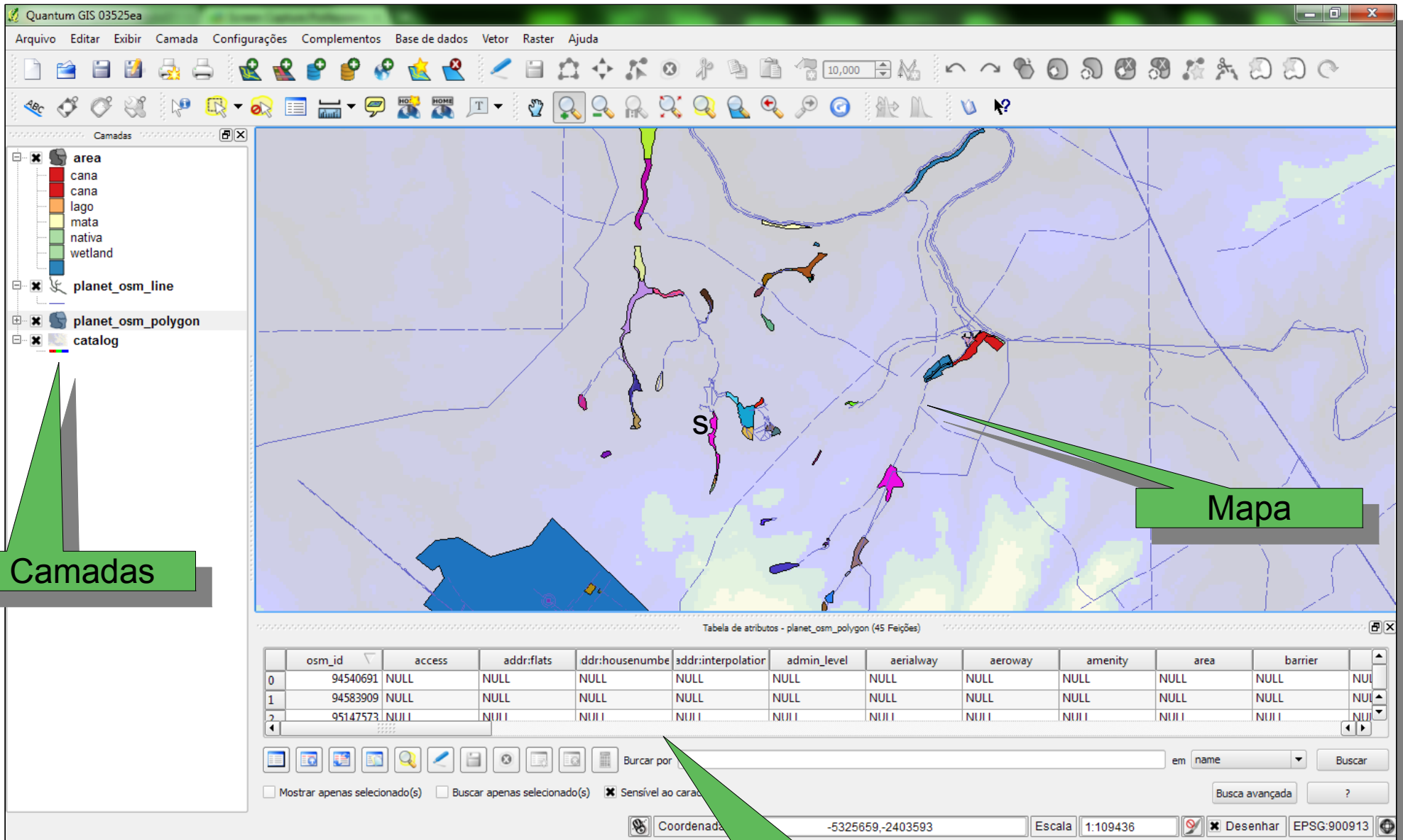




Quantum GIS

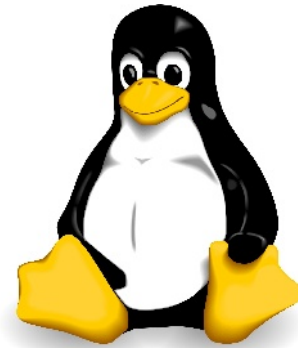
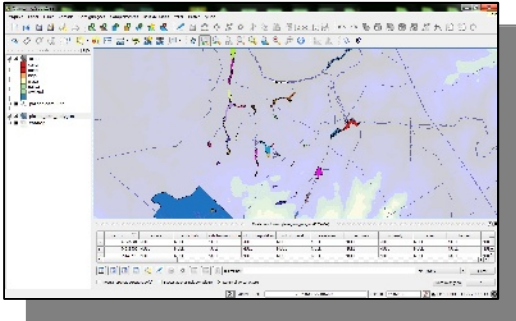
Pablo Torres Carreira
Eng. Agrônomo



Camadas

Mapa

Tabela de Atributos



qgis.org

~80mb



Free as in Freedom

Liberdade para:

- Utilizar o software para qualquer finalidade,
- Alterar o software para corresponder as suas necessidades,
- Compartilhar o software com quem quiser,
- Compartilhar as mudanças que você fizer.

(gnu.org/license/)

Imagens Orbitais de Alta Resolução



 **GeoEye™**

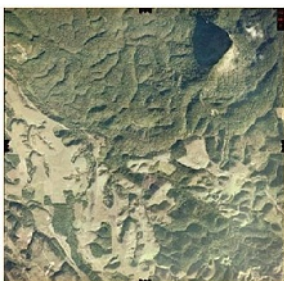
NITF ~4,5Gb



 **DIGITALGLOBE®**

GeoTIFF ~250Mb

Imagens Aéreas

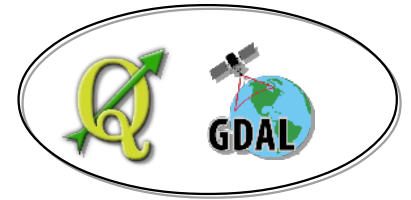


 **BASE**
aerofotogrametria e projetos s.a.

TIFF ~250Mb

GDAL - Geospatial Data Abstraction Library

OGR - Simple Feature Library











72 Formatos Raster








- jpg, gif, png, bmp
- GeoTIFF, TIFF
- Erdas
- NITF
- PCI Geomatics
- PDF Geospatial
- R Object Data
- ArcSDE Raster, ArcInfo Grid, E00
- SRTM HGT
- ASCII Grid
- GRASS Raster










52 Formatos Vetoriais









- ESRI Shapefile, ArcObjects, Binary Coverage, ArcSDE, GeoDatabase
- DXF
- Google KML
- GML
- GPS GPX
- GRASS
- GPS TrackMaker
- MapInfo
- MicrostationDGN
- MySQL
- PostgreSQL, PostGIS
- SQLite, SpatiaLite
- GeoCouch
- GeoJSON

