CP1133	Laotian
CP1250	Windows Central Europe
CP1251	Windows Cyrillic
CP1252	Windows Latin 1

Geometry storage

Coerce 2D geometries [x,y] Apply geometry compression With Spatial Index (R*Tree)

Geometry Type

Mode

Automatic User specified

Primary Key Column

Mode

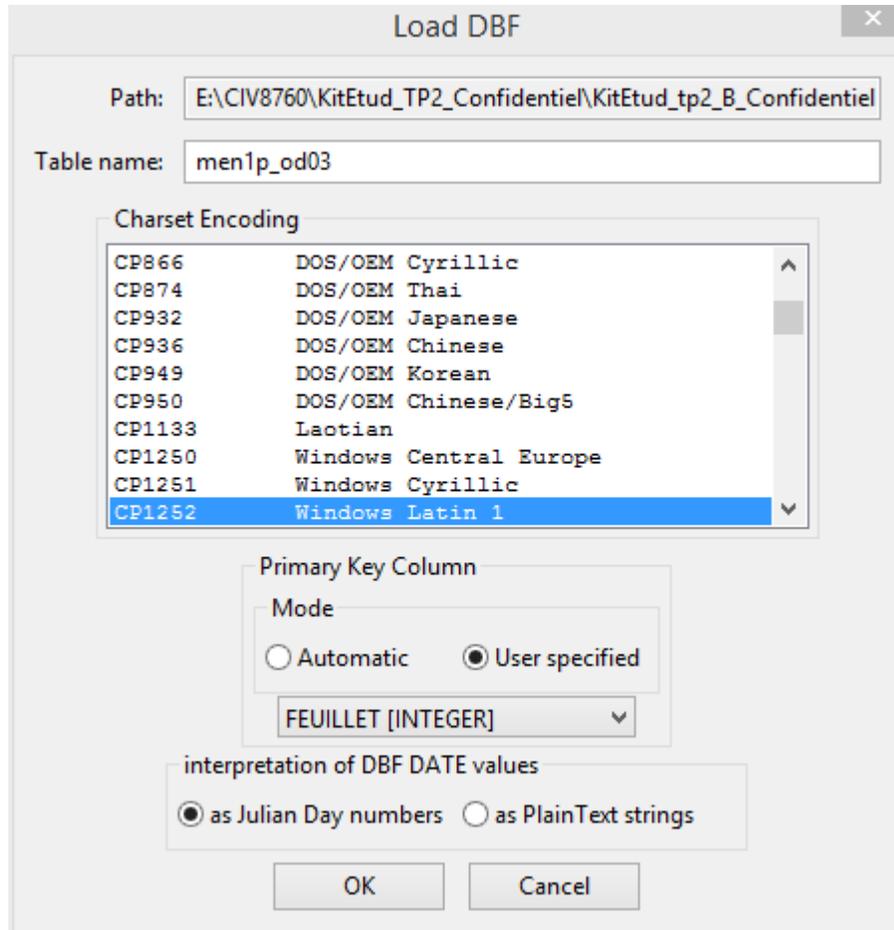
Automatic User specified

interpretation of DBF DATE values

as Julian Day numbers as PlainText strings

OK Cancel

Import de fichiers (DBF)



Introduction au SQL spatial (Spatialite)

- https://www.gaia-gis.it/fossil/spatialite_gui/home
- http://www.gaia-gis.it/gaia-sins/spatialite-gui-docs/spatialite_gui-1.5.0.pdf
- Cookbook : <http://www.gaia-gis.it/spatialite-2.4.0-4/spatialite-cookbook/>
- Liste de fonctions SQL : <https://www.gaia-gis.it/spatialite-2.3.0/spatialite-sql-2.3.0.html>

Les systèmes de coordonnées (en anglais SRID)

- <http://www.gaia-gis.it/spatialite-2.4.0-4/spatialite-cookbook/html/srid.html>

Création d'une colonne de géométrie

- Fonction AddGeometryColumn
- Voir ici : <http://www.gaia-gis.it/spatialite-2.4.0-4/spatialite-cookbook/html/new-geom.html>

