

# QGIS is dead! Long live QGIS!

## The very best new features of QGIS 3.x

Based on previous presentations by @AndiNeum and @geomenke

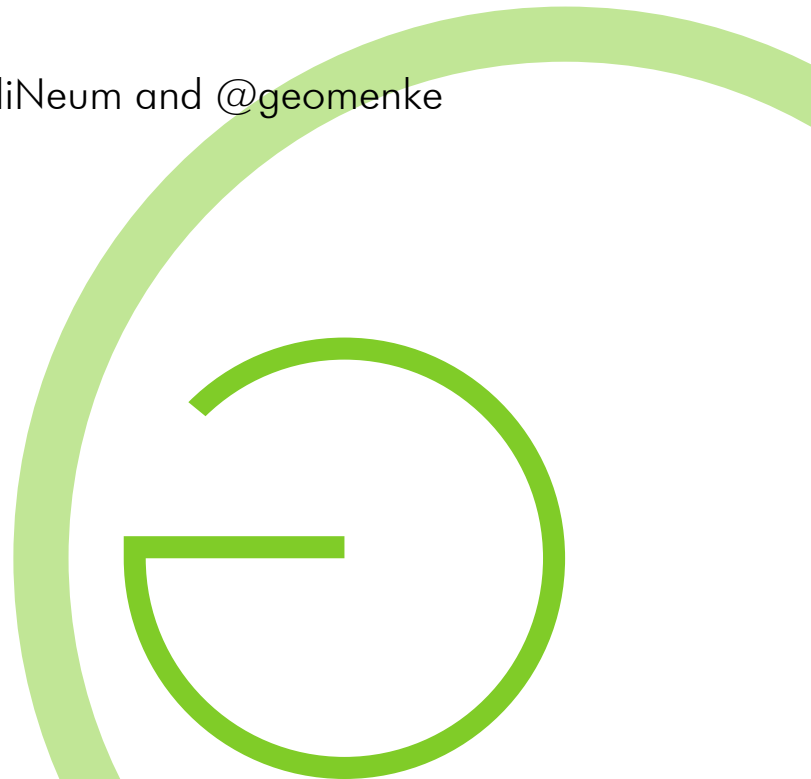
Marco Bernasocchi



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marco@opengis.ch

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# @mbernasocchi

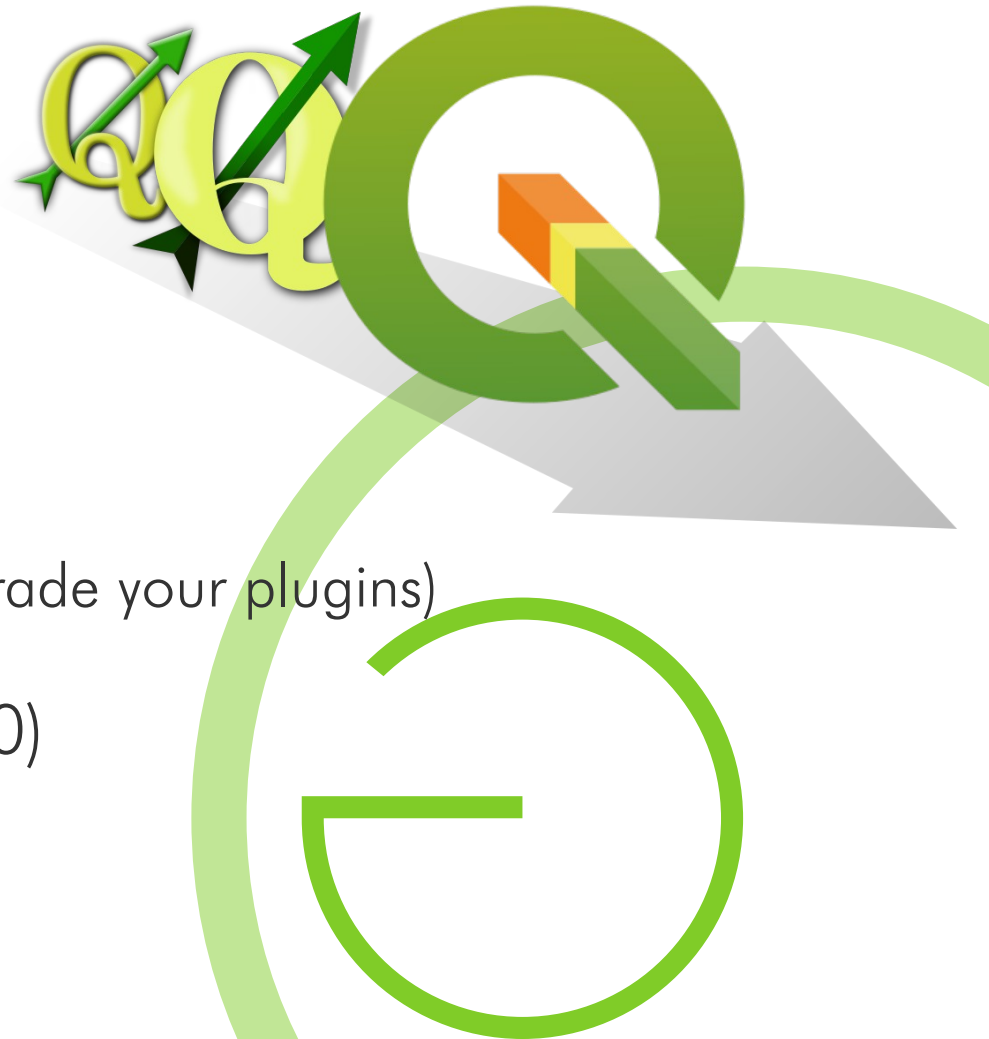
- QGIS Co-Chair
- QGIS on Android dad
- OPENGIS.ch CEO

**OPENGIS.ch**

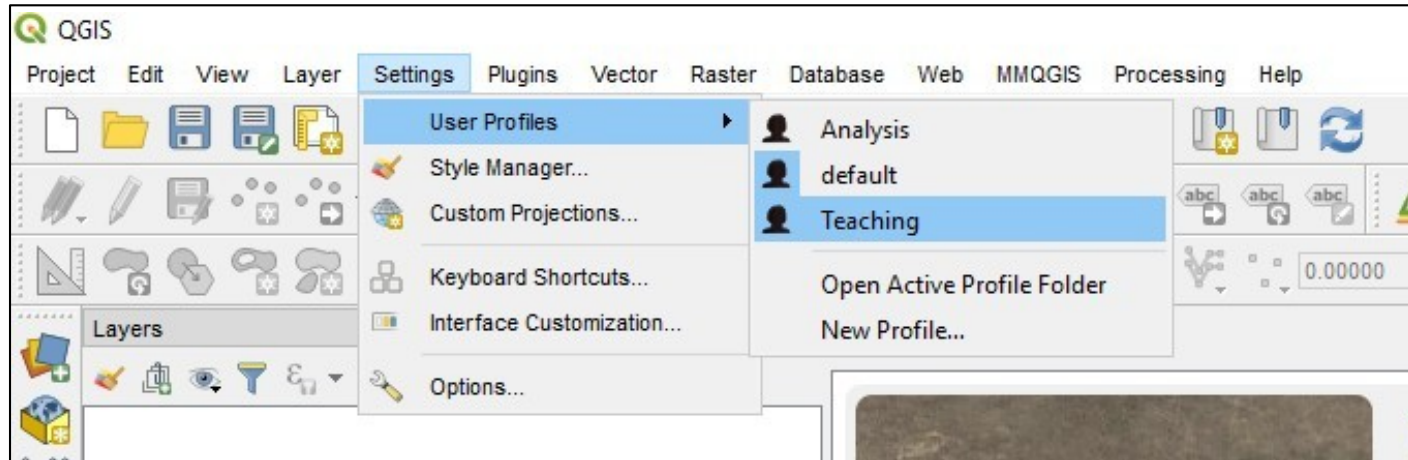
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# 2.18 LTR → 3.4 LTR

- 2.18 End of life
  - No more releases
  - No more bugfixes
- 3.4.8 Current LTR
  - Time to upgrade (and upgrade your plugins)
- 3.10.4 Next LTR (21.02.20)



# User Profiles



Set up GUI for different activities

- Plugins
- Toolbars/Panels
- Symbols

## **NOTE**

- Stored in QGIS3 folder
- QGIS 3 folder has moved to a more standard location for your OS

### **Linux:**

.local/share/QGIS/QGIS3/profiles/default

### **Mac OS X:**

Library/Application

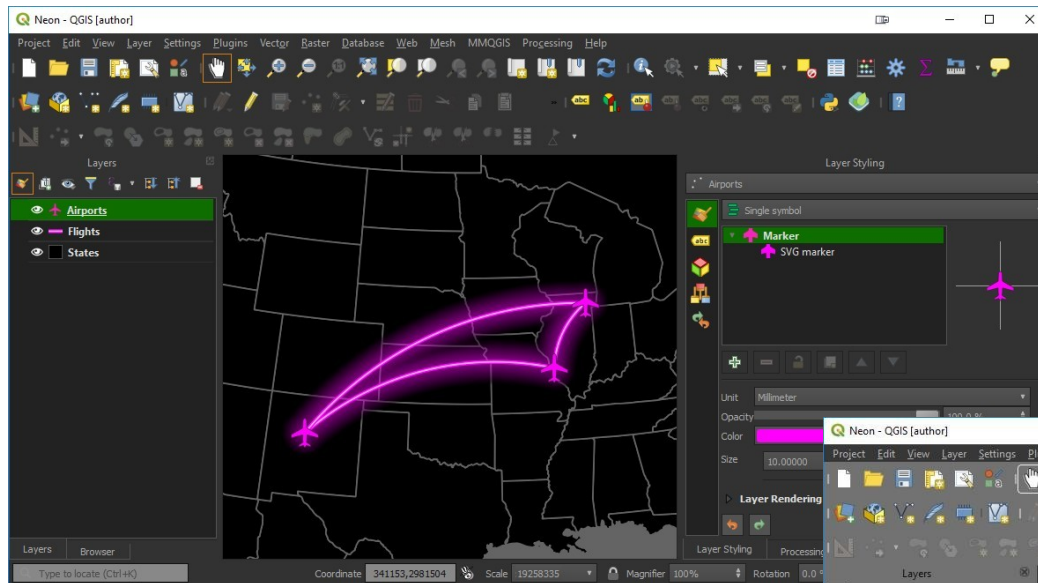
Support/QGIS/QGIS3/profiles/default

**Windows:** AppData\Roaming\QGIS\QGIS3\profiles\default

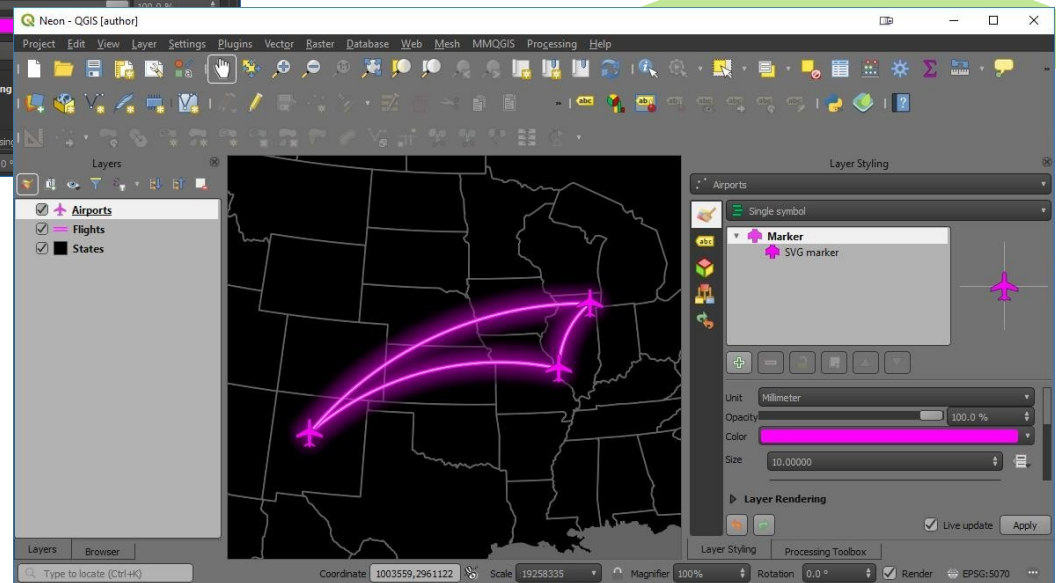
# New UI Themes



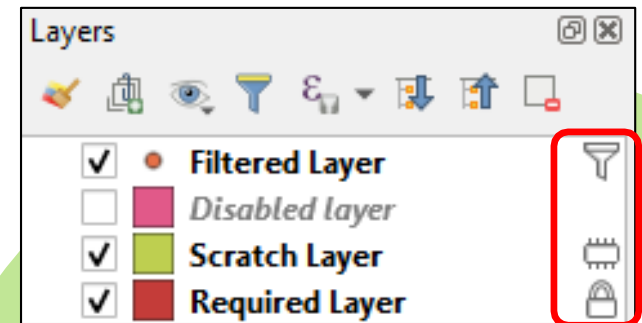
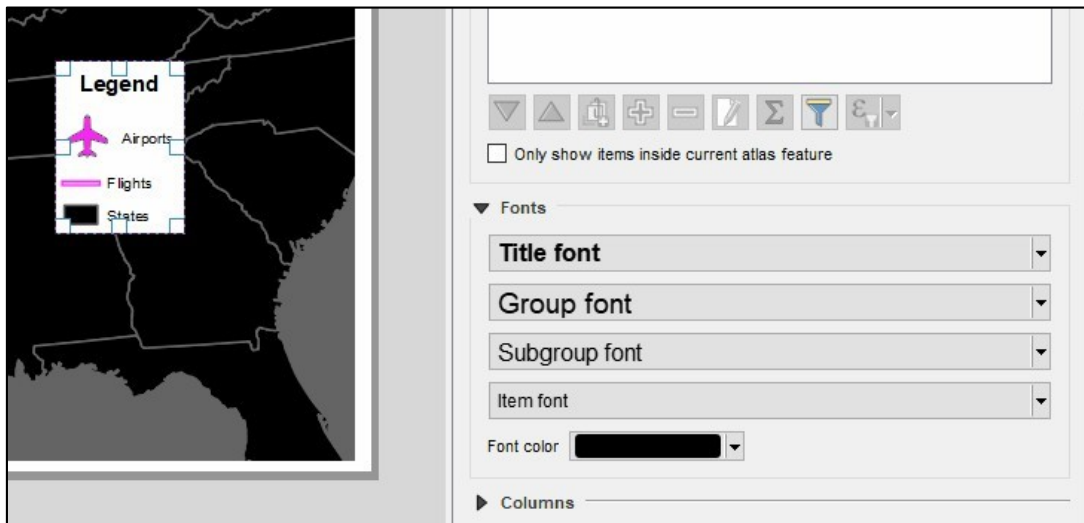
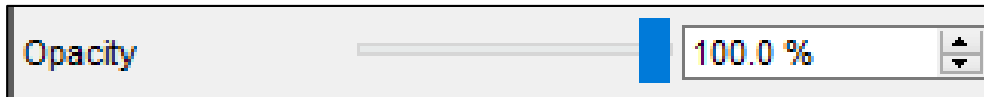
Blend of Gray



