

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

 @mbernasocchi
marco@opengis.ch

OPENGIS.ch

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@mbernasocchi?

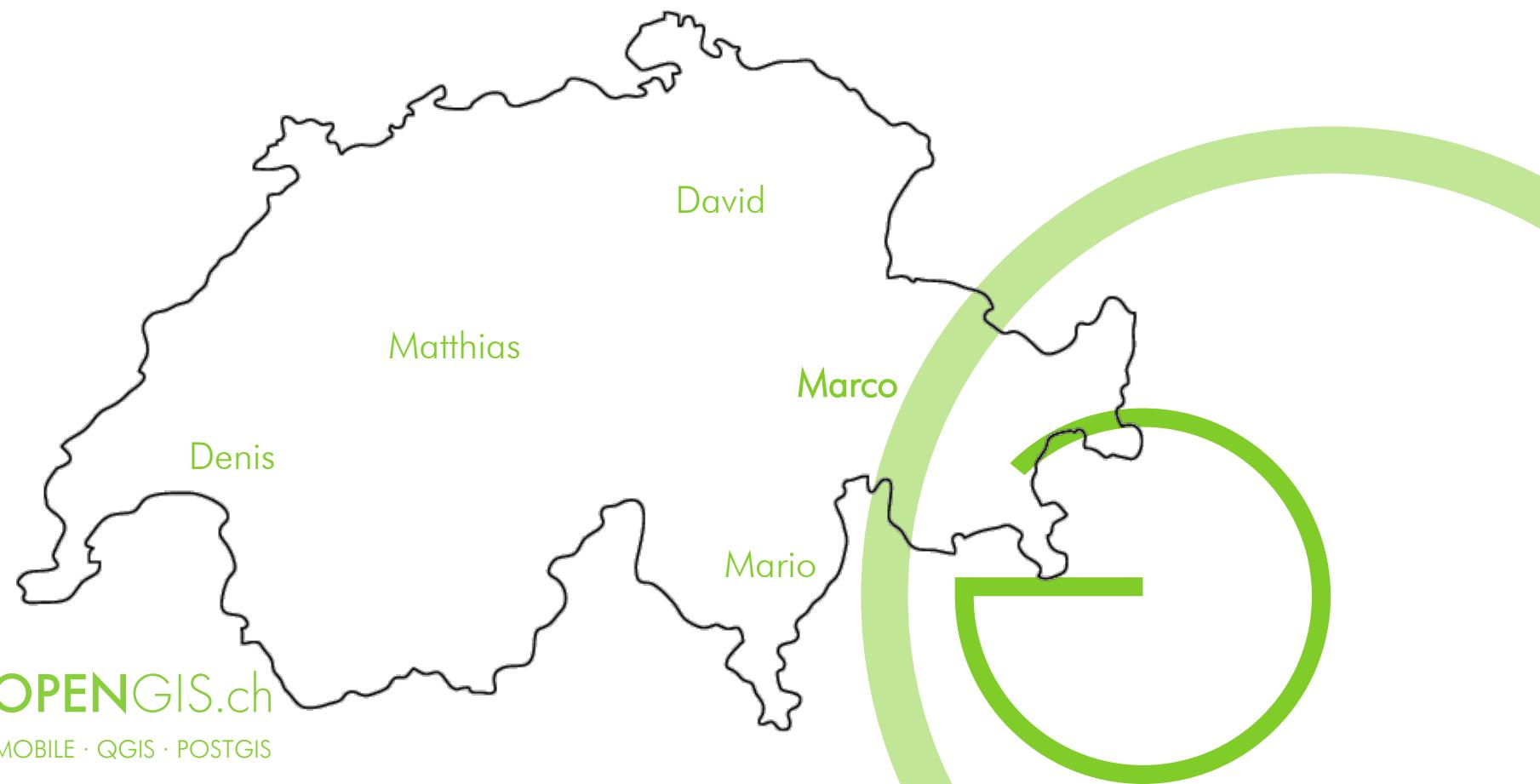
- QGIS Co-Chair
- QGIS on Android dad
- OPENGIS.ch director

OPENGIS.ch

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OPENGIS.ch LLC

Opensource geospatial experts at your doorsteps

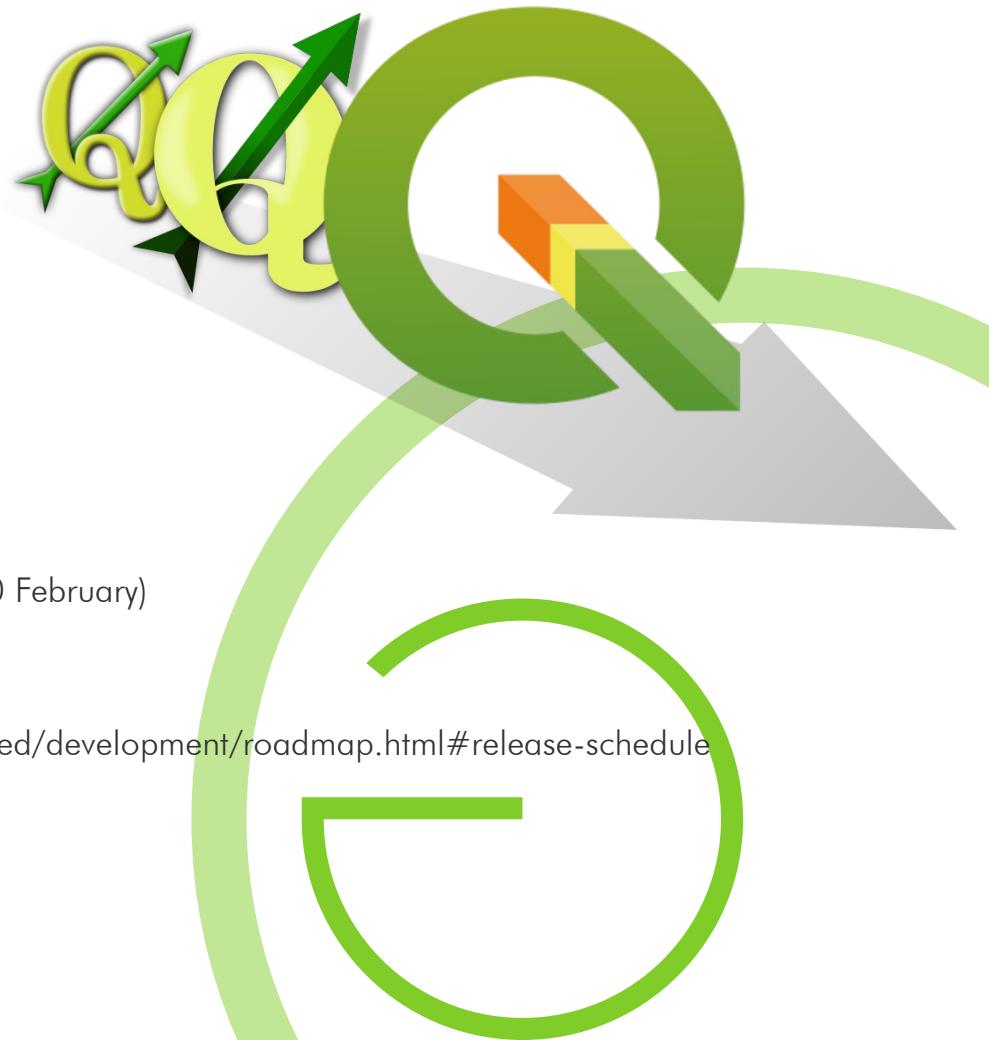


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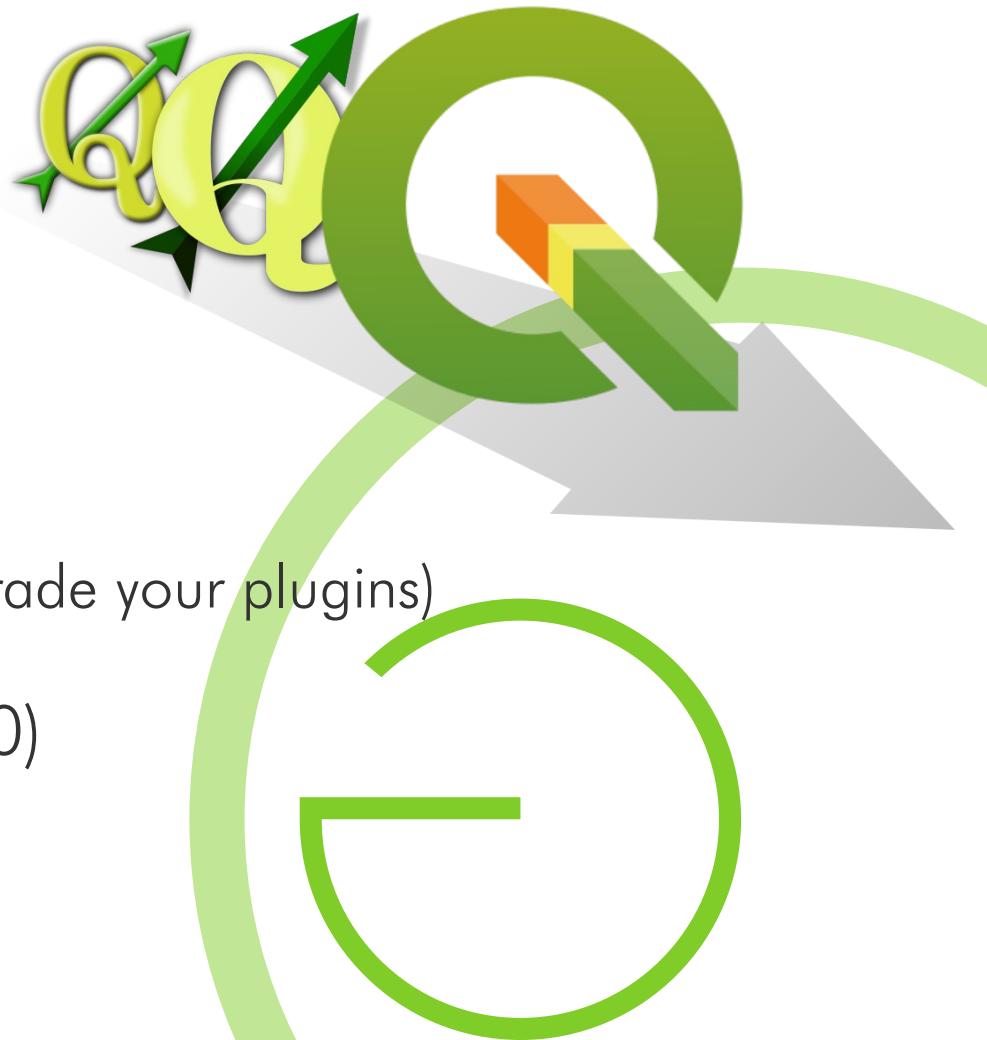
QGIS Evolution

- QGIS 0.0.1: 2002
- QGIS 1.0 "Kore": 2009
- QGIS 2.0 "Dufour": 2013
- QGIS 2.18 "Las Palmas": 2016 (October)
- QGIS 3.0 "Girona": 2018 (February)
- QGIS 3.4 "Madeira" (LTR version): 2018 (October)
- QGIS 3.6 "Noosa": 2019 (February)
- QGIS 3.8 "Zanzibar": 2019 (June)
- QGIS 3.10 "A Coruña (?)": 2019 (October) - LTR (2020 February)
- QGIS road map: <https://www.qgis.org/en/site/getinvolved/development/roadmap.html#release-schedule>



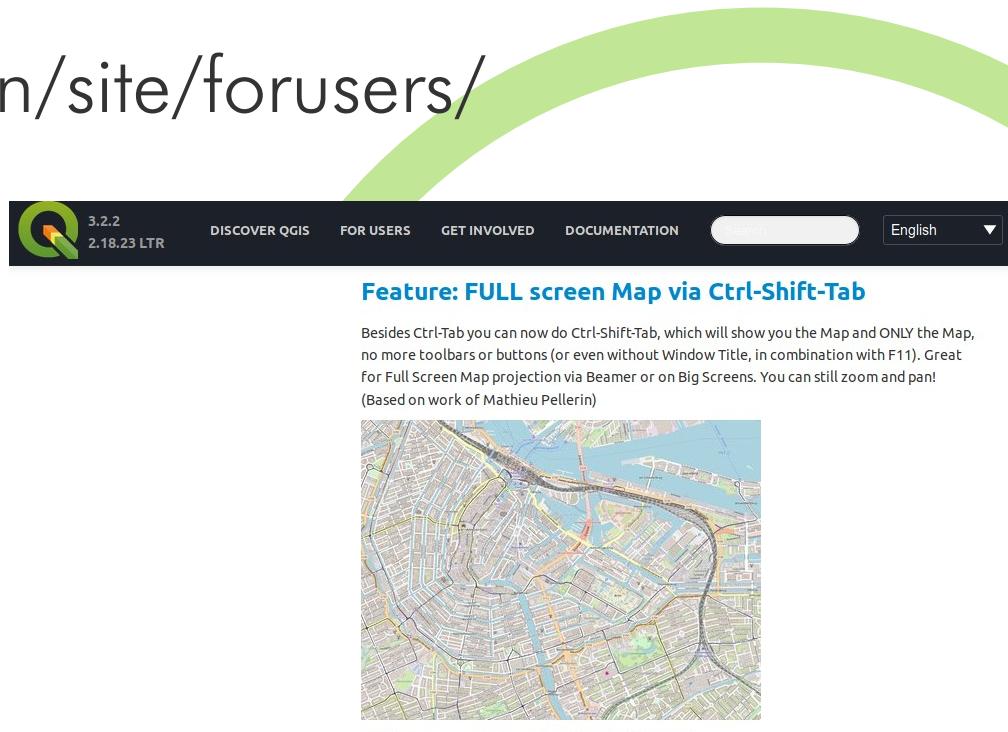
2.18 LTR → 3.4 LTR

- 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)



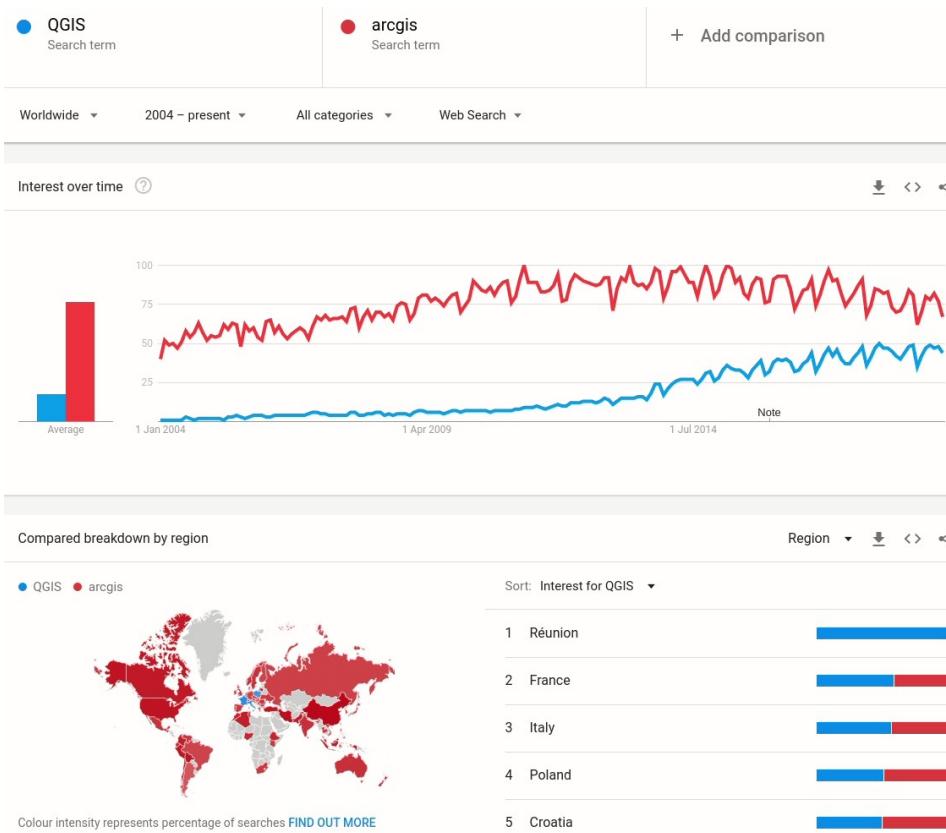
QGIS visual changelogs

- When you install a new QGIS version, always have a look at the visual changelogs:
- <https://www.qgis.org/en/site/forusers/visualchangelogs.html>