AddGeometryColumn	AddGeometryColumn(table <i>String</i> , column <i>String</i> , srid <i>Integer</i> , geom_type <i>String</i> , dimension <i>Integer</i> [, not_null <i>Integer</i>]) : <i>Integer</i>	X	X	X	X	<p>Creates a new geometry column updating the Spatial Metadata tables and creating any required trigger in order to enforce constraints</p> <p>geom_type has to be one of the followings:</p> <ul style="list-style-type: none">• 'POINT'• 'LINESTRING'• 'POLYGON'• 'MULTIPOINT'• 'MULTILINESTRING'• 'MULTIPOLYGON'• 'GEOMETRYCOLLECTION' <p>dimension has to be always 2, because current SpatiaLite version only supports 2D</p> <p>the return type is Integer, with a return value of 1 for TRUE or 0 for FALSE</p> <p>the optional 6th arg [not_null] is a non-standard extension required by the peculiar SQLite arch:</p> <ul style="list-style-type: none">• if set to 0 [<i>false</i>], then the Geometry column will accept NULL values as well. This is the default behaviour• if set to any <> 0 value [<i>true</i>], then the Geometry will be defined using a NOT NULL clause
--------------------------	---	---	---	---	---	---

Update d'une colonne de géométrie

- Fonctions MakePoint et ST_Transform :

MakePoint

MakePoint(x *Double precision* , y *Double precision* , [, SRID *Integer*]) : *Geometry*

Transform

Transform(geom *Geometry* , newSRID *Integer*) : *Geometry*

Update stops SET stop_geom =

Transform(

 MakePoint(stop_lon, stop_lat, 4326),

 32188);

Jointure spatiale

- Intersects, mais plusieurs autres :

Function	Syntax
Equals	<code>Equals(geom1 Geometry , geom2 Geometry) : Integer</code>
Disjoint	<code>Disjoint(geom1 Geometry , geom2 Geometry) : Integer</code>
Touches	<code>Touches(geom1 Geometry , geom2 Geometry) : Integer</code>
Within	<code>Within(geom1 Geometry , geom2 Geometry) : Integer</code>
Overlaps	<code>Overlaps(geom1 Geometry , geom2 Geometry) : Integer</code>
Crosses	<code>Crosses(geom1 Geometry , geom2 Geometry) : Integer</code>
Intersects	<code>Intersects(geom1 Geometry , geom2 Geometry) : Integer</code>
Contains	<code>Contains(geom1 Geometry , geom2 Geometry) : Integer</code>
Relate	<code>Relate(geom1 Geometry , geom2 Geometry , patternMatrix String) : Integer</code>

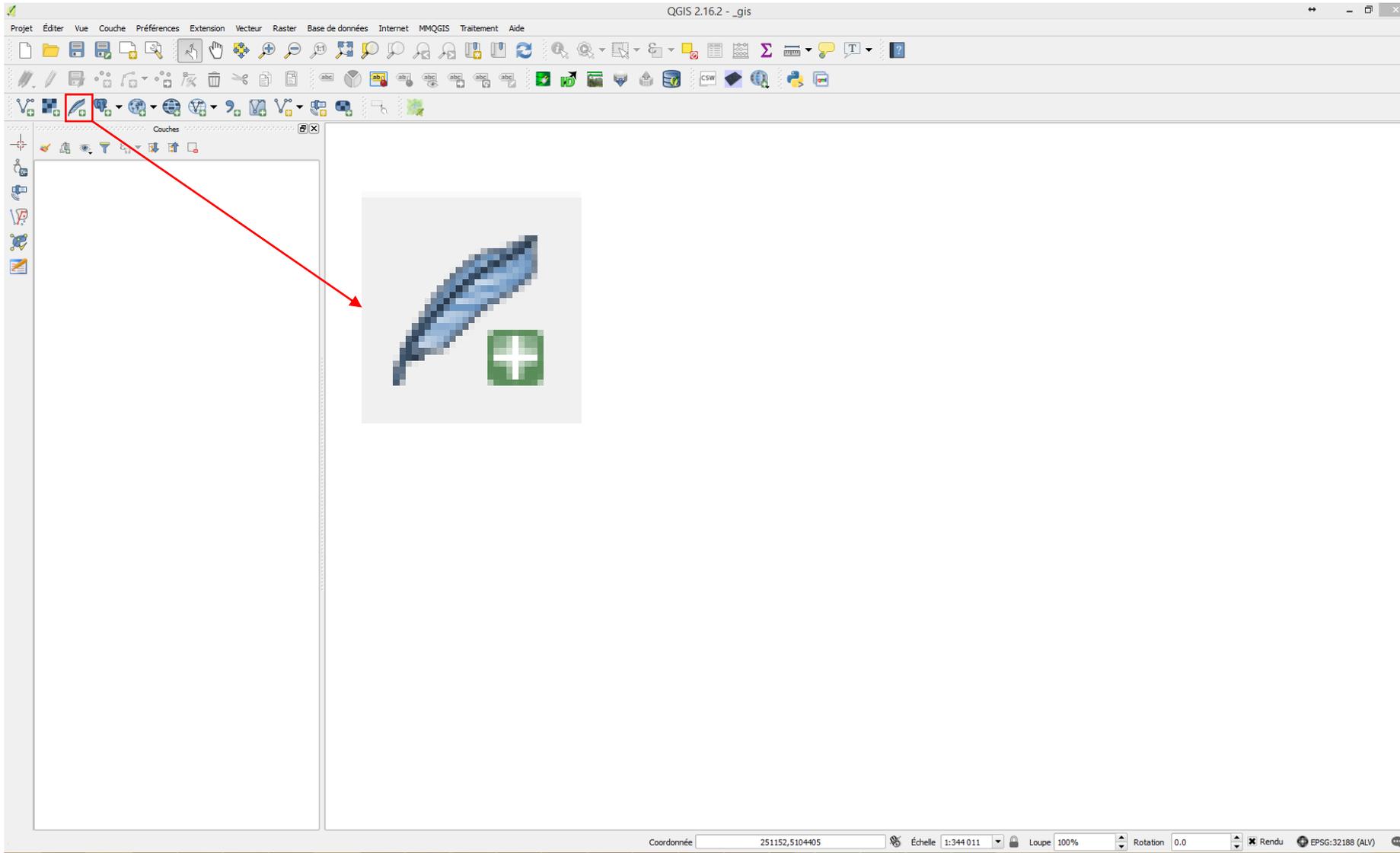
- (<https://www.gaia-gis.it/spatialite-2.3.0/spatialite-sql-2.3.0.html>)