Funções/Ferramentas Vetores

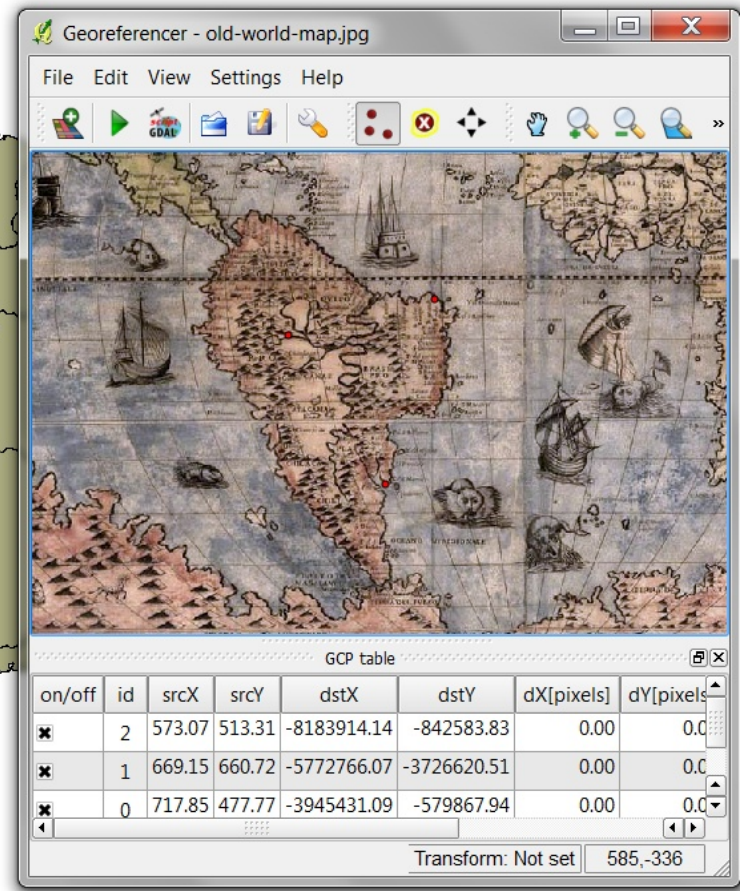
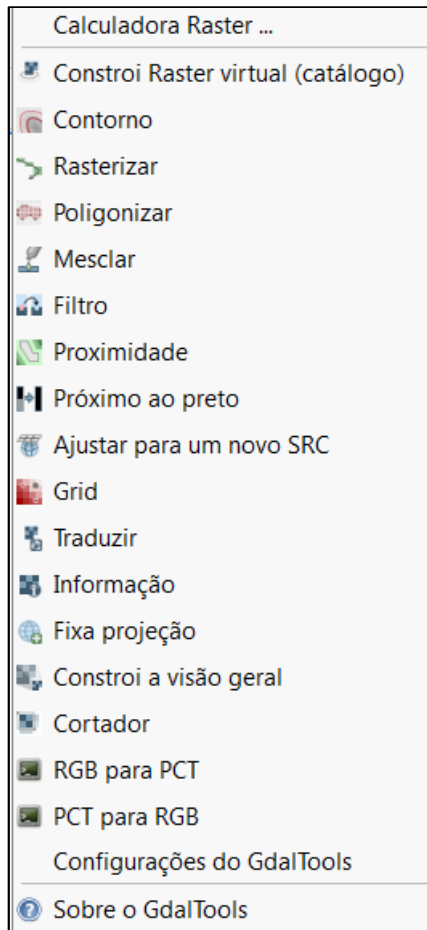
-  Matriz de distância
-  Soma comprimentos de linha
-  Pontos no polígono
-  Lista valores únicos
-  Estatísticas básicas
-  Análise do vizinho mais próximo
-  Coordenada(s) média(s)
-  Interseções de linhas

-  Seleção aleatória
-  Seleção aleatória dentro de subconjuntos
-  Pontos aleatórios
-  Pontos regulares
-  Grade vetorial
-  Selecionar pela localização
-  Polígono a partir da extensão da camada

-  Verificar a validade de geometria
-  Exportar/Adicionar geometria de colunas
-  Centroides de polígonos
-  Triangulação Delaunay
Voronoi Polygons
-  Simplificar geometrias
-  Multipartes para partes simples
-  Partes simples para multipartes
-  Polígonos para linhas
-  Extrair nós

-  Forma(s) convexa(s)
-  Buffer(s)
-  Cruzar
-  Unir
-  Diferença simétrica
-  Cortar
-  Diferença
-  Dissolver

