

Practical Introduction to OrbisGIS V3.0



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O P E N R S C E W P P O R T U N I T I I R S T V G

Summer School

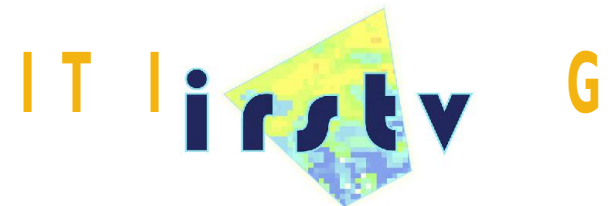
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Erasmus IP

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Partners Contribution



Partner Collaboration



Universitat de Girona
Departament de Geografia

Outline

- 1 - Presentation of OrbisGIS
- 2 - Start an OrbisGIS project
- 3 - OrbisGIS interface components
- 4 - Organize & Load your data
- 5 - Tools for navigation, selection and interrogation
- 6 - TOC : Table of contents
- 7 - Edit Legend
- 8 - Tools for displaying attributes
- 9 - Introduction to SQL

1 - Presentation of OrbisGIS ... in few words

- GIS application dedicated to scientific spatial simulation.
- Developed by French IRSTV (Research Institute on Urban Sciences and Technics)
- Able to manipulate and create vectorial and raster spatial data.
 - GDMS (Generic Datasources Management System) for vector layers and attributes data,
 - GRAP (GeoRAster Processing) for raster data such as aerial photos or digital elevation models.
- Distributed under GPL 3 license.
- 100% Java
- Since the beginning of 2008
- Last official release : V 2.2.0
- Last Beta release : V 3.0



1 - Presentation of OrbisGIS ... on Internet



<http://www.orbisgis.org/>



Mailing list



<http://orbisgis.3871844.n2.nabble.com/>



Online help



(... and soon for the V3.0)

http://brehat.ec-nantes.fr/orbisgis_download/documentation/online/2-2/en/orbisgis_help_en.htm



info@orbisgis.org



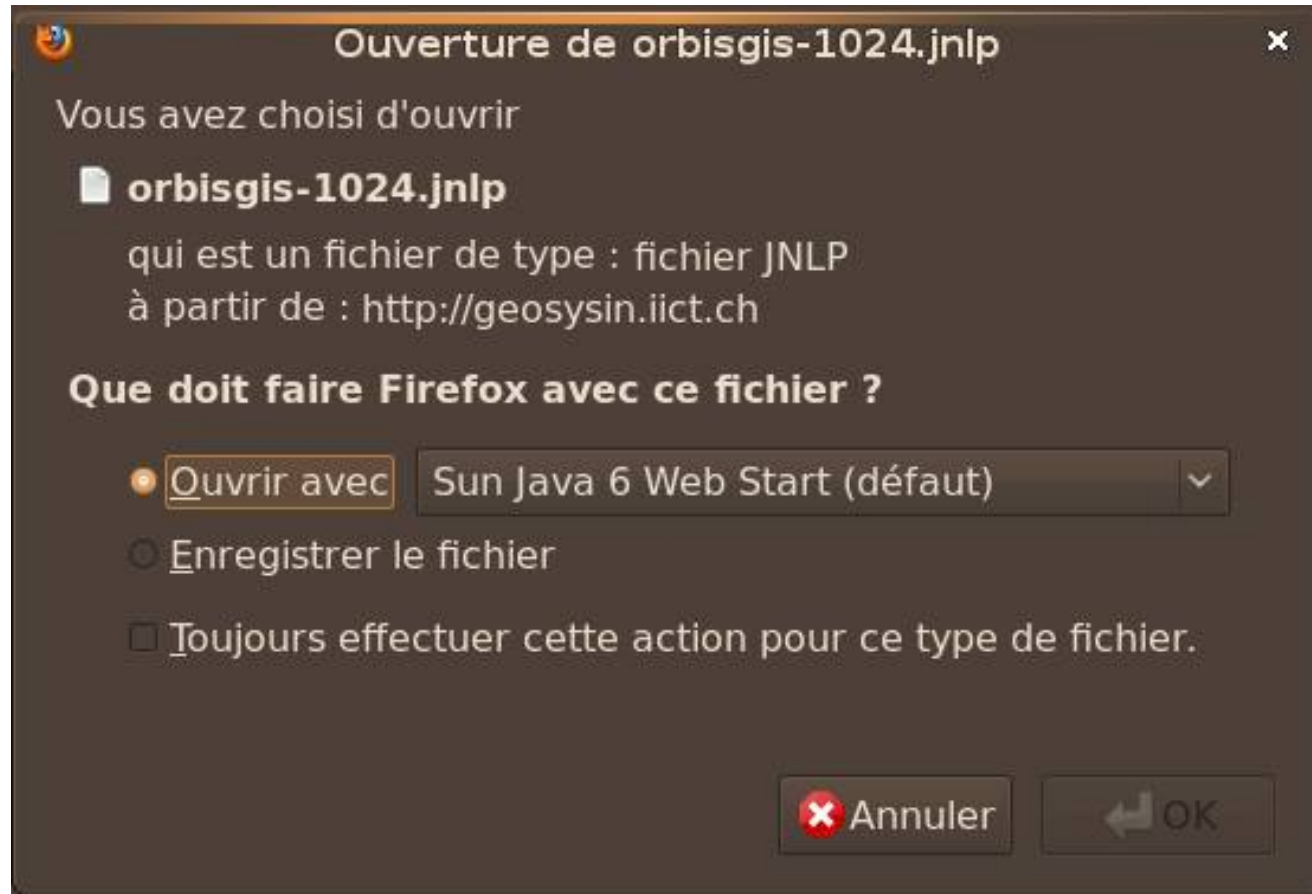
**Follow OrbisGIS
on Twitter**

<http://twitter.com/OrbisGIS>

2 - Start an OrbisGIS project

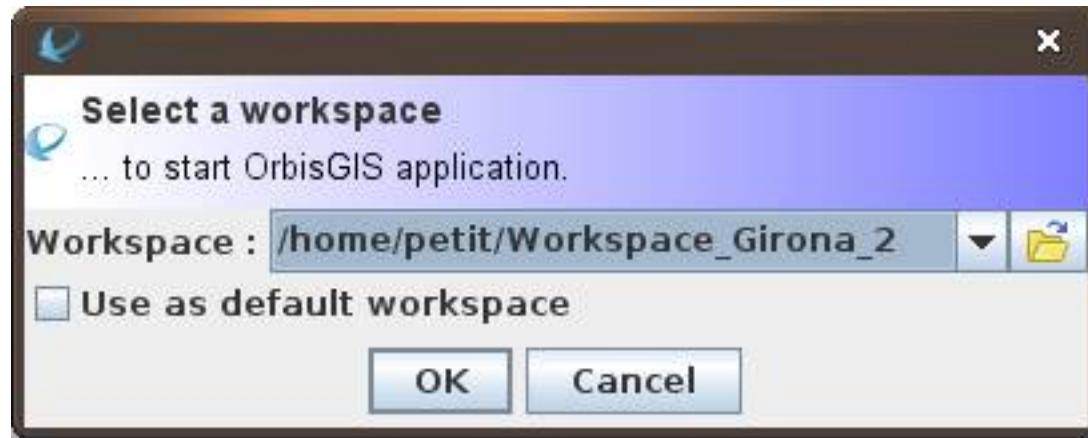
Launch the Java Web Start of OrbisGIS V3.0