QGIS vs ArcGIS

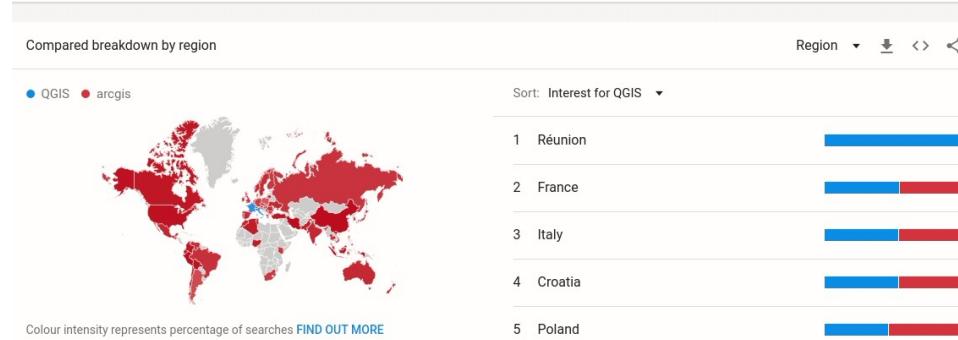
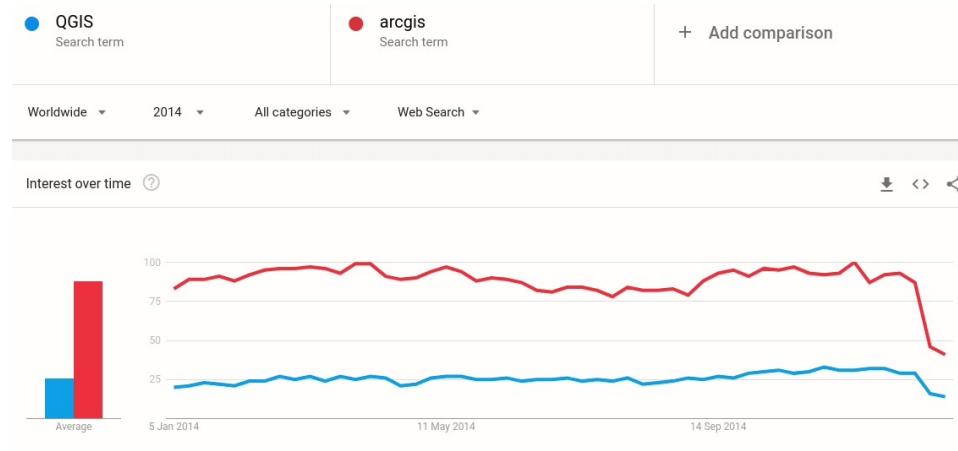
2004 - 2019



Google trends 12.06.19

QGIS vs ArcGIS

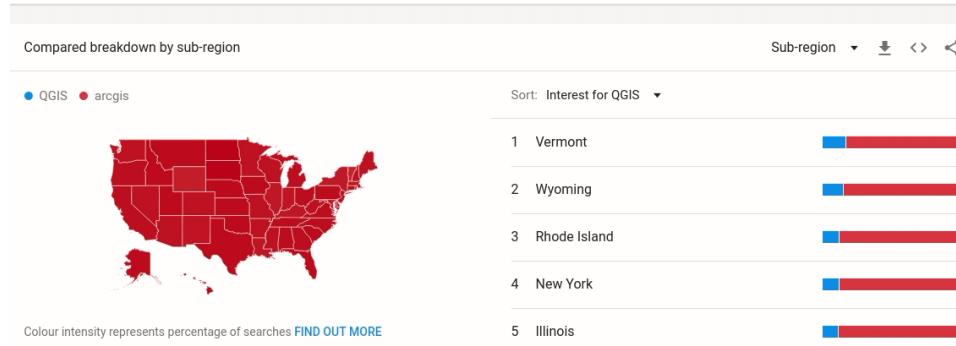
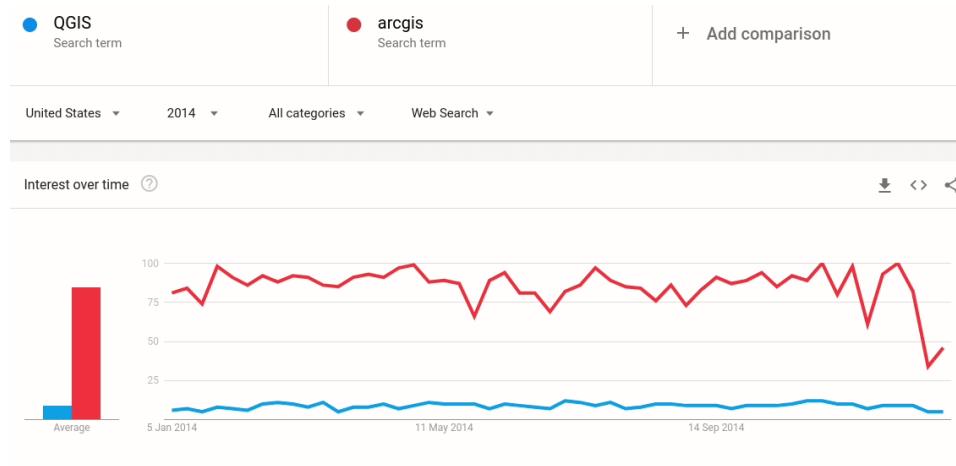
2014 - 2019 Worldwide



Google trends 12.06.19

QGIS vs ArcGIS

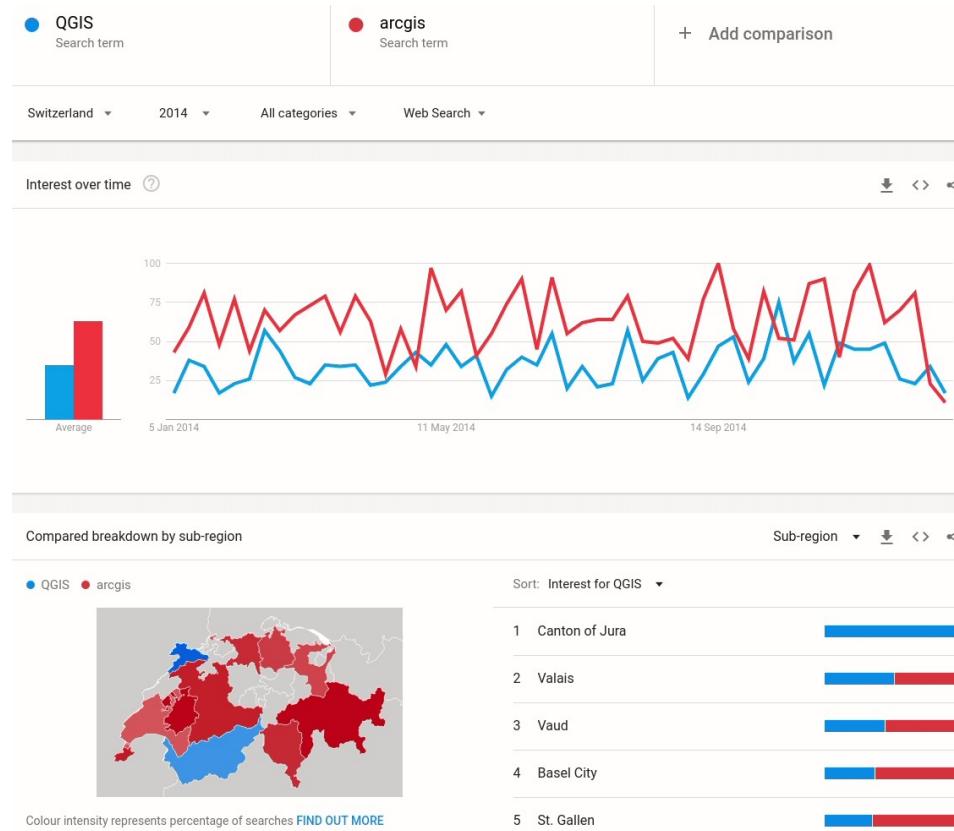
2014 - 2019 USA



Google trends 12.06.19

QGIS vs ArcGIS

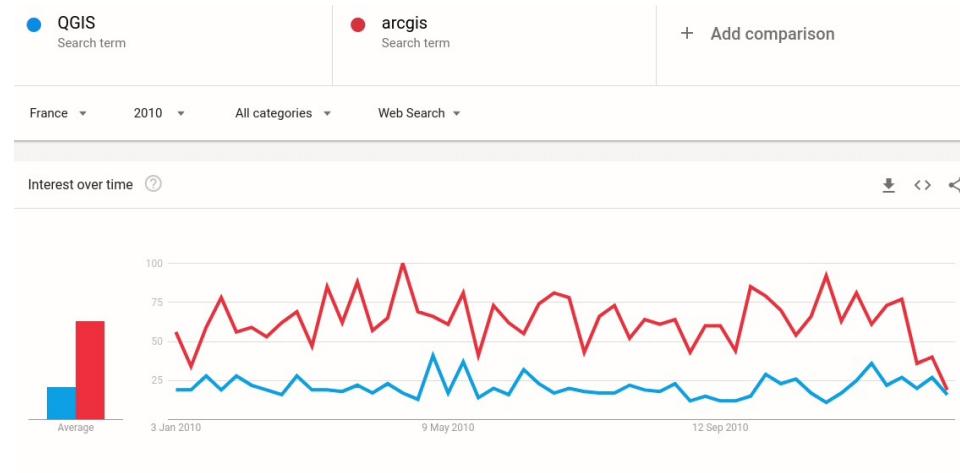
2014 - 2019 Switzerland



Google trends 12.06.19

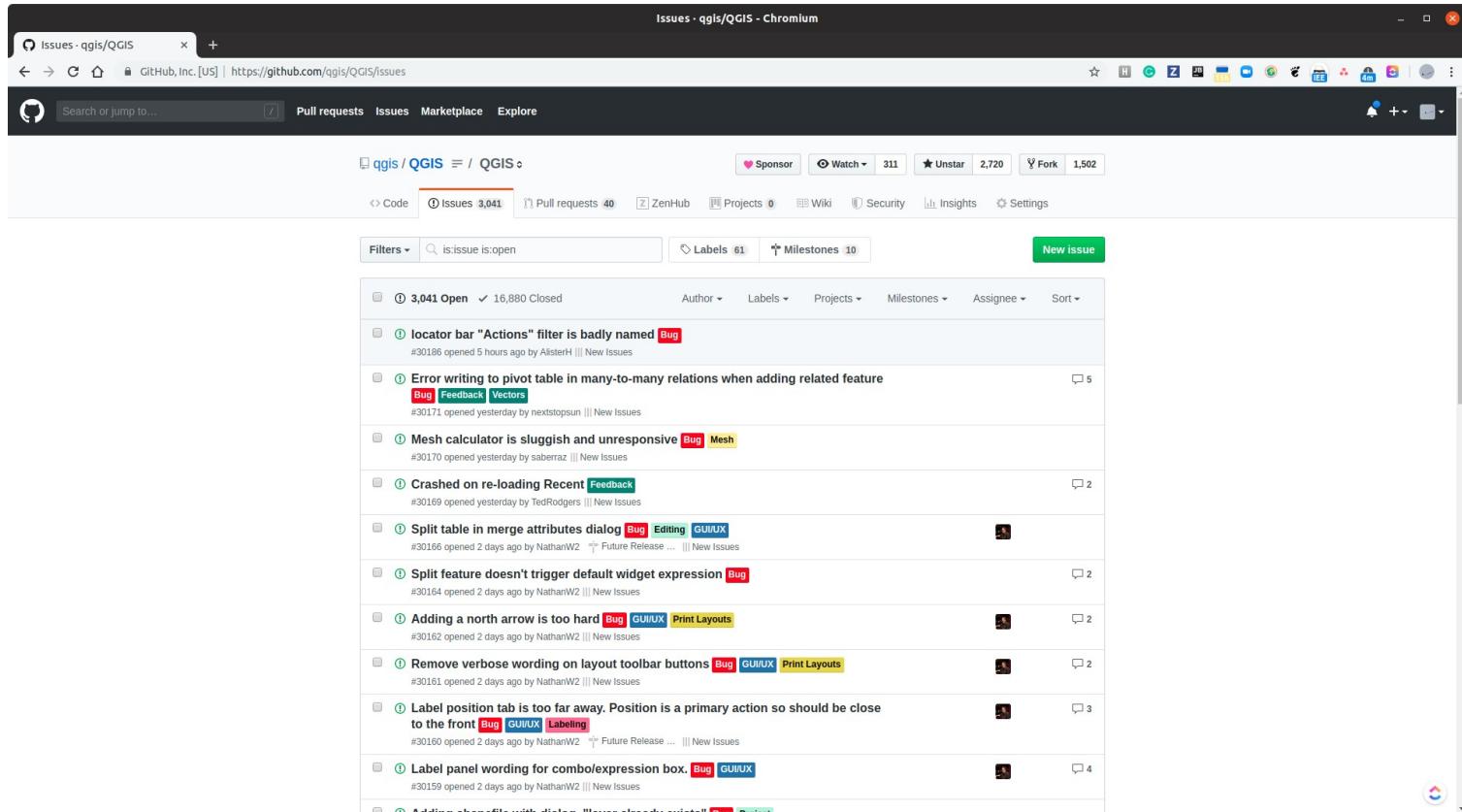
QGIS vs ArcGIS

2010 - 2019 France



Google trends 12.06.19

Infrastructure improvements: Issue tracker on GitHub

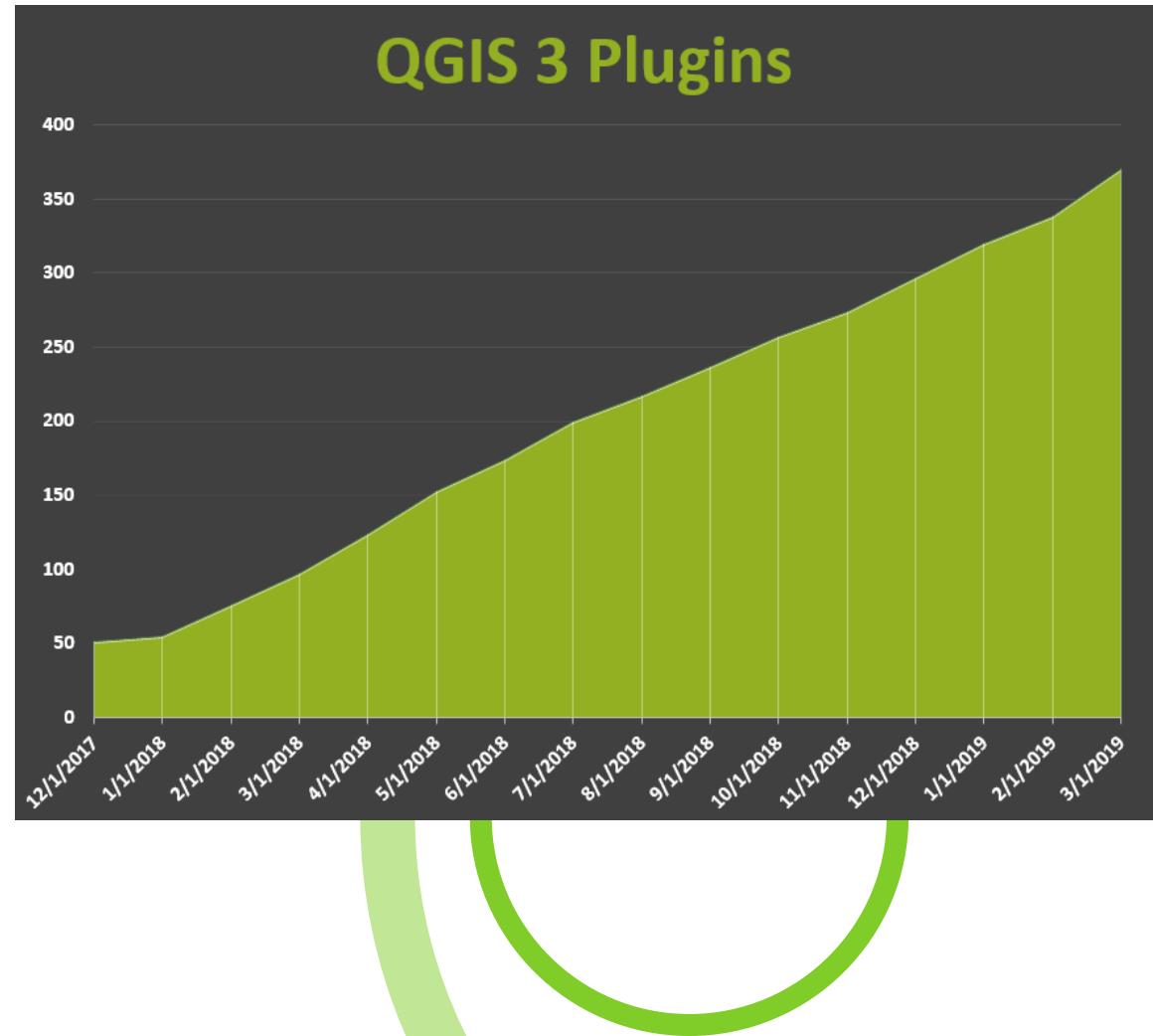


The screenshot shows the GitHub interface for the QGIS repository. The title bar reads "Issues · qgis/QGIS - Chromium". The URL in the address bar is "GitHub, Inc. [US] | https://github.com/qgis/QGIS/issues". The main navigation menu includes "Pull requests", "Issues", "Marketplace", and "Explore". Below the menu, there's a search bar with placeholder text "Search or jump to...". The top navigation bar for the repository shows "qgis / QGIS" and "QGIS". It also displays statistics: "Issues 3,041", "Pull requests 40", "ZenHub", "Projects 0", "Wiki", "Security", "Insights", and "Settings". A green "New issue" button is located on the right side of the top bar. The main content area is titled "Filters" and shows a search bar with the query "is:issue is:open". Below the search bar is a list of 12 open issues, each with a checkbox, a title, a description, labels, and a "New issue" button. The issues are as follows:

- ① 3,041 Open ✓ 16,880 Closed
- ② locator bar "Actions" filter is badly named **Bug**
#30186 opened 5 hours ago by AlisterH ||| New Issues
- ③ Error writing to pivot table in many-to-many relations when adding related feature **Bug** **Feedback** **Vectors**
#30171 opened yesterday by nextstopsum ||| New Issues
- ④ Mesh calculator is sluggish and unresponsive **Bug** **Mesh**
#30170 opened yesterday by saberraz ||| New Issues
- ⑤ Crashed on re-loading Recent **Feedback**
#30169 opened yesterday by TedRodgers ||| New Issues
- ⑥ Split table in merge attributes dialog **Bug** **Editing** **GUI/UX**
#30166 opened 2 days ago by NathanW2 ||| Future Release ... ||| New Issues
- ⑦ Split feature doesn't trigger default widget expression **Bug**
#30164 opened 2 days ago by NathanW2 ||| New Issues
- ⑧ Adding a north arrow is too hard **Bug** **GUI/UX** **Print Layouts**
#30162 opened 2 days ago by NathanW2 ||| New Issues
- ⑨ Remove verbose wording on layout toolbar buttons **Bug** **GUI/UX** **Print Layouts**
#30161 opened 2 days ago by NathanW2 ||| New Issues
- ⑩ Label position tab is too far away. Position is a primary action so should be close to the from **Bug** **GUI/UX** **Labeling**
#30160 opened 2 days ago by NathanW2 ||| Future Release ... ||| New Issues
- ⑪ Label panel wording for combo/expression box **Bug** **GUI/UX**
#30159 opened 2 days ago by NathanW2 ||| New Issues
- ⑫ Add missing shapenode with dialog "layer already exists" **Bug** **Dialog**
#30158 opened 2 days ago by NathanW2 ||| New Issues

Infrastructure improvements: Plugin Ecosystem Back

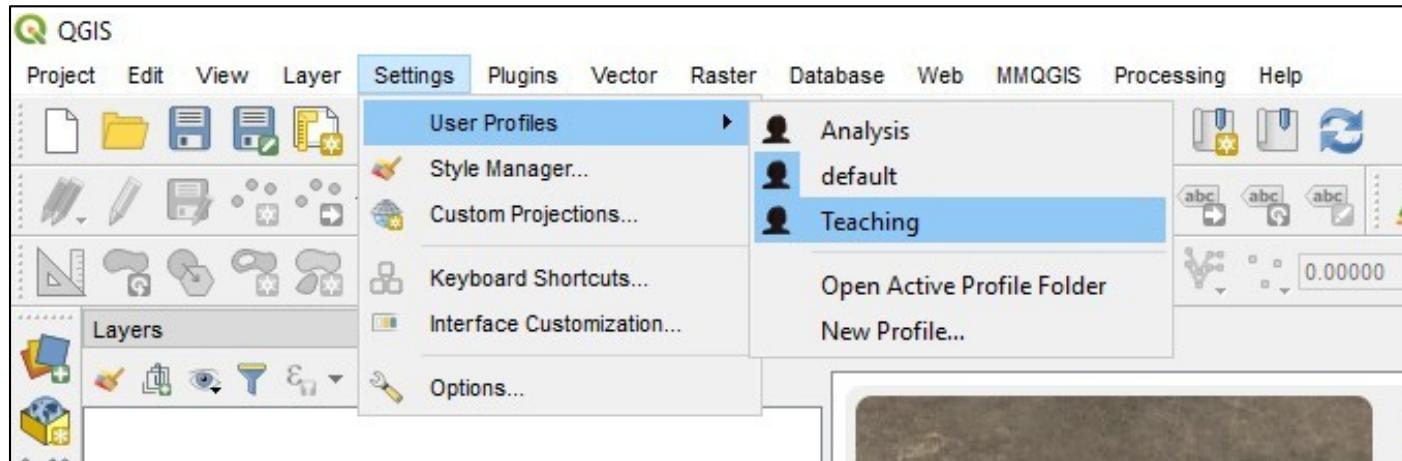
- DataPlotly
- GroupStats
- Map Swipe Tool
- MMQGIS
- QGIS2ThreeJS
- QGIS2Web
- QuickMapServices
- QuickOSM
- Semi-Automatic Classification
- Sentinel Hub
- ShapeTools
- TauDEM
- Time Manager
- Whitebox
- QGIS Hats



Infrastructure improvements: Mac one-click installers (dmg)



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

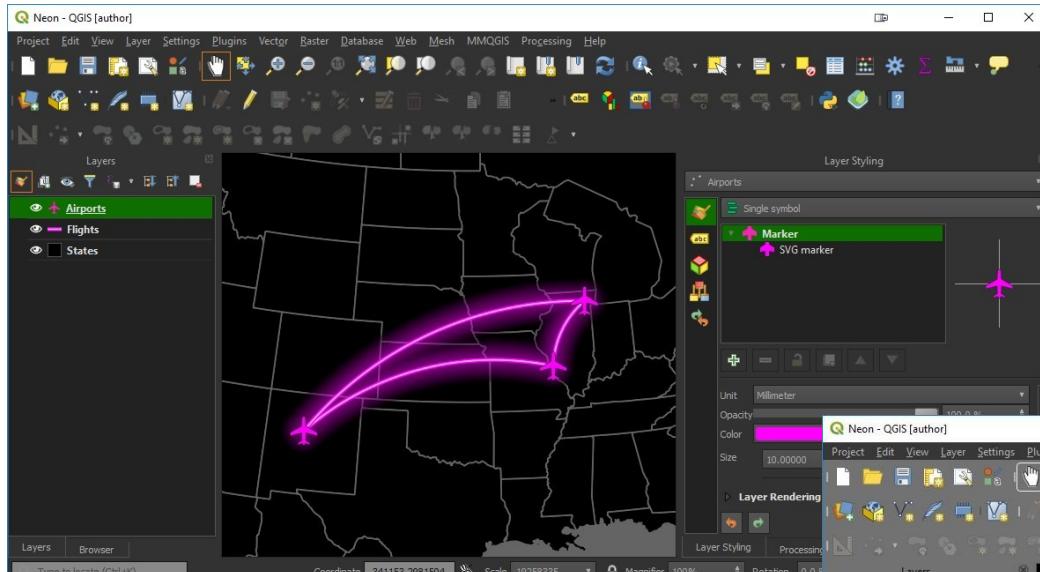
Mac OS X:

Library/Application

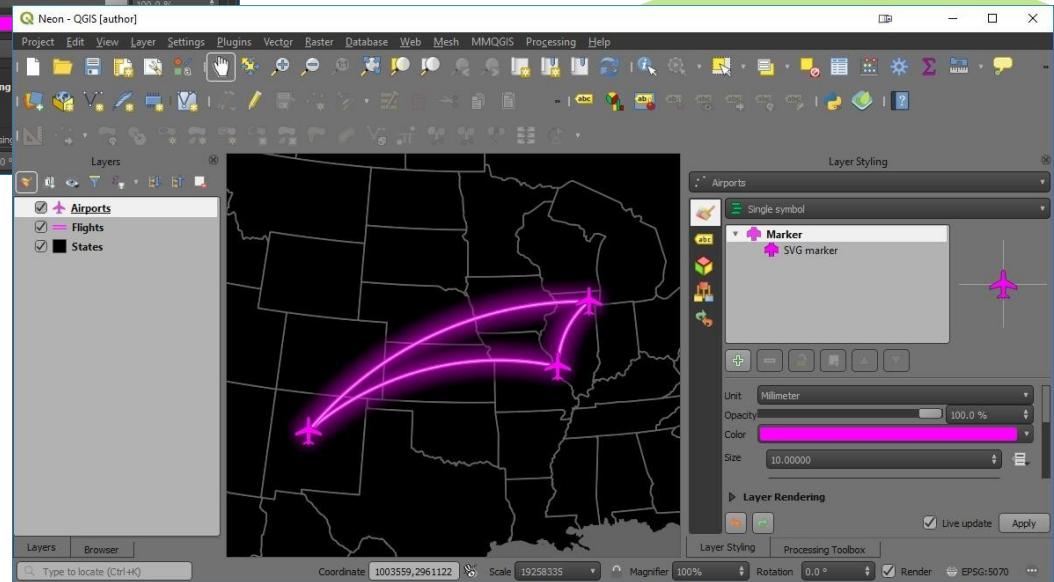
Support/QGIS/QGIS3/profiles/default

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

New UI Themes

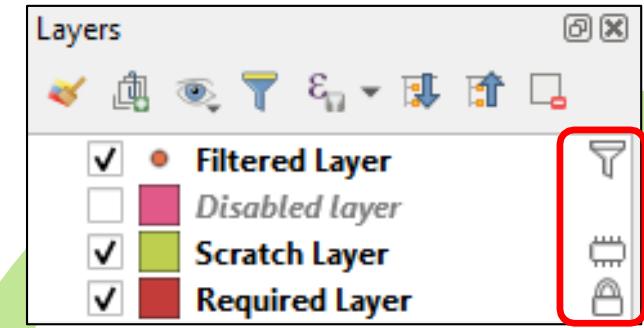
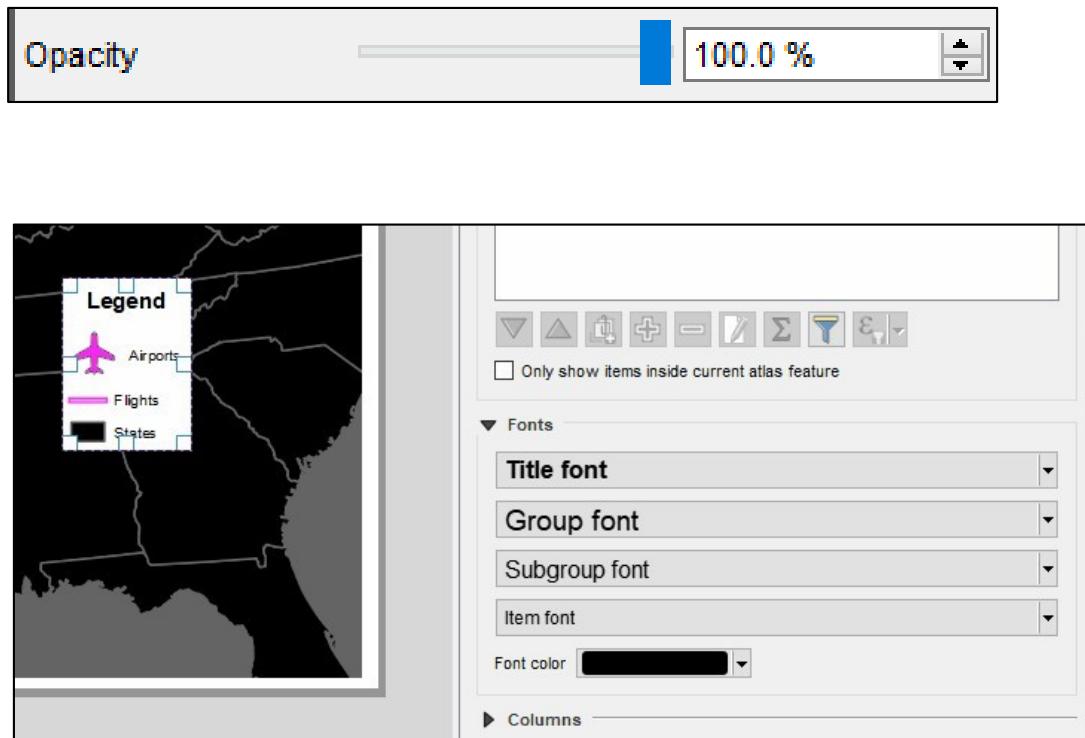


Night Mapping



Blend of Gray

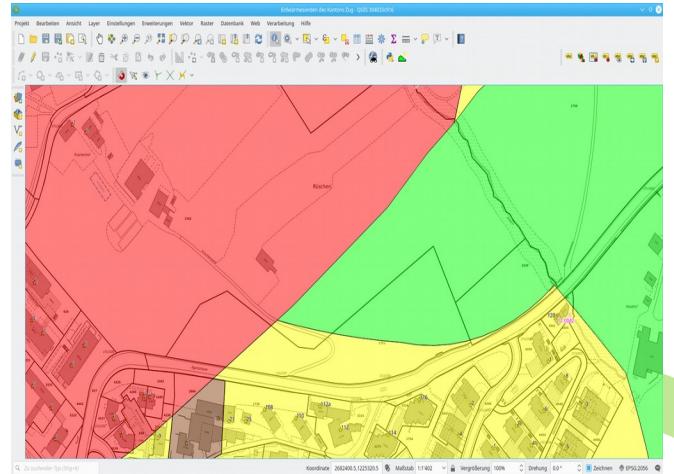
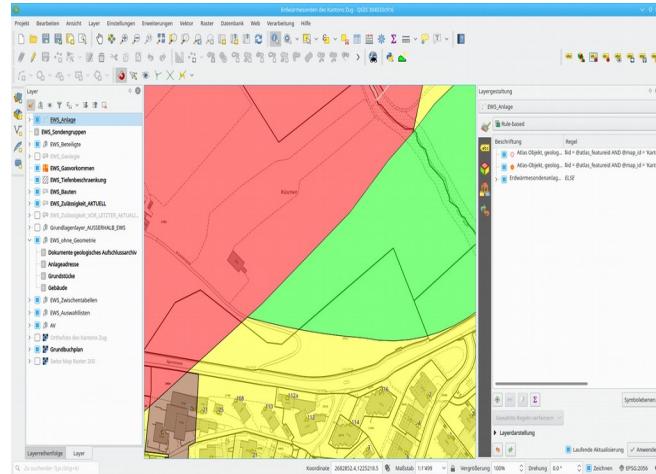
Lots of UI Improvements



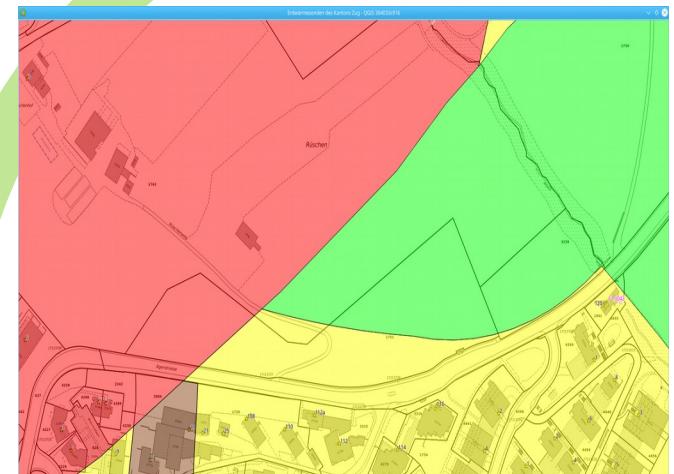
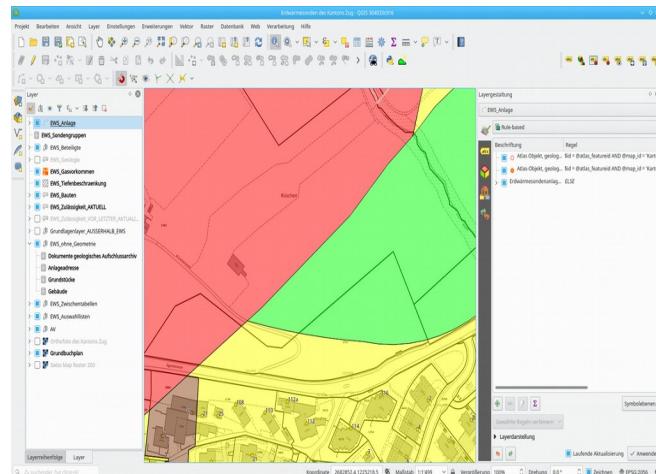
Optionally show/hide Panels and GUI