Funções/Ferramentas Raster



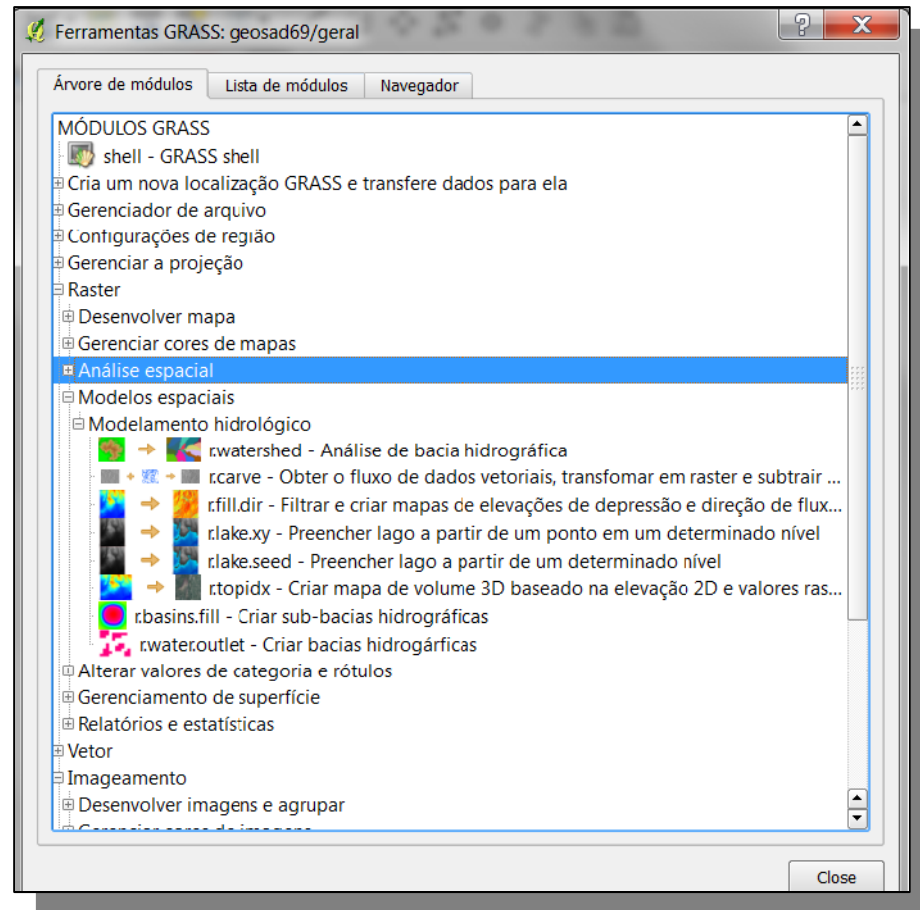


GRASS - Geographic Resources Analysis Support System



+200 Funções (Rasters e Vetores)

- USLE (solos)
- NDVI (vegetação)
- Microbacias
- Radiação Solar
- Superfície de Custo
- Classificações
- Interpolações
- Propagação de Incêndios

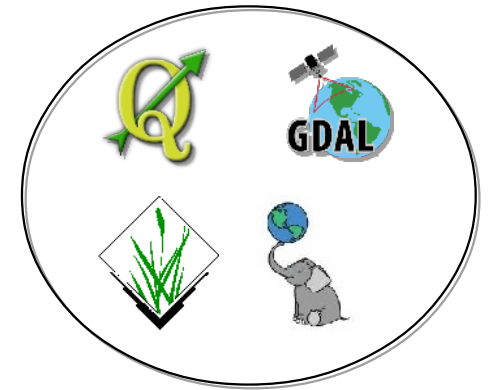


PostGIS



Spatial PostgreSQL

“Many-to-Many” Relação “Muitos-para-muitos”



areas_parcelas_rel		
<u>id</u>	INTEGER	<pk>
area_id	INTEGER	<fk>
parcela_id	INTEGER	<fk>
gid	INTEGER	

areas	
<u>gid</u>	INTEGER
nome	VARCHAR
the_geom	CHAR(10)
id	INTEGER

parcelas	
<u>id</u>	INTEGER <pk>
nome	VARCHAR

area_id=gid

parcela_id=id



SQL "Query"

```

Select distinct
parid as id,
parcela.nome as parcela,
array_to_string(array_agg(distinct(areas.nome)), ',') as area,
--areas.chave->'solo' as solo,
geom as the_geom,
round(cast(st_area(geom)/10000 as numeric),2) as tamanho,
round(cast(((st_area(geom)/100)/67.54) as numeric),2) as parea,
pequenas, medias, grandes, mortas,
round(((100-mortas)/100)*((pequenas)+(medias*2)+(grandes*3))*100,
contagem

FROM(
SELECT
parcela.id as parid,
st_union(areas.the_geom) AS geom,
((((('p'::text || round(avg(to_number(dado.valor -> 'pequena':
to_number(dado.valor -> 'media'::text, '99'::text)) * 10::numeri
::text, '99'::text)) * 10::numeric, 2)) || ',m'::text) || round
numeric, 2) AS legenda,
round(avg(to_number(dado.valor -> 'pequena'::text, '99'::text))
round(avg(to_number(dado.valor -> 'media'::text, '99'::text)) *
round(avg(to_number(dado.valor -> 'grande'::text, '99'::text))
round(avg(to_number(dado.valor -> 'morta'::text, '99'::text)) *
count(distinct dado.id) AS contagem
FROM petr.dado, petr.parcela, petr.parcela_rel, petr.areas
WHERE dado.parcela_id = parcela.id AND parcela_rel.area_id = a
GROUP BY parcela.id
ORDER BY parcela.id
) as dados,
petr.parcela,
petr.areas,
petr.parcela_rel

