

# GRASS GIS 7 workshop

OSGeo-Live  
Intro QGIS-Processing-GRASS GIS

Markus Neteler

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mundialis GmbH & Co. KG  
<http://www.mundialis.de>





# Session Objectives

- Starting OSGeo-Live
  - ... of GRASS GIS 7
  - ... of QGIS
- Download of related course data
- Using GRASS GIS in QGIS through “Processing”



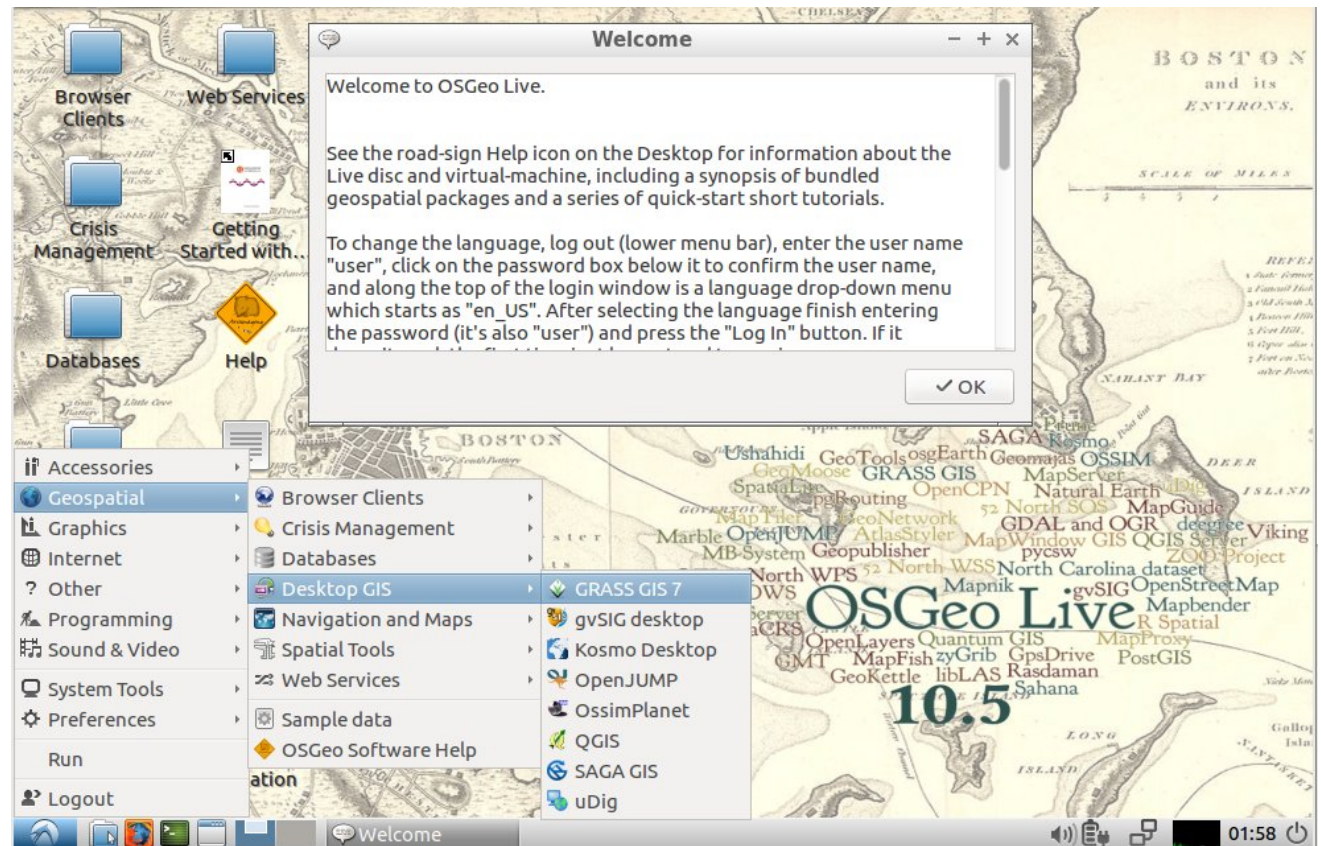
# Preparation – Starting OSGeoLive

OSGeo-Live, ISO available from:  
<http://download.osgeo.org/livedvd>

Copy to **DVD or USB flash drive**, then boot from flash drive;  
or run it in a **Virtual Machine** environment.

