



INTRO TO QGIS



A POWERFUL OPEN SOURCE DESKTOP GIS

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TERRA GIS
TERRESTRIAL ENVIRONMENT REGIONAL ANALYSIS

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gvSIG – Generalidad Valenciana

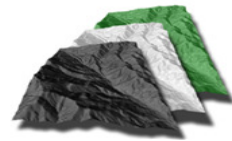
Conselleria d'Infraestructures i Transport

- project - Spanish Community of Valencia
- mid range Desktop GIS
- based on open standards
- part of gvPONTIS project

http://www.gvpontis.gva.es/fileadmin/conselleria/images/Documentacion/memoria/gvpontis_ingles.pdf



- project - Spanish province of Extremadura
Sistema Extremeno de Analisis Territorial
- java based plug-in for gvSIG
- offers more than 280 spatial functions
raster and vector processing
originally targeted at forestry usage
initially based on SAGA GIS

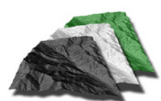


SEXTANTE



gvSIG is a project of the Spanish province of Valencia. The goals of the project are to provide an open source GIS that is platform independent and based on open source standards. Basically the capabilities should be comprehensive enough to replace ESRI's ArcView 3 desktop GIS. The user interface and functionalities of gvSIG are similar to ArcView 3, but in addition has capabilities to connect to Internet mapping services.

Another Java based project of the autonomous region of Extremadura called Sextante can be installed as a plug-in and offers more than 270 spatial functions.



SEXTANTE



gvSIG

Main supporter of **gvSIG** Generalitat Valencia (GVA) - Province of Valencia, Spain

Type	Desktop GIS
Functionality	Multilingual Desktop GIS - Analysis functions can be greatly extended when installing Sextante. Many extensions.
Operating systems	Unix/Linux, Windows
Project started	2003
Implementation	Java
OS libraries	GeoTools and JTS
PostGIS support	Yes
License	GPL



gvSIG and Sextante facts

Main supporter of **Sextante** Sextante Team, Victor Olaya, Juan Carlos Giménez

Functionality	Comprehensive set of spatial vector data and image analysis tools
Operating systems	Unix/Linux, Windows
Project started	2004
Implementation	Java
OS libraries	built on top of SAGA GIS functionality
PostGIS support	Yes
License	GPL

gvSIG Distributions

Official



- Desktop version 1.10 RC2
- Extensions

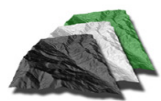
- Sextante Analysis
- 3D visualization
- Network analysis

- Mobile - *GIS/SDI client on mobile devices.*
- Mini - *map viewer for mobile phones*
e.g. Yahoo, Google, Bing, OSM