Night Mapping



# Lots of UI Improvements

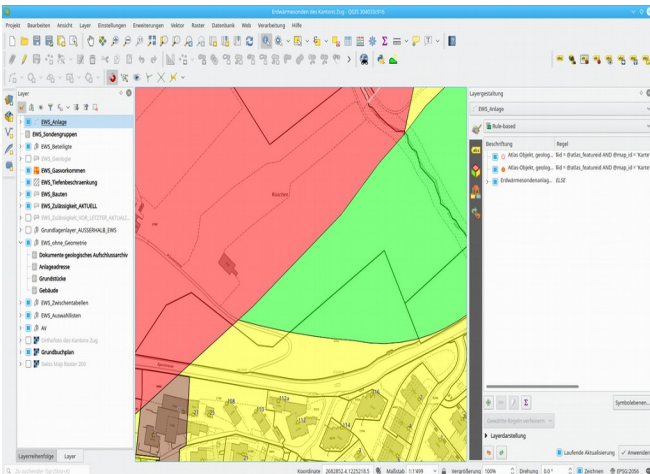
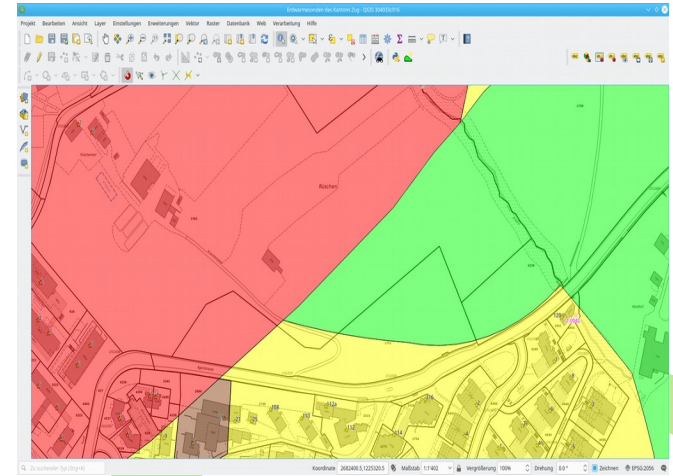
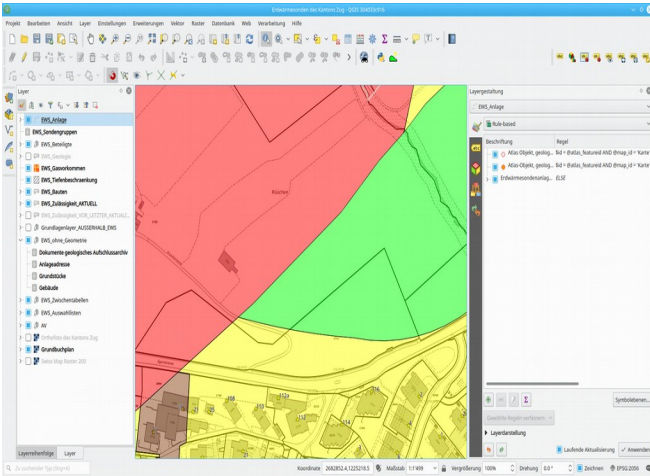




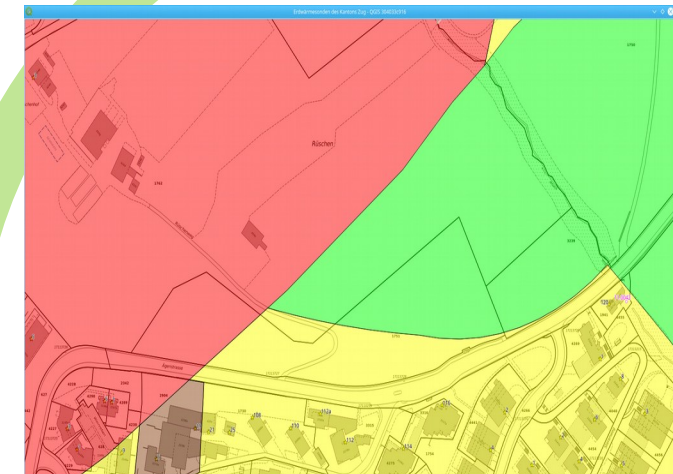
# Optionally show/hide Panels and

## GUI

Ctrl-Tab  
Hide/Show all Panels

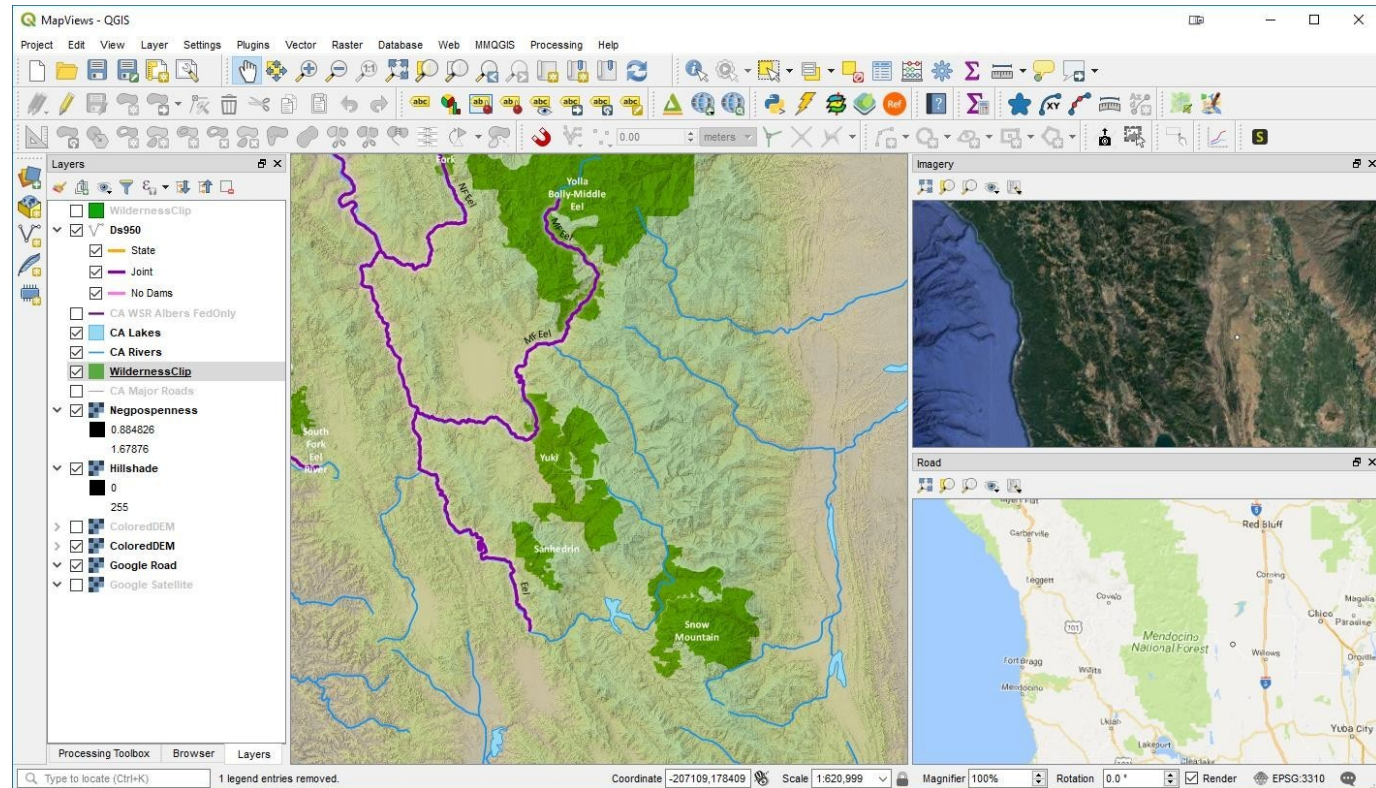


Ctrl-Shift-Tab  
Hide/Show all of the  
GUI



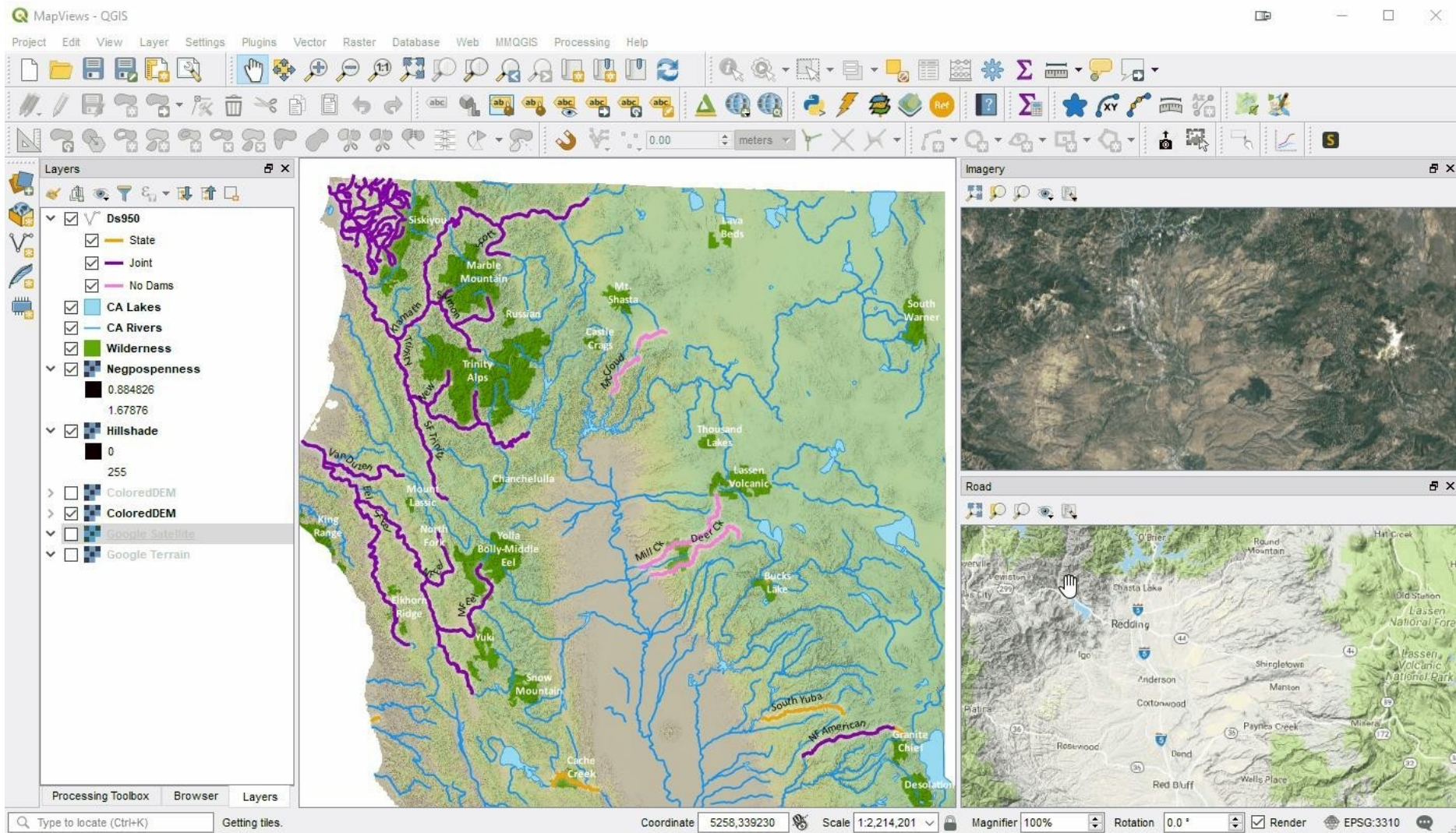
# Multiple Map Views

- Dockable panels
- Honor Themes
- Can link to main view
- Set scale
- Each canvas can have its own visibility preset
- Each canvas can have different CRS
- Optionally show annotations
- Show cursor locations and extent
- Each canvas can show magnified or rotated views