Click on : <http://geosysin.iict.ch/irstv-web/jws/orbisgis.jnlp>



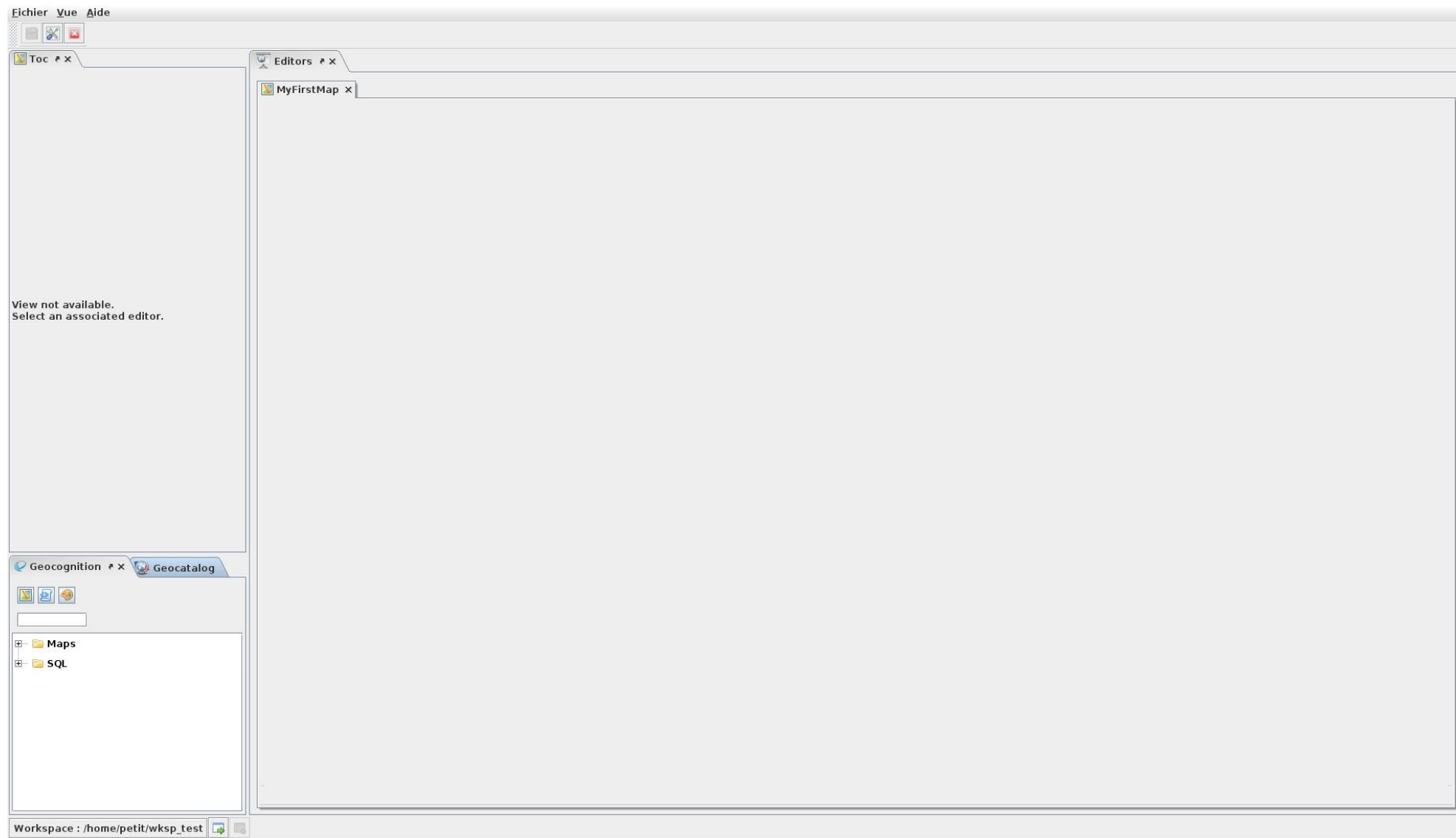
2 - Start an OrbisGIS project

Load or create a new workspace



- As much workspace as you want
- Use a workspace as default in order to skip this step (not definitive)

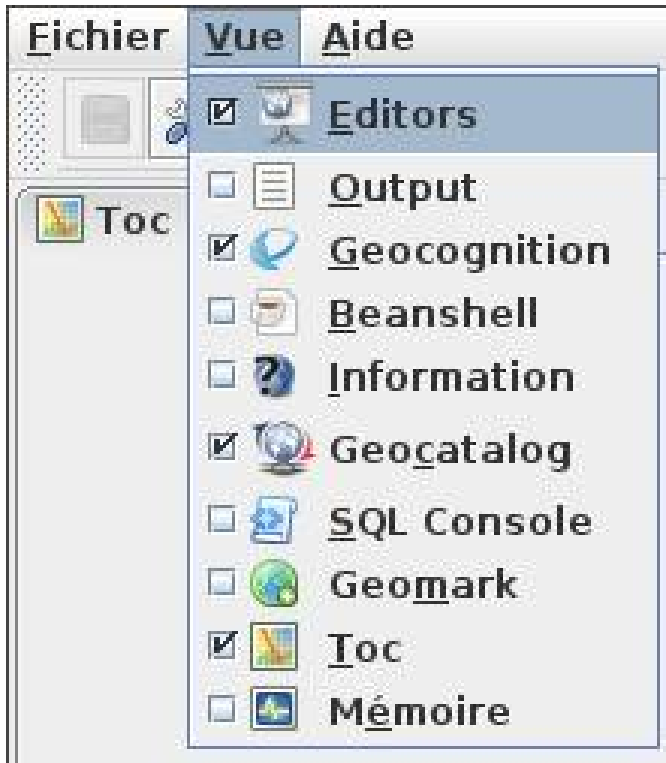
3 - OrbisGIS interface components ... a multi-document based application



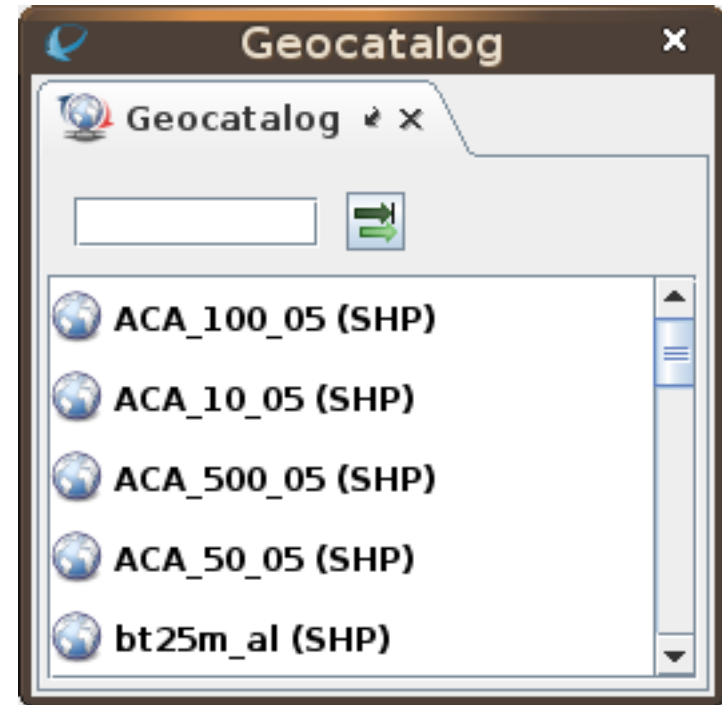
Add / Remove / Resize / Extract / Move (with drag & drop) windows