Oxford Archeology



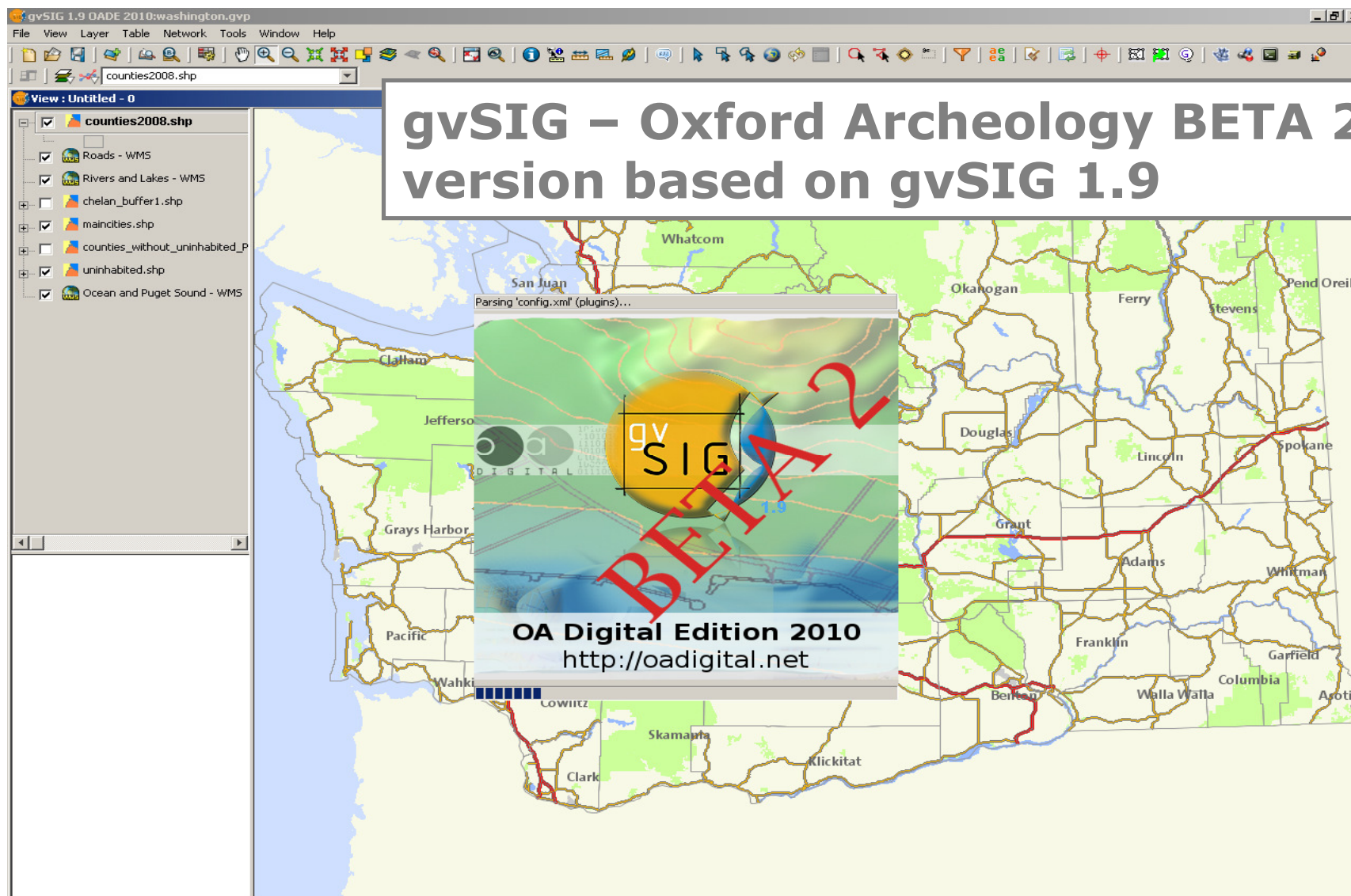
gvSIG 2010 OADE version 1.0.
based on [gvSIG 1.10](#)
Win, Unix + Mac OS X !



SEXTANTE



gvSIG



**gvSIG – Oxford Archeology BETA 2010
version based on gvSIG 1.9**



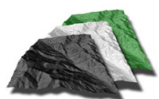
wa_shade_1km_2285.tif

Vista: WA Map

- ☒ wa_shade_1km_2285.tif
- ☒ counties2008.shp
- ☒ Roads - WMS
- ☒ Rivers and Lakes - WMS
- ☐ chelan_buffer1.shp
- ☒ maincities.shp
- ☐ counties_without_uninhabited_P
- ☒ uninhabited.shp
- ☒ Ocean and Puget Sound - WMS