Ctrl-Tab
Hide/Show all Panels

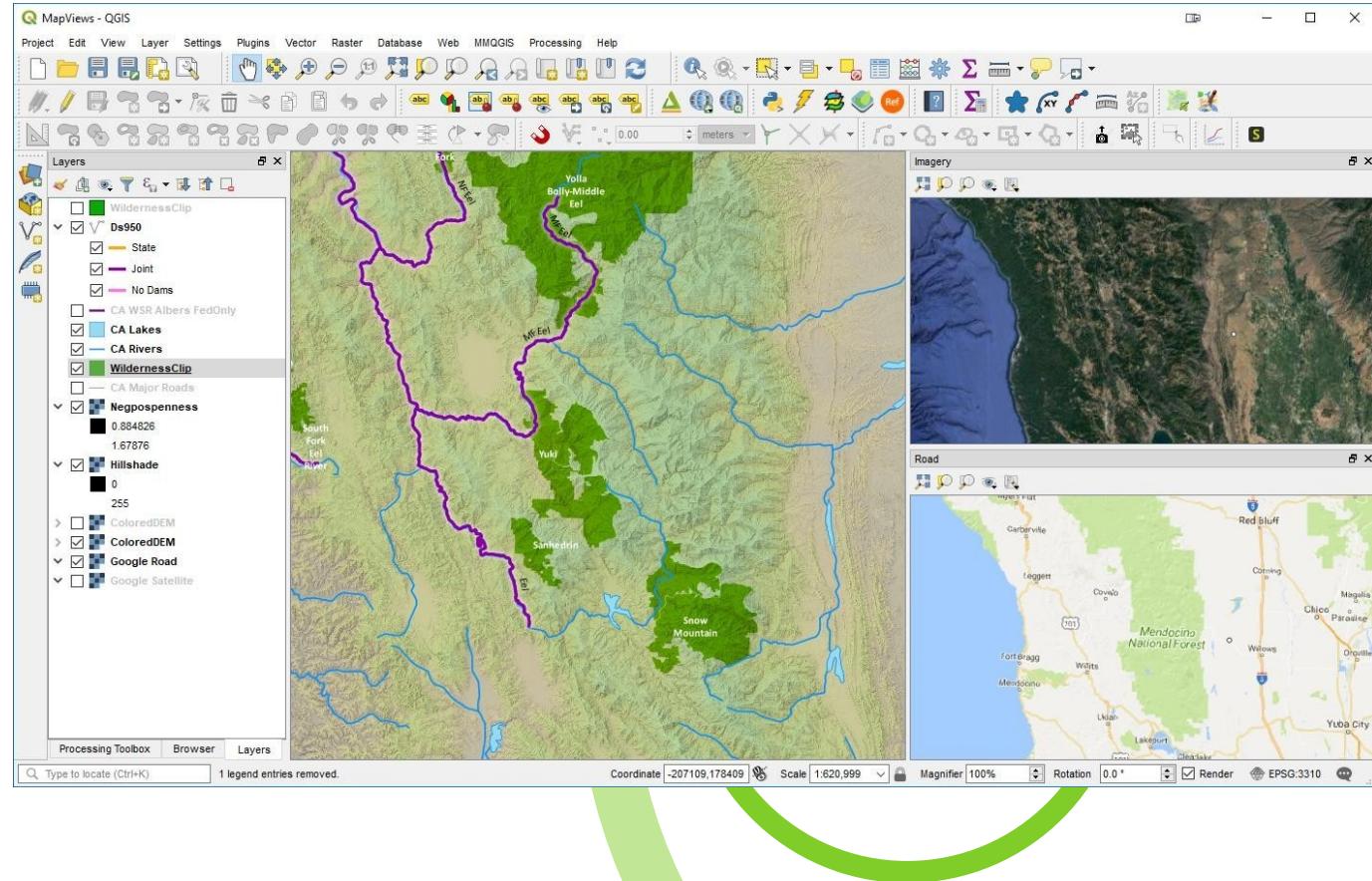


Ctrl-Shift-Tab
Hide/Show all of the
GUI



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

MapView - QGIS

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

Layers

- Ds950
 - State
 - Joint
 - No Dams
 - CA Lakes
 - CA Rivers
 - Wilderness
- Negspopenness
 - 0.884826
 - 1.67876
- Hillshade
 - 0
 - 255
- ColoredDEM
- ColoredDEM
- Google Satellite
- Google Terrain

Imagery

Road

Type to locate (Ctrl+R) Getting tiles.

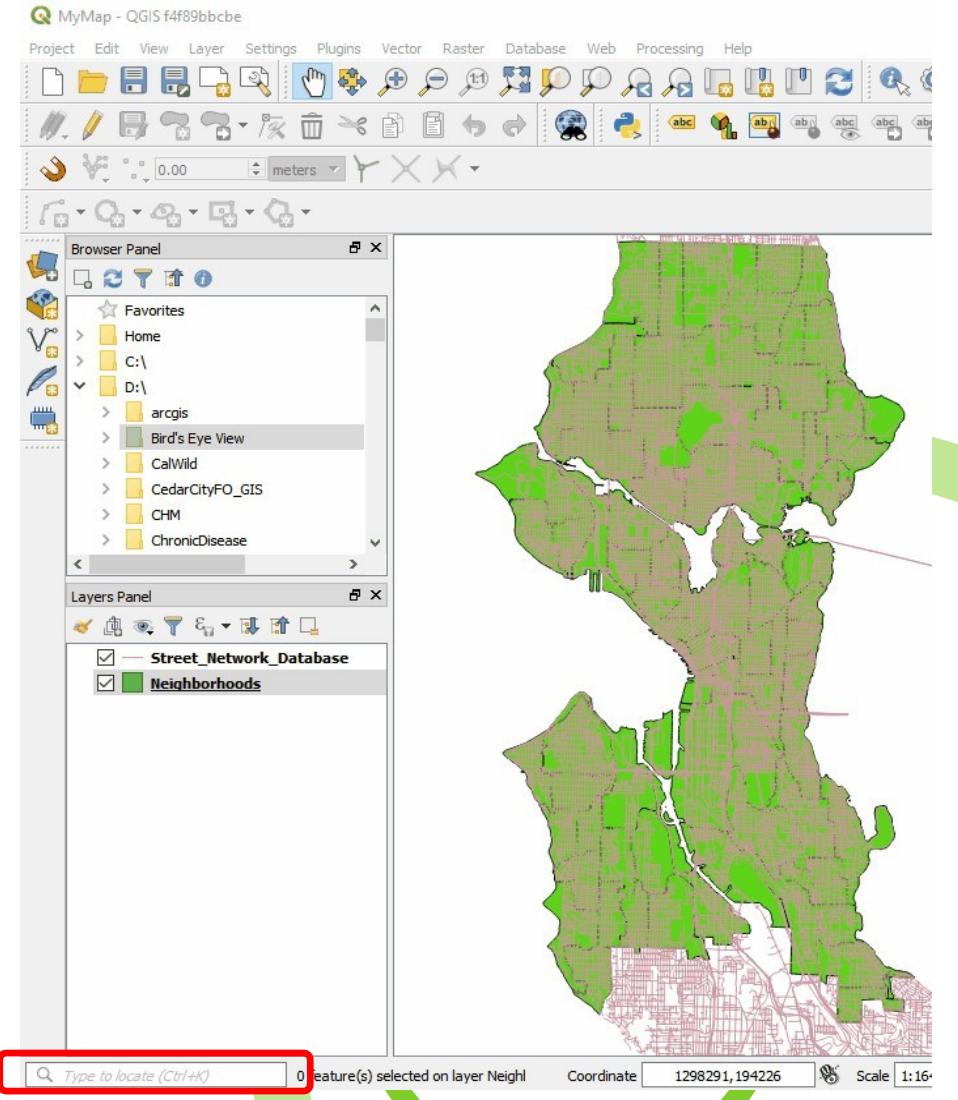
Coordinate 5258,339230 Scale 1:2,214,201 Magnifier 100% Rotation 0.0° Render EPSG:3310

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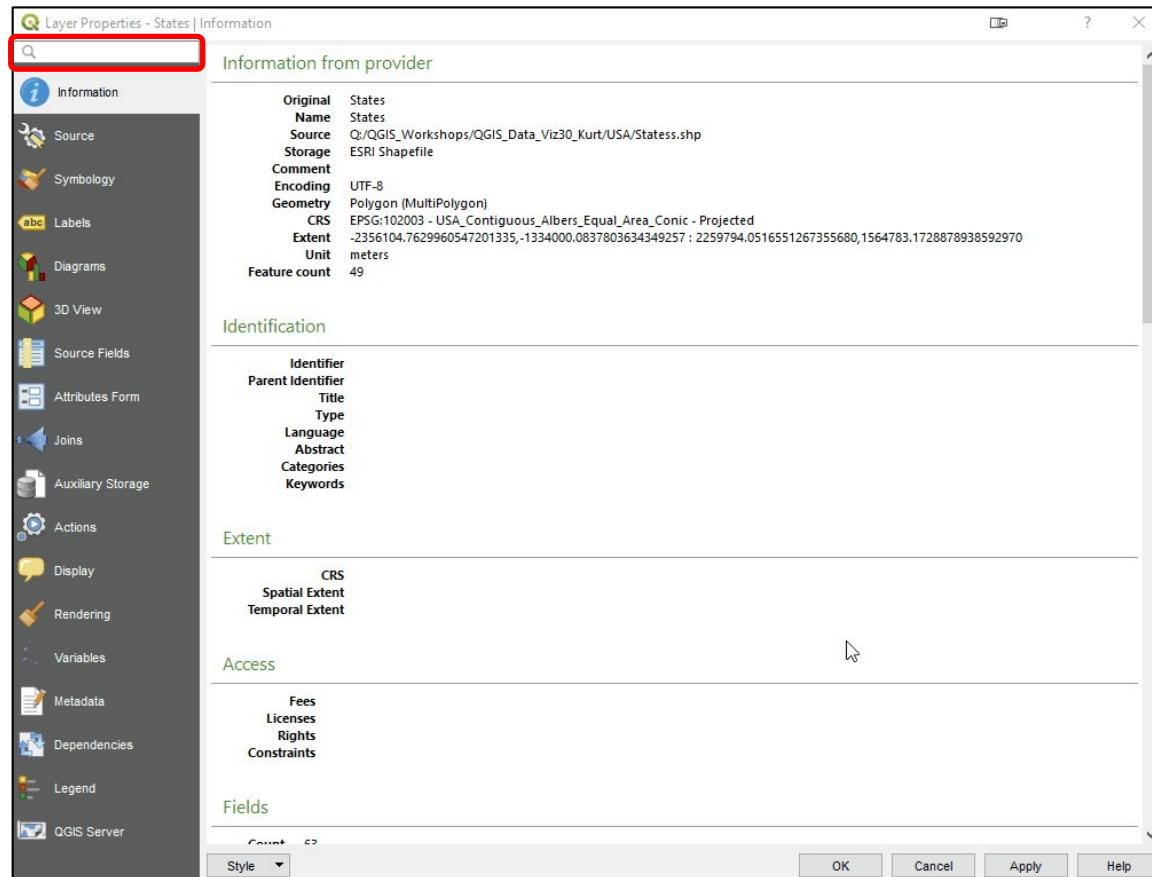
Locator Bar

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

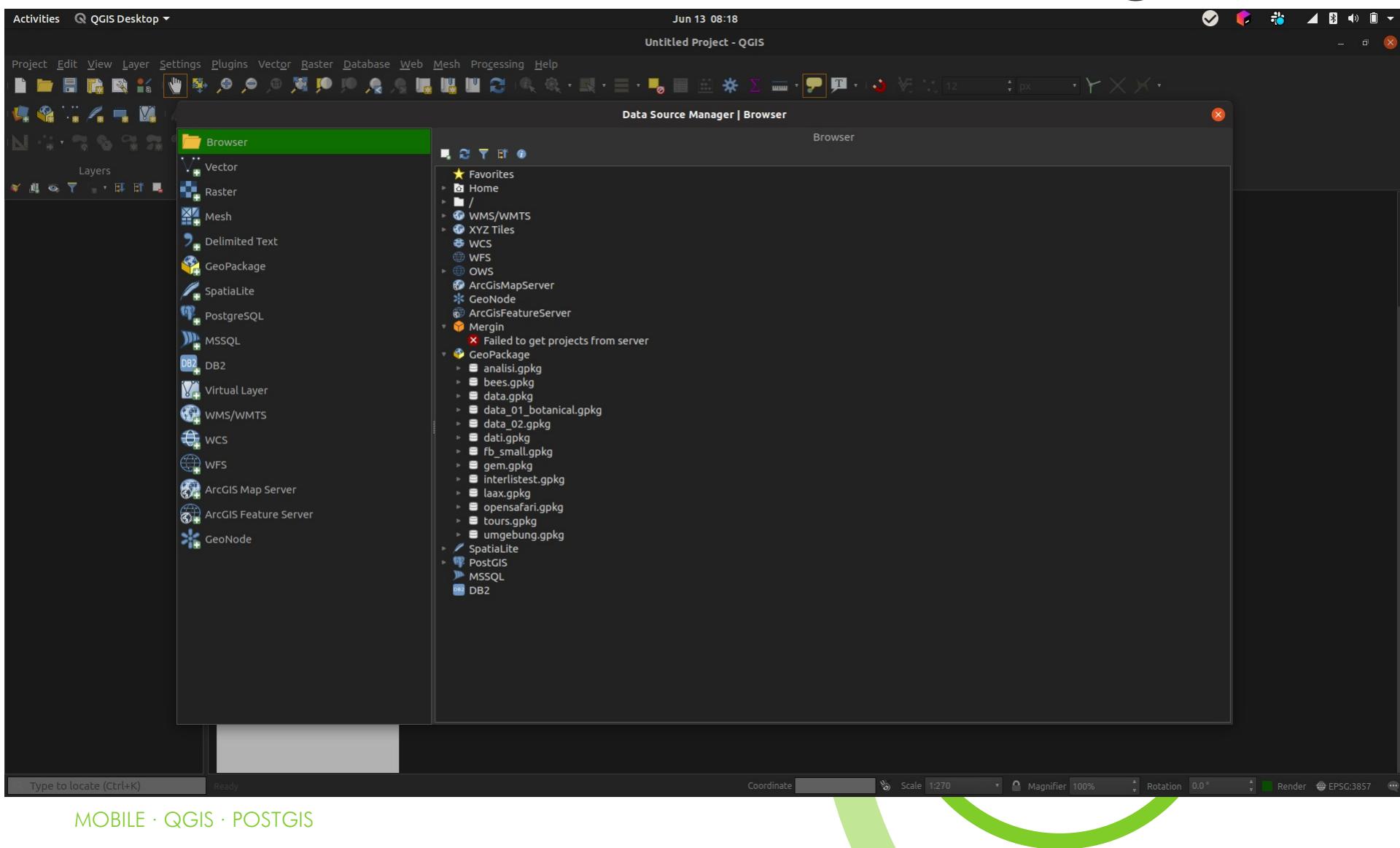


Autocomplete Search Boxes Everywhere

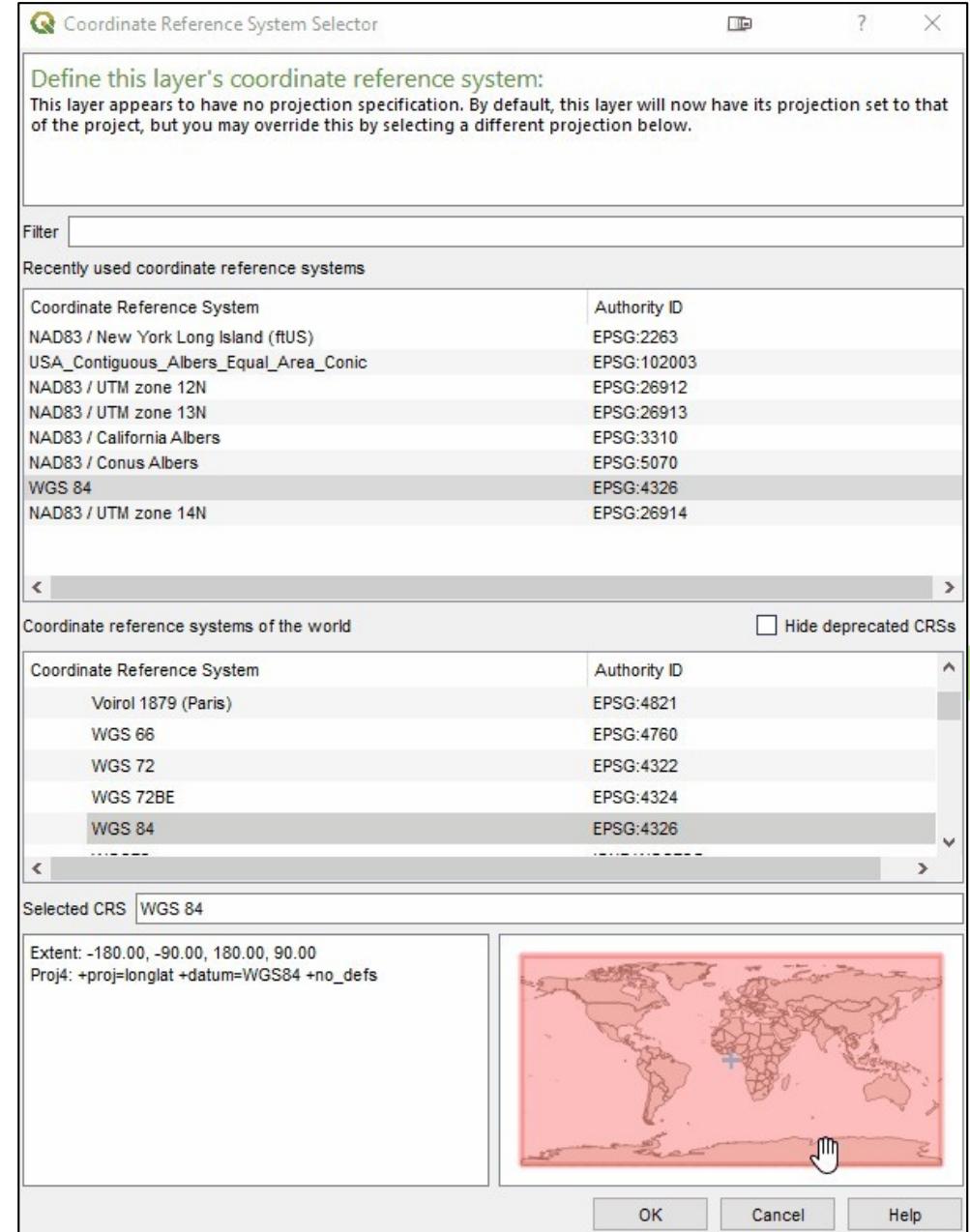
- Processing Toolbox
- Project Settings
- Layer Properties
- Plugin Manager
- CRS's
- Functions