3 - OrbisGIS interface components

Add / Remove window



Extract / Remove window



Change workspace



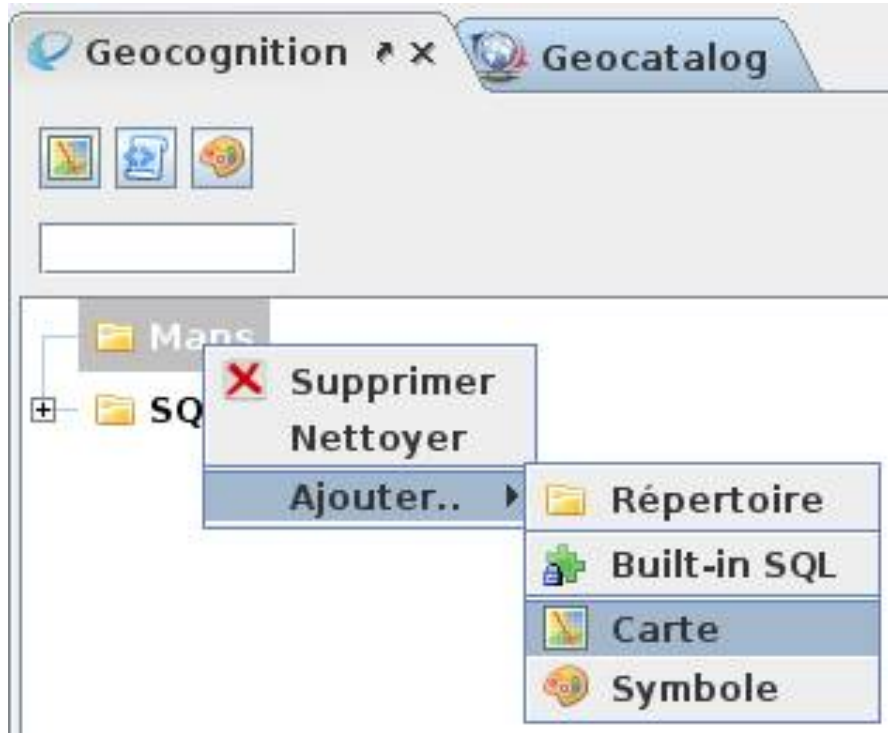
3 - OrbisGIS interface components

The major components

- Geocatalog : the place where you manage datasources
- Editor – Map : the place where you display and edit spatial objects
- Editor – Table : the place where you consult attributes informations
- Geocognition : the place where you manage map and SQL queries
- SQL console : the place where you execute SQL statements

4 - Organize and load your data

Add a new map



→ A new map appears in the “Editors” view

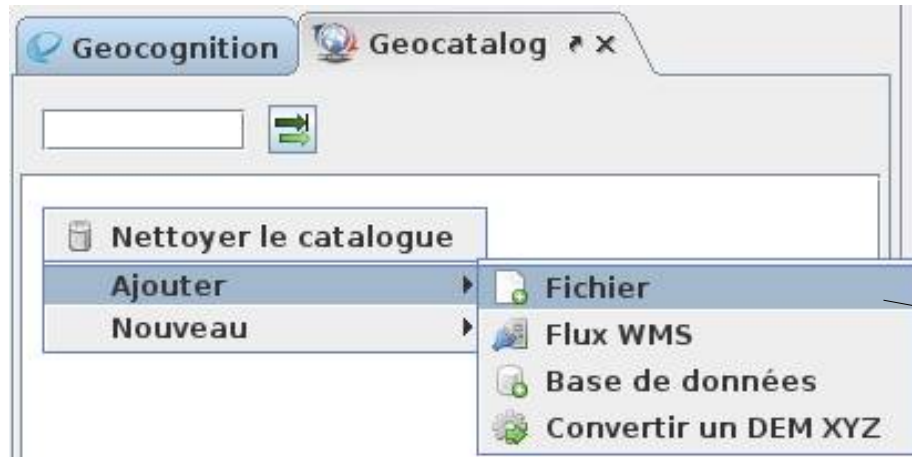


→ TOC becomes enabled

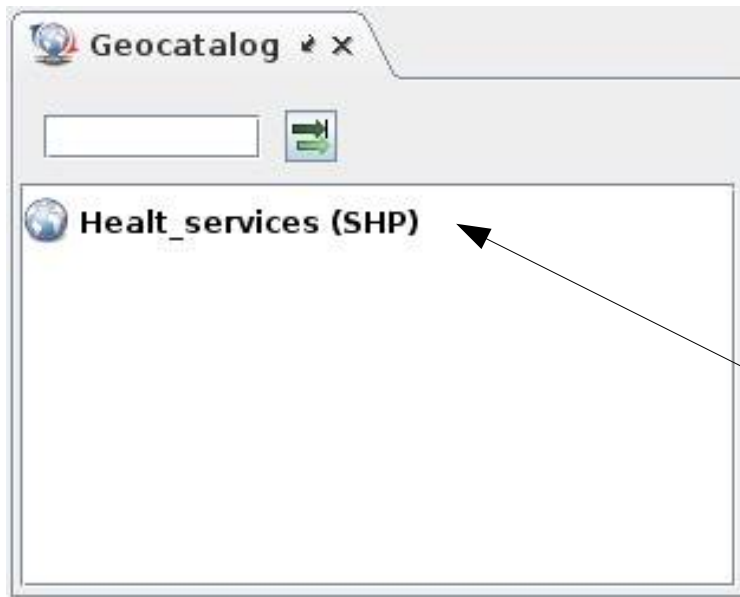
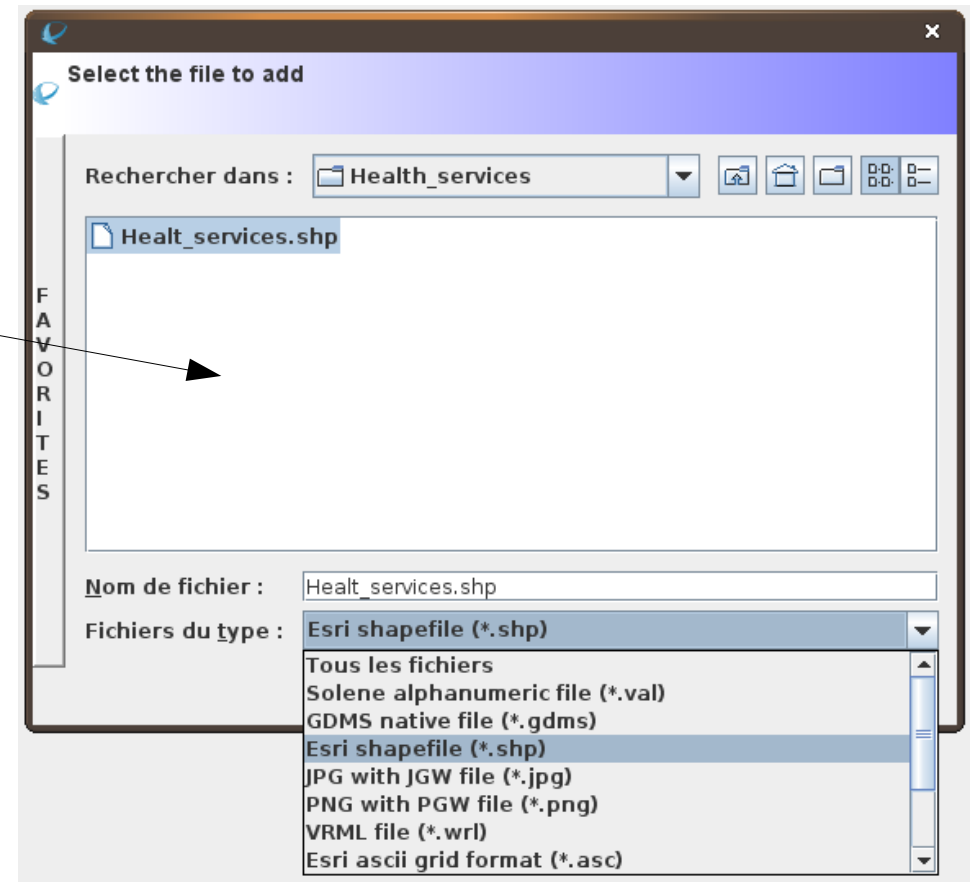