Map View – Cartography transparent hillshade





SEXTANTE



gvSIG

Table tools - add, rename, delete

gvSIG 1.9 OADE 2010:mci_region.gvp

File View Table Tools Window Help

View: Untitled - 0

mci_region_counties2.shp

mci_region

2008_mci

Table: Attribute table: mci_region_counties2.shp

ObjectID	NAME	STATE_NAME	STATE_FIPS	CNTY_FIPS	FIPS	POP2000	POP2004	POP00_SQMI	POP04_SQMI	WHITE	BLACK	AMERI_ES
173	Beltrami	Minnesota	27	007	27007	39650	42397.0	13.0	13.9	30394	142	8071
181	McKenzie	North Dakota	38	053	38053	5737	5653.0	2.0	2.0	4438	4	1215
182	Grant	North Dakota	38	037	38037	2841	2776.0	1.7	1.7	2753	0	49
183	Dewey	South Dakota	46	041	46041	5972	6241.0	2.4	2.6	1442	2	4429
191	McLean	North Dakota	38	055	38055	9311	8994.0	4.0	3.9	8615	2	554
192	Dunn	North Dakota	38	025	38025	3600	3499.0	1.7	1.7	3117	1	448
193	Mercer	North Dakota	38	025	38025	3600	3499.0	1.7	1.7	3117	1	448
194	Golden Valley	North Dakota	38	025	38025	3600	3499.0	1.7	1.7	3117	1	448
195	Billings	North Dakota	38	025	38025	3600	3499.0	1.7	1.7	3117	1	448
196	Oliver	North Dakota	38	025	38025	3600	3499.0	1.7	1.7	3117	1	448

0 / 967 Total records selected.

Manage fields (schema)

Add, delete or rename field:

Field name:	Type	Length	Decimal precision	Default value:
ObjectID	Integer	9	0	
NAME	String	32	0	
STATE_NAME	String	25	0	
STATE_FIPS	String	2	0	
CNTY_FIPS	String	3	0	
FIPS	String	5	0	
POP2000	Integer	9	0	
POP2004	Double	10	6	
POP00_SQMI	Double	11	6	
POP04_SQMI	Double	8	6	
WHITE	Integer	9	0	
BLACK	Integer	9	0	
AMERI_ES	Integer	9	0	
ASIAN	Integer	9	0	
HAWN_PI	Integer	9	0	
OTHER	Integer	9	0	
MULT_RACE	Integer	9	0	
HISPANIC	Integer	9	0	
MALES	Integer	9	0	
FEMALES	Integer	9	0	
AGE_UNDEFE	Integer	9	0	

Add...

Rename...

Delete...

Accept

gvSIG Geoprocessing Tools

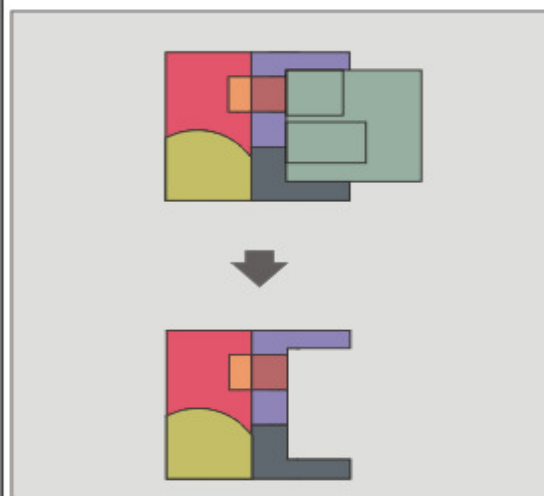
Geoprocessing tools...

- Geoprocessing tools
 - Analysis
 - Proximity
 - Buffer zones
 - Spatial join
 - Overlay
 - Clip
 - Difference**
 - Intersection
 - Union
 - Computational geometry
 - Convex hull
 - Voronoi/Delaunay
 - Aggregation
 - Dissolve
 - Data conversion
 - Merge
 - XY shift (2D)
 - Reproject
 - Generalize
 - Smooth
 - Transform
 - Topology
 - Flip lines
 - Reduce to lines
 - Reduce to points
 - Clean
 - Build polygons

Difference

This tool performs a geometric *overlay* operation. It works on two layers, an input layer **A** and an overlay layer **B**. The procedure is also called a "spatial NOT" operation, because it includes all geometries of **A** that are *not* present in **B**.