Jointure spatiale

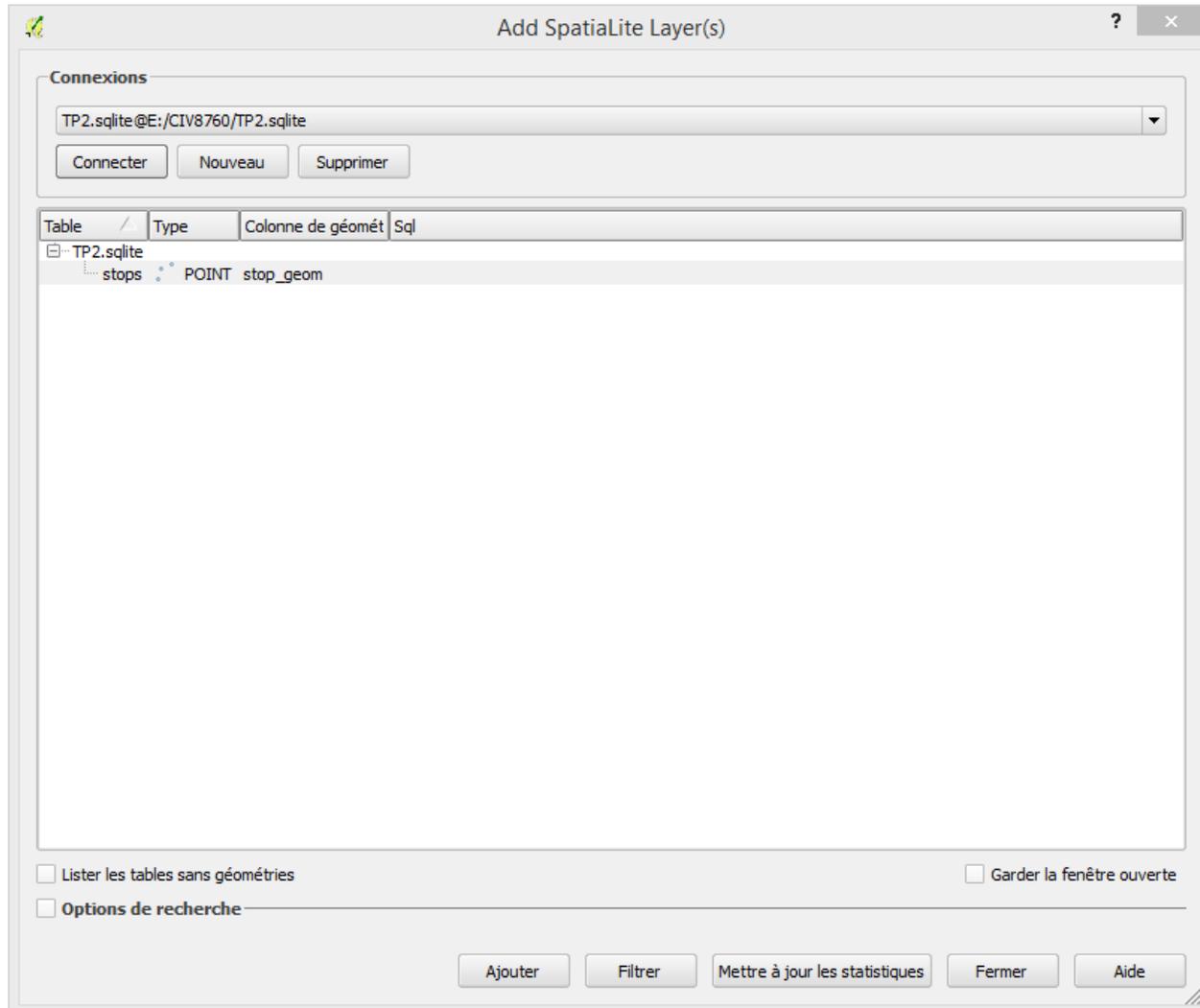
```
SELECT count(*), r.S65_EOD_ID FROM  
stops l INNER JOIN  
s65_mtmNad83 r  
ON Intersects(l.stop_geom,r.Geometry)  
GROUP BY r.S65_EOD_ID;
```