4 - Organize and load your data

a- Add new datasources



b- Define the extension and select file



c- Clic on "Ok" → data is in the Geocatalog

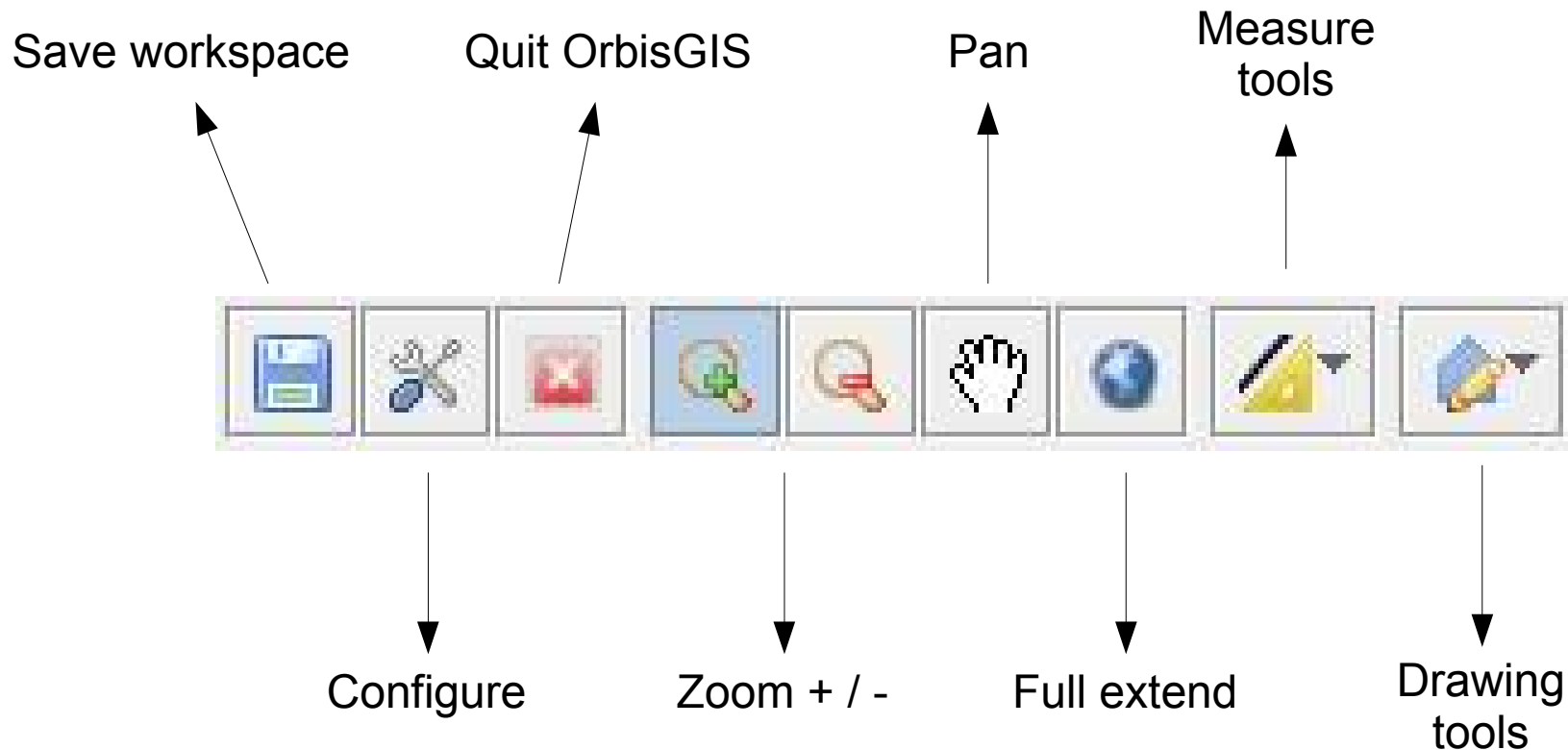
5 - Tools for navigation, selection and interrogation

The screenshot displays the OrbisGIS software interface. At the top, there is a menu bar with 'Fichier', 'Vue', and 'Aide'. Below it is a toolbar with various icons for file operations and navigation. The main window is divided into several panels:

- Toc (Table of Contents):** Lists two layers: 'Healt_services' and 'Population_structure', both with checked boxes.
- Geocognition/Geocatalog:** A panel for managing data sources, showing 'Healt_services (SHP)' and 'Population_structure (SHP)' as available layers.
- Editors:** A panel containing a map window titled '*Map0'. The map displays a city layout with purple polygons representing buildings or land parcels. Several red squares are overlaid on the map, likely representing points of interest or specific data points.

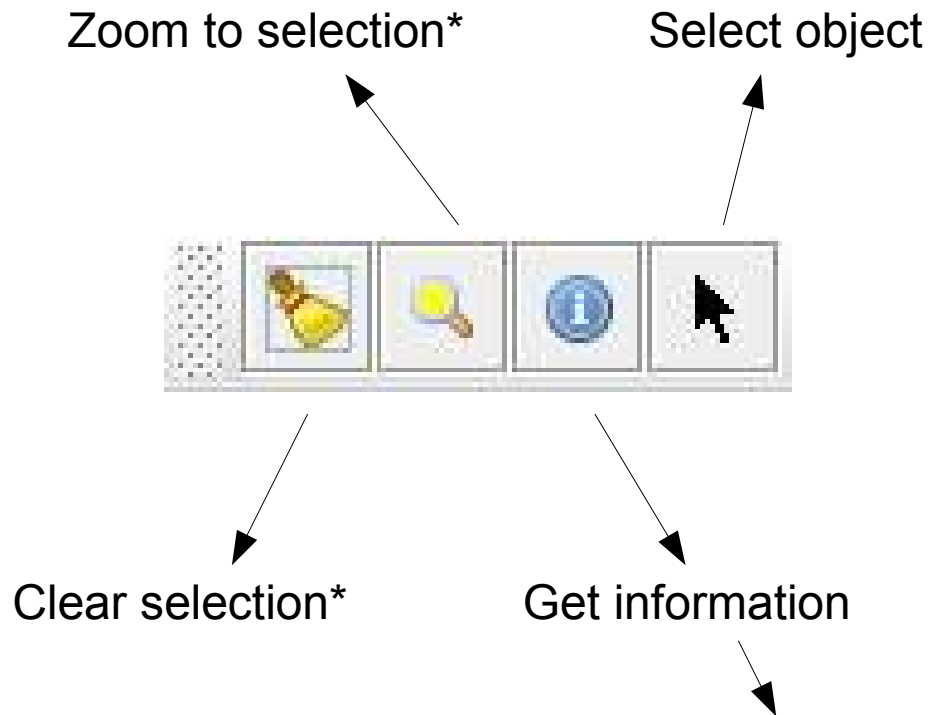
At the bottom of the map window, the coordinates 'X:480892 ,Y:4648144' are displayed. The workspace path is shown at the bottom left: 'Workspace : /home/petit/Workspace_Girona'.