Owing to its geometric nature, this operation only works for *polygon* type layers. The result layer will have a copy of the attribute table of the input layer.



Open tool...

Close



Sextante Toolbox (in gvSIG)

SEXTANTE

Tools

- + Buffers
- + Cost, distances and routes
- + Fire modeling
- + Focal statistics for neighbourhoods
- + Fuzzy logic
- + Geomorphometry and terrain analysis
- + Geostatistical simulations
- + Geostatistics
- + Hydrological analysis tools
- + Hydrological indices and parameters
- + Image processing
- + Local statistics
- + Location/allocation
- + Models
- + Pattern analysis
- + Profiles
- + Raster algebra
- + Raster categories analysis
- + Raster creation tools
- + Rasterization and interpolation
- + Raster layer analysis
- + Raster tools
- + Reclassify raster layers
- + Statistical methods
- + Table tools
- + TIN
- + Topology
- + Vectorization
- + Vector layer tools
- + Vector line layers
- + Vector point layers
- + Vector polygon layers
- + Vegetation indices
- + Visibility and lighting

Execute as batch process

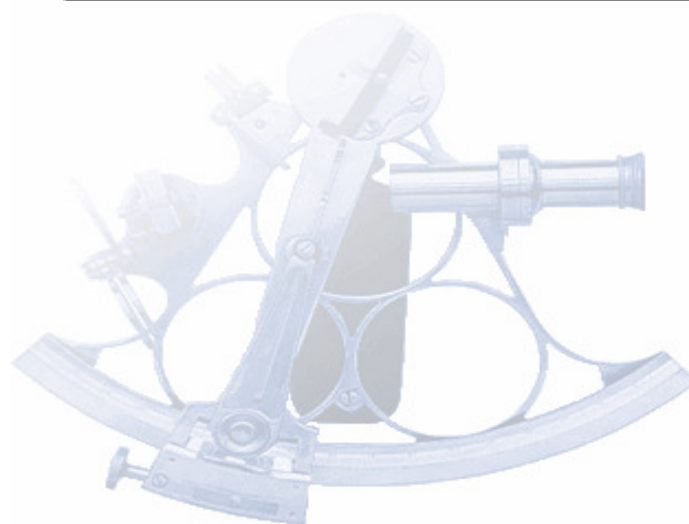
Execute as batch process (using layers from GIS app)

Expand all

Collapse all

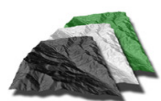
Show active only

Show help



Search



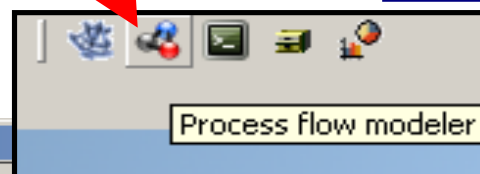


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gvSIG

Sextante Modeler



Modeler

Procedures

- Tools
 - Buffers
 - Cost, distances and routes
 - Fire modeling
 - Focal statistics for neighbors
 - Fuzzy logic
 - Geomorphometry and terrain analysis
 - Geostatistical simulations
 - Geostatistics
 - Hydrological analysis tools
 - Hydrological indices and parameters
 - Image processing
 - Local statistics
 - Location/allocation
- Models
 - calculate landcover type
 - tab area1
 - test1
- Pattern analysis
- Profiles
- Raster algebra
- Raster categories analysis
- Raster creation tools

Search: Sea...