# Multiple Map Views

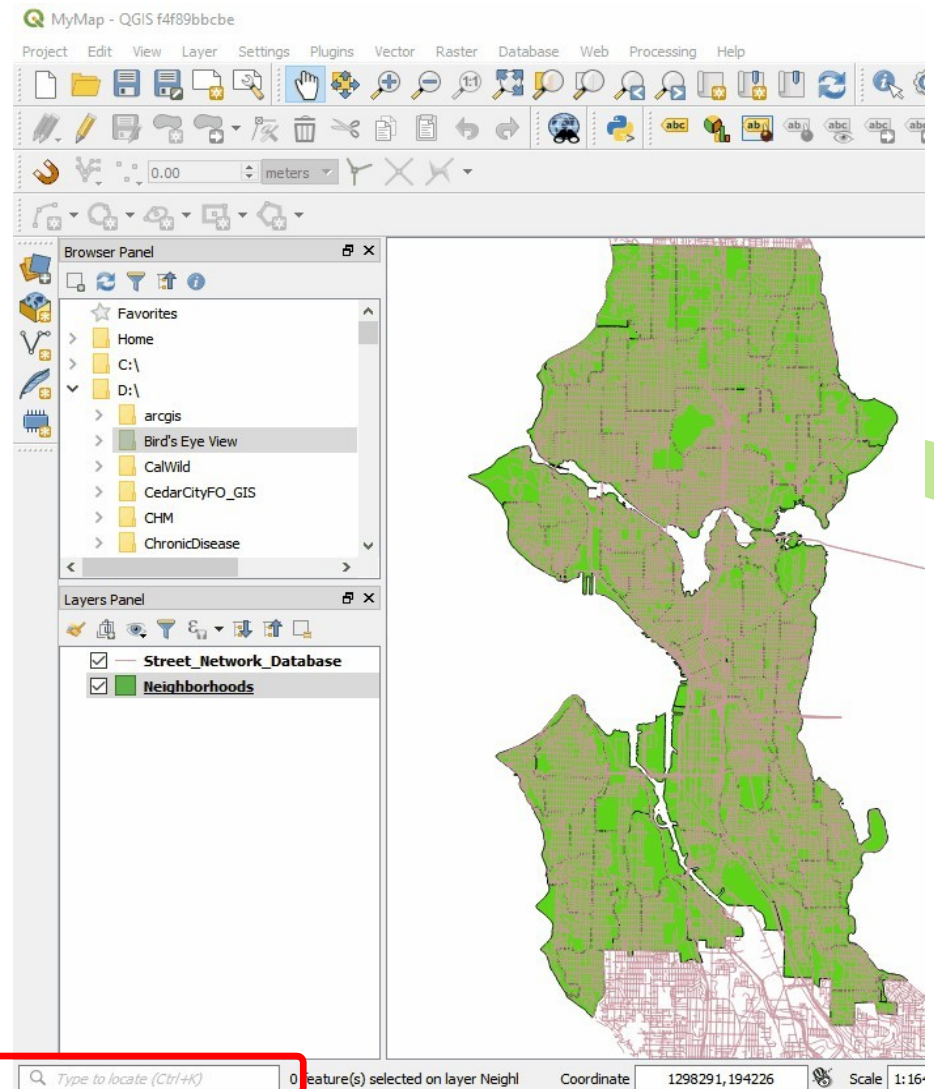


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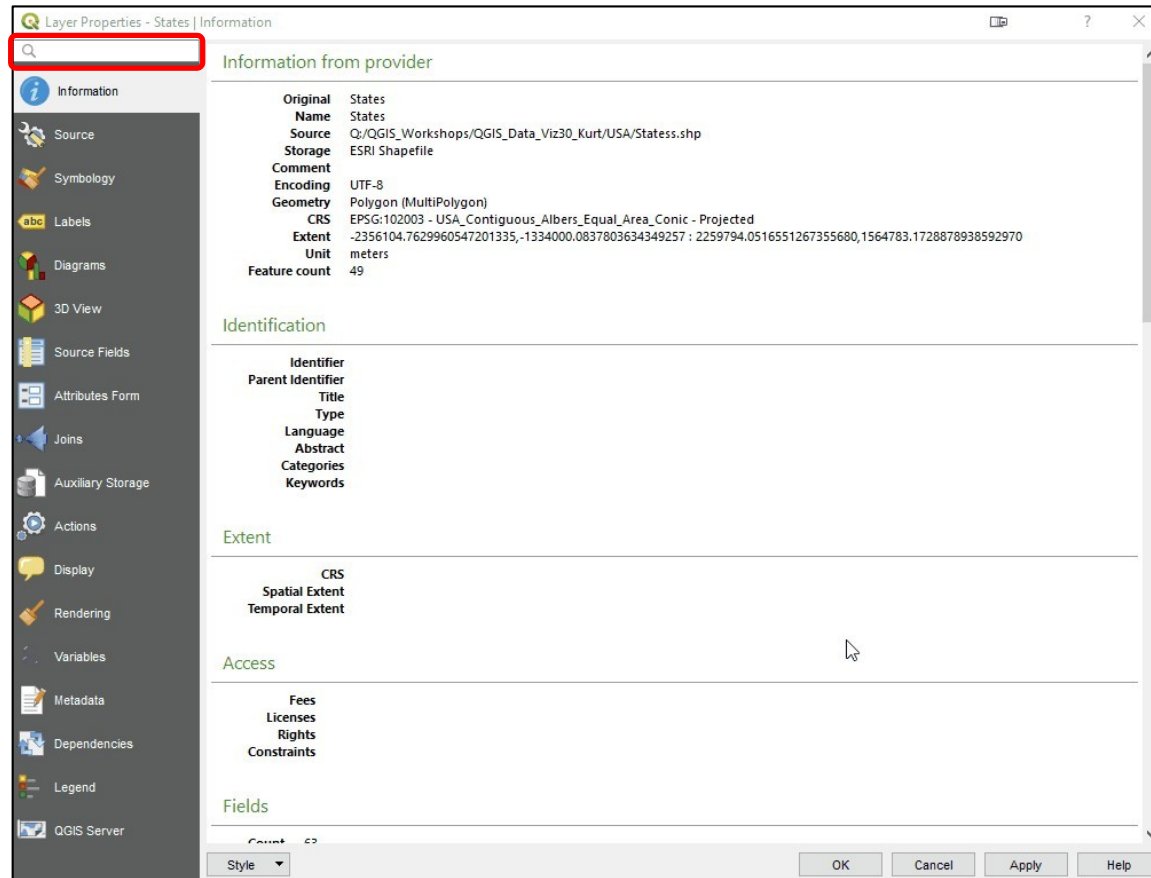
# Locator Bar

- Autocompletes
- Processing Tools
- Layers
- Features
- Actions
- Calculator



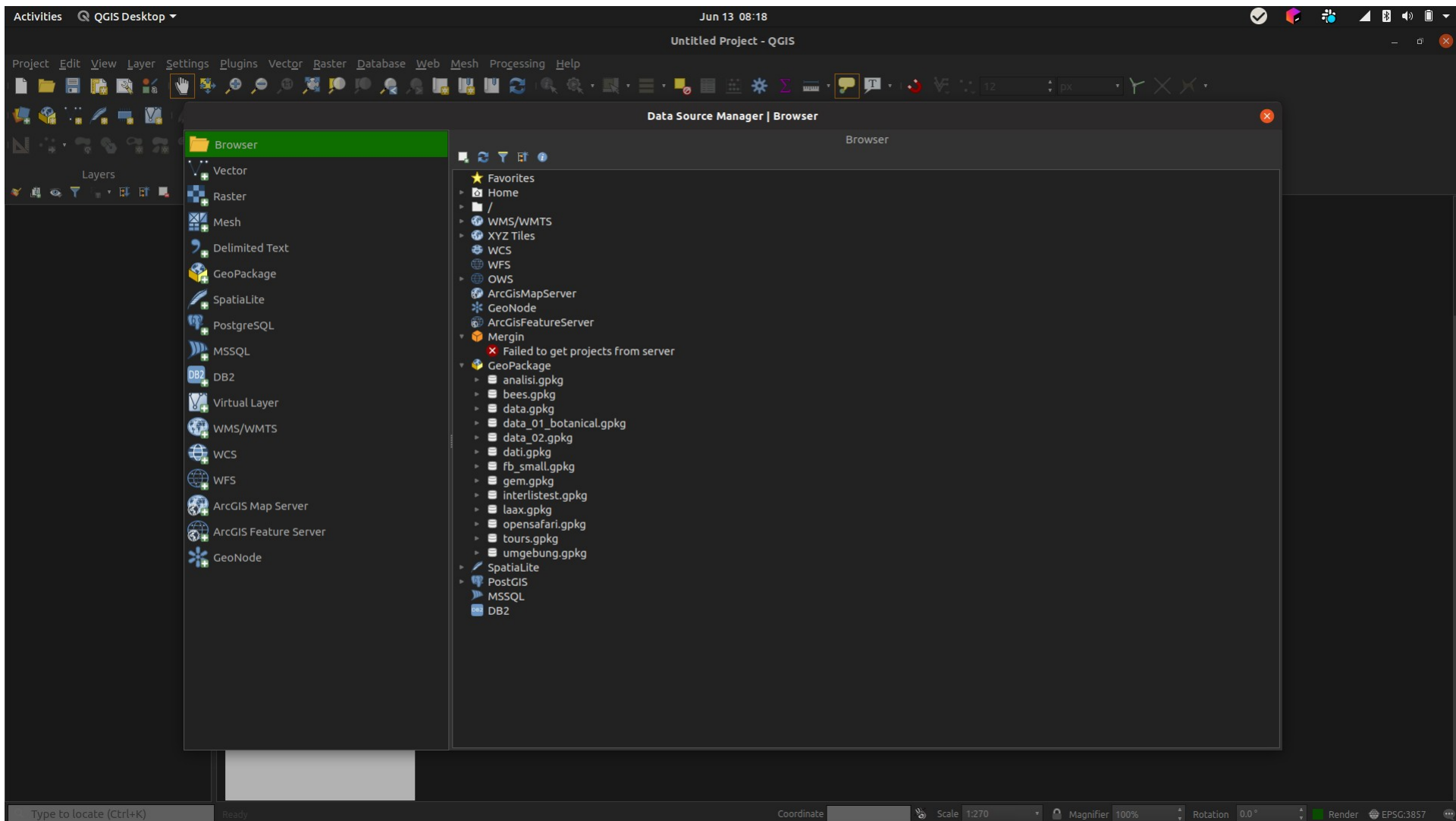
# Autocomplete Search Boxes Everywhere

- Processing Toolbox
- Project Settings
- Layer Properties
- Plugin Manager
- CRS's
- Functions

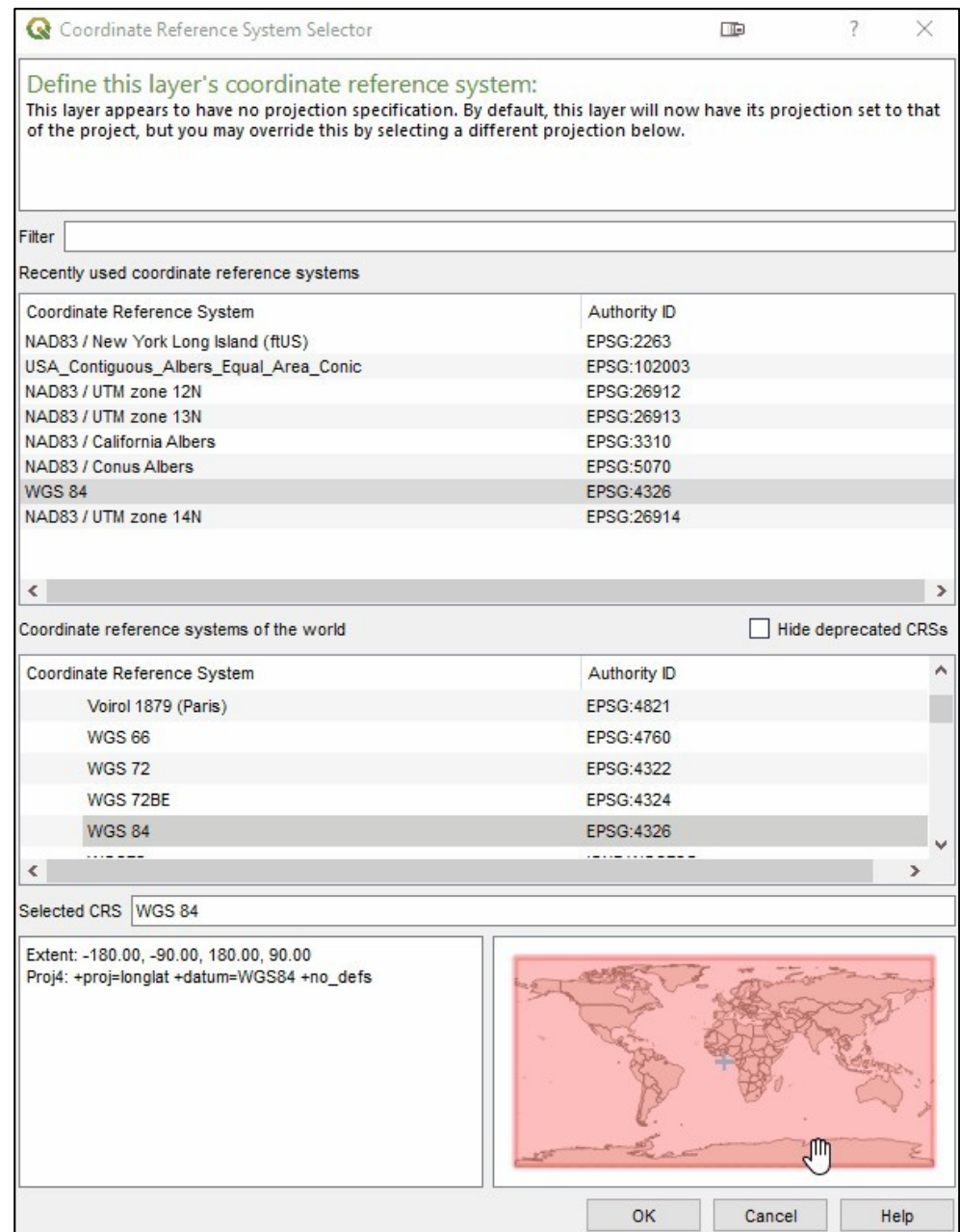




# Unified Data Source Manager



# Valid CRS Extends Preview

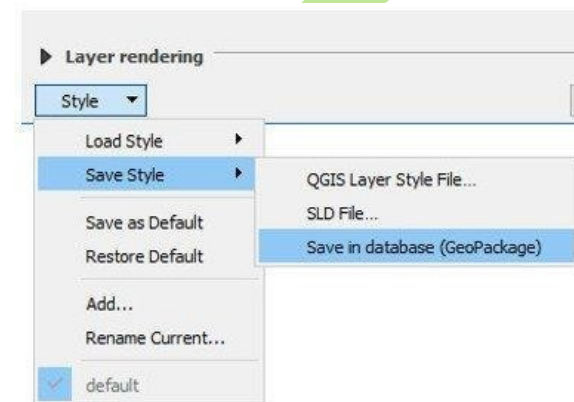




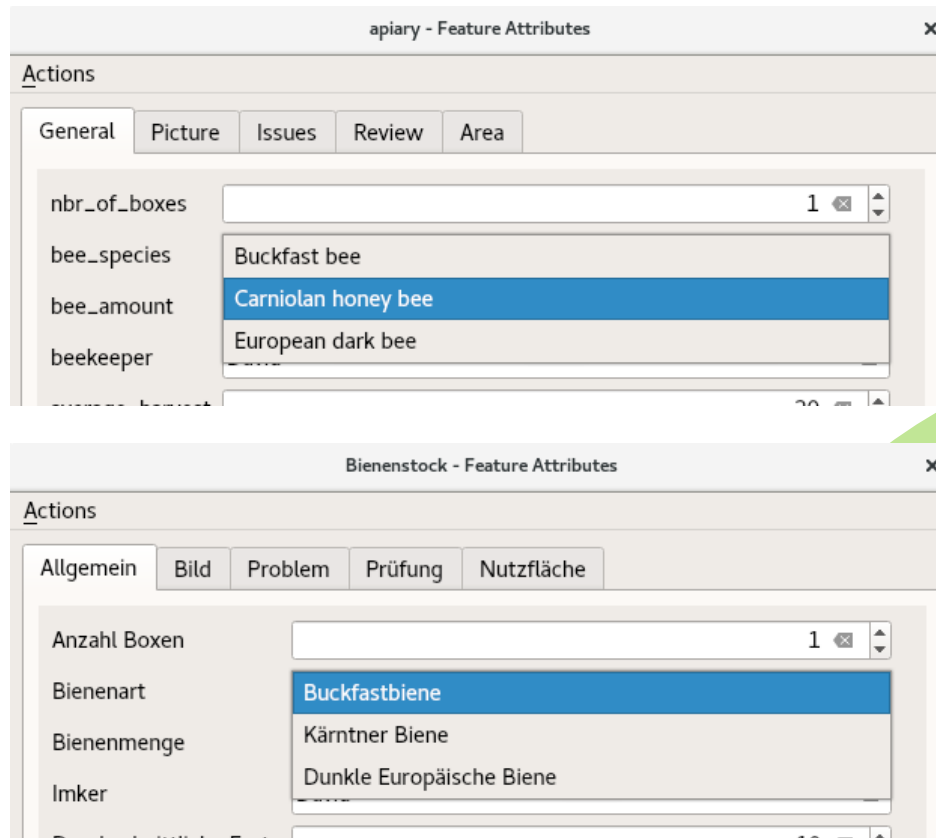
# Geopackage Improvements

- Standard format for processing and “Save As”
- Easier to save additional tables into existing Geopackages
- Integration in DB-Manager
- Save styles in GPKG
- <http://switchfromshapefile.org/>

I  SHP



# Projects Translation using Qt Linguist



# JSON/JSONB Type support

- JSON Data can be displayed in the widgets as “Key/Value” (maps), as “List” (arrays) or as text.

The image shows two GUI widgets for displaying JSON data. The top widget, labeled 'jvalue', has a '+' icon and a table with a single column titled 'Value' containing the numbers 1, 2, and 3. The bottom widget, labeled 'jbvalue', has a '+' icon and a table with two columns titled 'Key' and 'Value', containing the pairs (a, b) and (c, d).