Unified Data Source Manager



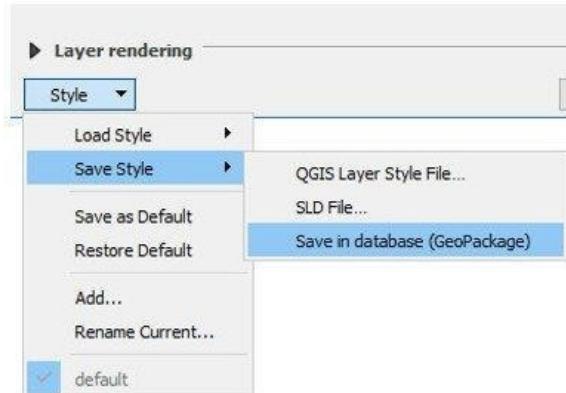
Valid CRS Extents Preview



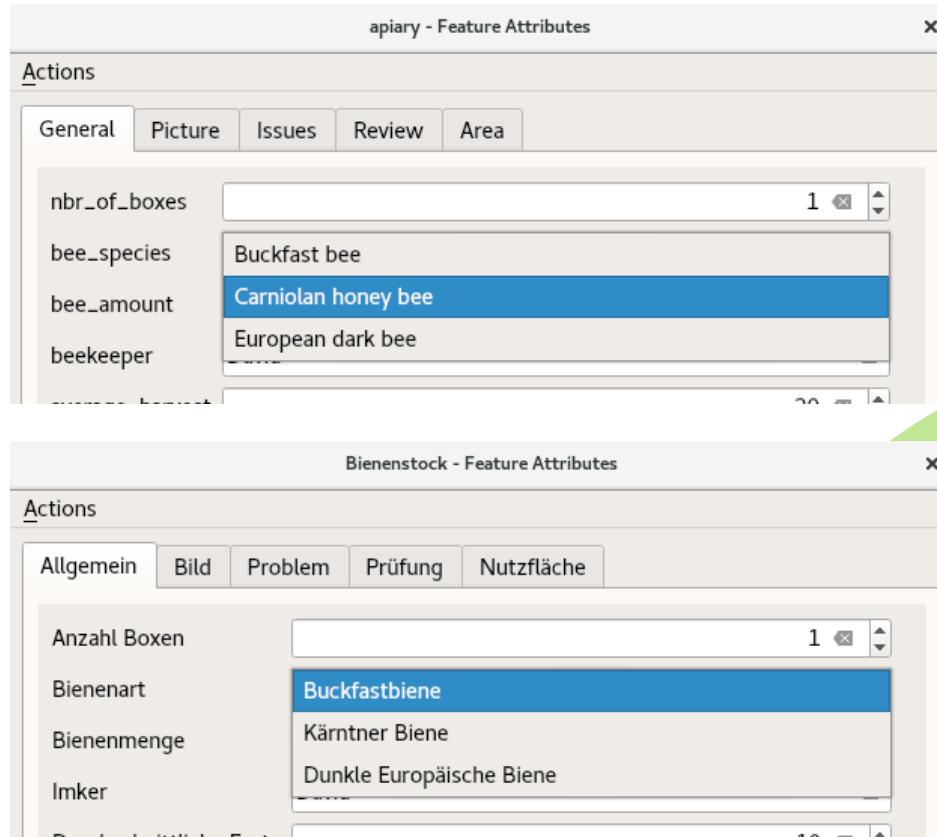
Geopackage Improvements

- 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.

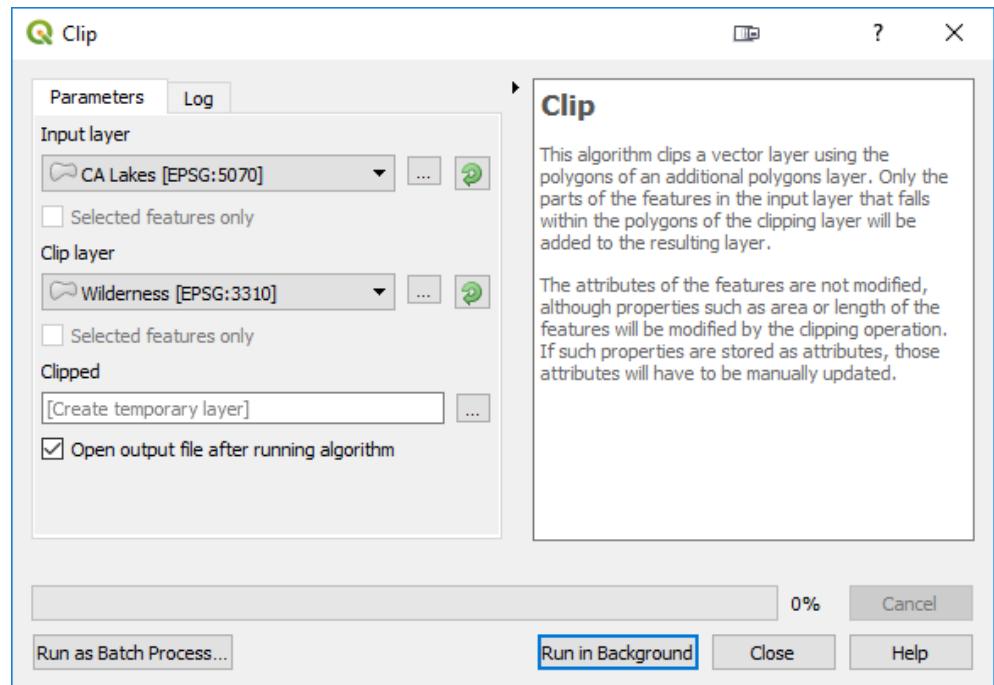
The screenshot shows two columns of data in a QGIS attribute table. The left column is labeled 'jvalue' and contains three rows of integer values: 1, 2, and 3. The right column is labeled 'jbvalue' and contains two rows of key-value pairs: 'a' with value 'b' and 'c' with value 'd'. Each row has a '+' icon for adding more items and a '-' icon for removing items. The data is presented in a tabular format with columns 'Key' and 'Value'.