Inputs Procedures

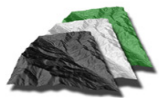
Help Add

Name: tab area1 Group: Models

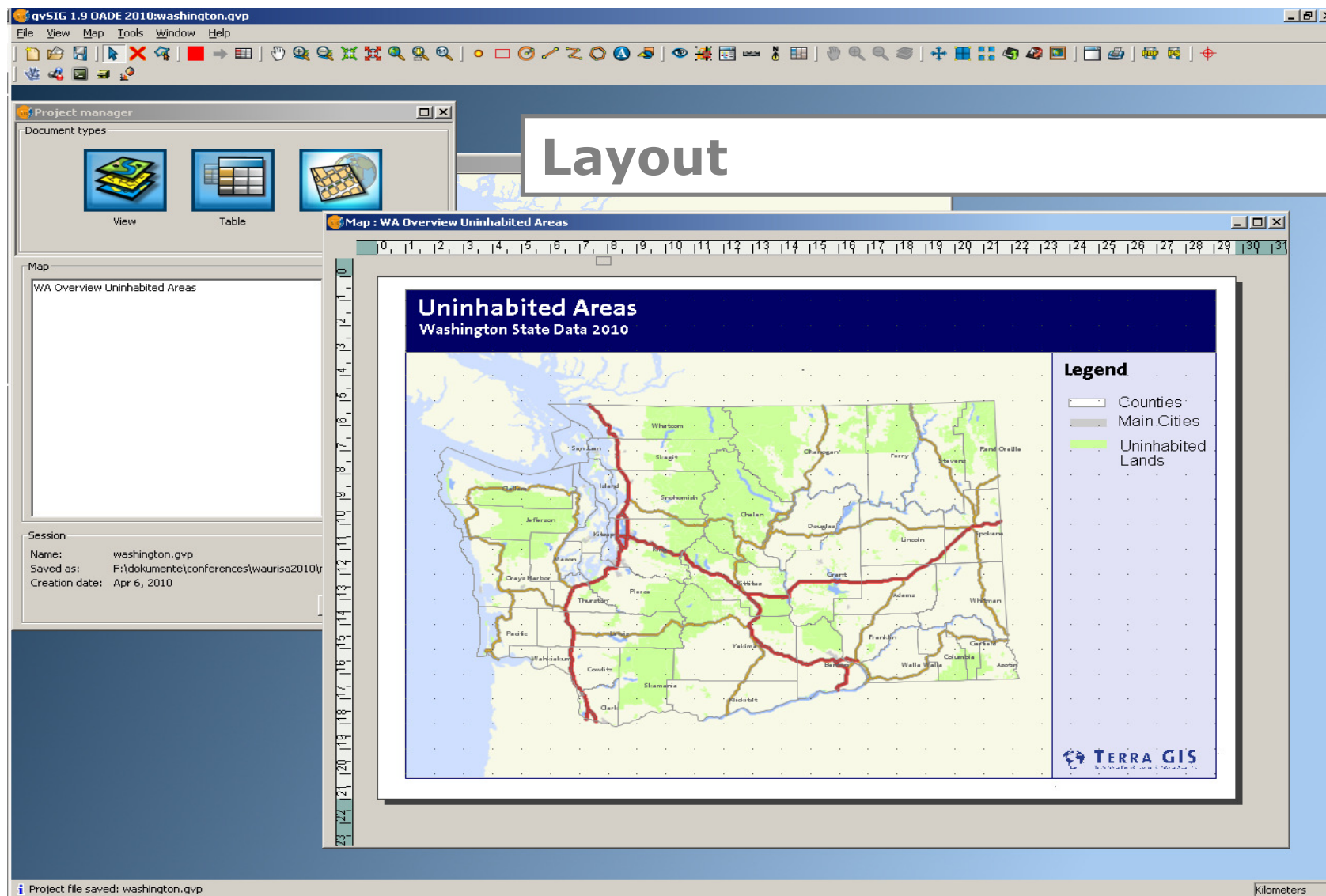
Process flow diagram:

```
graph TD; landcover[landcover] --> TabulateArea[Tabulate Area]; counties[counties] --> Rasterize[Rasterize vector layer]; Rasterize --> TabulateArea;
```