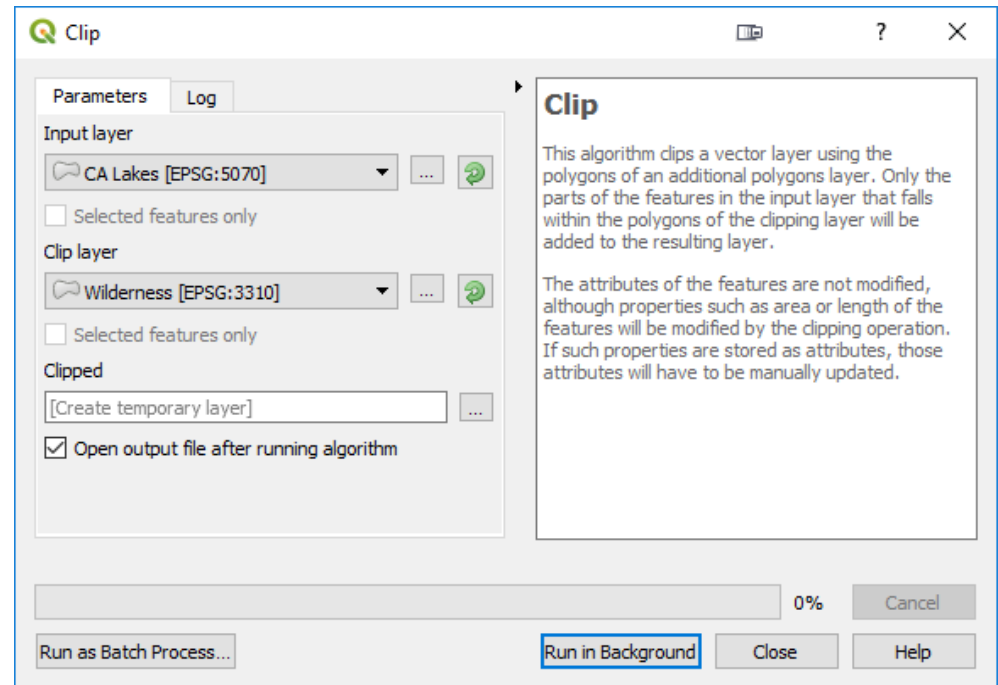
Value	
1	
2	
3	

Key	Value
a	b
c	d

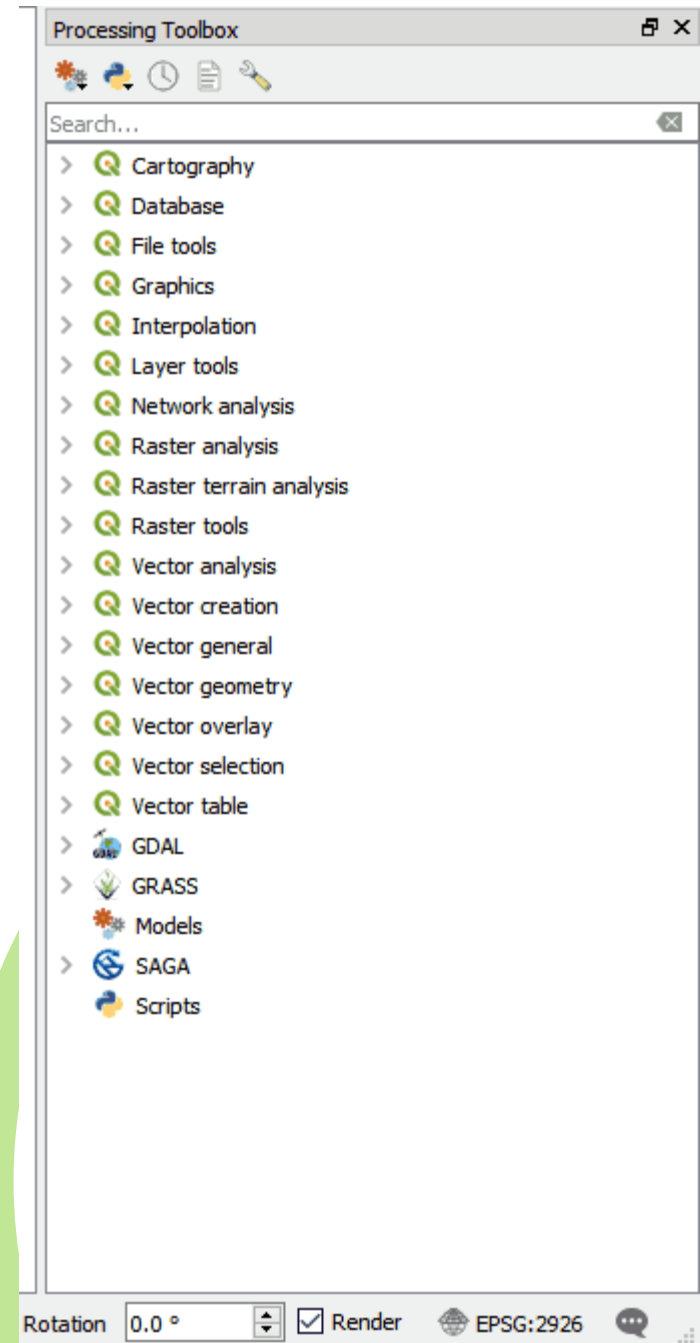
# Processing Improvements

- Processing was rewritten in c++
- Many tools now native c++ algs
  - Optimized
  - Faster
- All tasks Run in Background!
- Many new tools
- Better Documentation
- Automatic reprojection of layers in processing algorithms



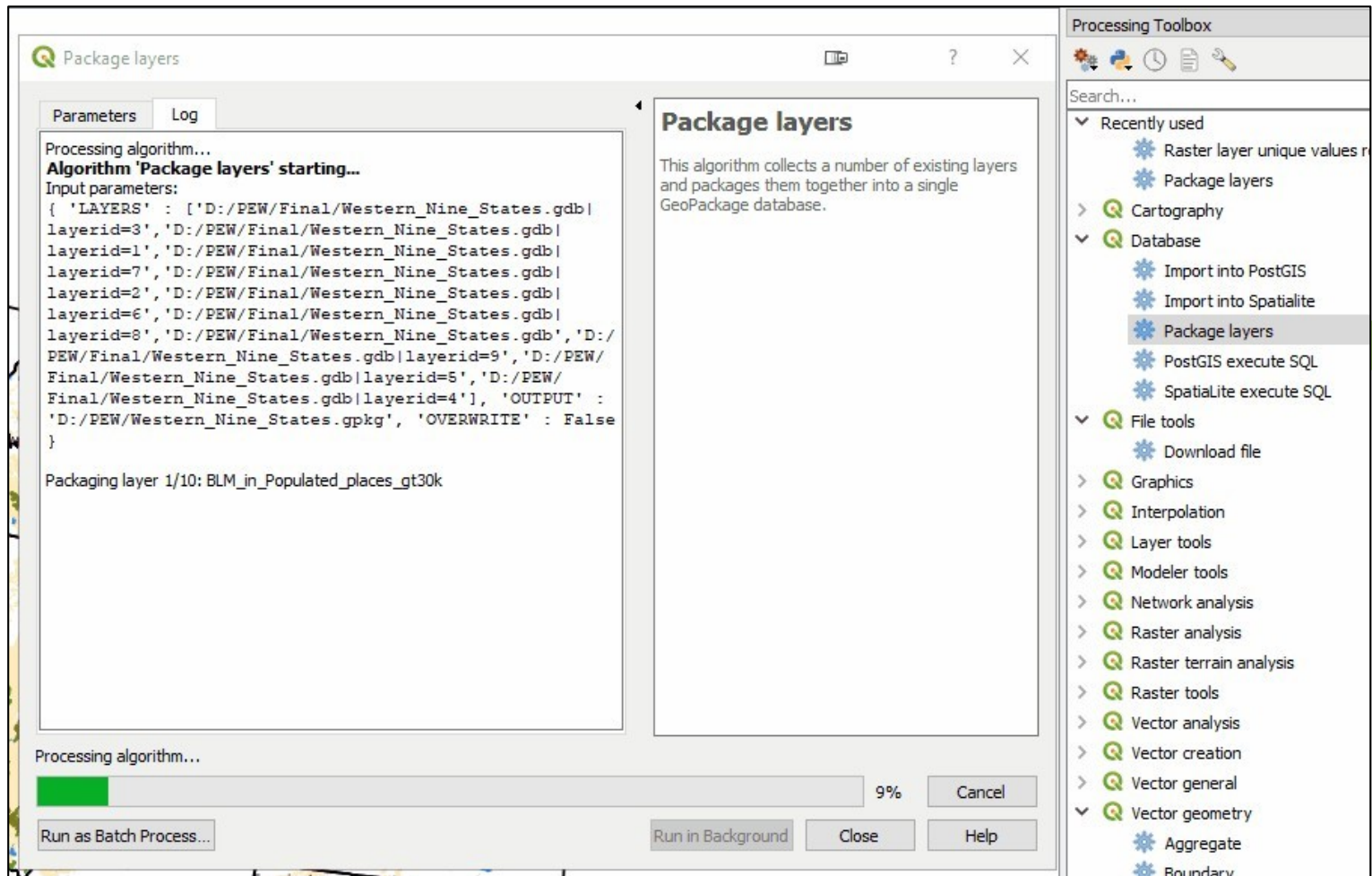
# Processing Toolbox

- Native QGIS algs
- 3rd Party Providers will become plugins
- Graphical Modeler
- Models can again be exported to Python



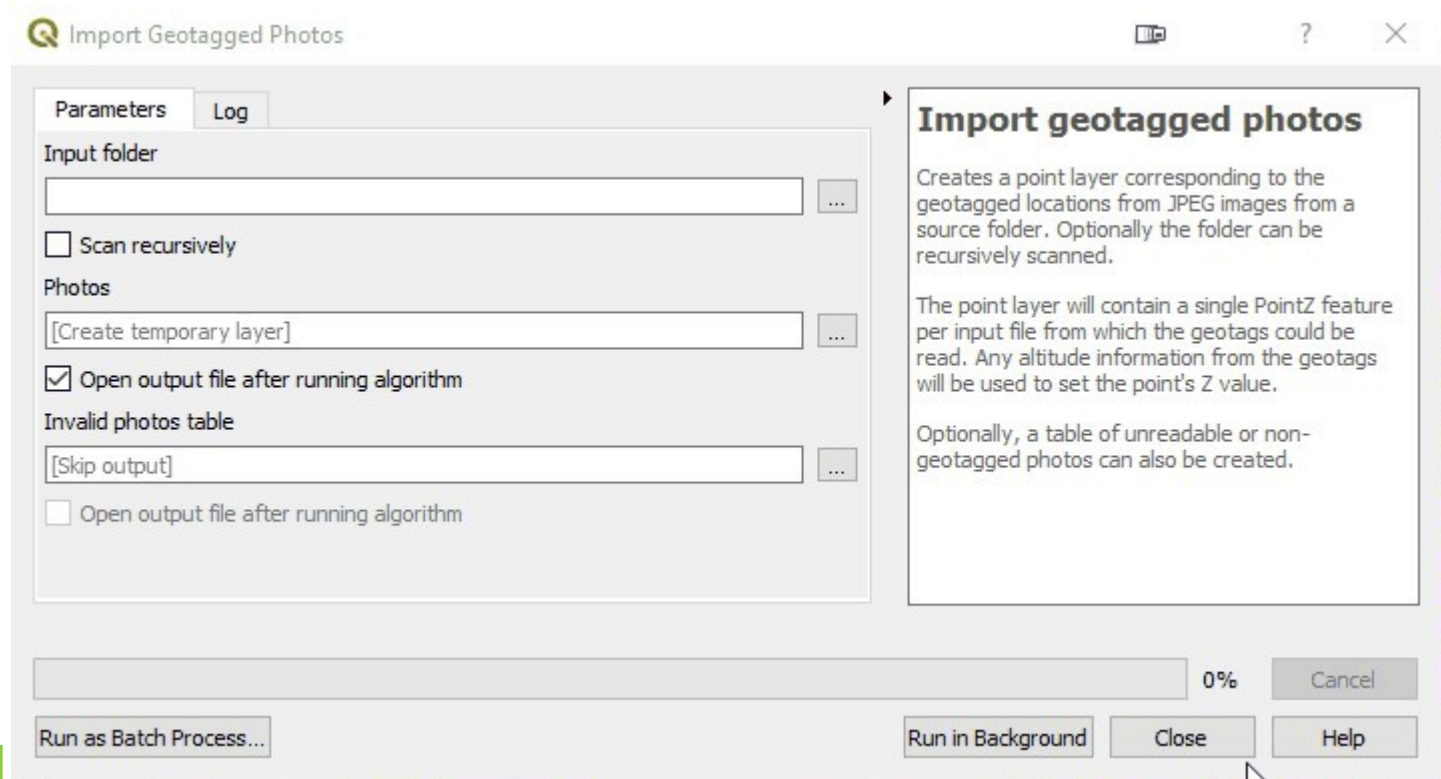


# Package Layers tool

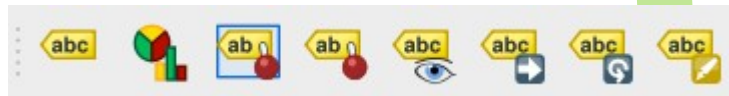
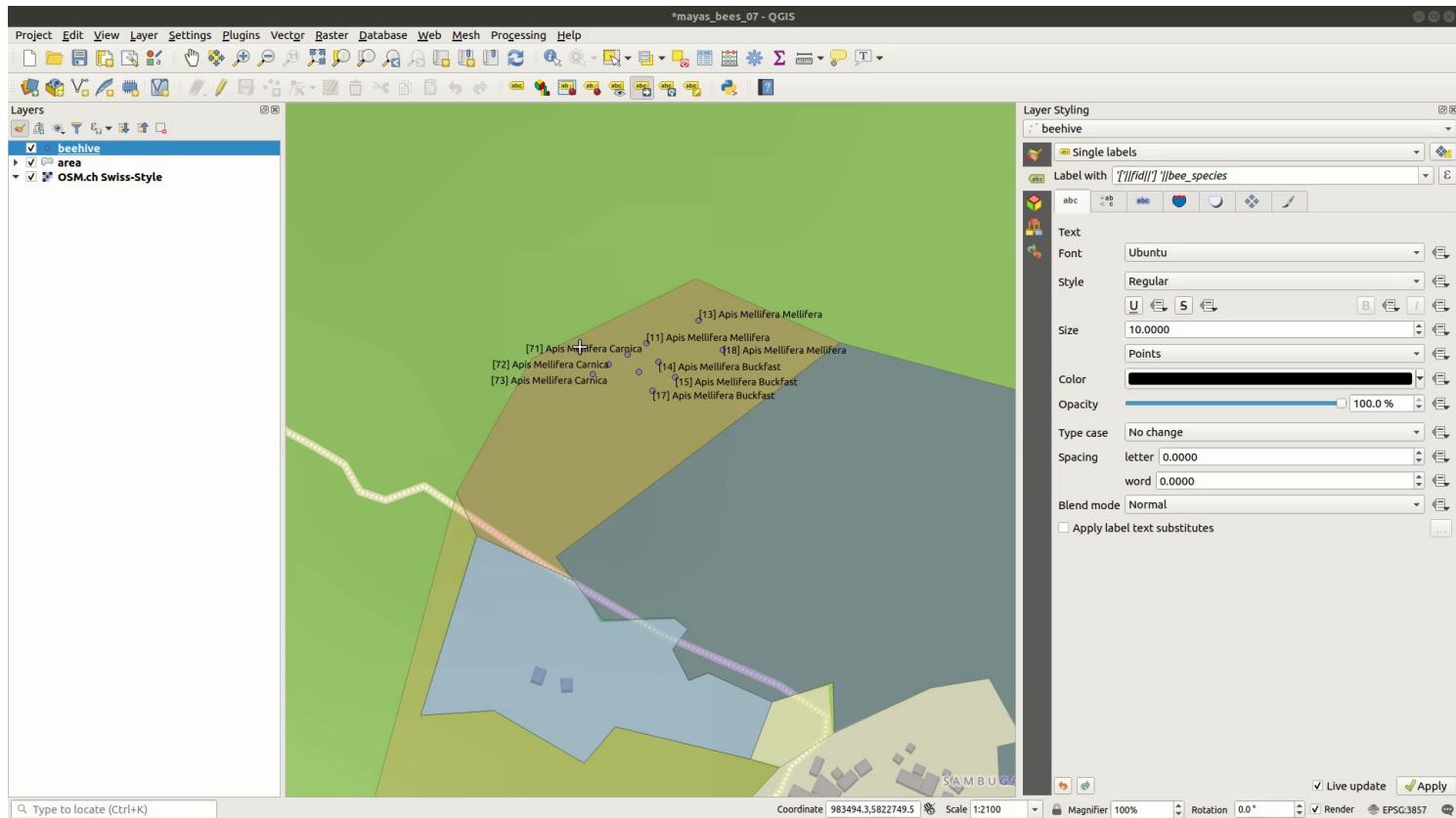