```

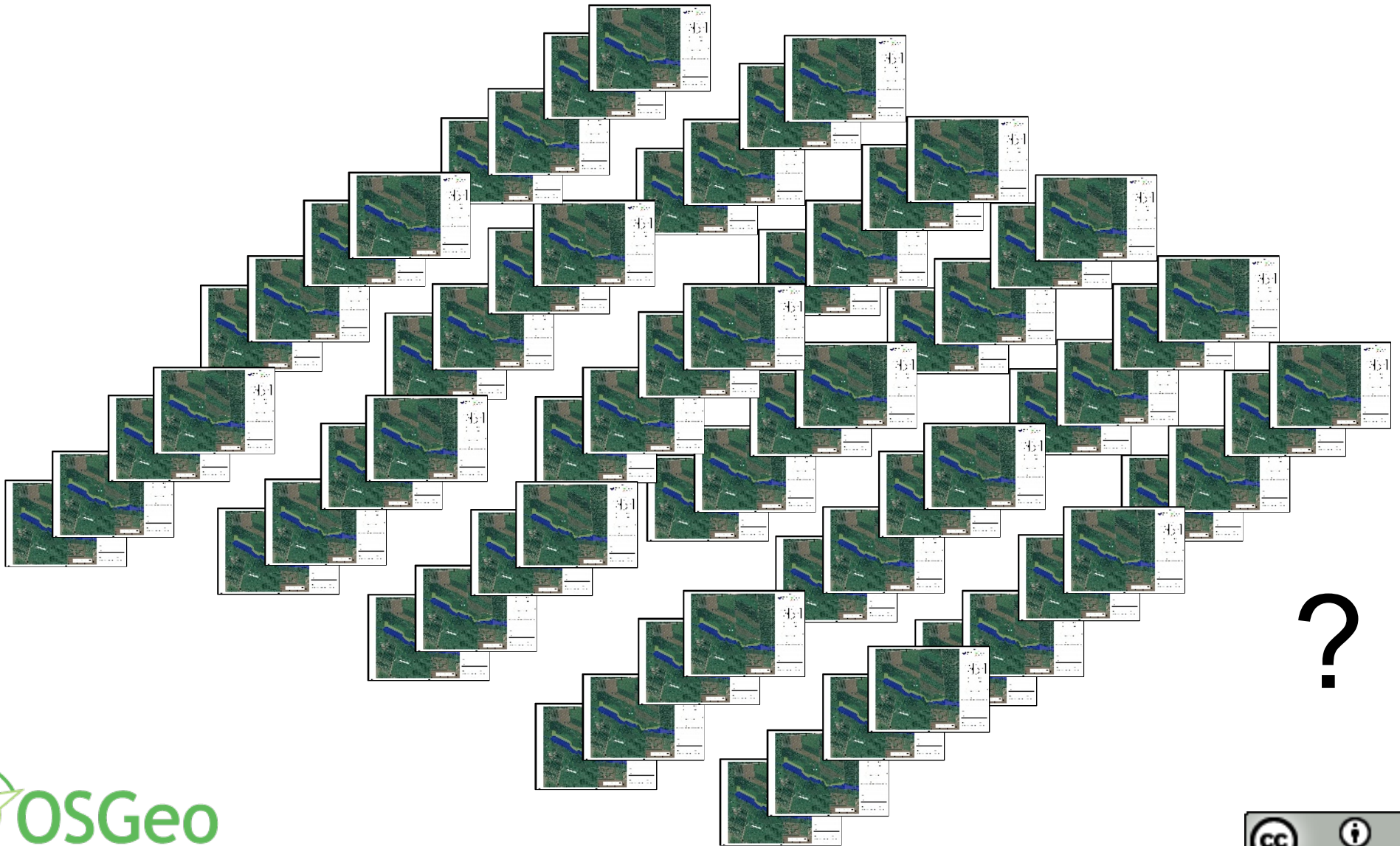
Tamanho	Denominação
<50cm	Pequena
50cm-1m	Média
>1m	Grande
	Mortalidade