5 - Tools to manage OrbiGIS and for navigation



- *A map must be open*
- *You must have at least one layer in the TOC*
- *Zoom + / - and Pan runs too with the mouse's wheel*

5 - Tools for selection & interrogation

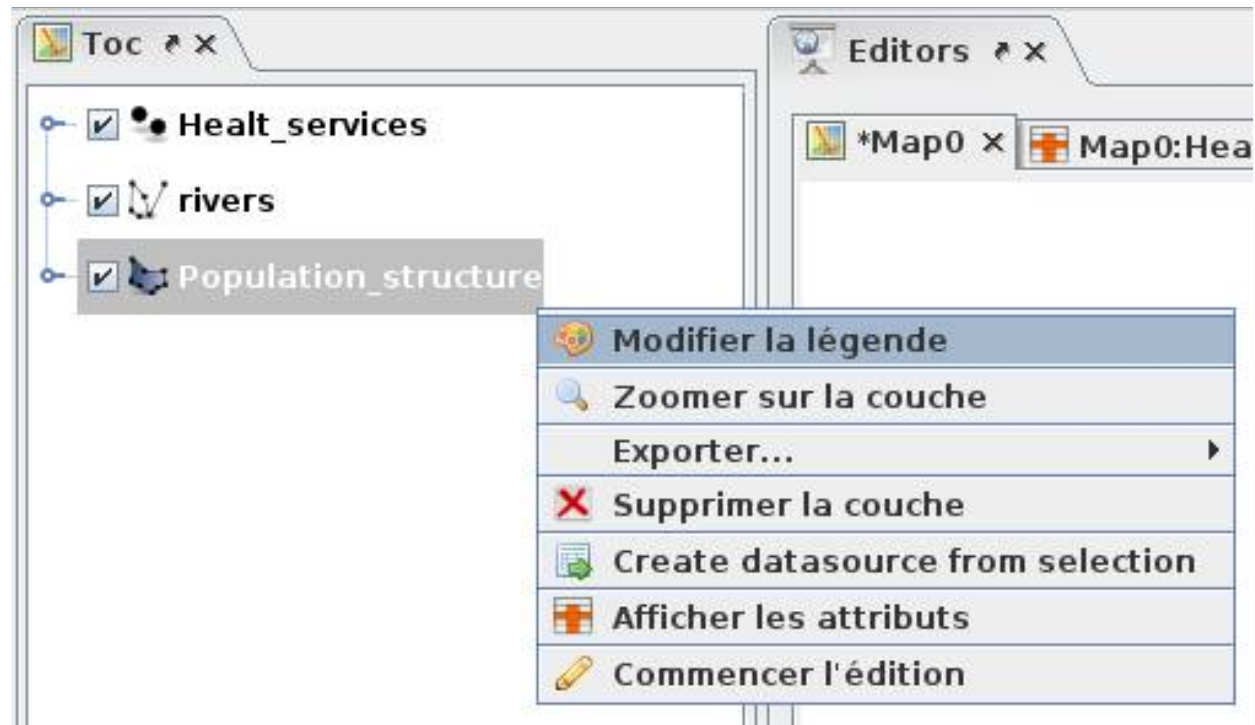


The screenshot shows a window titled 'Information' with a table of data. The table has 8 columns: 'the geom', 'OBJECTID', 'FID 1', 'SECCIO', 'DISTRICTE', 'ILLA4', 'DSI', and 'MITJANA ED'. The first row of data is: 'MULTIPOL...', '3930', '0', '4', '6', '0027', '6040027', and '0'.

the geom	OBJECTID	FID 1	SECCIO	DISTRICTE	ILLA4	DSI	MITJANA ED
MULTIPOL...	3930	0	4	6	0027	6040027	0

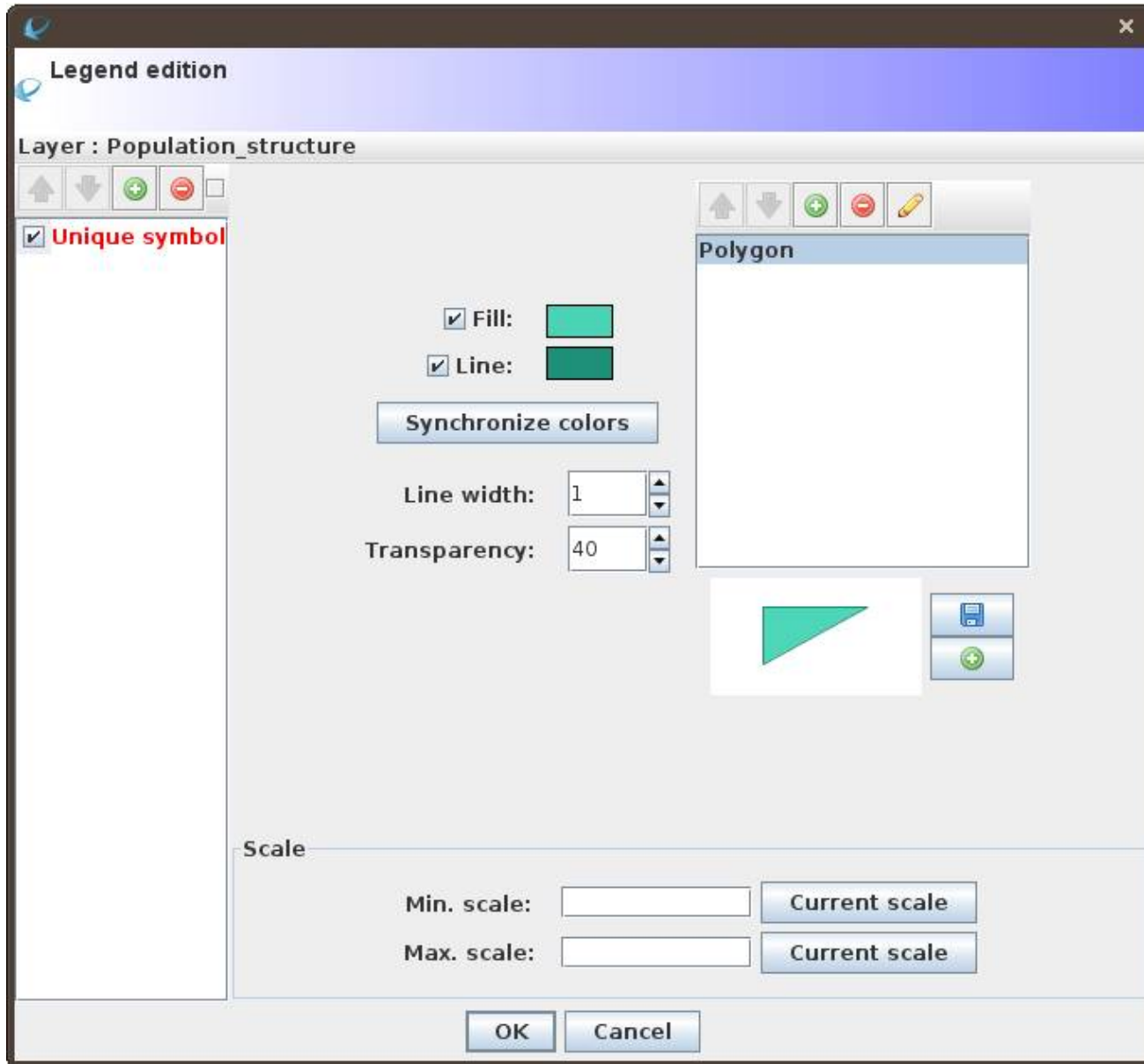
** At least one object must be selected*