# Import Geotagged Photos

- Processing Toolbox → Vector Creation

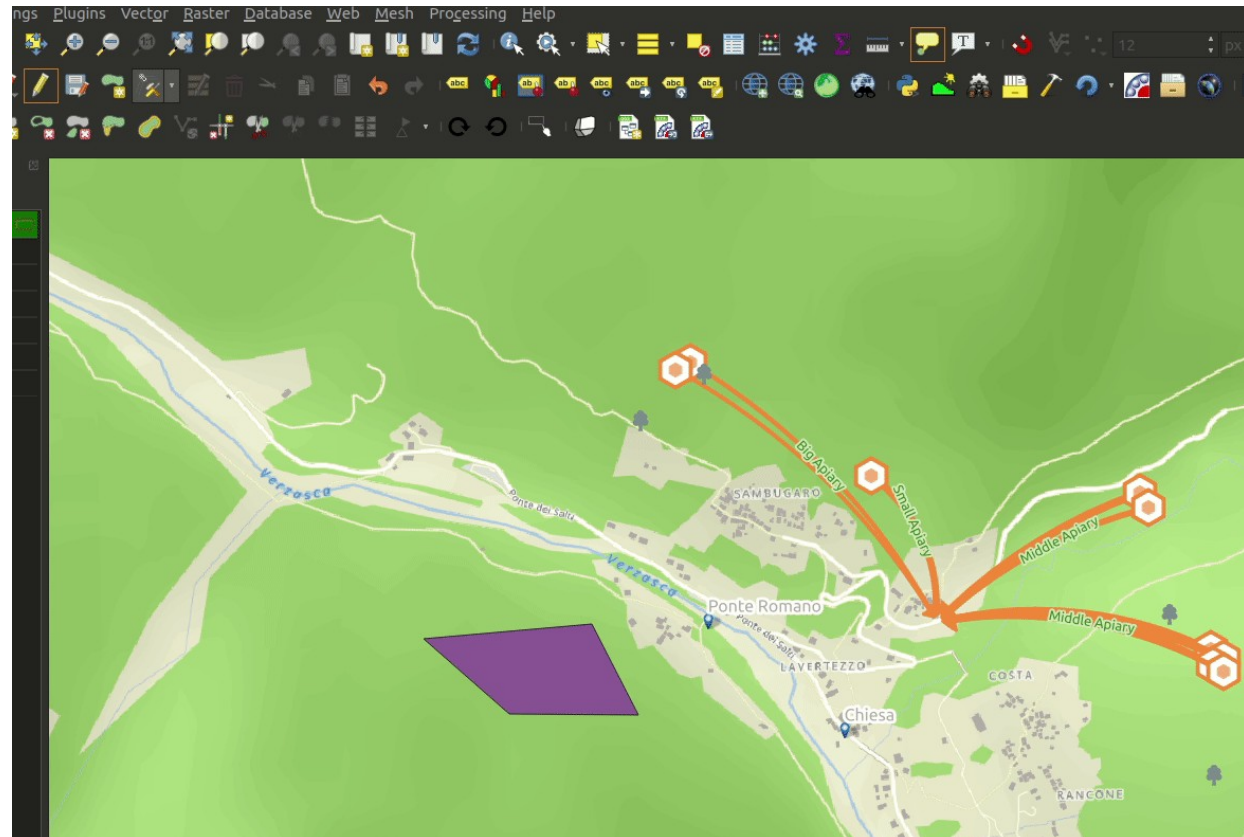


# Easy Custom Labeling

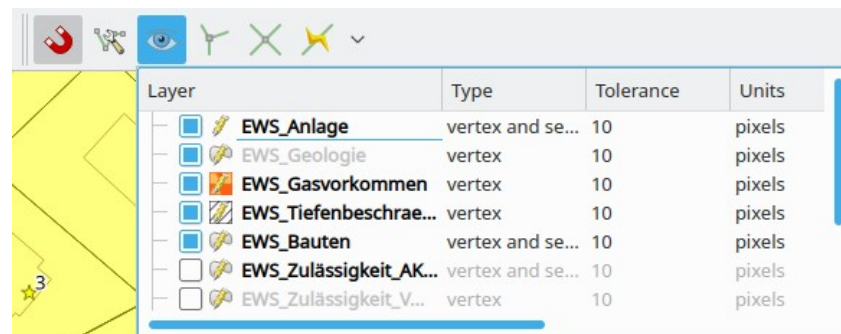
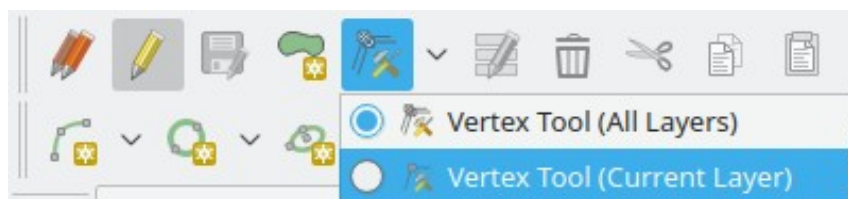


# Editing Improvements

- New Vertex Tool
- CAD Tools
- Tracing at offsets



# Editing tools enhancements

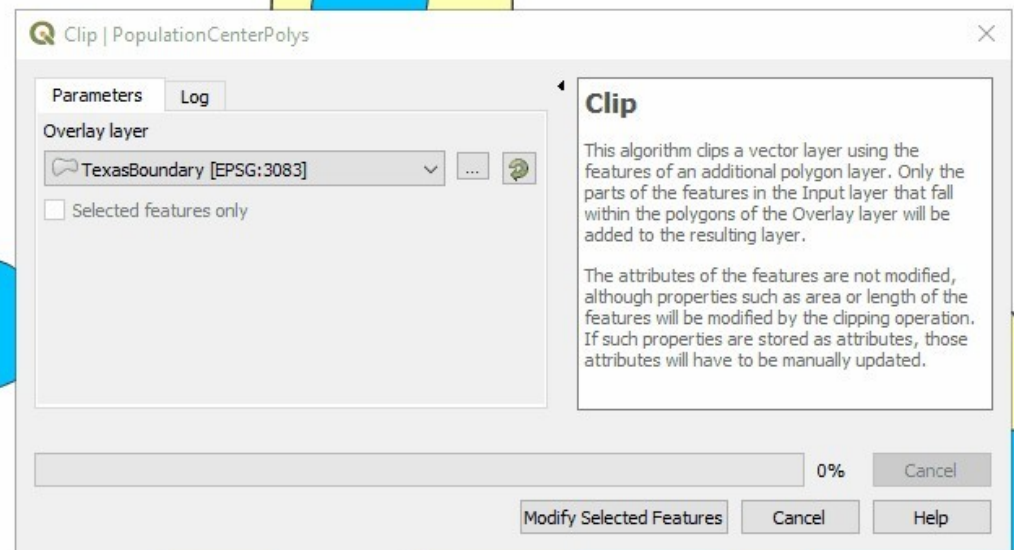


- MultiLayer or SingleLayer editing modes
- Edition of vertices of polygons and linestring
- Change from click-drag to click-click mode in order to allow numeric input
  - Range vertex selection in node tool (Shift-R). Selects all vertices between start and end-point
  - New modes to create mid-point vertices and to extend lines at the ends
- Node tool can be combined with “advanced digitizing” (construction) tool for precise placement of vertices
- Tracing now allows offset for parallel lines
- Snapping settings are available in toolbar



# Editing In Place

- Run processing tools against layers without having to produce a new output layer.

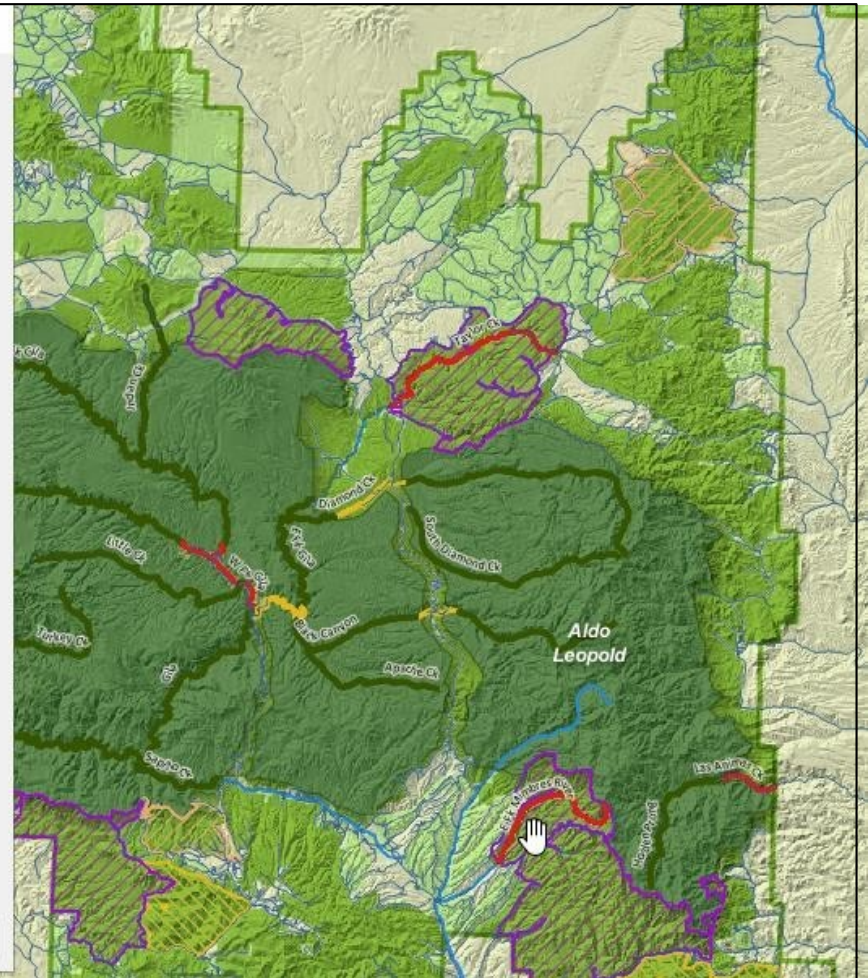


# Select Features By Value



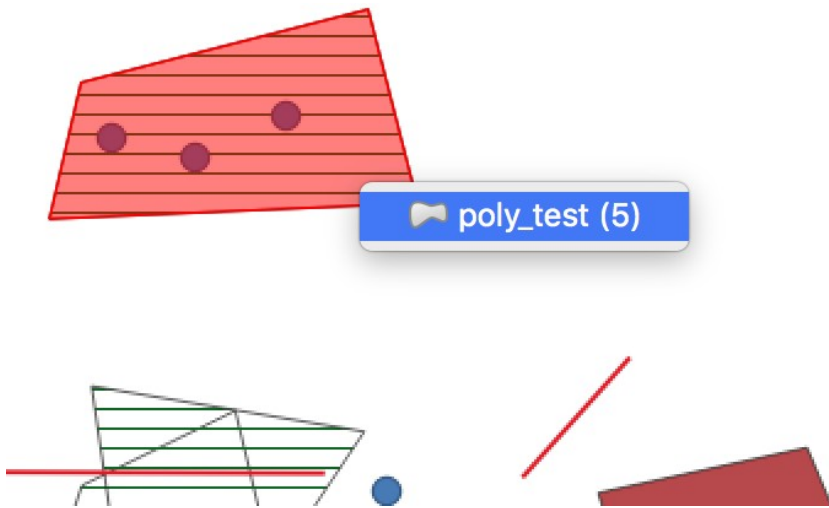
**Select Features by Value**

PERMANENT_	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
FDATE	<input type="text"/>		Exclude field
RESOLUTION	<input type="text"/>		Exclude field
GNIS_ID	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
GNIS_NAME	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
LENGTHKM	<input type="text"/>		Exclude field
REACHCODE	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
FLOWDIR	<input type="text"/>		Exclude field
WBAREA_PER	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
FTYPE	<input type="text"/>		Exclude field
FCODE	<input type="text"/>		Exclude field
SHAPE_LEN	<input type="text"/>		Exclude field
PWSR	<input type="text"/>		Exclude field
PWSRType	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
Miles	<input type="text"/>		Exclude field
Label	<input type="text"/>	<input type="checkbox"/> Case sensitive	Exclude field
orig_ogc_fid	<input type="text"/>		Exclude field