jvalue	Value
	1
	2
	3

jbvalue	Key	Value
	a	b
	c	d

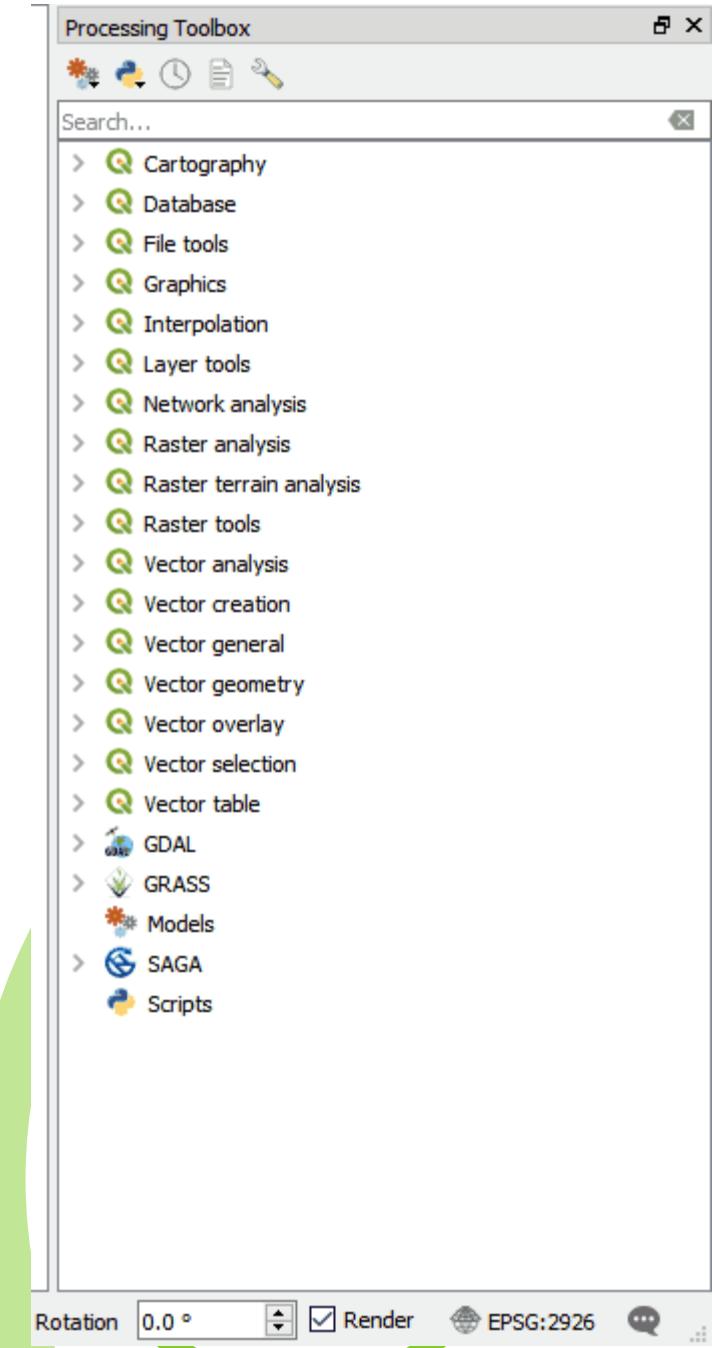
Processing Improvements

- 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

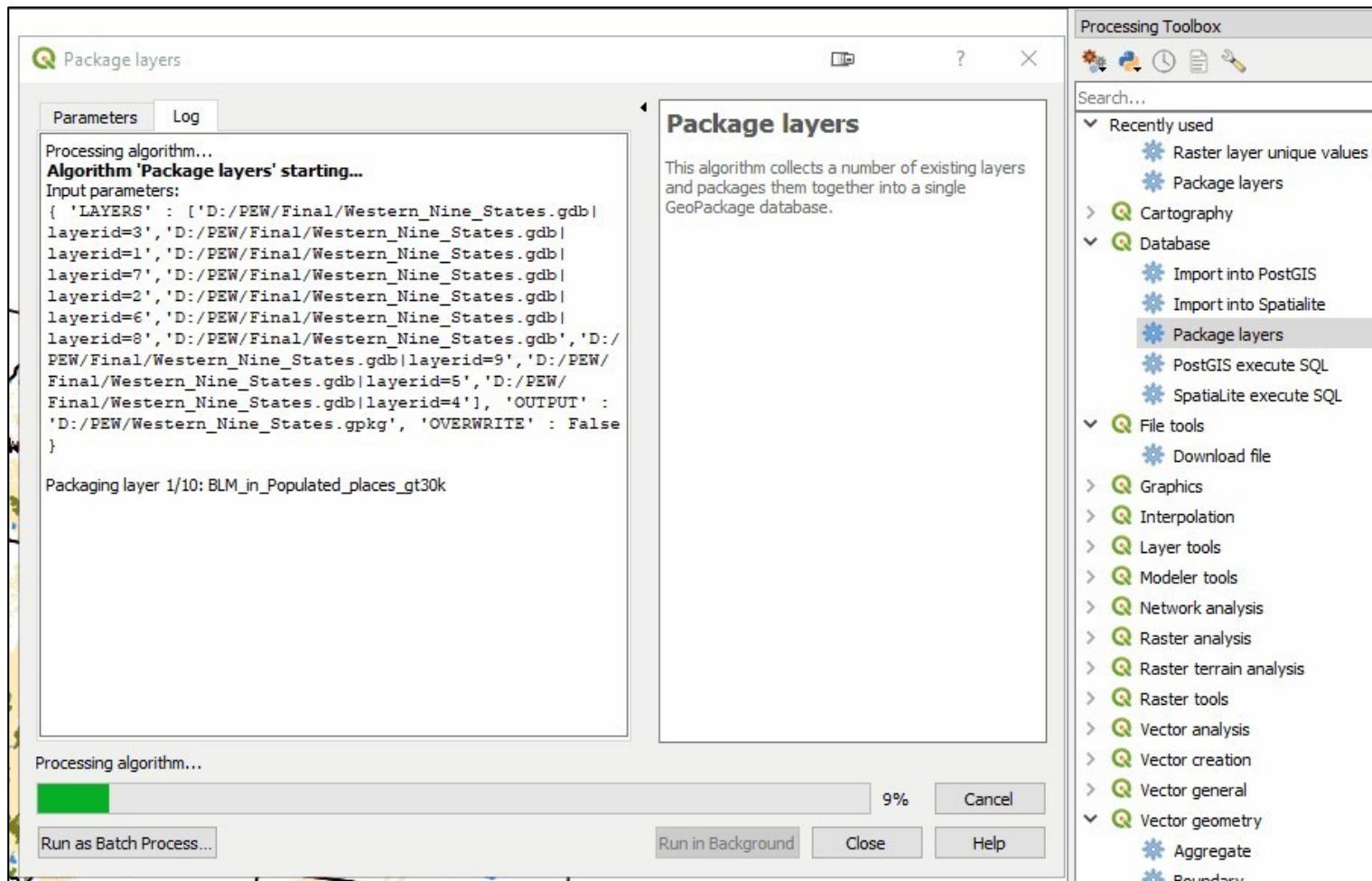


Processing Toolbox

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

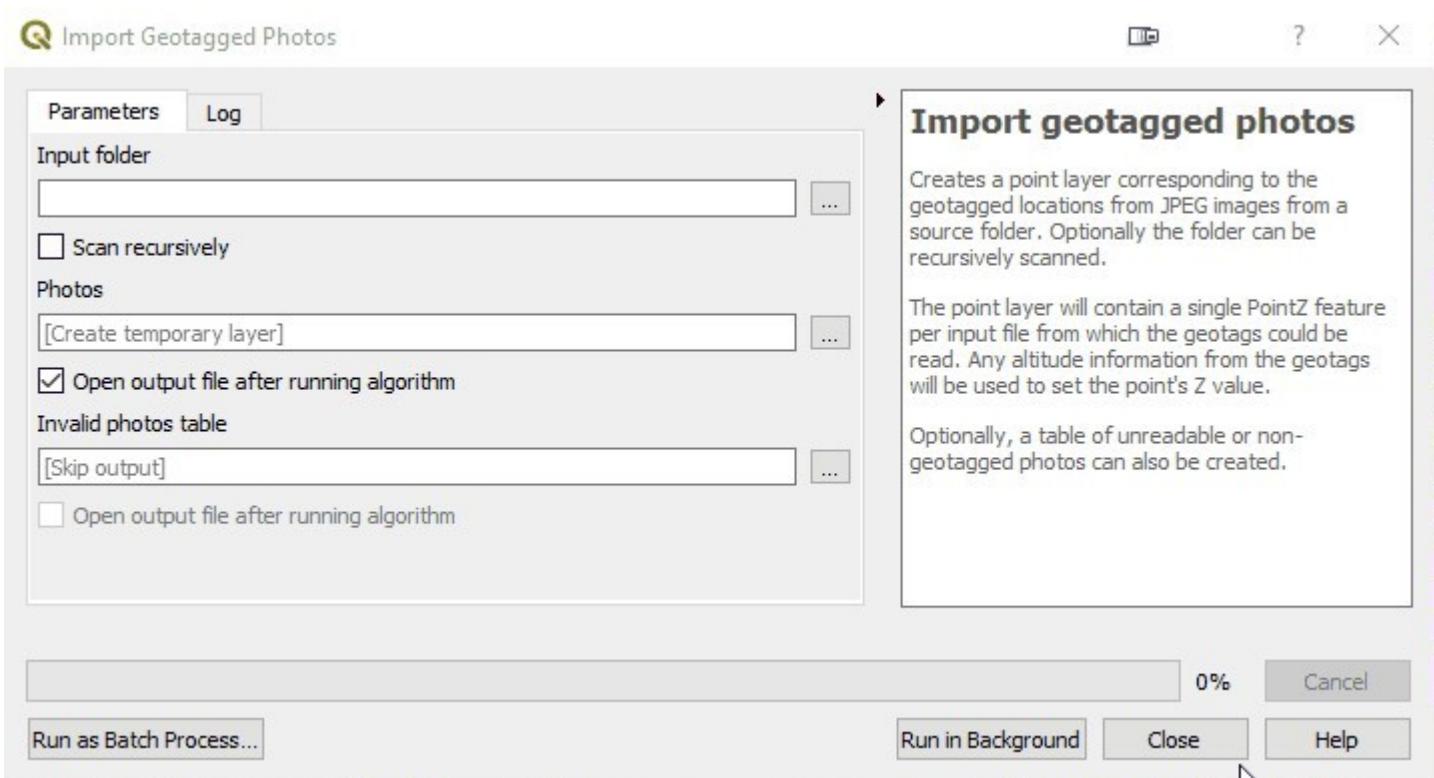


Package Layers tool

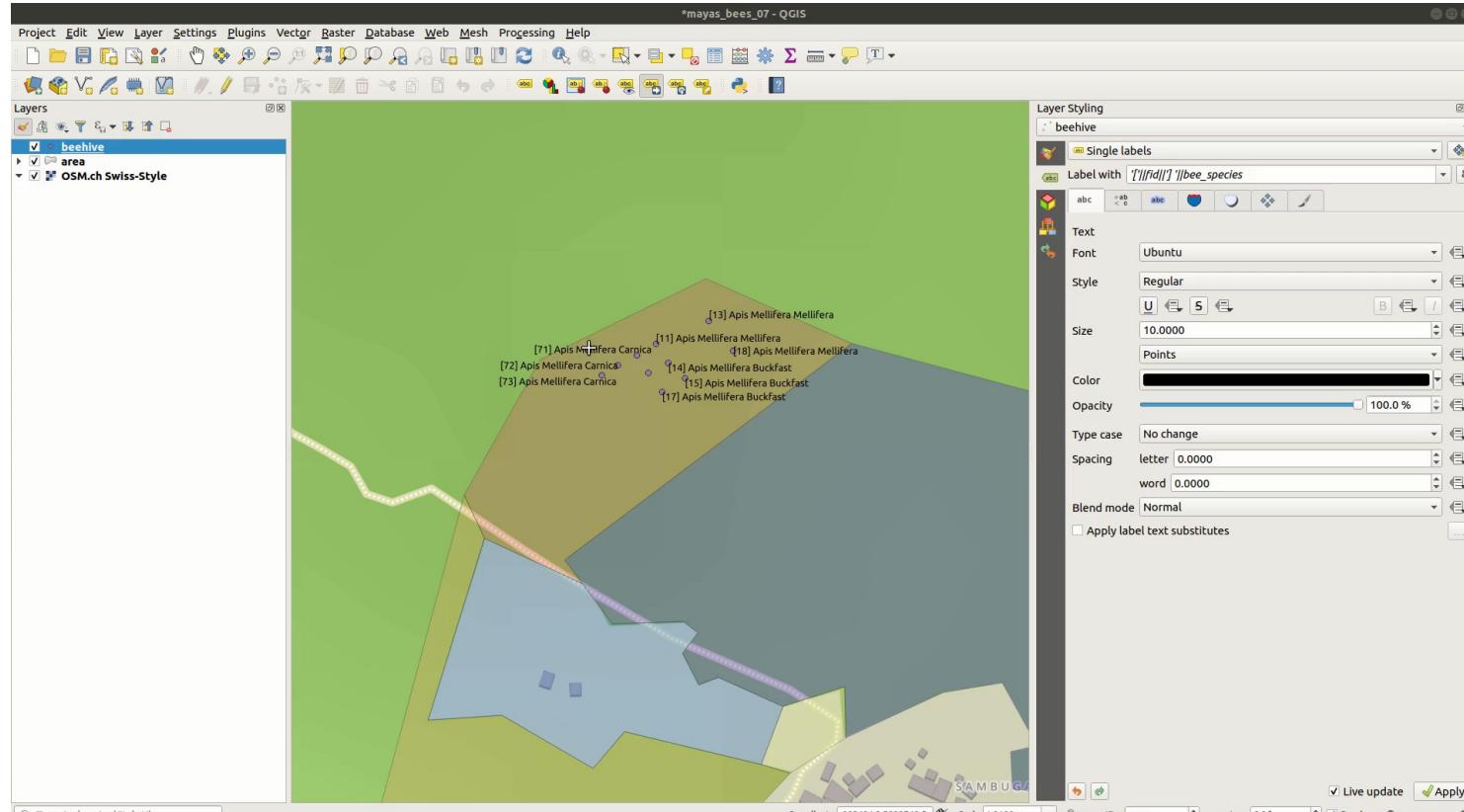


Import Geotagged Photos

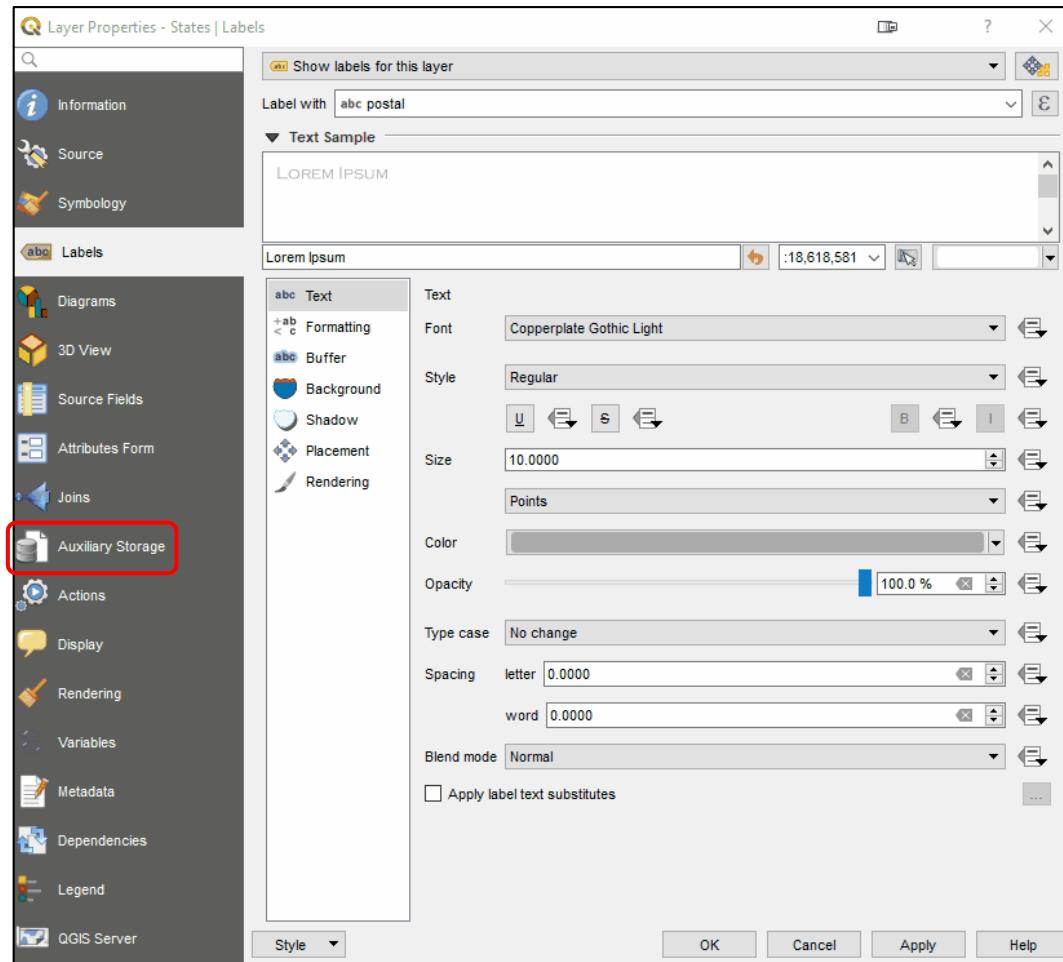
- Processing Toolbox → Vector Creation



Easy Custom Labeling

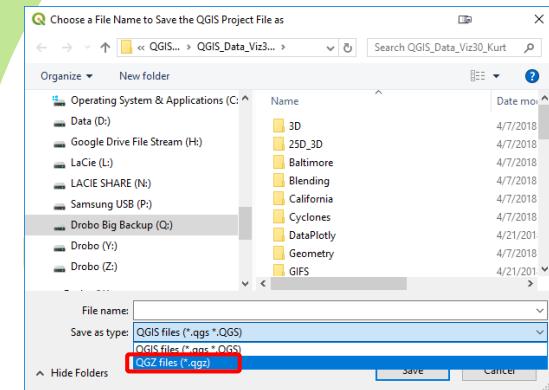


Made Possible by Auxiliary Storage



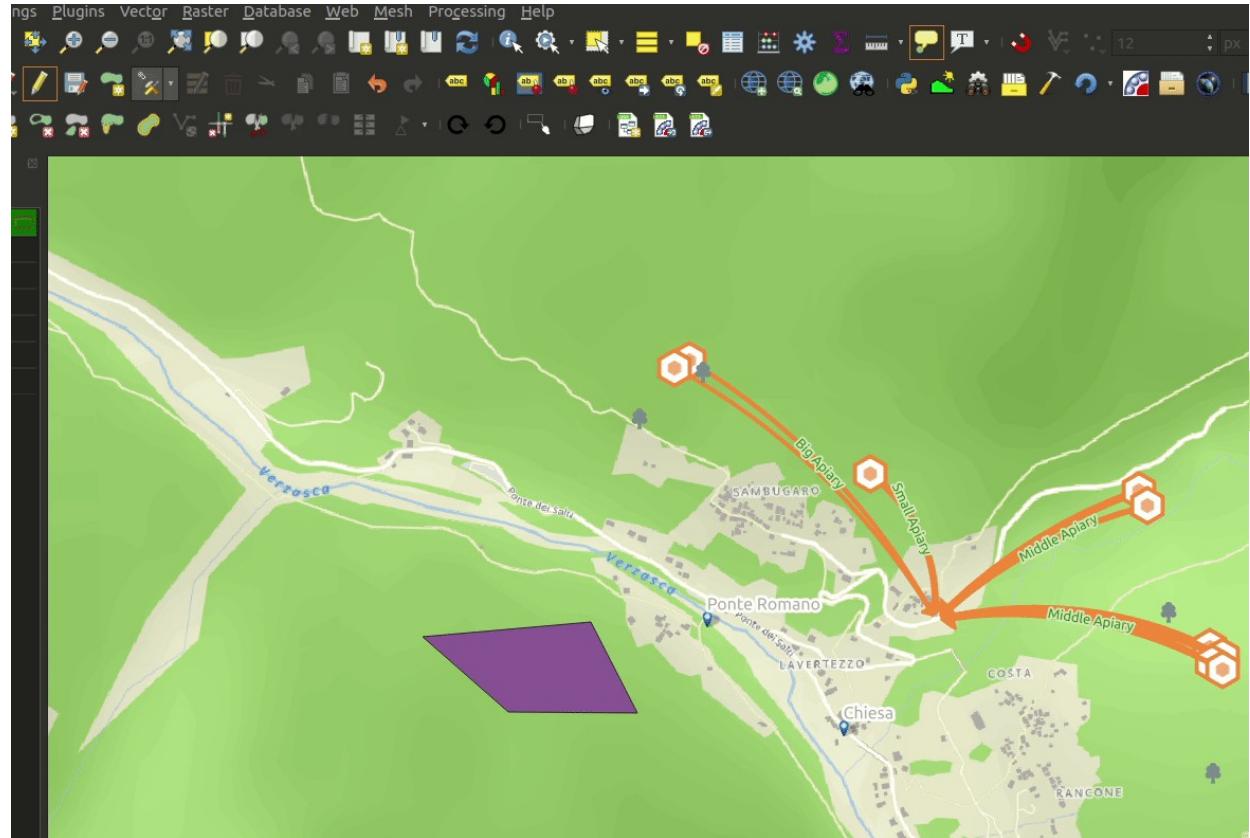
States.qgd
States.qgs

- SQLite db
- Stored as *.qgd file with QGIS project
- Identify primary key for the join
- QGZ files – combine both qgs and qgd