Run New Save Open



Layout



Overlay - Difference

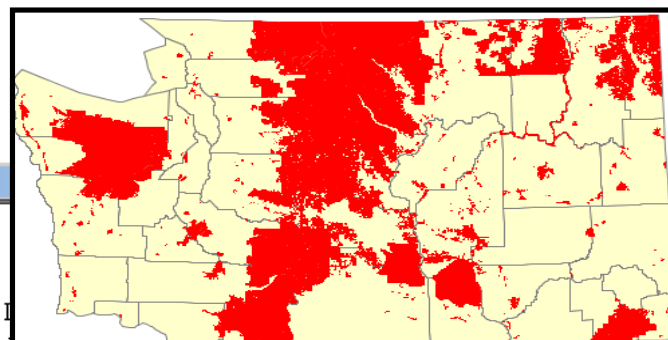
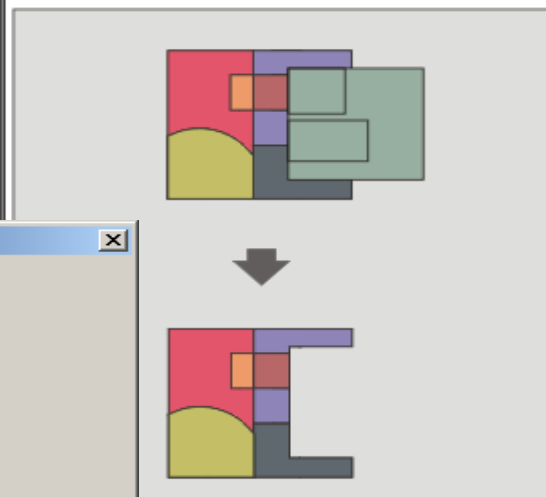
Geoprocessing tools...

- Geoprocessing tools
 - Analysis
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 - Difference**
 - Intersection
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 - Computational geometry
 - Convex hull
 - Voronoi/Delaunay
 - Aggregation
 - Dissolve
 - Data conversion
 - Merge
 - XY shift (2D)
 - Reproject

Difference

This tool performs a geometric *overlay* operation. It takes an input layer **A** and an overlay layer **B**. The procedure is also called *difference* because it includes all geometries of **A** that are not present in **B**.

Owing to its geometric nature, this operation only works with vector layers. The output layer will have a copy of the attribute table of the input layer.



Analysis tools

Data input for difference:

Input layer:

☐ Use selected features only

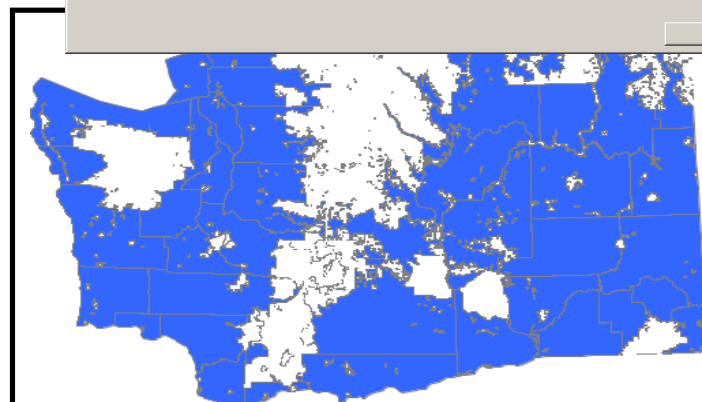
Number of selected features: 39

Overlay layer:

☐ Use selected features only

Number of selected features: 39

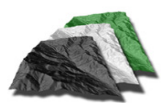
Output layer:



PluginServices.Procesando

Difference tool...