6 - TOC : Table of contents

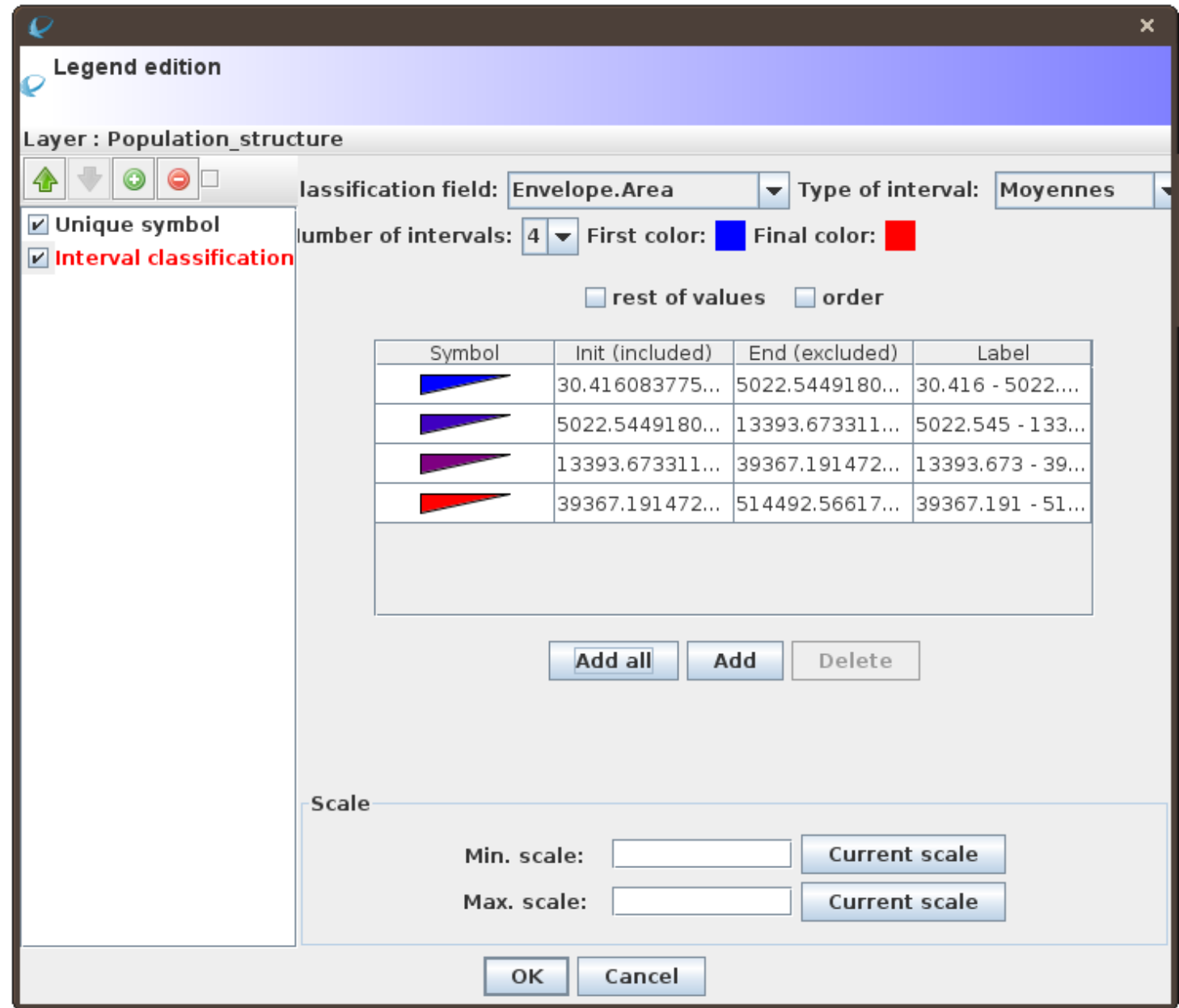
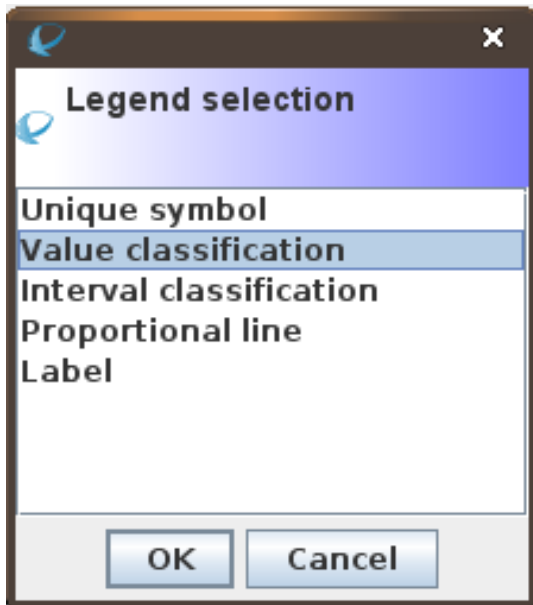


- Make visible / invisible layers
- Order layers (with drag & drop)
- Rename layers (with double-click) → gives an alias
- Get tools with right-click

7 - Edit Legend ... Unique symbol



7 - Edit Legend ... Thematic analysis



8 - Tools for displaying attributes

Table view

Row number : 12

the_geom	OBJEC...	ID	TIPUS	NOM	CARRER	CODI_POS
POINT (485194.1610200249 4...	6	6	hospital	HOSPITAL DE GIRONA DR. TRUE...	Av. de França, 60	17007 GIRON
POINT (483867.7500009552 4...	15	16	CAP	C.A.P. DR. JOAN VILAPLANA. GER...	C. Mas Catofa, 2	17007 GIRON
POINT (483943.28727937763 ...	16	17	CAP	C.A.P. GIRONA 2 CAN GIBERT DE...	c/ Sant SebastiÀ , 50	17005 GIRON
POINT (484486.5621293242 4...	17	18	CAP	C.A.P. GÀRDELL	Joan Pons, 6	17001 GIRON
POINT (485428.5603697811 4...	18	20	CAP	C.A.P. SANTA CLARA.	c/ Santa Clara, 33.	17001 GIRON
POINT (486939.51999806735 ...	19	21	CAP	C.A.P. VILA-ROJA	C. Germans LumiÀ r...	17004 GIRON
POINT (485815.78653419734 ...	198	196	CAP	CAP MONTILVI	c/Castell de Solterra...	17003 GIRON
POINT (485494.72529743065 ...	321	0	RESIDÀ...	RESIDÈNCIA ASSISTIDA CREU D...	JOO BARCELONA	17003
POINT (484609.0595372148 4...	322	0	RESIDÀ...	RESIDÈNCIA PER A GENT GRAN...	ANTONI VARÀS	17007
POINT (485236.7954657927 4...	2	2	hospital	CLÀINICA GIRONA.	c/ Joan Maragall, 26	17002 GIRON
POINT (485227.03550787695 ...	1	1	hospital	CLÀINICA DR. BOFILL.	c/ St. Antoni Ma. Cla...	17001 GIRON