See: [https://live.osgeo.org/en/quickstart/osgeolive\\_quickstart.html](https://live.osgeo.org/en/quickstart/osgeolive_quickstart.html)

*...sit back while the system boots up...*





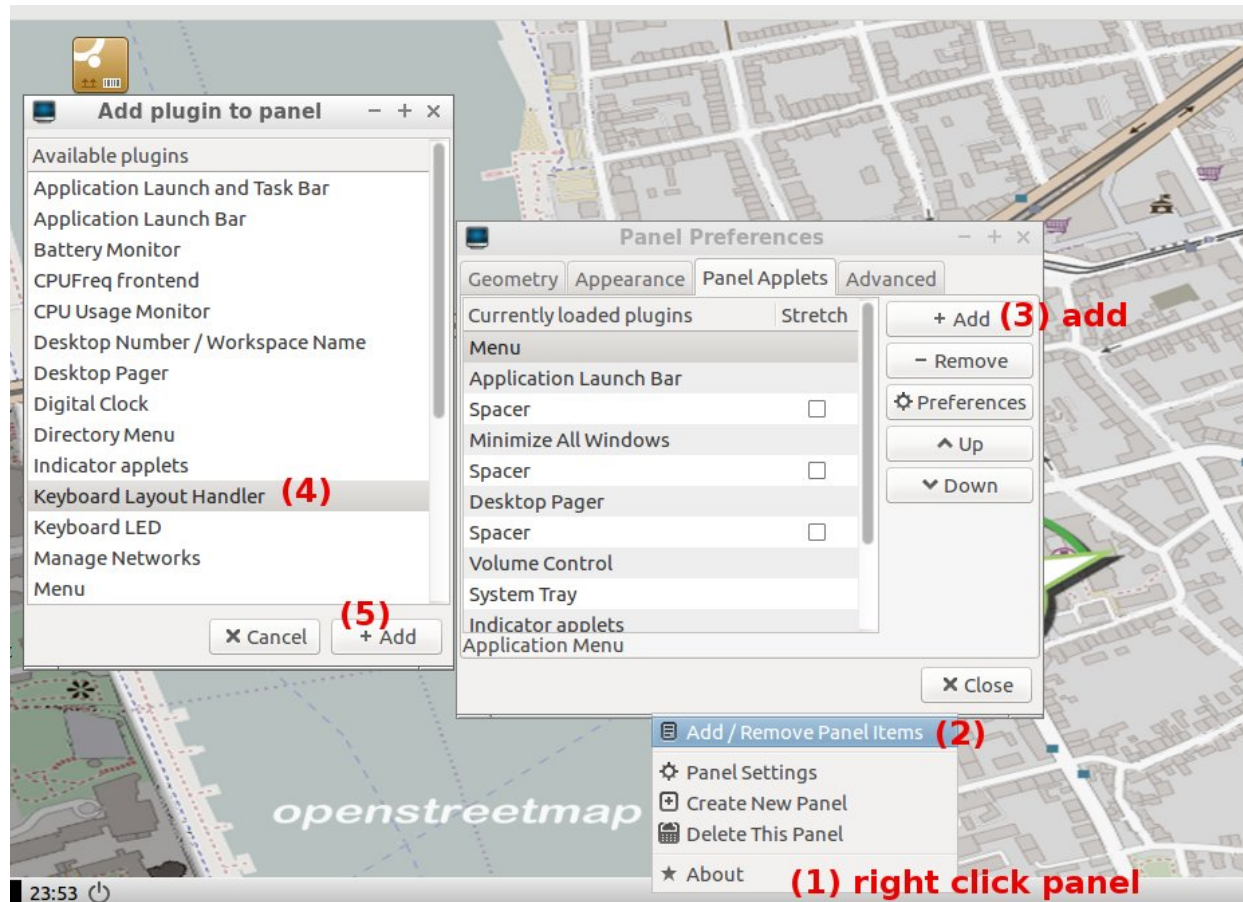
# Preparation – Starting OSGeoLive

Optional: Configuration of region settings:  
OSGeo-Live Internationalisation Quickstart:

[https://live.osgeo.org/en/quickstart/internationalisation\\_quickstart.html](https://live.osgeo.org/en/quickstart/internationalisation_quickstart.html)

**Keyboard layout** switcher:

To add a “flag” icon to the lower menu panel, do the following steps:





# Preparation - Starting OSGeoLive

Optional: Configuration of **keyboard layout**

**1** Right-click the flag

**2** Select the Settings

**3** Uncheck [ ] Keep system layouts

**4** Add new layout

Flag	Layout	Variant
	us	

Advanced setxkbmap Options

- Do not reset existing options
- Keep system layouts

Show Layout as

- Image
- Custom Image
- Text

Panel Icon Size

- 1
- 2
- 3
- 4
- 5
- 6



# Preparation – Starting OSGeoLive

Configuration of region settings if needed:

OSGeo-Live Internationalisation Quickstart (language + keyboard layout):

[https://live.osgeo.org/en/quickstart/internationalisation\\_quickstart.html](https://live.osgeo.org/en/quickstart/internationalisation_quickstart.html)

Update of **language settings**:

For the **menus**: Logout > Change language in top menu > Login again.

Authentication:

User: user

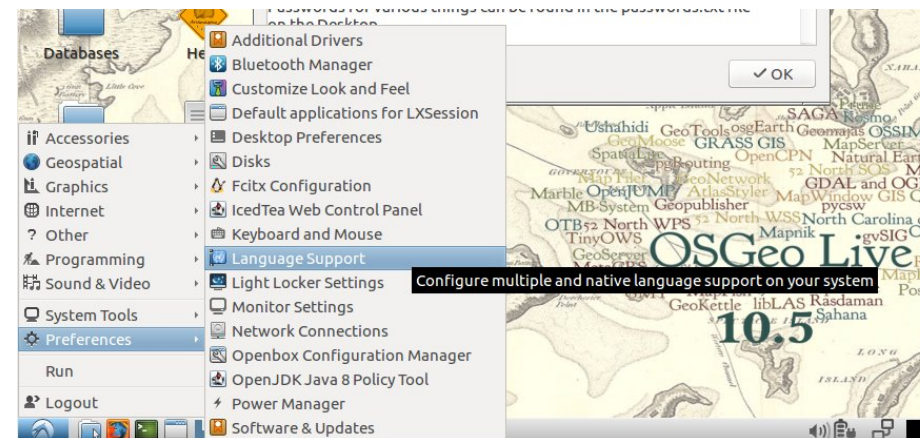
Password: user

Missing language?

Set it via the **main applications menu**  
Preferences

> Language Support

> Install/Remove languages



# Preparation – Web Download of course data sets



Please create a “gis\_data” directory for the course data:

```
cd $HOME
mkdir gis_data
```

*Download data from:*

[https://www.mundialis.de/workshops/osgeo\\_ireland2017/](https://www.mundialis.de/workshops/osgeo_ireland2017/)

```
folder: north_carolina/
- nc_zipcodes_wake_SHP.zip           308 KB
- elev_ncstate_500m_tif.zip         1.8 MB
- elev_lid792_1m_tif.zip           1.7 MB
[...]
```

Save these **3 files** on your computer into the new “gis\_data” directory and unpack them. The other files we'll download later.

The maps are located in North Carolina, USA.





# OSGeo-live: North Carolina sample data set

Create a “gis\_data” directory for the course data (this or file manager):

```
cd $HOME  
mkdir gis_data
```

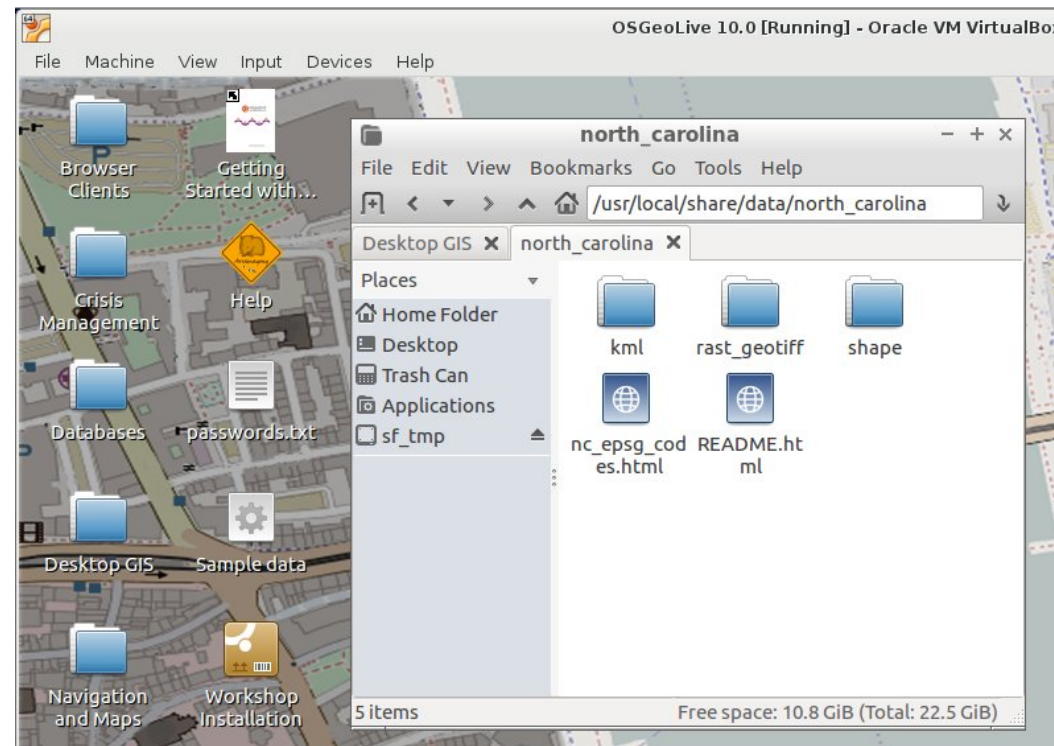
## Data files in OSGeo-live:

Stored in /usr/local/share/data/north\_carolina/

- zipcodes\_wake.shp (.dbf, .prj, .shx)
- elev\_state\_500m.tif
- elev\_lid792\_1m.tif

Find these **3 datasets** and copy them into the new “gis\_data” directory.

The maps are located in North Carolina, USA.





# Preparation - Unpacking the course data set



Unpacking of the `nc_zipcodes_wake_SHP.zip|.tar.gz`  
(ZIP codes map of Wake county in North Carolina)

## Linux:



- Create a directory “gis\_data” in your home directory and unpack the file therein as follows (or use a graphical program):

```
mkdir $HOME/gis_data  
cd $HOME/gis_data  
tar xvfz /path/to/nc_zipcodes_wake_SHP.tar.gz
```

---

## Mac OSX:



- Create a directory “gis\_data” in your home directory and unpack the `nc_zipcodes_wake_SHP.zip` file therein.
- 

## MS-Windows:



- Create a directory “gis\_data” in your home directory and unpack the `nc_zipcodes_wake_SHP.zip` file therein
- Note: avoid white space in the path as well as non-ASCII characters (it may work, though)

# QGIS: “GRASS Toolbox” versus “Processing”



## Two ways of using GRASS GIS from QGIS

**GRASS Toolbox**

**Processing** (formerly SEXTANTE) → GRASS GIS provider

The choice is up to the user. The differences are... (next slide)

# QGIS: “GRASS Toolbox” versus “Processing”



## GRASS Toolbox

- “traditional” GRASS GIS support in QGIS
- Connects directly to GRASS: uses region information and reads/writes GRASS data format directly