Computing differences... 2 of 39



SEXTANTE



■ functionality examples

- reprojection
- batch processing
- dissolve
- format conversion
- editing

Importing data into PostGIS

shp2pgsql + pgsql2shp

```
shp2pgsql -l -s 2285 counties2008.shp counties_pg > counties.sql
```

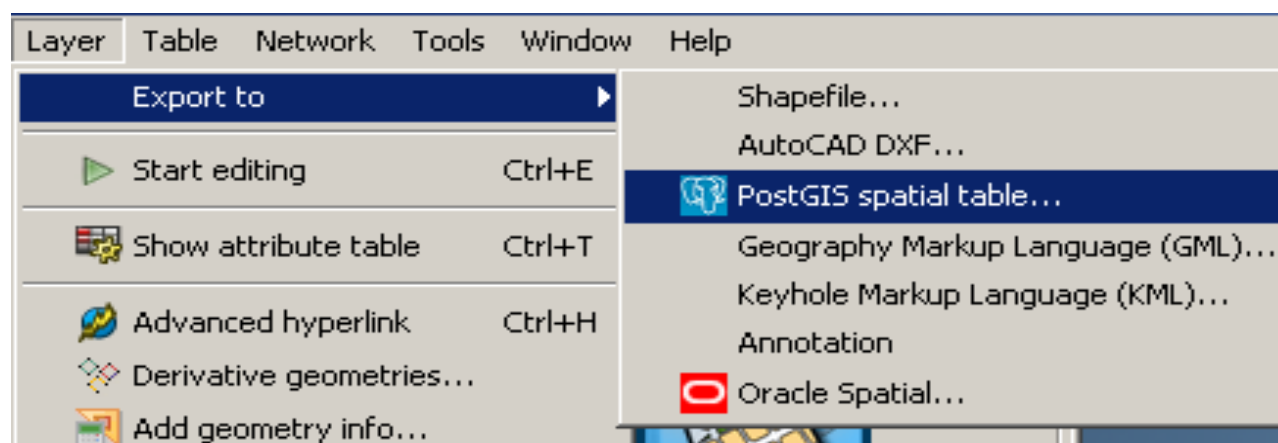
```
psql -U postgres -d weave -f counties.sql
```

Can combine both with “|”

ogr2ogr

```
ogr2ogr -f "PostgreSQL" PG:"host=localhost user=postgres port=5432  
dbname=workshop password=postgres" streamnet_fishdist.mdb -lco  
GEOMETRY_NAME=the_geom -t_srs "EPSG:2285" -nln "Fish_AllSpeciesCombined"  
fishspecies
```

user interfaces
gvSIG etc.





PostGIS – Spatial Database

- PostGIS is an extension for PostgreSQL
- adds support for geographic objects to PostgreSQL
- enables PostgreSQL server to be used as a backend spatial database for GIS
- Spatial operations and analysis simply mean running a (spatial) SQL query in the database
- Similar functions as SDE and much more

Links

- [gvSIG](http://www.gvsig.org/web/) <http://www.gvsig.org/web/>
- [gvSIG Association](http://www.gvsig.com/welcome?set_language=en) http://www.gvsig.com/welcome?set_language=en
- [gvSIG at OSGEO](http://www.osgeo.org/gvsig) <http://www.osgeo.org/gvsig>
- [gvSIG project information](http://www.gvsig.org/web/projects/gvsig-desktop/description2/view?set_language=en)
http://www.gvsig.org/web/projects/gvsig-desktop/description2/view?set_language=en
- [gvSIG OA Digital Edition 2010, 1.0.](http://oadigital.net/software/gvsigoade) <http://oadigital.net/software/gvsigoade>
- [blog post about gvSIG GIS by Karsten](http://www.waurisa.org/phpBB3/viewtopic.php?f=37&t=636&start=0&st=0&sk=t&sd=a)
<http://www.waurisa.org/phpBB3/viewtopic.php?f=37&t=636&start=0&st=0&sk=t&sd=a>
- [gvSIG overview - CSGIS website](http://csgis.de/joomla/index.php?option=com_content&view=article&id=102&Itemid=96)
http://csgis.de/joomla/index.php?option=com_content&view=article&id=102&Itemid=96
- [gvSIG Case Studies](http://gvsigusecases.drupalgardens.com/) <http://gvsigusecases.drupalgardens.com/>