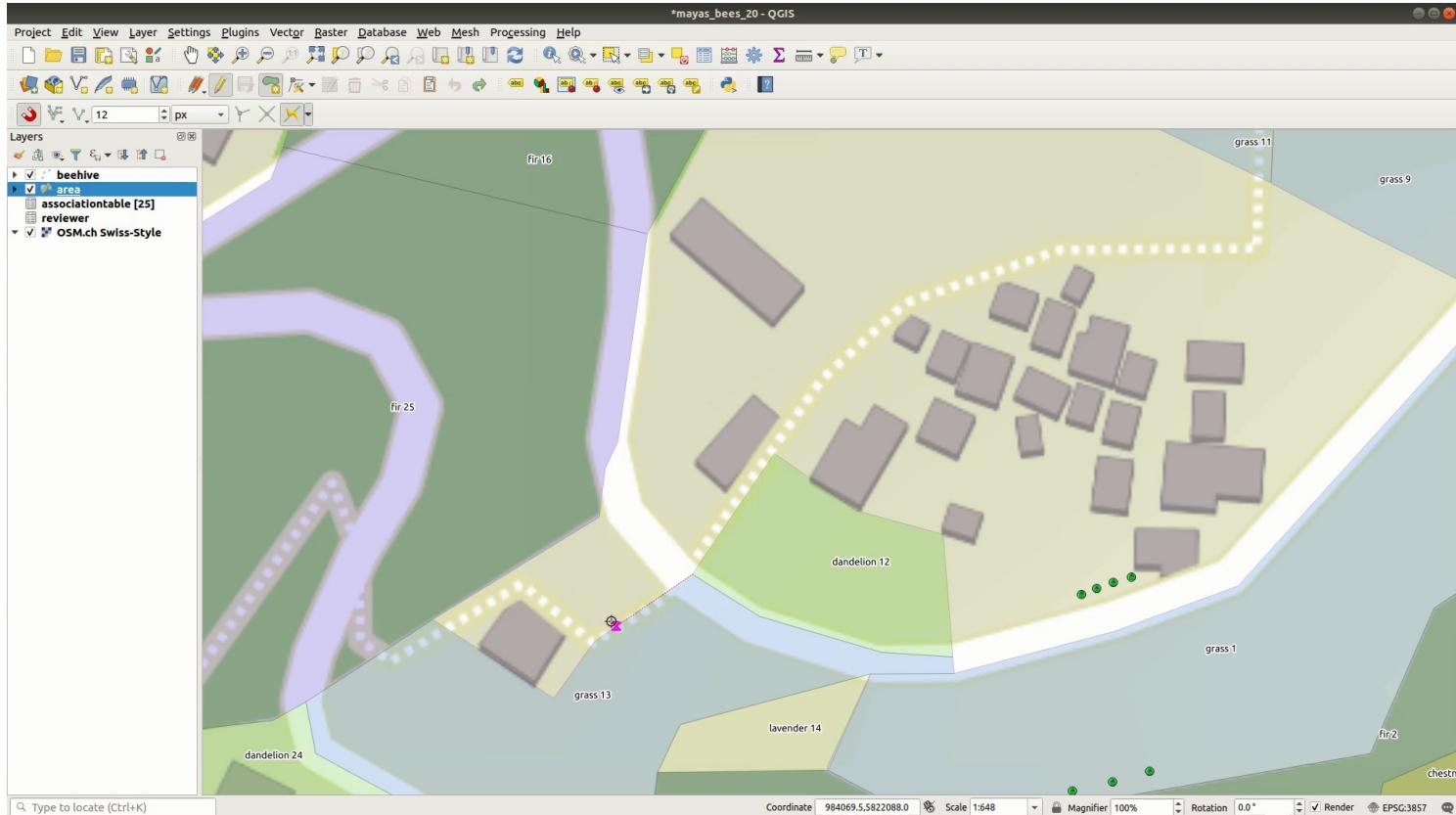


Editing Improvements

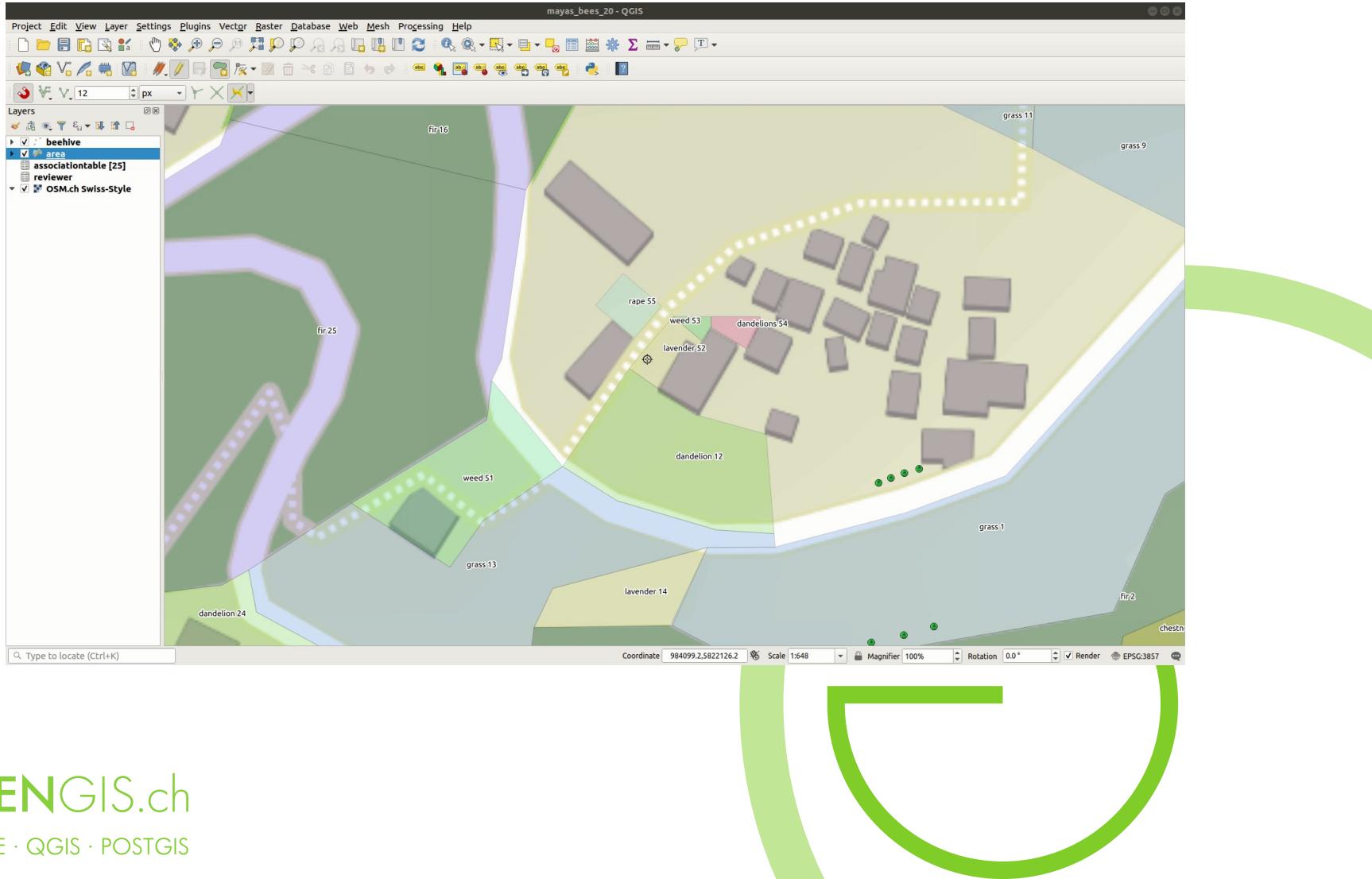
- New Vertex Tool
- CAD Tools
- Tracing at offsets



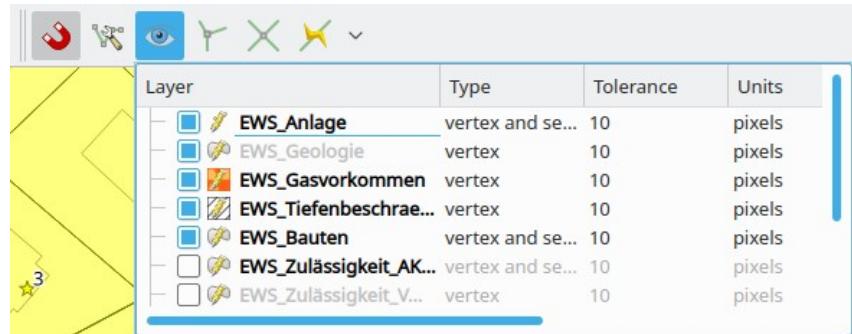
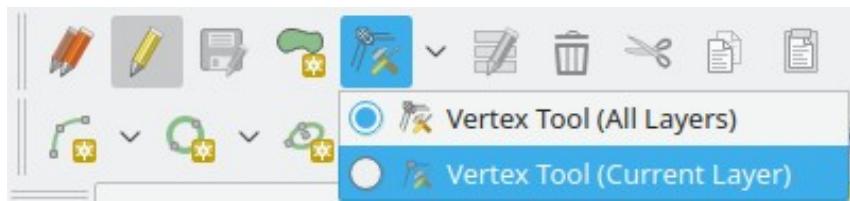
Editing Improvements



Editing Improvements - CAD



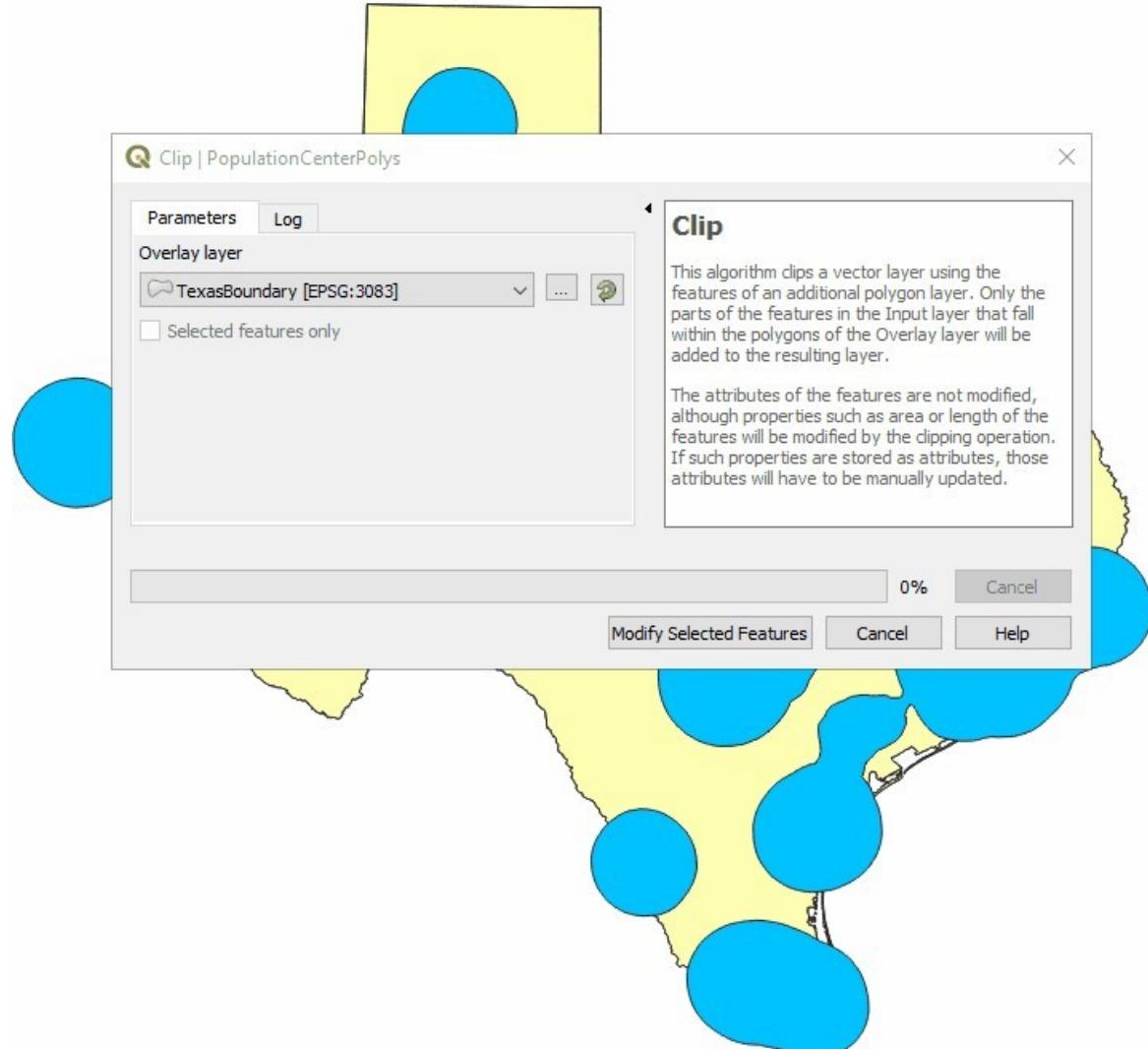
Editing tools enhancements



- 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



Q Select Features by Value

PERMANENT_ Case sensitive

FDATE

RESOLUTION Case sensitive

GNIS_ID Case sensitive

GNIS_NAME Case sensitive

LENGTHKM

REACHCODE Case sensitive

FLOWDIR

WBAREA_PER Case sensitive

FTYPE

FCODE

SHAPE LENG

PWSR

PWSRTyp Case sensitive

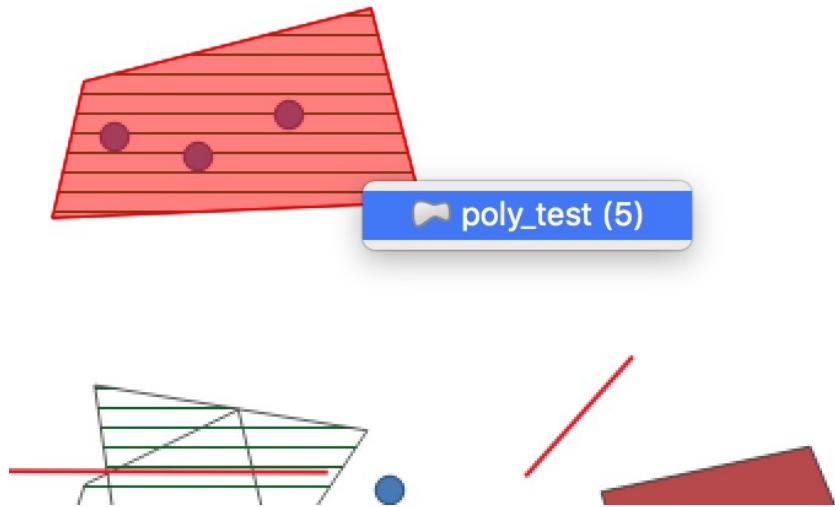
Miles

Label Case sensitive

orig_ocf_id

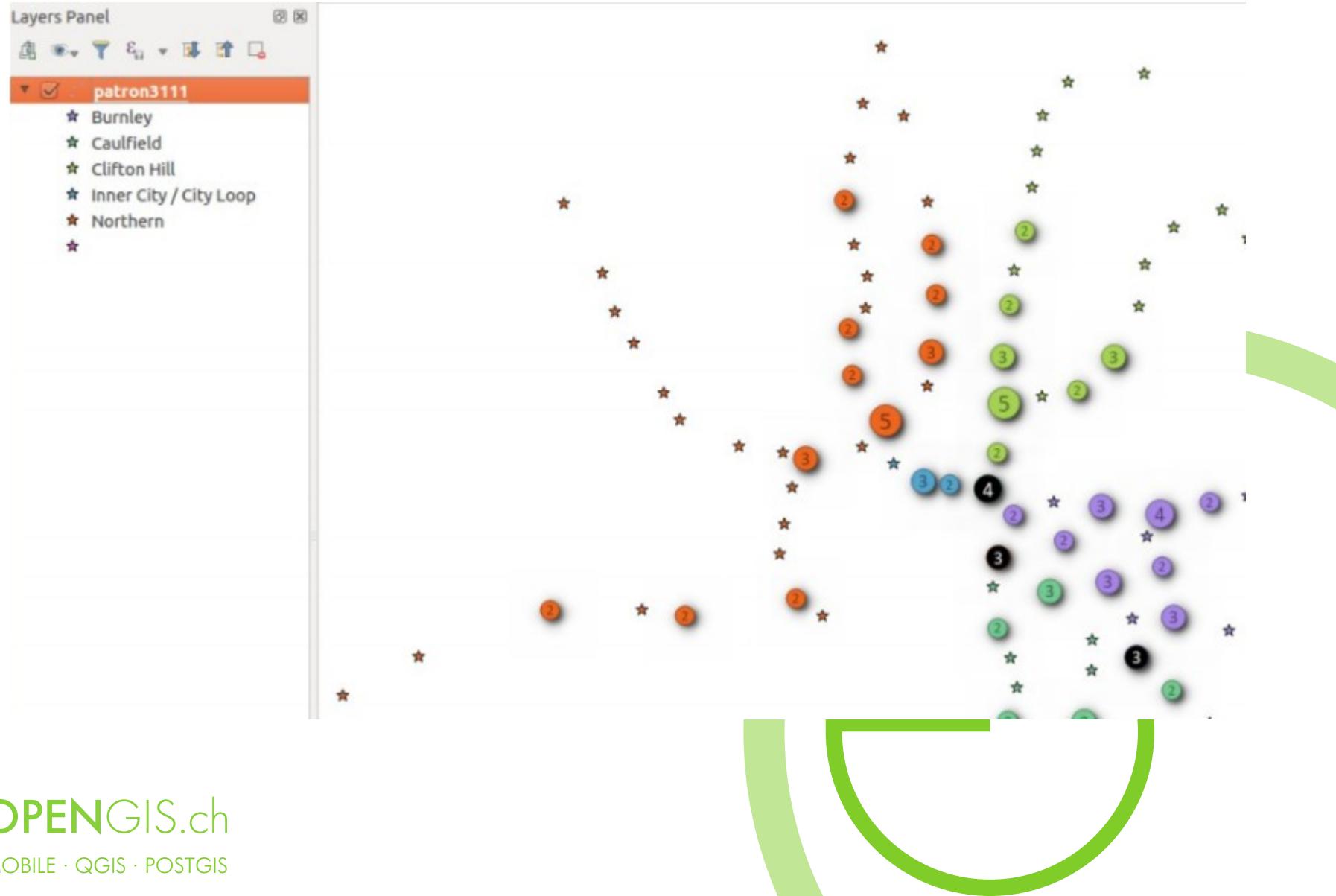
A map showing a river network with various features selected and highlighted in green and purple. A specific feature is being selected with a cursor.