## Processing (formerly SEXTANTE) → GRASS GIS provider

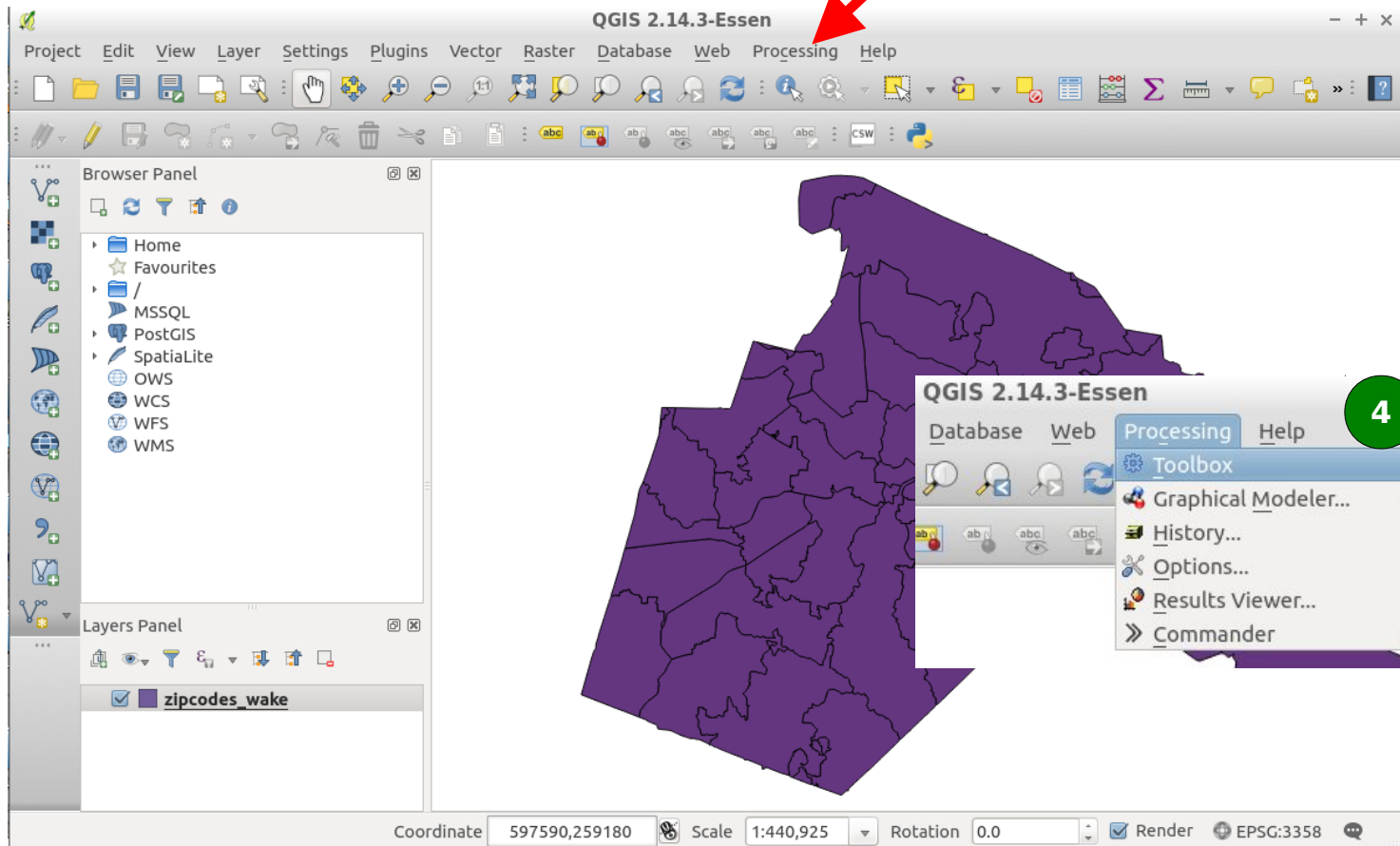
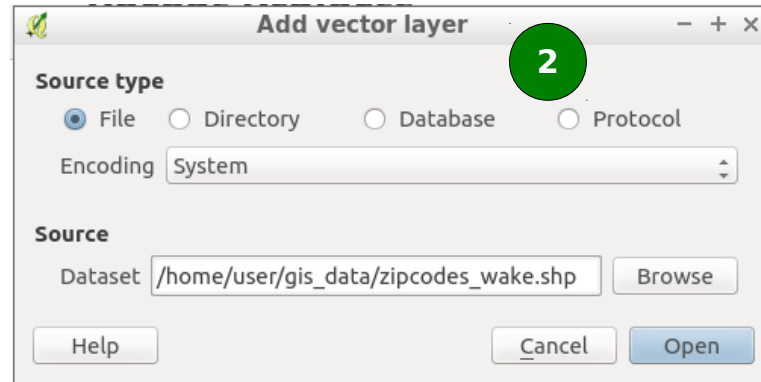
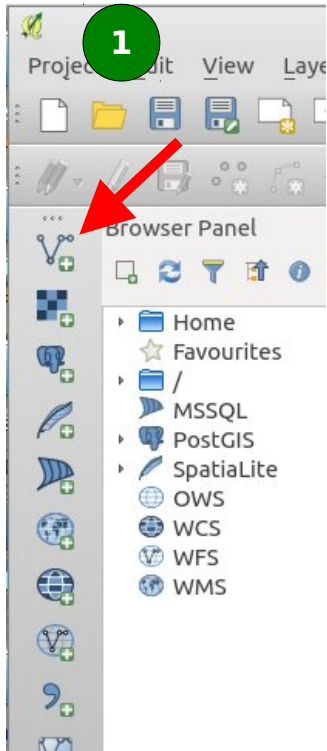
- “new” GRASS GIS support
- Runs GRASS GIS in a temporary session for each calculation
- ... using GRASS GIS from QGIS (internal batch job mode)

So, which one? We will now use “Processing”!