Simple query interface

Row selected : 1 / 1181 total rows

the_geom	OBJECTID	FID_1	SECCI...	DISTRIC...	ILLA4	DSI	MITJANA...
MULTIPOLYGON (((484799.3690...	2600	0	17	2	0033	2170033	32.08
MULTIPOLYGON (((484461.1190...	3509	0	4	6	0004	6040004	38.47
MULTIPOLYGON (((486009.0099...	2805	0	18	2	0008	2180008	33.38
MULTIPOLYGON (((484529.5809...	3482	0	4	6	0002	6040002	41.33
MULTIPOLYGON (((484363.1290...	2783	0	10	3	0004	3100004	35.79
MULTIPOLYGON (((486853.1319...	2931	0	5	1	0020	1050020	32.06

OBJECTID=2805;

8 - Tools for displaying attributes

Tools on field

	OBJEC...	ID		CAI
4...	6	6	AV	y. de Fran
2 4...	15	16		Mas Cat
3 ...	16	17		Sant Se
2 4...	17	18		an Pons,
4...	18	20		Santa C
35 ...	19	21		German
34 ...	198	196		Castell d
35 ...	321	0		OO BARCE
3 4...	322	0		NTONI VA
7 4...	2	2		Joan Ma
35 ...	1	1		St. Anto
4...	20	22	CAP	CONSULTORI PONT MAJOR, C.A.P... C. Pont Ma

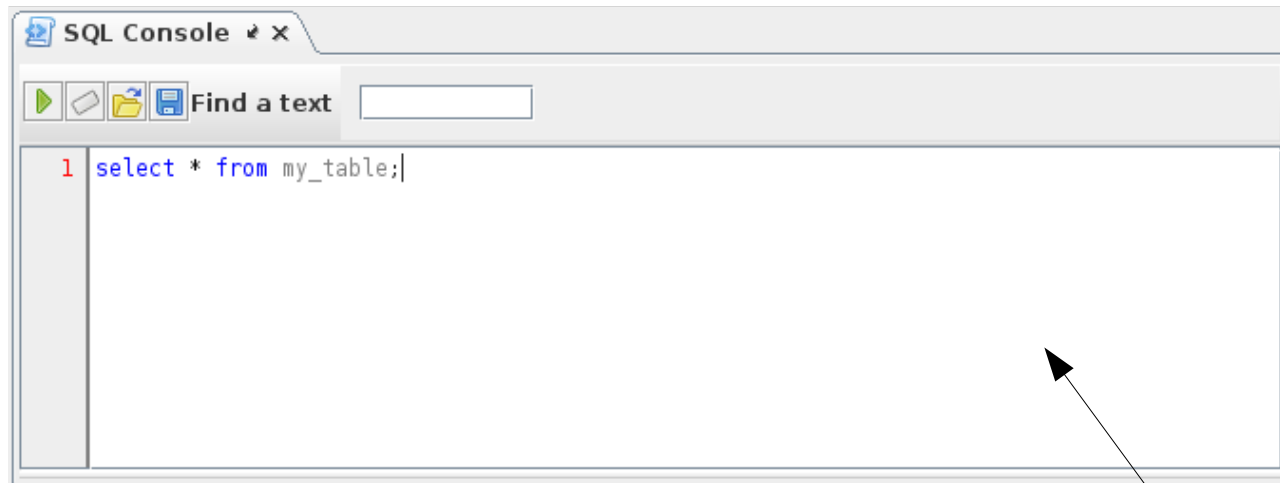
Tools are different if field is string or numeric

Tools on lines

MULTIPOLYGON (((484363.1290...	2783	0	10	30004	3100004	35.79
MULTIPOLYGON (((486853.1319...	2931	0	5	10020	1050020	32.06
MULTIPOLYGON (((485962.7060...	3232	0				
MULTIPOLYGON (((485989.3991...	3529	0				
MULTIPOLYGON (((484491.8840...	2937	0				
MULTIPOLYGON (((483810.1270...	3568	0				
MULTIPOLYGON (((486074.6609...	2782	0				
MULTIPOLYGON (((485018.2147...	3419	0				
MULTIPOLYGON (((484156.8162...	3703	0				
MULTIPOLYGON (((483705.6149...	3571	0				
MULTIPOLYGON (((485491.5630...	2786	0				
MULTIPOLYGON (((485048.5400...	3015	0	7	20009	2070009	35.07

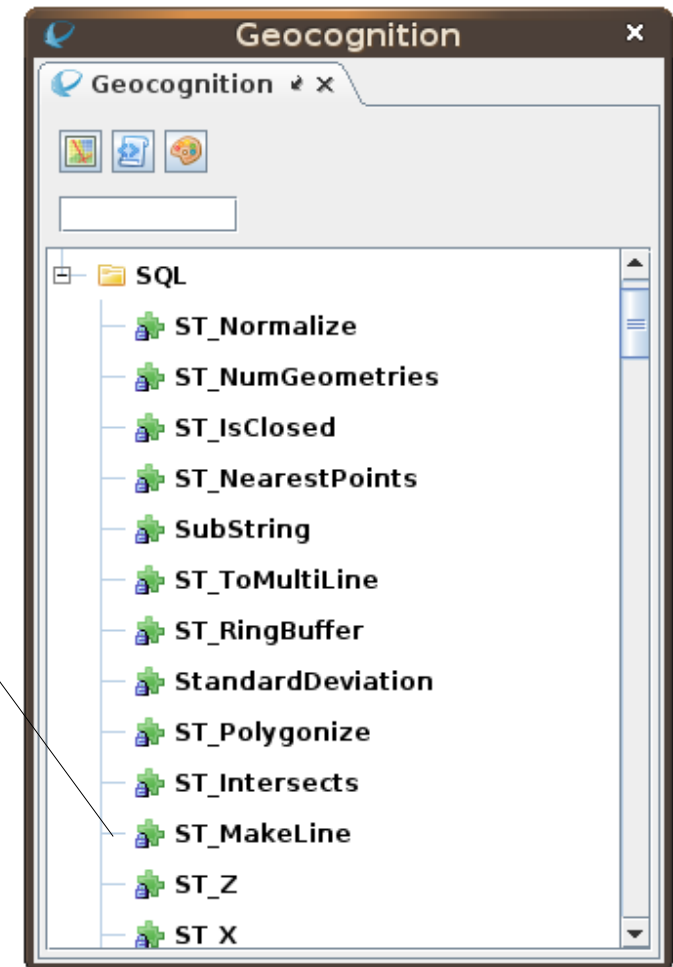
9 - Introduction to SQL

SQL Console



- Syntax coloring
- Execute queries
- Erase script
- Open .sql file
- Save script in a .sql file
- Search text
- Drag & Drop syntax from the Geocognition

SQL repository



9 - Introduction to SQL

Selection query

```
select * from Healt_services;
```

Query with a “where” condition

With string

```
select * from Healt_services where TIPUS='hospital' ;
```

With numeric

```
select * from Healt_services where ID > 5 ;
```

Both types

```
select * from Healt_services where ID > 5 and TIPUS='hospital';
```

Extract a part of a table

```
select the_geom, OBJECTID, FID_1 from Population_structure;
```

```
select *{except OBJECTID, FID_1} from Population_structure;
```



- Click on the map before executing your query
- OrbisGIS returns a new temporary .gdms layer in the TOC
- You can use “Create table” function to save the result in the Geocatalog

9 - Introduction to SQL

Compute mathematical operations on fields

```
select *, (FNODE_ + TNODE_ ) as NODE from rivers;  
select the_geom, (LENGTH/1000) as Dist_km from rivers;
```