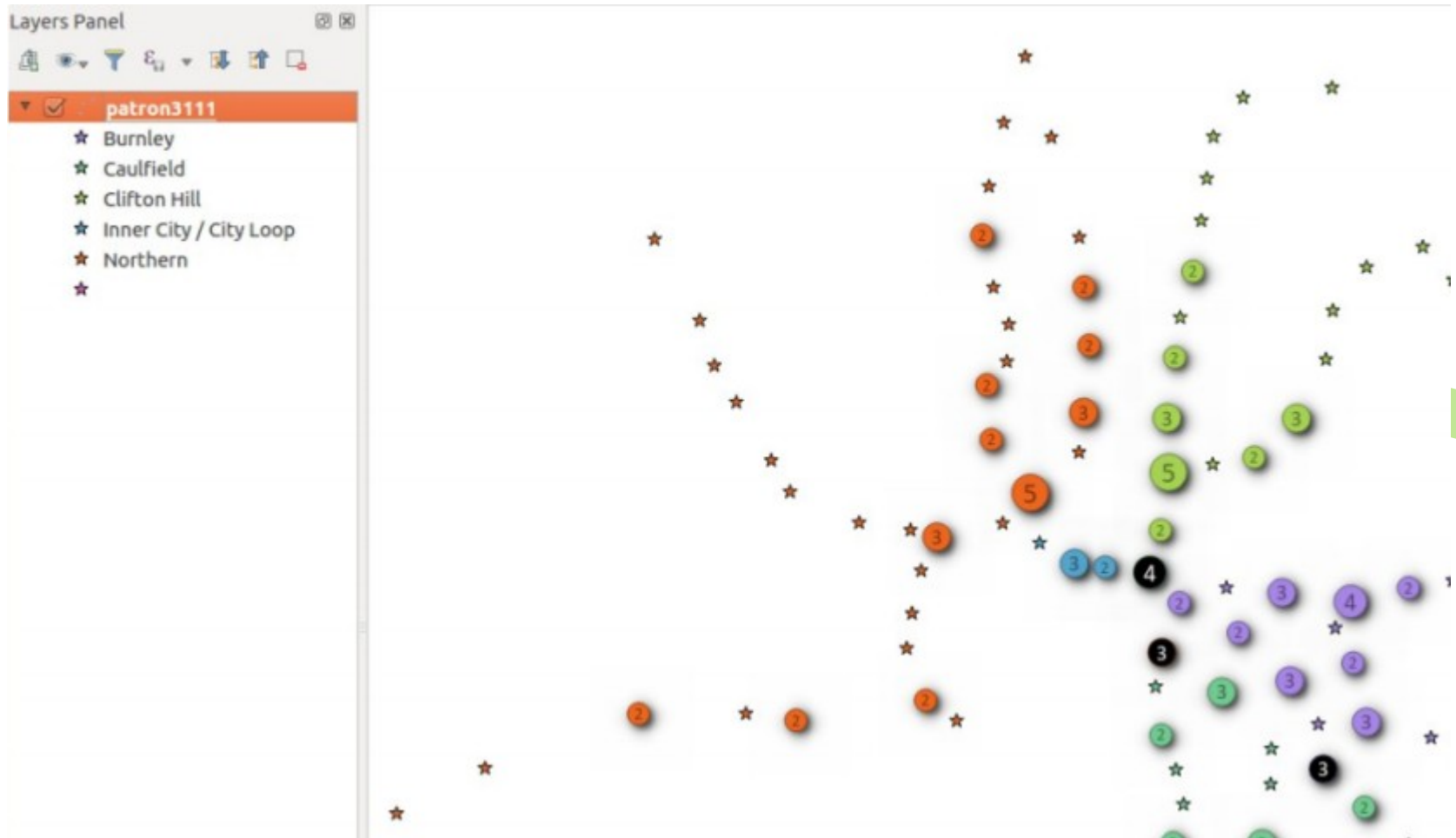


# Select Features based on existing polygon

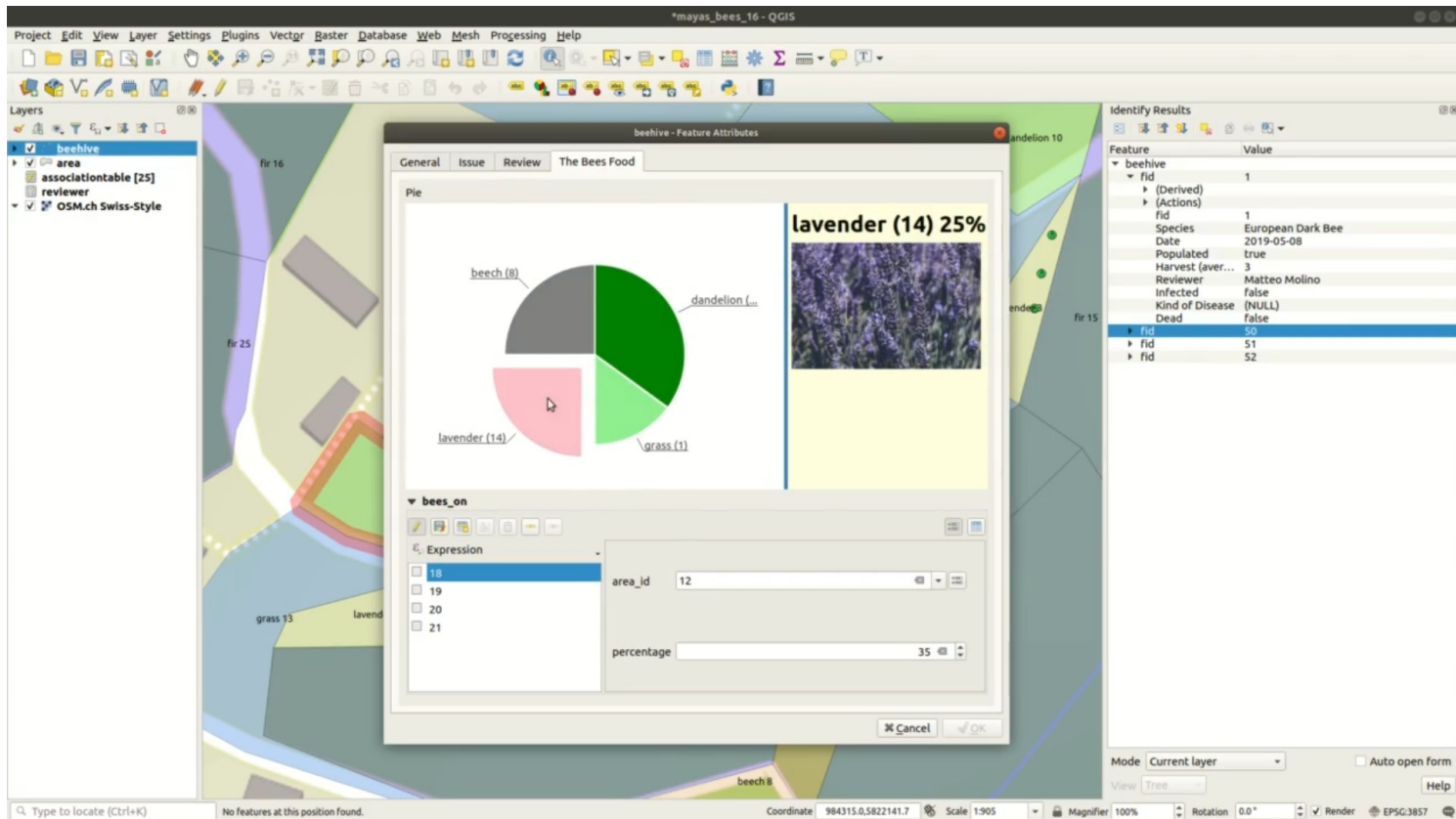
- allows user to right click on the map and pick an existing polygon feature at that location from popup menu - that polygon will be used as input for selection or identification.