Índice de Desenvolvimento

$$i = \frac{100 - Mo}{100} \times [(P \times 1) + (M \times 2) + (G \times 3)] \times \frac{100}{285,2}$$

i = índice de desenvolvimento
P = % mudas pequenas
M = % mudas médias
G = % mudas grandes
Mo = % mudas mortas

Grande Volume de Trabalho



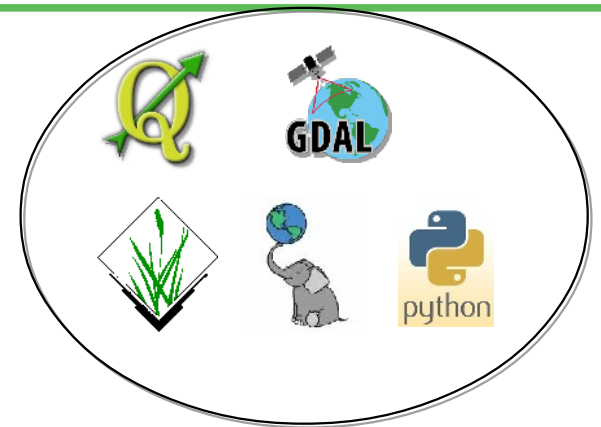
Vou demorar um ano
para mapear todas
estas roupas...



Talvez eu possa
escrever um script
que faça isso por
mim!



Qgis API



Main Page Modules Namespaces Classes Files Related Pages Search for

QGIS core library

Contains all basic GIS functionality. [More...](#)

Classes

- class **QGis**
The *QGis* class provides global constants for use throughout the application. [More...](#)
- class **QgsApplication**
Extends *QApplication* to provide access to QGIS specific resources such as theme paths, database paths etc. [More...](#)
- class **QgsAction**
Utility class that encapsulates an action based on vector attributes. [More...](#)
- class **QgsClipper**
A class to trim lines and polygons to within a rectangular region. [More...](#)
- class **QgsContextHelp**
Provides a context based help browser for a dialog. [More...](#)
- class **QgsCoordinateReferenceSystem**
Class for storing a coordinate reference system (CRS). [More...](#)
- class **QgsCoordinateTransform**
Class for doing transforms between two map coordinate systems. [More...](#)
- class **QgsCredentials**

Scripts em Python

```
def run(self):
    QApplication.setOverrideCursor(QCursor(Qt.WaitCursor))


    dados = str(self.dock.comboConnections.currentText())
    self.db = self.actionsDb[dados].connect()
    uniqueFieldName = self.dock.uniqueCombo.currentText()
    geomFieldName = self.dock.geomCombo.currentText()
    uri = self.db.getURI()
    query = str(self.dock.textQuery.toPlainText())

    #replace layer
    if self.dock.layerCombo.currentText() == 'replace layer':
        layer = self.iface.activeLayer()
        try: layer.actionRemoveLayer()
        except: pass

    #lstrip() is needed to remove spaces in the first line
    uri.setDataSource("", "(" + query.lstrip() + ")", geom)
    vl = self.iface.addVectorLayer(uri.uri(), "QueryLayer")

    QApplication.restoreOverrideCursor()
```

Expõe as “peças” do Qgis



Vovô,
pra que serve isto?