**Start QGIS** from “Desktop GIS” in OSGeoLive

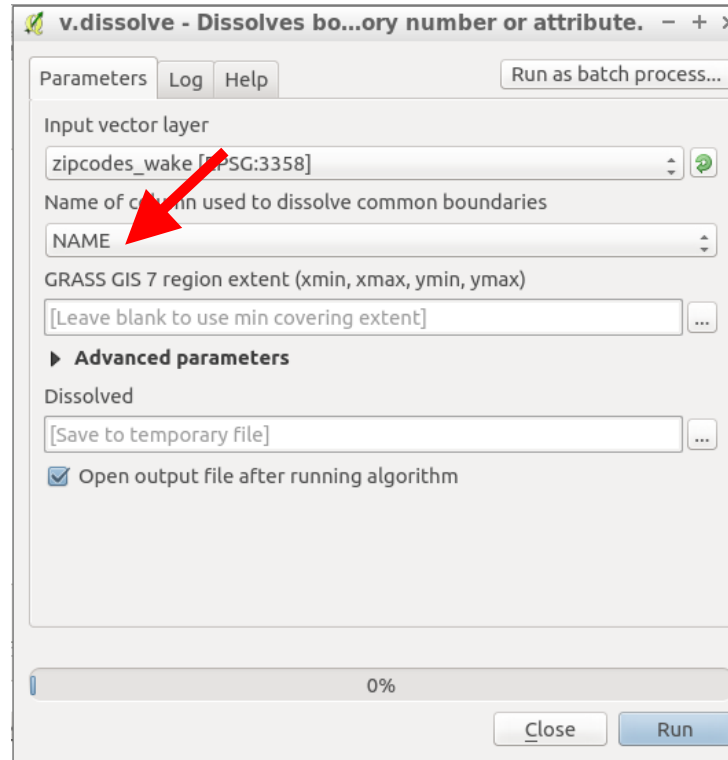
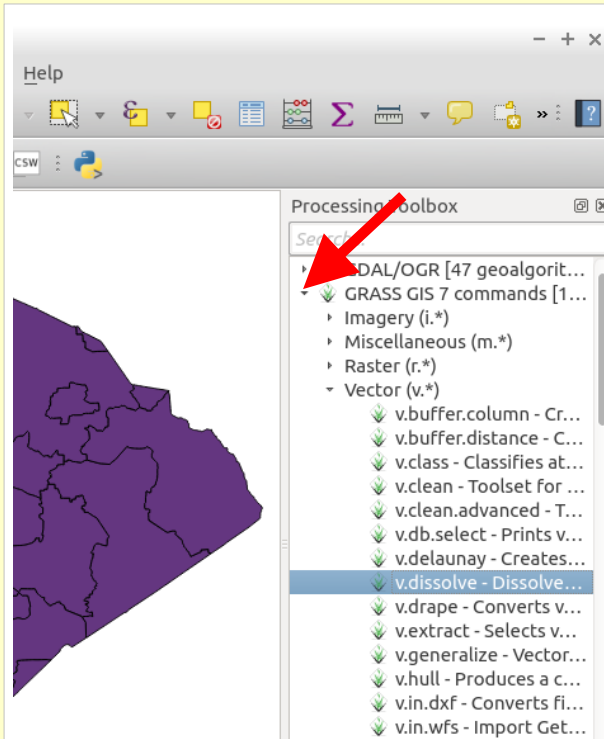


# QGIS-Processing – Using QGIS and Processing





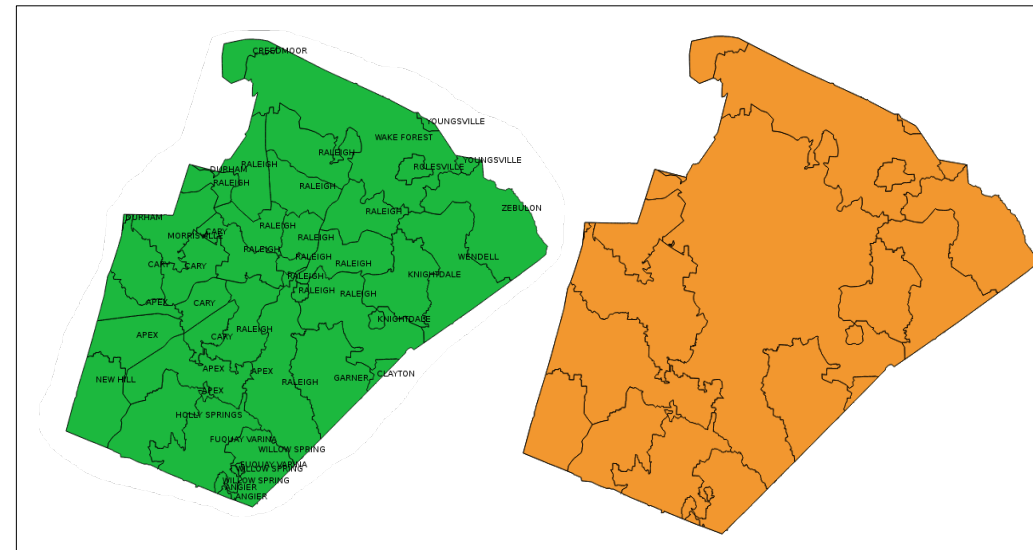
# QGIS-Processing – Vector exercise: dissolve