# Point Cluster Renderer

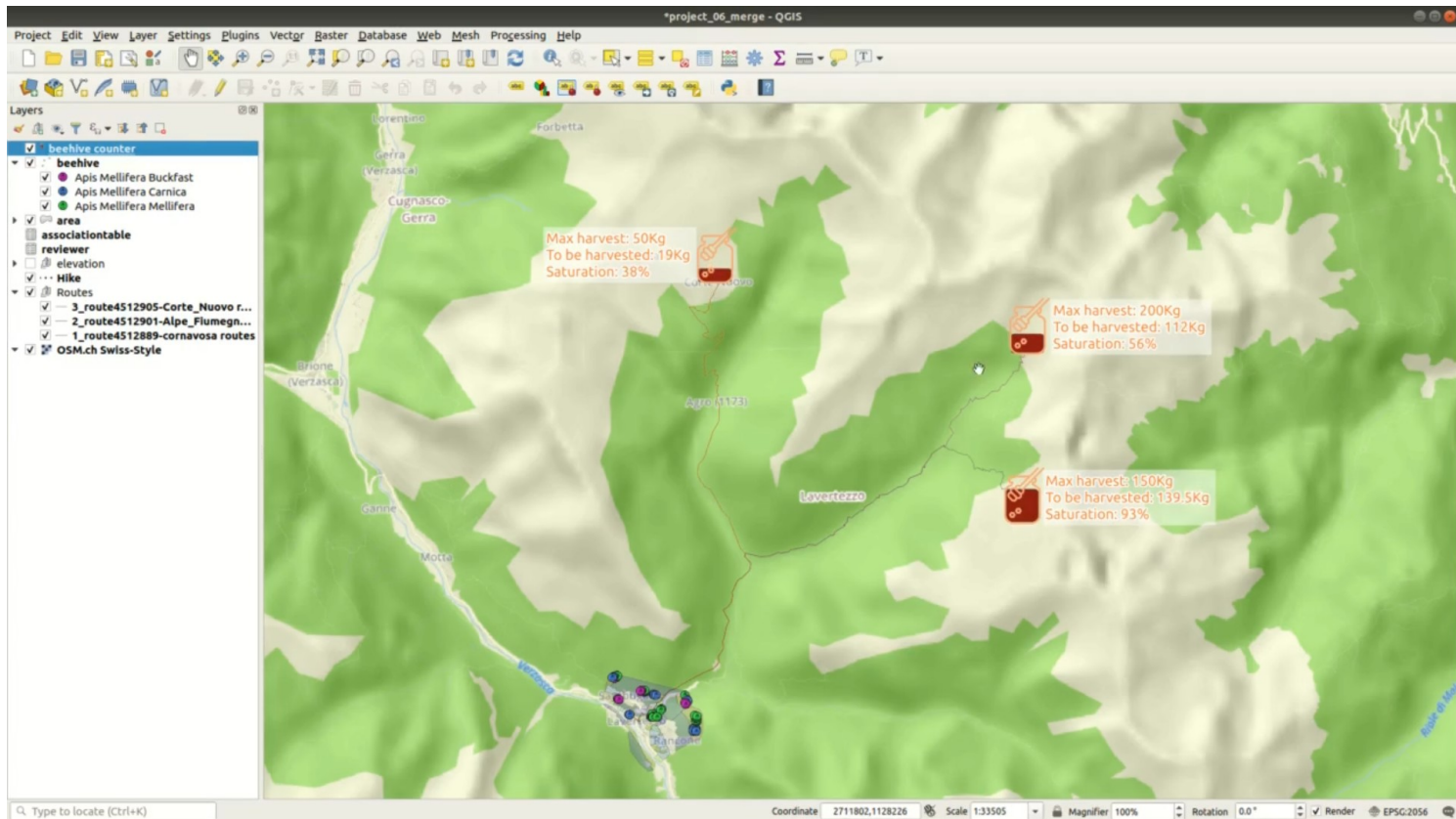


# QML widget



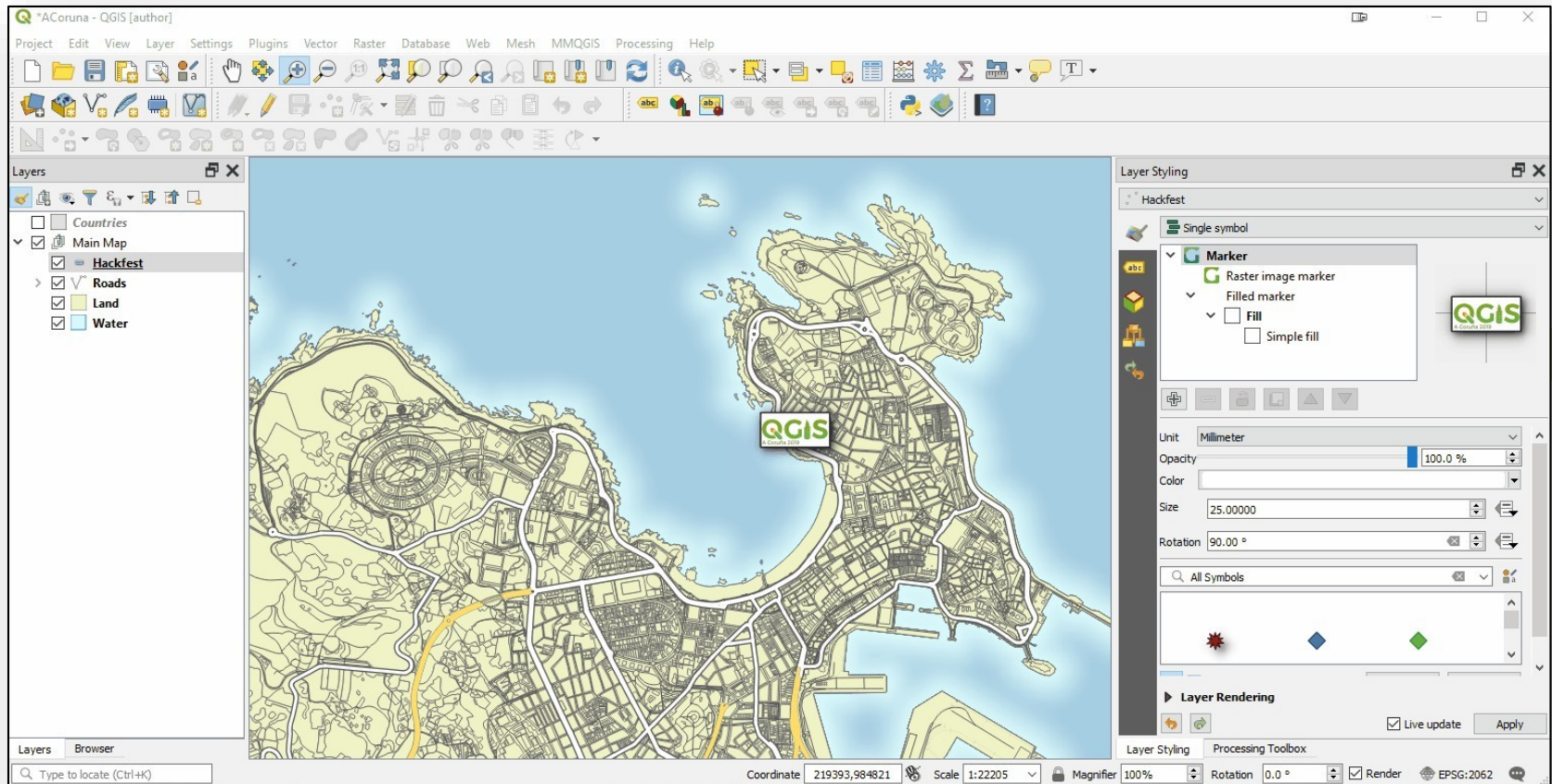


# Live layers





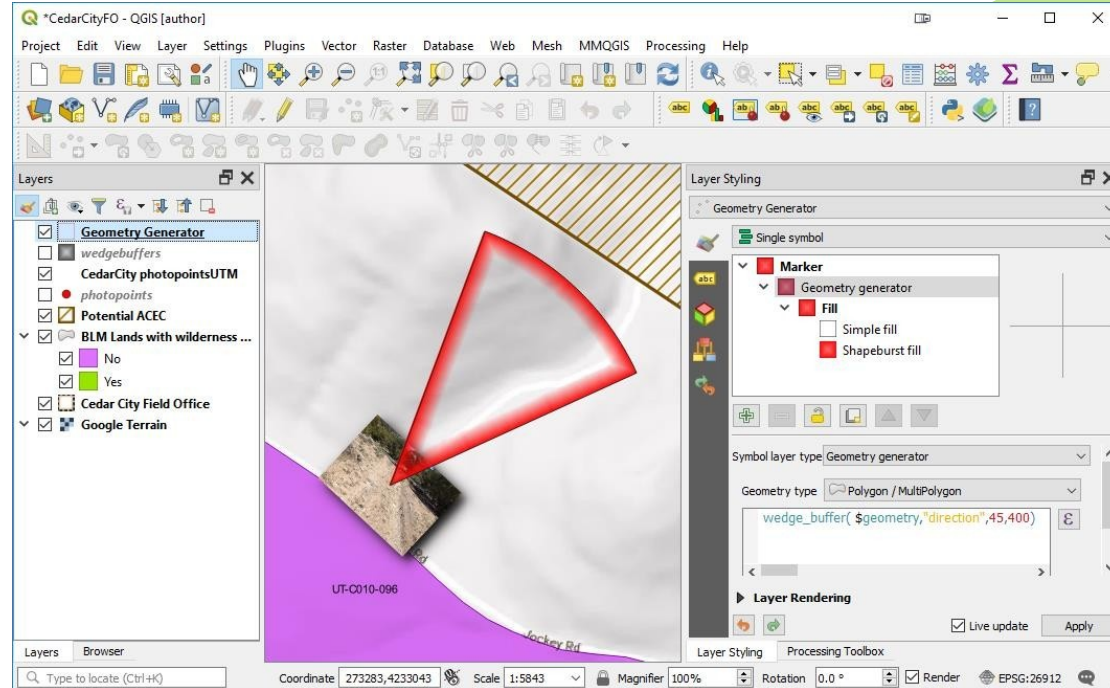
# Raster Image Marker



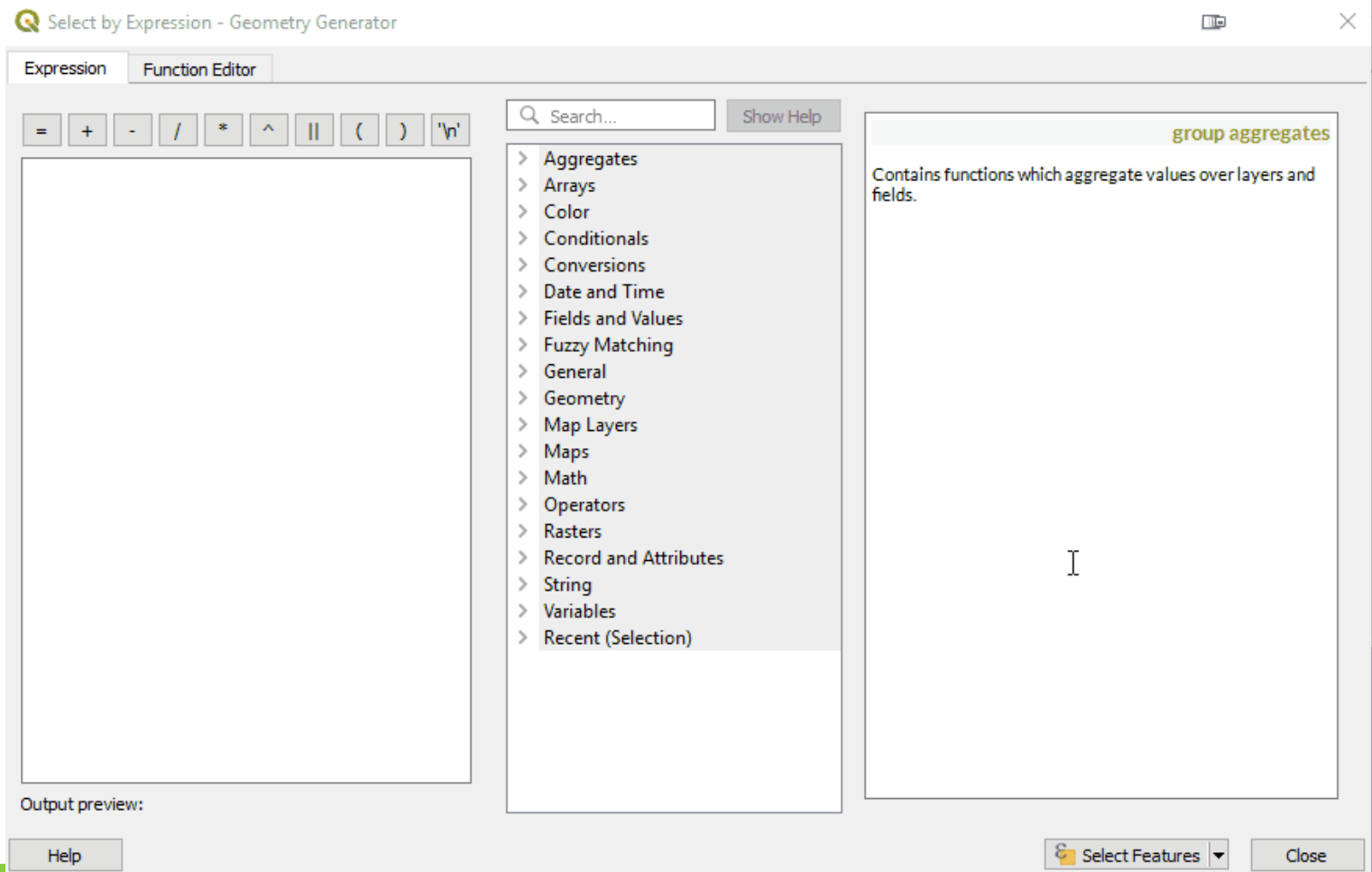


# Raster Image Marker

- Use the Raster Image Marker with output from the Import Geotagged Photos tool with Data Defined Overrides for Angle & Size along with Wedge buffer geometry generators for some great effects



# Even More Expressions | Variables & Data Defined Overrides





# Print Composer

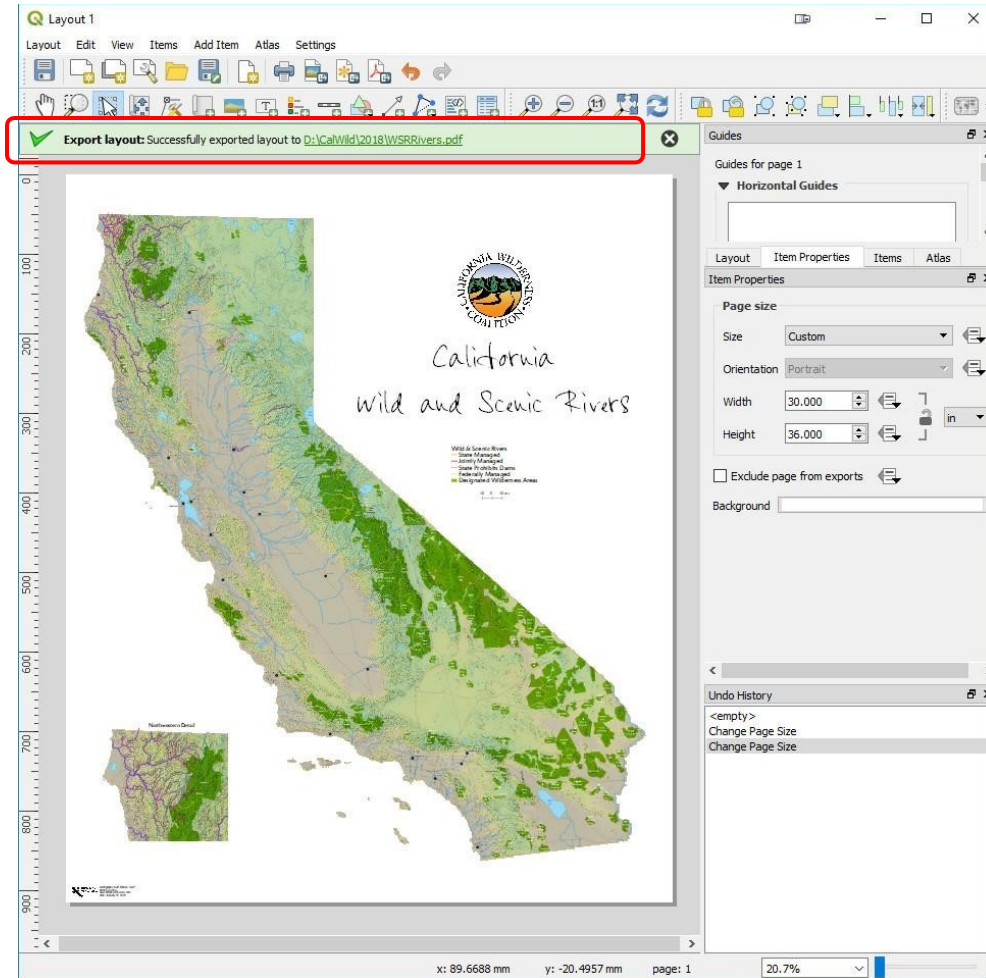
Completely rewritten

Can have multiple sheets per

layout of different orientation and sizes

New Reports

Hyperlinks to export folder

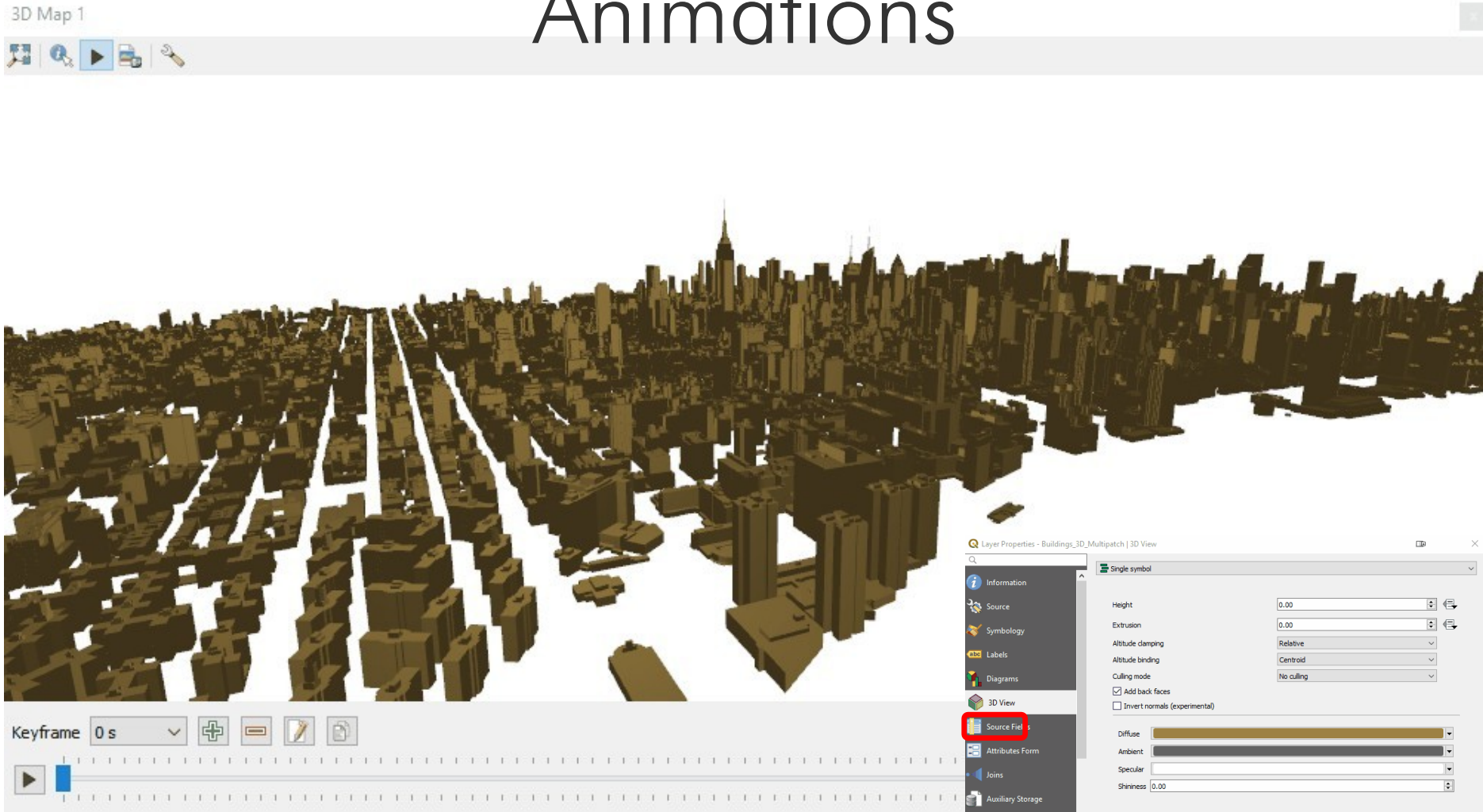


# Print Composer...

- Scalebars more user friendly
- All units available including inches (mm, cm, m, in, ft, pt, pica & px)
- Better grid snapping
- Change CRS of Layout independent of QGIS map
- Exposed to plugins!
- New Map Extent Toolbar



# 3D Extrusion of Vector Data & Animations

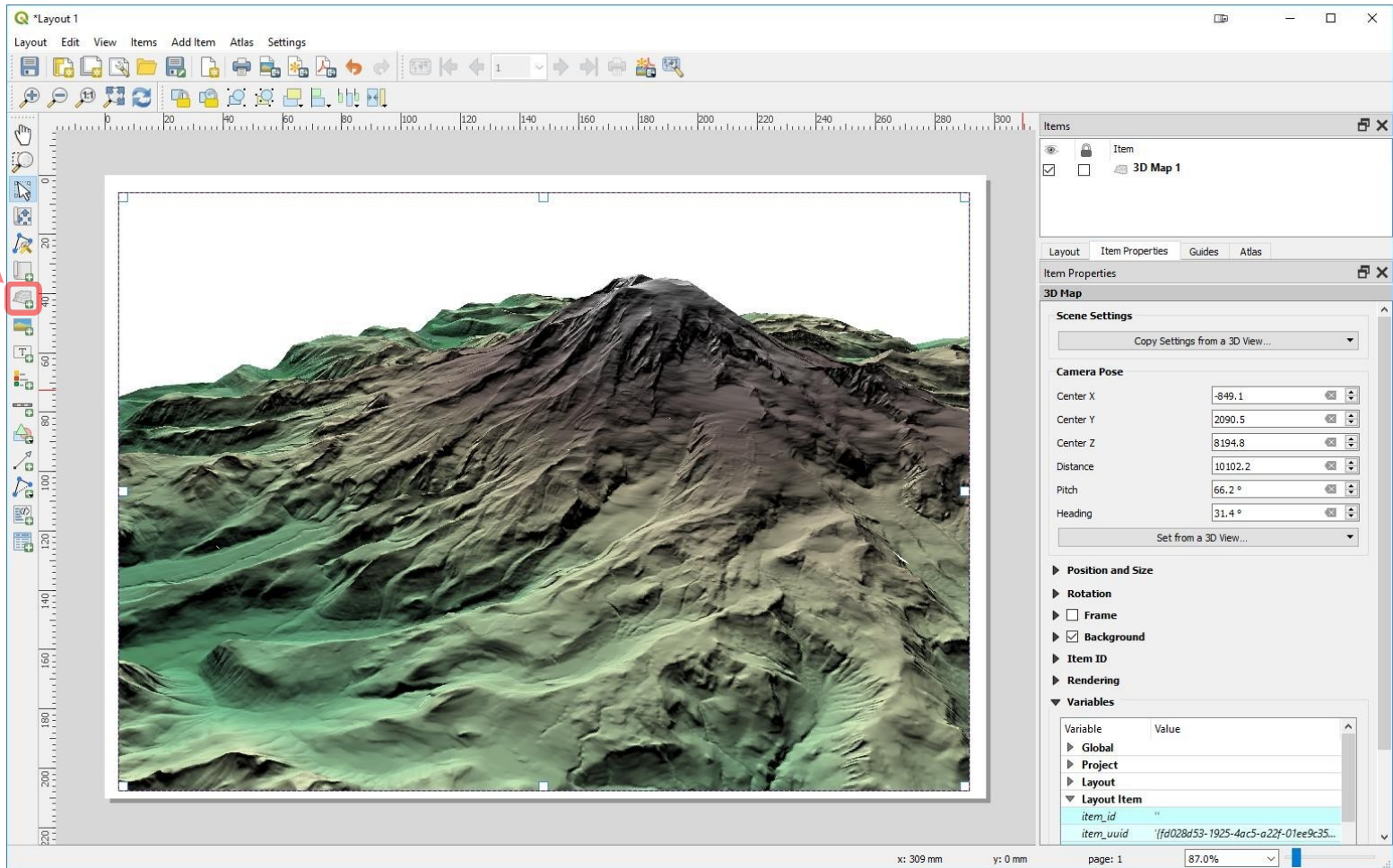


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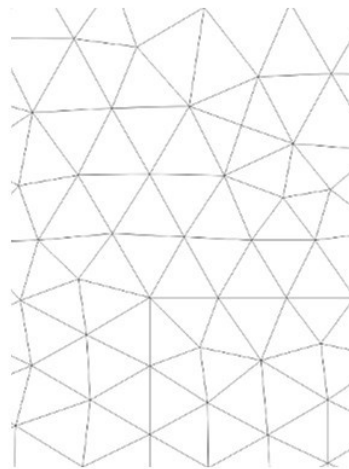