Esta peça realiza
as transformações
de coordenadas

Qgis API

Public Slots

virtual void	zoomFull ()=0 <i>Zoom to full extent of map layers.</i>
virtual void	zoomToPrevious ()=0 <i>Zoom to previous view extent.</i>
virtual void	zoomToNext ()=0 <i>Zoom to next view extent.</i>
virtual void	zoomToActiveLayer ()=0 <i>Zoom to extent of the active layer.</i>
virtual QgsVectorLayer *	addVectorLayer (QString vectorLayerPath, QString <i>Add a vector layer.</i>
virtual QgsRasterLayer *	addRasterLayer (QString rasterLayerPath, QString <i>Add a raster layer given a raster layer file name.</i>
virtual QgsRasterLayer *	addRasterLayer (const QString &url, const QString &crs)=0 <i>Add a WMS layer.</i>
virtual bool	addProject (QString theProject)=0 <i>Add a project.</i>
virtual void	newProject (bool thePromptToSaveFlag=false)=0 <i>Start a blank project.</i>
virtual QgsMapLayer *	activeLayer ()=0 <i>Get pointer to the active layer (layer selected in the</i>
virtual bool	setActiveLayer (QgsMapLayer *)=0 <i>Set the active layer (layer gets selected in the legen</i>
virtual int	addToolBarIcon (QAction *qAction)=0 <i>Add an icon to the plugins toolbar.</i>
virtual void	removeToolBarIcon (QAction *qAction)=0 <i>Remove an action (icon) from the plugin toolbar.</i>
virtual QToolBar *	addToolBar (QString name)=0 <i>Add toolbar with specified name.</i>
virtual QgsMapCanvas *	mapCanvas ()=0 <i>Return a pointer to the map canvas.</i>

Public Member Functions

bool	simplify (QgsVectorLayer *layer, const QString &shapefileName, double tol <i>Simplify vector layer using (a modified) Douglas-Peucker algorithm and write</i>
bool	centroids (QgsVectorLayer *layer, const QString &shapefileName, bool only <i>Calculate the true centroids, or 'center of mass' for a vector layer and write it</i>
bool	extent (QgsVectorLayer *layer, const QString &shapefileName, bool onlySe <i>Create a polygon based on the extent of all (selected) features and write it to</i>
bool	buffer (QgsVectorLayer *layer, const QString &shapefileName, double buffe <i>Create buffers for a vector layer and write it to a new shape file.</i>
bool	convexHull (QgsVectorLayer *layer, const QString &shapefileName, bool o <i>Create convex hull(s) of a vector layer and write it to a new shape file.</i>
bool	dissolve (QgsVectorLayer *layer, const QString &shapefileName, bool only <i>Dissolve a vector layer and write it to a new shape file.</i>

```
Terminal Python
Para acessar o ambiente Quantum GIS a partir desse console
use o objeto qgis.utils.iface (instância de classe da Qgsinterface).
>>>
```

Qgis API

Public Member Functions

- `bool simplify (QgsVectorLayer *layer, const QString &shapefileName, double tolerance)`
Simplify vector layer using (a modified) Douglas-Peucker algorithm and write it to a new shape file.
- `bool centroids (QgsVectorLayer *layer, const QString &shapefileName, bool onlySelected)`
Calculate the true centroids, or 'center of mass' for a vector layer and write it to a new shape file.
- `bool extent (QgsVectorLayer *layer, const QString &shapefileName, bool onlySelected)`
Create a polygon based on the extent of all (selected) features and write it to a new shape file.
- `bool buffer (QgsVectorLayer *layer, const QString &shapefileName, double bufferDistance)`
Create buffers for a vector layer and write it to a new shape file.
- `bool convexHull (QgsVectorLayer *layer, const QString &shapefileName, bool onlySelected)`
Create convex hull(s) of a vector layer and write it to a new shape file.
- `bool dissolve (QgsVectorLayer *layer, const QString &shapefileName, bool onlySelected)`
Dissolve a vector layer and write it to a new shape file.

Código Python

```
def run(self):
    QApplication.setOverrideCursor(QCursor(Qt.WaitCursor))

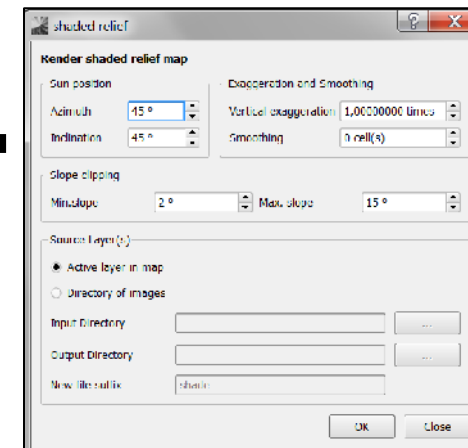
    dados = str(self.dock.comboConnections.currentText())
    self.db = self.actionsDb[dados].connect()
    uniqueFieldName = self.dock.uniqueCombo.currentText()
    geomFieldName = self.dock.geomCombo.currentText()
    url = self.db.getURL()
    query = str(self.dock.textQuery.text())

    #replace layer
    if self.dock.layerCombo.currentText() == 'replace layer':
        layer = self iface.activeLayer()
        try: layer.actionRemoveLayer()
        except: pass

    #strip() is needed to remove spaces in the first line
    url.setDataSource("", "%s" % query.strip() + "%s", geom=
    vl = self iface.addVectorLayer(url.url(), "newlayer")

    QApplication.restoreOverrideCursor()
```

Interface Gráfica



Plugin



Preciso criar um ou será que alguém já teve esta ideia?