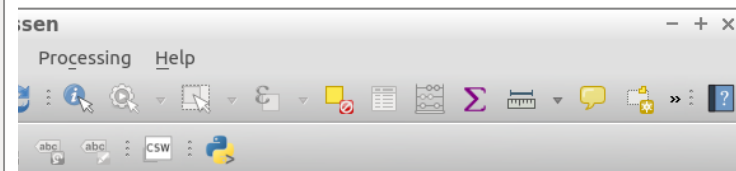
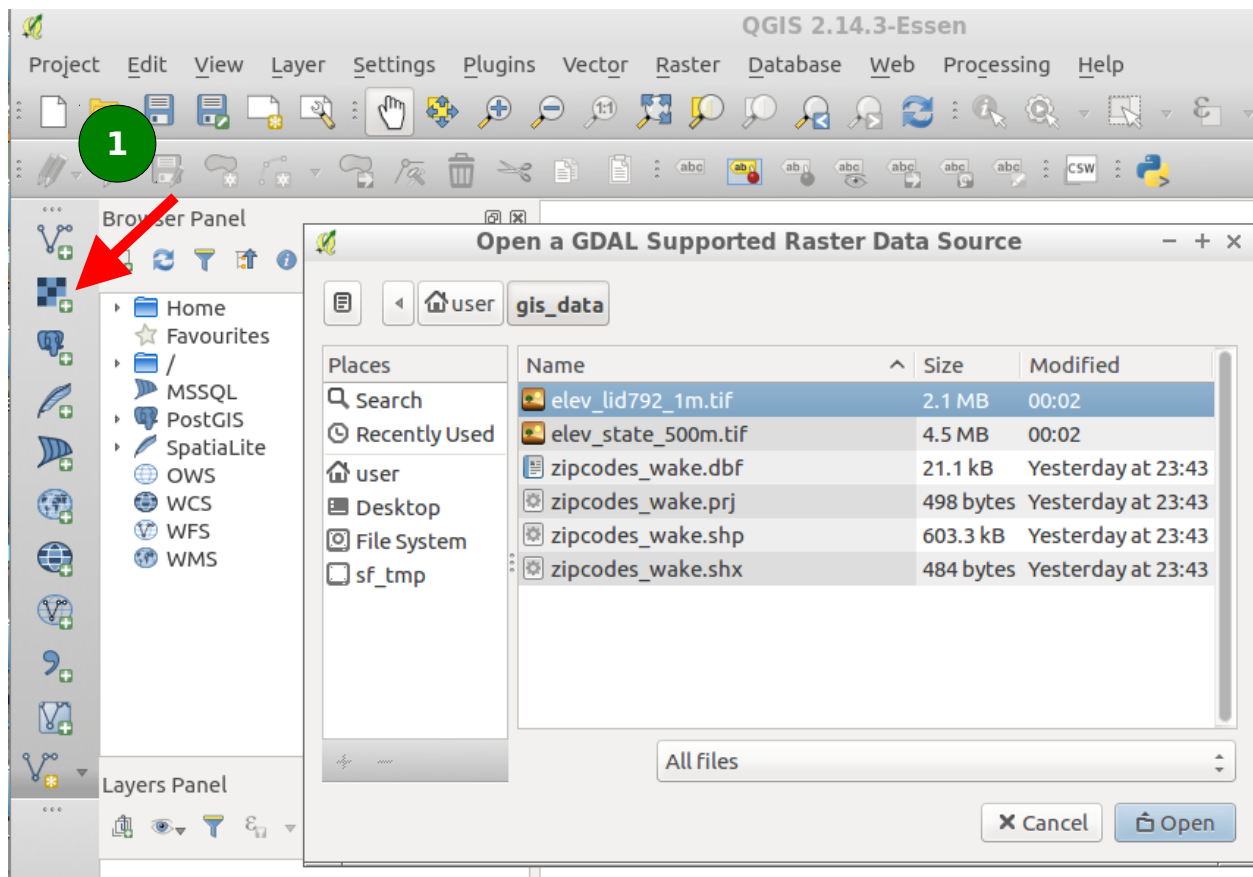
## Dissolving geometry by string column attributes:

- **SHAPE** file is preselected according to legend
- **Select "NAME" column for dissolving**
- **Run**

**Processing** calls GRASS GIS in a temporal session which deliver the result back (here: SHAPE file)



# QGIS: Raster data: loading a 1m LiDAR map



Once you see the map, select "Properties" in the legend entry of "elev\_lidar792\_1m" (right mouse button) to change the color style



# QGIS: Raster data: styling the elevation map



QGIS 2.14.3-Essen

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Browser Panel

- Home
- Favourites
- /
- MSSQL
- PostGIS
- Spatialite
- OWS
- WCS
- WFS
- WMS

Layers Panel

- elev\_lid792\_1m
- 107.170000
- 113.086000
- 119.002000
- 124.918000
- 130.834000

Layer Properties: 2\_1m | Style

Band render: Singleband pseudocolor

Band: Band 1 (Gray)

Color interpolation: Linear

Value	Color	Label
107.170...	Red	107.170000
113.086...	Orange	113.086000
119.002...	Yellow	119.002000
124.918...	Green	124.918000
130.834...	Blue	130.834000

Generate new color map

Spectral [Edit] [Invert]

Mode: Continuous [Classes: 5]

Min: 107.17 Max: 130.834

[Classify]

Min / max origin: Estimated cumulative cut of full extent.

Load min/max values

- Cumulative count cut: 2.0 - 98.0 %
- Min / max
- Mean +/-

Apply Cancel OK

1 legend entries removed. Coordinate: 638064,220274 Scale: 1:5,353 Rotation: 0.0 Render EPSG:3358 (OTF)



# QGIS: Raster data: hillshading

Please try yourself...

The screenshot shows the QGIS 2.14.3-Essen interface. The main window displays a grayscale hillshaded raster map of a terrain. The interface includes a menu bar (Project, Edit, View, Layer, Settings, Plugins, Vector, Raster, Database, Web, Processing, Help), a toolbar, a Browser Panel on the left with a tree view of file systems and data sources, and a Layers Panel at the bottom left showing two layers: 'Output shaded relief layer' and 'elev\_lid792\_1m'. The Processing Toolbox on the right contains a search bar and a list of raster processing algorithms. The 'r.relief' algorithm is highlighted in blue. A blue banner at the bottom of the toolbox reads: 'You can add more algorithms to the toolbox, enable additional providers. [close]'. The status bar at the bottom shows the coordinate '638284,220637', a scale of '1:5,669', and a rotation of '0.0'.

QGIS 2.14.3-Essen

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Browser Panel

- Home
- Favourites
- /
- MSSQL
- PostGIS
- SpatialLite
- OWS
- WCS
- WFS
- WMS

Layers Panel

- Output shaded relief layer
  - 101
  - 144
- elev\_lid792\_1m
  - 107.170000

Processing Toolbox

Search...

- r.out.ppm - Converts a raster la...
- r.out.vrml - Export a raster layer...
- r.param.scale - Extracts terrain ...
- r.patch - Creates a composite ra...
- r.plane - Creates raster plane la...
- r.profile - Outputs the raster lay...
- r.quant - Produces the quantiza...
- r.quantile - Compute quantiles ...
- r.random - Creates a raster laye...
- r.random.cells - Generates rand...
- r.random.raster - Create rand...
- r.reclass - Creates a new map la...
- r.reclass.area.greater - Reclassi...
- r.reclass.area.less - Reclassifie...
- r.recode - Recodes categorical r...
- r.regression.line - Calculates lin...
- r.relief - Creates shaded relief fr...**
- r.relief.scaling - Creates shaded ...
- r.report - Reports statistics for r...
- r.resamp.interp - Resamples ras...
- r.resamp.rst - Reinterpolates usi...
- r.resamp.stats - Resamples rast...
- r.resample - GRASS raster map l...
- r.rescale - Rescales the range of...
- r.rescale.eq - Rescales histo...

Coordinate 638284,220637 Scale 1:5,669 Rotation 0.0 Render EPSG:3358 (OTF)