# 3D Support in Print Layout

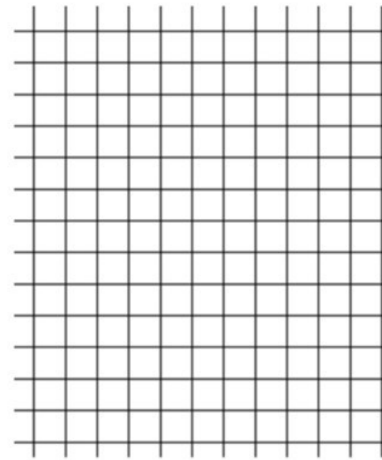


# Support for Mesh Data

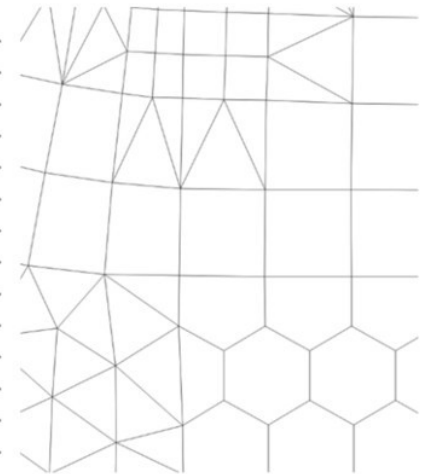
- Used for meteorological, hydrological, and oceanographic datasets and model outputs.
- Mesh Calculator
- Supports Identify features
- 3D support for mesh data



Triangular mesh

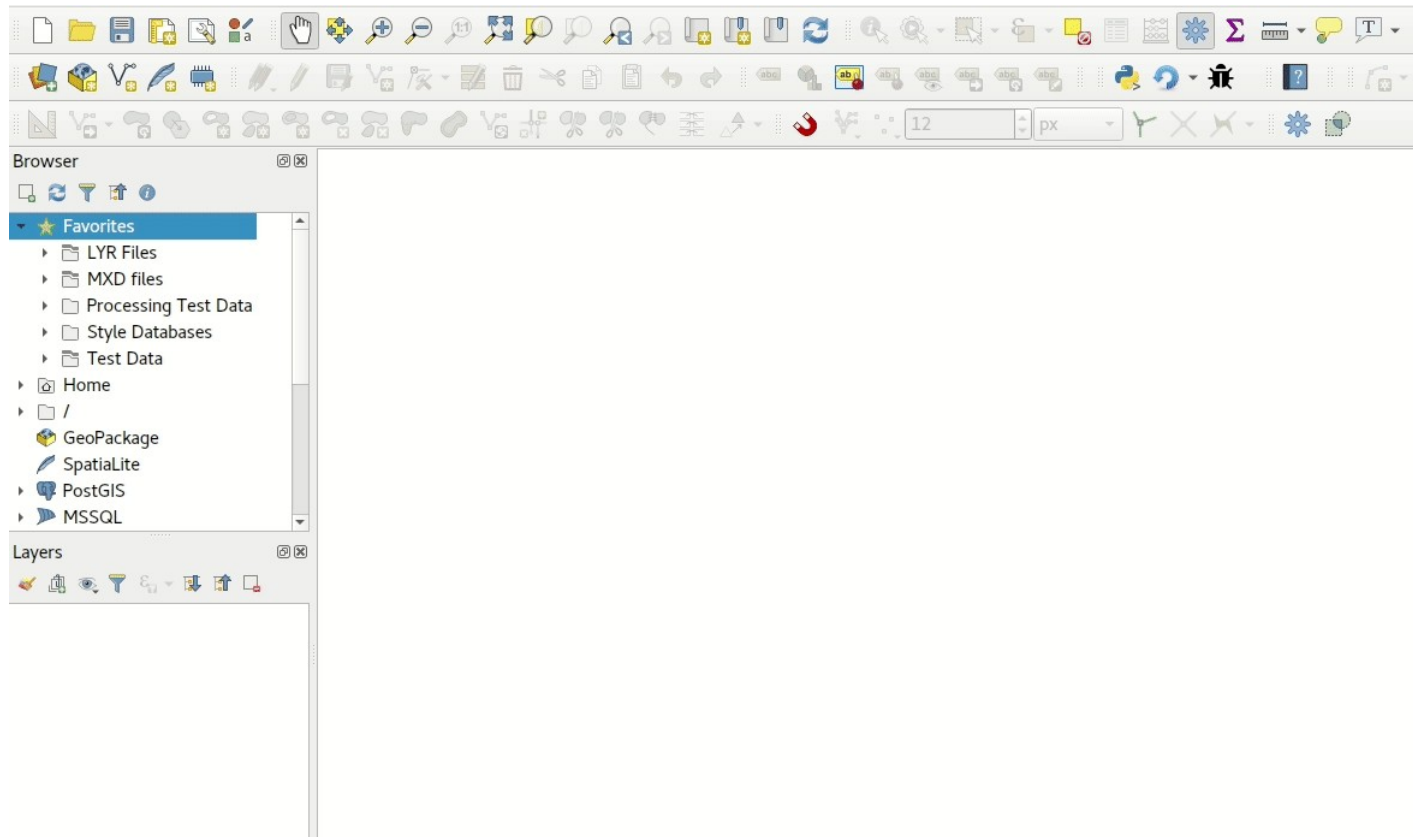


Quad mesh (regular grid)



Mesh with mixed element types

# ESRI .mxd to .qgs (Beta, in fundraising)



# QGIS Server

- Totally refactored, rewritten and modularized
- Now a OGC reference implementation for WMS
- Tested as compliant against OGC WMS testsuit
- Much more unit tests
  - Ongoing work
  - Compliance work for WFS ongoing
  - WMTS support
  - Performance: currently still slightly worse than version 2x, but being worked on



# 3.8 highlights

- Geometry generators for labeling
- Export 3d animations
- Terrain from online sources
- Configuration of field of view angle of camera
- HTML Form Widget
- Save layer styles into GeoPackage option for Package Layers algorithm
- Generate raster XYZ tiles
- Resurrection of the OTB provider
- Improved modeler UI
- QGIS projects inside geopackage files
- Much Improved ArcGIS MapServer Handling
- SQL Server: handle v2 geometries, including curved and Z/M geometries
- Support for plugin dependencies



# 3.8

- Force Cartesian Measurements when Measuring Distances/Areas
- Save to Template Button
- Improved “Zoom to Native Resolution” behavior
- Drag and Drop Layers to Map Layer widgets
- Multi-character strings for font markers
- Point Displacement label distance factor
- Hash Line symbol type
- Average line angles for marker and hashed line symbology
- Offset settings for point pattern fill symbol layers
- Live Effects Blur Radius is now hi-dpi friendly
- Geometry generators for labeling
- Label Map Tools now use click-click behavior
- Wide lines and polygon edge highlighting
- Export 3d animations
- Terrain from online sources
- Configuration of field of view angle of camera
- Distribute spacing between items evenly
- North Arrow Creation
- Order by support for expression aggregate and concatenation functions
- Simplified variant of “attribute” function
- Retrieve vertices from the end of geometries
- New expression functions
- New aggregation method: concatenate\_unique
- Floating widget for advanced input next to cursor
- Chained add vertex at the endpoint
- Improvements in the vertex editor
- Allow browsing feature list
- HTML Form Widget
- Form widgets custom background color



# 3.8 bis

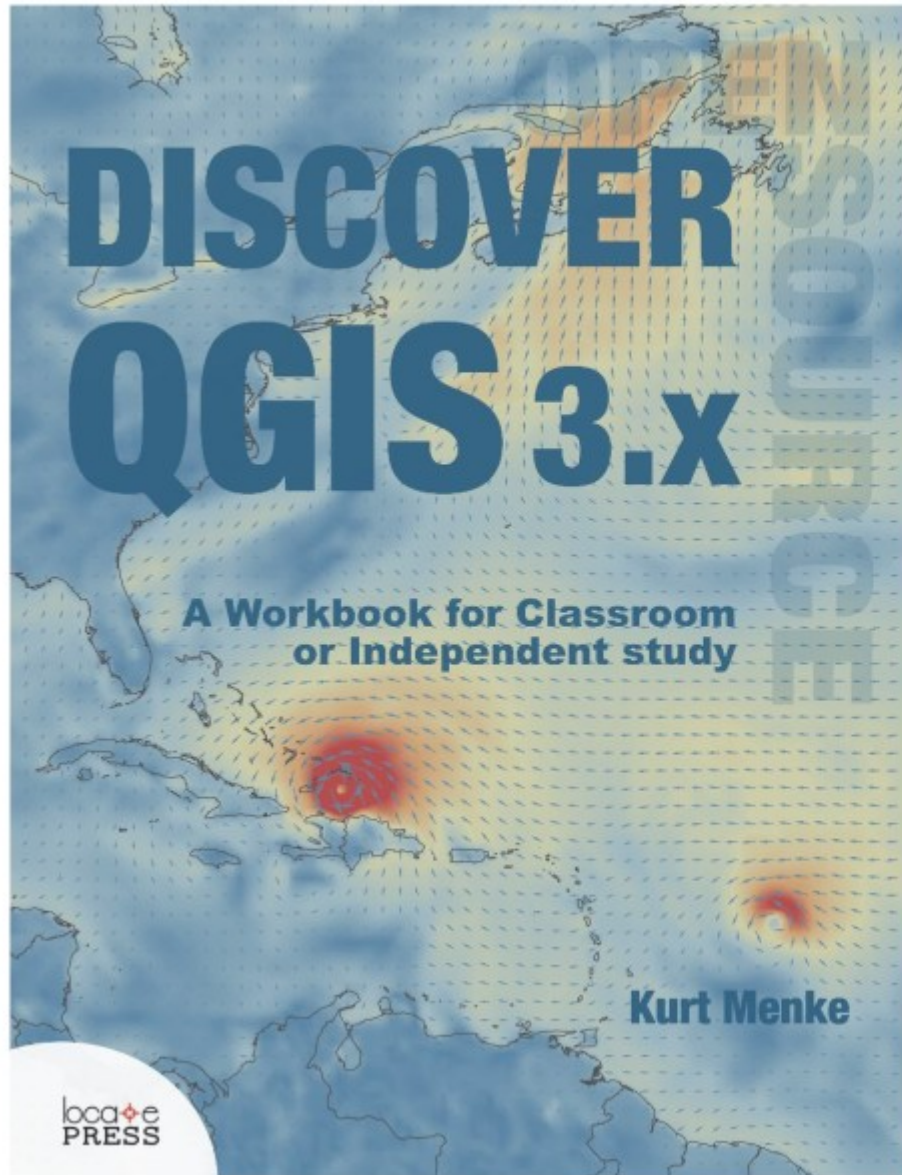
- Browse through features in the attribute table form view
- Add "Save layer styles into GeoPackage" option for Package Layers algorithm
- Overlap Analysis
- Allow rounding values in Extract Layer Extent
- New options for autofilling batch Processing
- Generate raster XYZ tiles
- Resurrection of the OTB provider
- Expression variables for a model
- Improved modeler UI
- Flagging algorithms with known issues
- Raster Boolean logical OR/AND algorithms
- New input parameter types for Print Layouts and Print Layout Items
- New parameter type for Map Scales
- Improved "point" parameter handling
- New "Print Layout Map Extent to Layer" algorithm
- Add X/Y fields to layer
- "Join attributes by nearest" algorithm
- Grass r.geomorphon algorithm
- GDAL pansharpener algorithm
- New fields prefix parameter for overlay algorithms
- Direct access to sheets from XLSX/ODS files
- QGIS projects inside geopackage files
- Much Improved Coordinate Transform Handling
- postgres provider: add support for generated identity columns
- String List support for compatible layers
- Much Improved ArcGIS MapServer Handling
- SQL Server: handle v2 geometries, including curved and Z/M geometries
- WMS: Define one filter for several layers
- Allow configuring size for GetLegendGraphics
- Support for plugin dependencies
- REGEXP SQL syntax support for spatialite provider and python connections
- Nearest Neighbour search in QgsSpatialIndex
- Support for curves in DXF export

# Changelogs

- <https://changelog.kartoza.com/en/qgis/version/3.8>
- <https://changelog.kartoza.com/en/qgis/version/3.6.0>
- <https://changelog.kartoza.com/en/qgis/version/3.4-LTR/>
- <https://changelog.kartoza.com/en/qgis/version/3.2.0>
- <https://changelog.kartoza.com/en/qgis/version/3.0.0>

# Shameless Plug #1

**Spring 2019**



- ✓ Updated for QGIS 3.6
  - ✓ A workbook for classroom or independent study
  - ✓ Lab exercises based on the GeoAcademy
  - ✓ Data, Discussion questions & Solution files included
  - ✓ Challenge exercises
  - ✓ Learn enhanced workflows with QGIS 3.x
  - ✓ Covers Spatial analysis, Data management & Cartography
  - ✓ New section → Advanced Data Visualization
    - Blending modes | Live layer effects | Expression-based symbology | Geometry generators | Time Manager | 3D | Mesh data
  - ✓ Available in Print and e-Book
  - ✓ 400 pages
  - ✓ \$35
- Appendices**
- Keyboard shortcuts
  - Useful plugins
  - Getting involved



**BIRD'S EYE  
VIEW GIS**

**locate  
PRESS**  
Open Source "Your" Books & Training

<https://locatepress.com/dq3>



# Shameless Plug #2



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# Shameless Plug #3

[https://opengis.ch/maya\\_trailer\\_foss4g.mp4](https://opengis.ch/maya_trailer_foss4g.mp4)



# Thanks! Questions?

Get in touch  
[@mbernasocchi](https://twitter.com/mbernasocchi)  
[marco@opengis.ch](mailto:marco@opengis.ch)