Qgis Plugins

Instalador de Complemento Python - 57 plugins available

Complementos Repositórios Opções

Filtrar por: todos repositórios qualquer estado

Situação	Nome	Versão	Descrição
Atualizável	fTools	0.5.10 -> 0.6.1	Tools for vector data analysis and management
não instalado	Nearest	0.0.6	Selects the nearest feature.
não instalado	MultiQml	0.3.18	Applying a one qml style to many rasters. For additional info see http://gis-lab.in
não instalado	Mapfile Tools	0.7	Load UMN Mapserver Mapfile as Layer
não instalado	Arpat	0.3.1	Display of stratigraphy from surveys.
não instalado	EasyPrint	0.0.10	Create printable maps.
não instalado	autosave	0.21	save qgis projects as we go...
não instalado	Zoom to Point	1.1	Zooms the map canvas to a coordinate you specify. You can specify the zoom level
não instalado	AverageCoords	0.0.1	Takes average of the coordinates of two point layers.
não instalado	OpenAddresses converter	1.0	Convert openaddresses xml format to shape file
não instalado	RandomHR	0.2.1	AniMove: Randomization of home ranges within a study area
não instalado	topocolour	0.45	Colour polygons so neighbouring polygons are different
não instalado	Modified Zoom-to-Point	1.1	Modified Zoom-to-Point Plugin (adds elements to the dialog for zoom levels)
não instalado	rasterlang	0.31	process raster data with a simple language
não instalado	SDA4PP	0.196	Spatial Data Analysis for Point Pattern with R. Also requires RPy2 and several R packages
não instalado	osmpoly_export	0.1.4	Generate Poly files used by Osmosis from layer
não instalado	Cartogram creator for QGIS > 1.3	0.03	Create continuous rubber-sheet cartogram based on an input point shapefile
não instalado	Interactive Identify	1.2	Customizable descriptive information for feature in the intersecting several vector layers
não instalado	RT Omero	1.0.2	Omero plugin per la Regione Toscana
não instalado	RT Sql Layer	1.0.26	Load a PostGIS/Spatialite layer using a custom query. Developed with funding from
não instalado	Watermark Plugin	Version 1.0	Render watermark using QgsPluginLayer
não instalado	DumpLoadField	0.0.5	Dumps or loads text from/to a selected field from/to a textfile
não instalado	manageR	1.0	Provides R statistical functionality within QGIS. Recommends rpy2 (>=2.1.0alpha2)
não instalado	Linear referencing plugin	0.5.6	Calculate dynamic segmentation for PostGIS layers

Upgrade all Instalar/atualizar complemento Desinstalar complemento

Ajuda Os complementos serão instalados em ~/home/nome_do_usuario/.qgis/python/plugins (no Linux) Fechar

Qgis como software "Open Source"



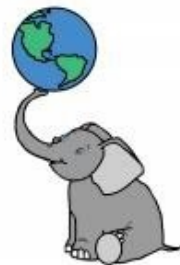
2,191,640 lines
\$ 34,460,532



802,519 lines
\$ 12,099,824



1,226,034 lines
\$ 18,850,560



225,619 lines
\$ 3,180,859



INKSCAPE
Draw Freely.



Saga



Ajuda e Suporte

<http://www.qgis.org/pt/documentation/manuals.html>

http://www.qgis.org/wiki/Welcome_to_the_QGIS_Wiki

<http://gis.stackexchange.com/>

<http://underdark.wordpress.com/>

<http://forum.qgis.org/>

<http://lists.osgeo.org/mailman/listinfo>

<http://blog.qgis.org/>



Quantum GIS

Pablo Torres Carreira