	count(*)	S65_EOD_ID
1	4	1
2	7	2
3	2	3
4	2	11
5	1	12
6	2	27
7	909	42
8	141	43
9	25	44
10	112	45
11	694	46
12	617	47

Connexion avec QGIS



Connexion avec QGIS



GeoDa

- Logiciel d'analyse spatiale
- Permet de se connecter à une base de données Sqlite)
- Multi-Plateforme
- <https://geodacenter.github.io>

GeoDa

- Connection à une base de données Sqlite

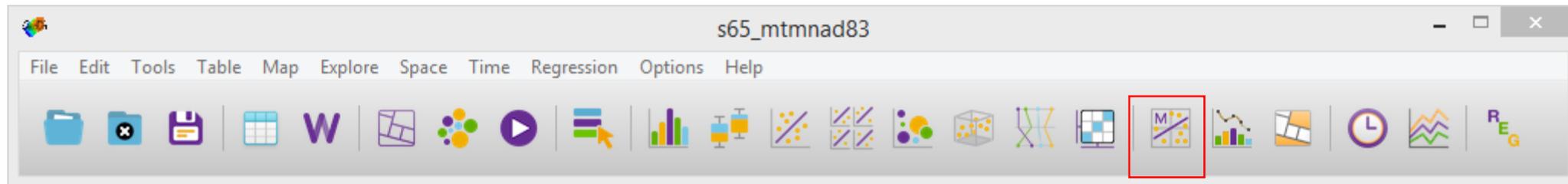


GeoDa

- Fichier de poids (tools -> Weight Manager)
 - Connexité (Queen ou Rook) -> attention à la précision
 - Distance Seuil
 - Voisins les plus proches (k-Nearest Neighbors)

GeoDa

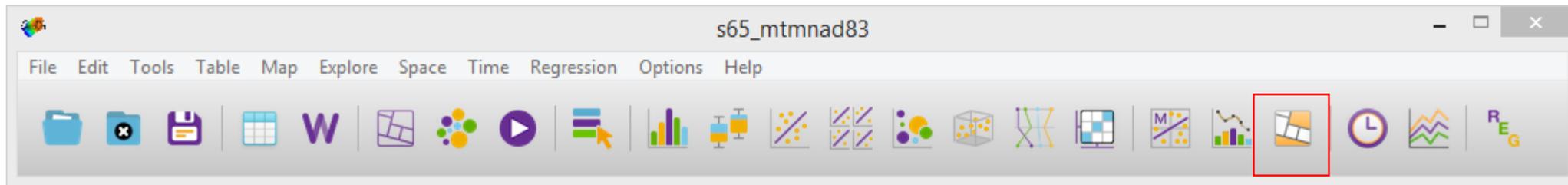
- Moran ScatterPlot :



- Il faut PRÉALABLEMENT créer un fichier de poids

GeoDa

- Moran Local



- Il faut PRÉALABLEMENT créer un fichier de poids

GeoDa

- Régression