Store the result in a new table

Create table my_new_table as select * from Population_structure where SECCIO_ < 15;

! The result is stored in the Geocatalog. Then you have to drag & drop it in the TOC

Save the result directly in a file, on your computer

```
Select register('/my_directory/my_table.shp','my_table');  
Create table my_table as select * from Population_structure;
```

→ you can choose different type of format (here .shp)

→ 'my_table' correspond to the layer's alias

Remove layer from OrbisGIS ...

```
drop table my_table;
```

... and directly on you computer

```
drop table my_table purge;
```

... if the layer exists

```
drop table if exists my_table;
```

9 - Introduction to SQL

Query chaining

```
create table table_1 as select * from Population_structure where OBJECTID < 3000;  
create table table_2 as select * from table_1 where MITJANA_ED > 40;
```

Gives a new name to a field or to the result of an operation

```
create table table_3 as select the_geom, MITJANA_ED as MITJ from table_1  
create table table_4 as select Count(the_geom) as Total from Population_structure  
where OBJECTID < 3000;
```

Alter table

```
alter table rivers add column id numeric;
```

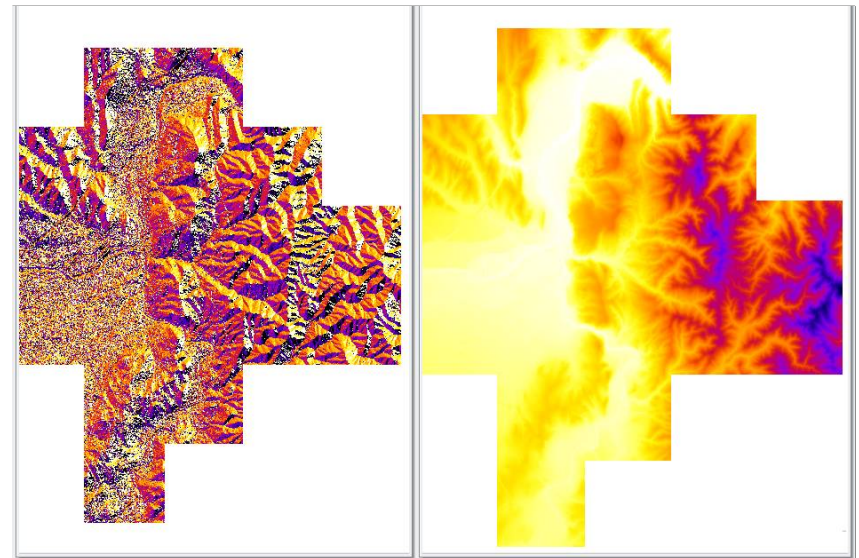
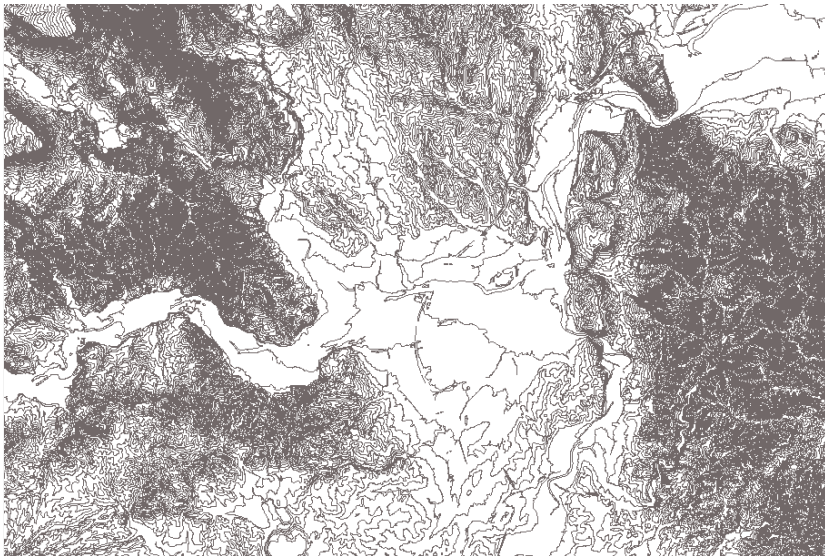
Update table

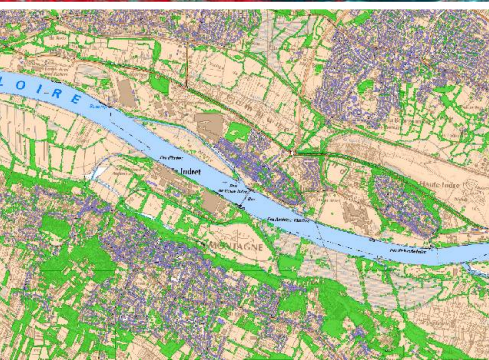
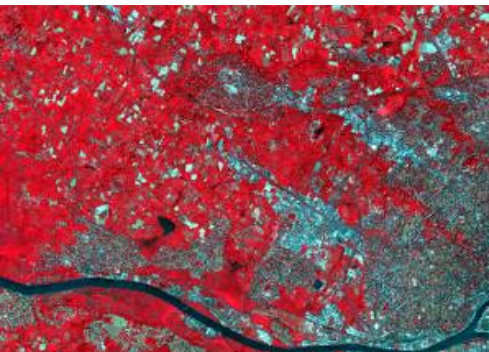
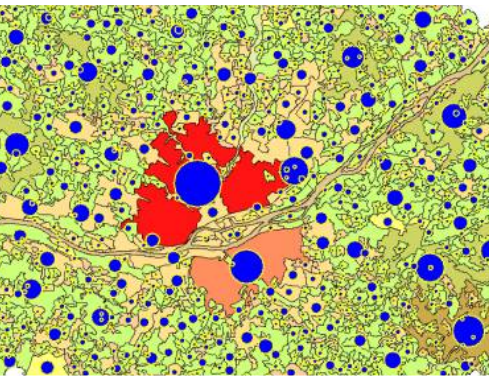
```
update rivers set id = autonumeric();  
or  
update rivers set id='1';
```

the_geom	FNO...	TNO...	LPO...	RPO...	LENGTH	RIUS_	RIUS...	N_VERTE...	id
MULTILINESTRING ((321441.937...	8	7	0	0	47.167	1	1		1
MULTILINESTRING ((313122.468...	5	9	0	0	291.176	2	2		4 2
MULTILINESTRING ((312863.656...	9	10	0	0	35.993	3	3		2 3
MULTILINESTRING ((312828.562...	10	4	0	0	150.382	4	4		3 4
MULTILINESTRING ((307805.25 ...	12	2	0	0	805.799	5	5		6 5
MULTILINESTRING ((313168.031...	14	10	0	0	1038.233	6	6		10 6
MULTILINESTRING ((305498.5 4...	15	1	0	0	1046.375	7	7		7 7
MULTILINESTRING ((304885.625...	13	15	0	0	676.803	8	8		6 8
MULTILINESTRING ((313168.031...	16	14	0	0	40.209	9	9		2 9
MULTILINESTRING ((305262.531...	19	15	0	0	394.206	10	10		7 10
MULTILINESTRING ((304619.312...	17	19	0	0	746.819	11	11		7 11
MULTILINESTRING ((316428.906...	11	21	0	0	2925.093	12	12		17 12
MULTILINESTRING ((313881.468...	21	22	0	0	22.488	13	13		2 13

Outline for tomorrow

- Introduction to spatial SQL
- Compare the calculation of the watersheds using two different DEM
- Production of spatial indicators
- Assessing the impact of rail roads on runoff





Any questions