Select Features based on existing polygon

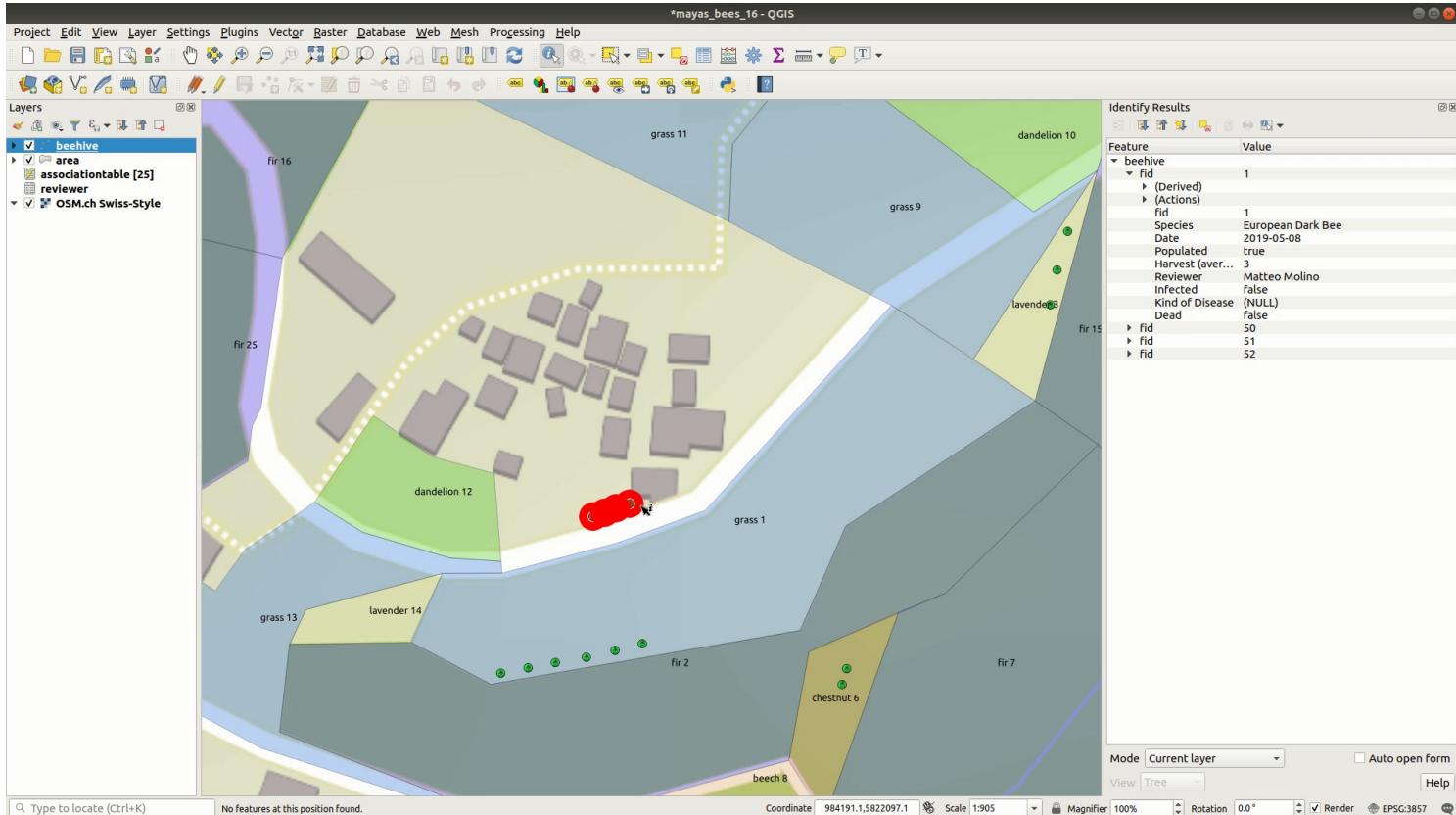


- allows user to right click on the map and pick an existing polygon feature at that location from popup menu - that polygon will be used as input for selection or identification.

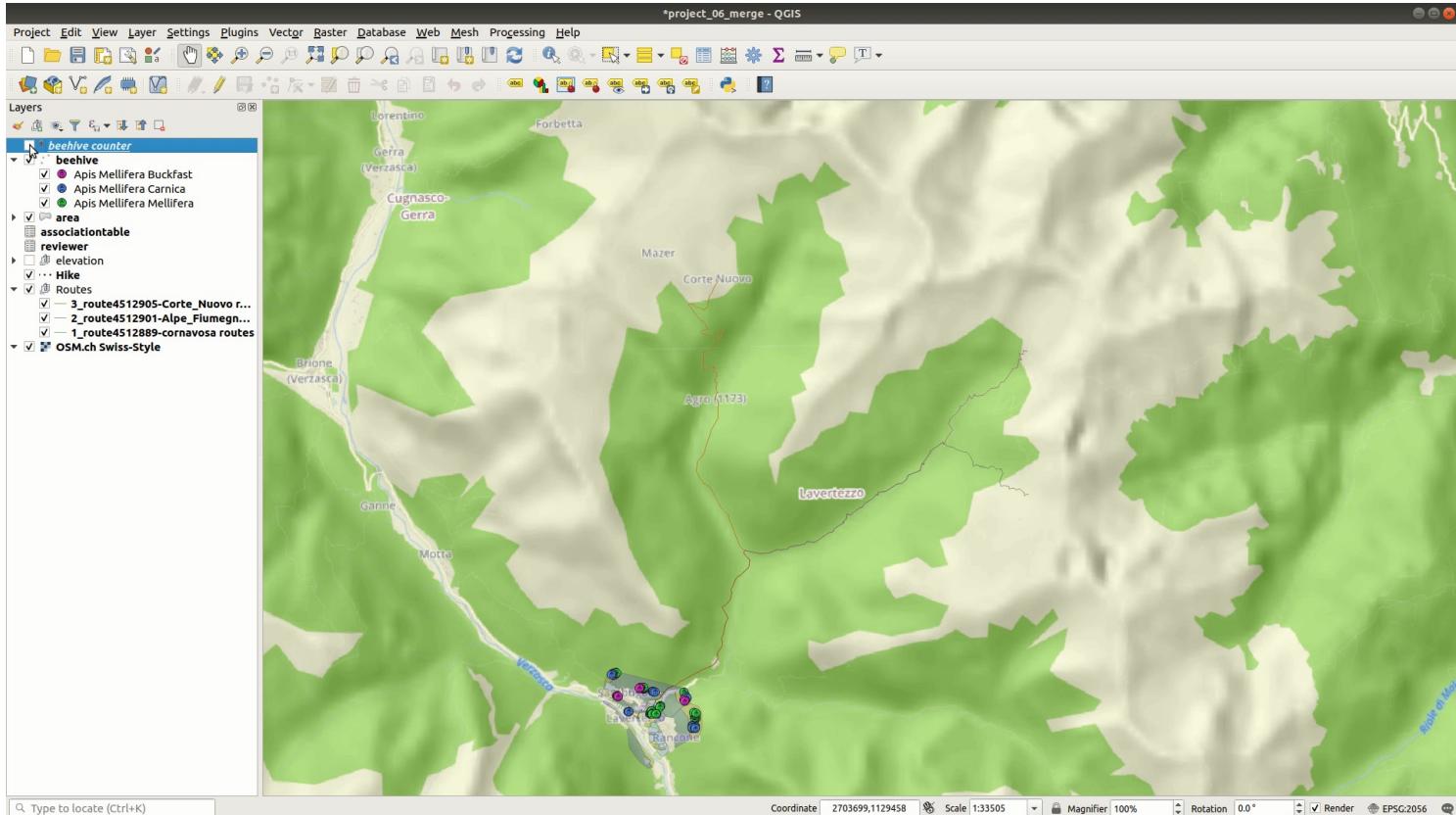
Point Cluster Renderer



QML widget

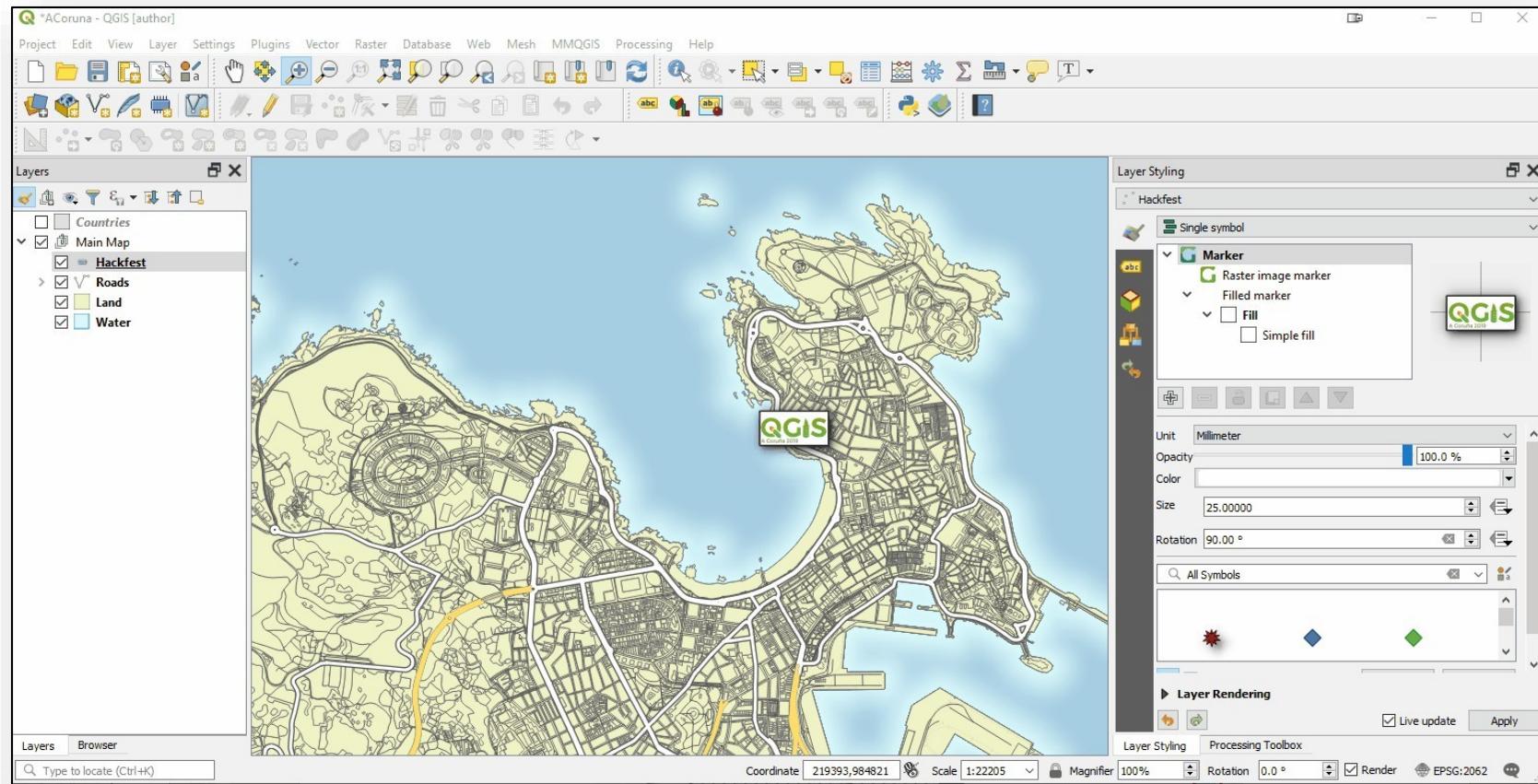


Live layers





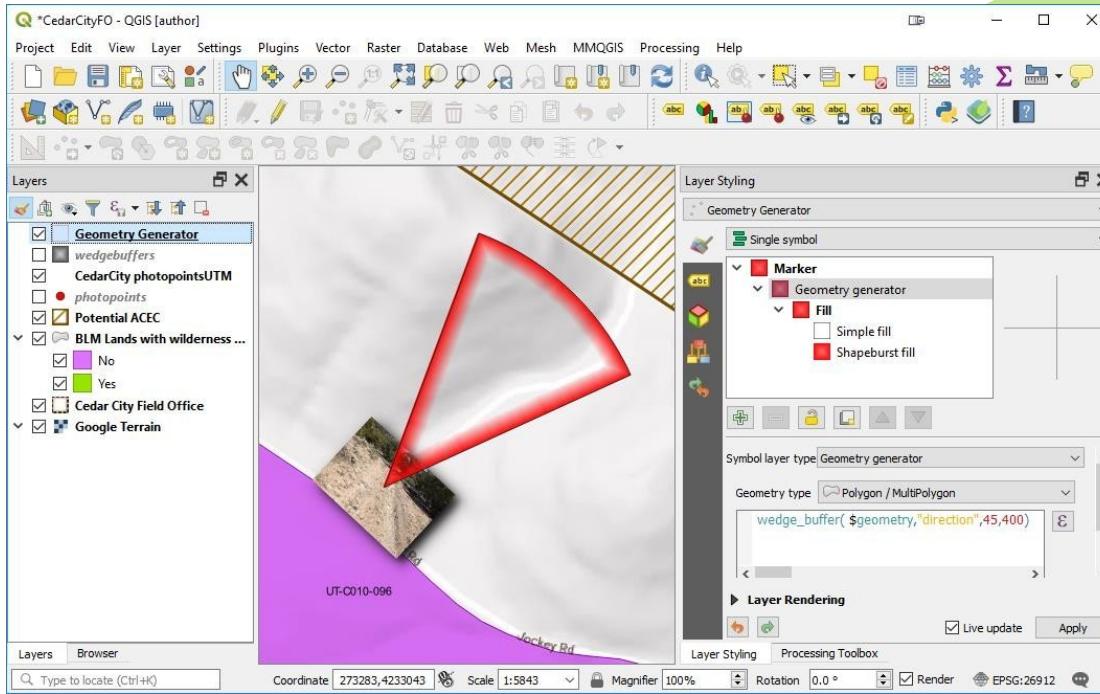
Raster Image Marker



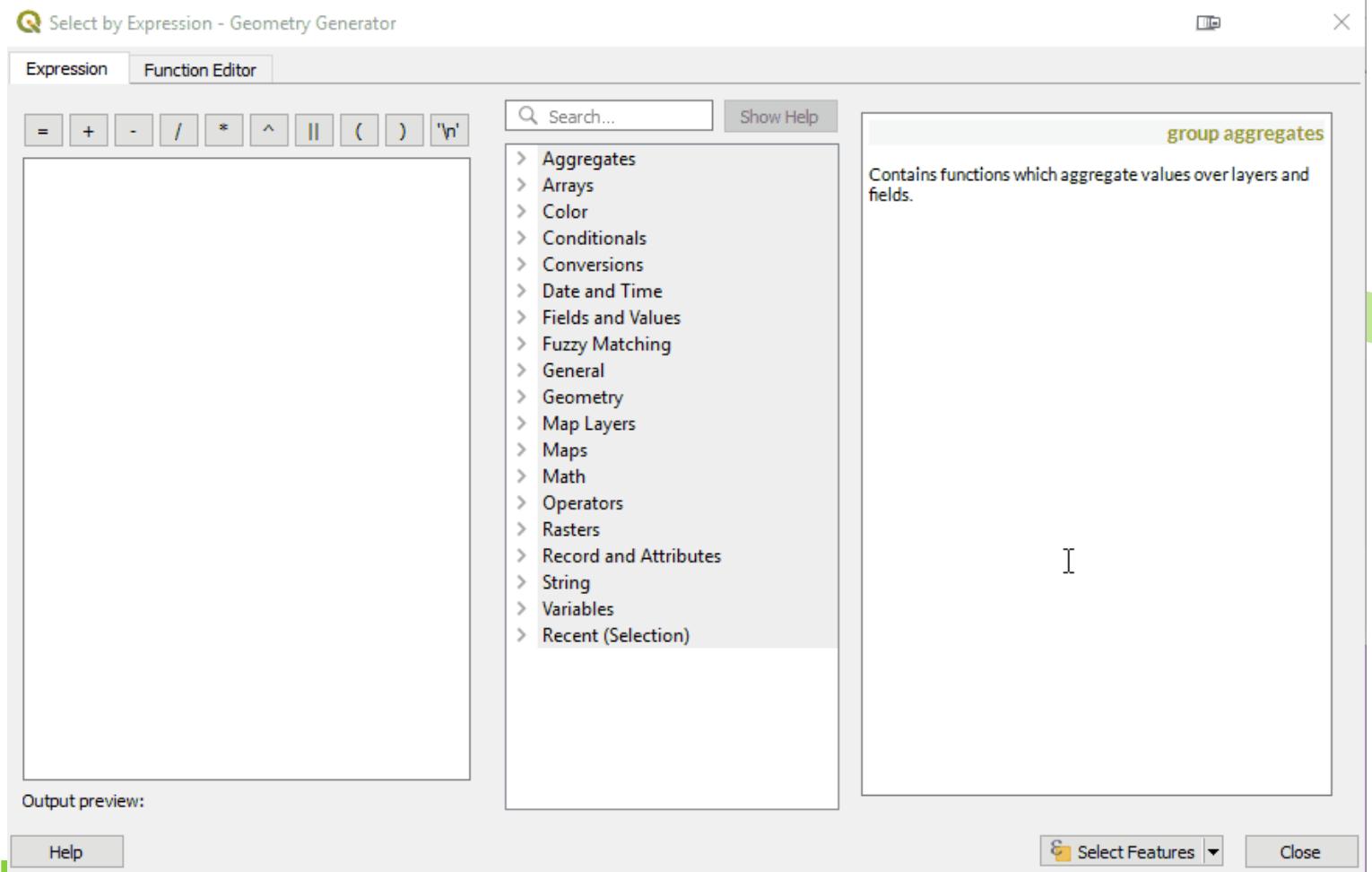


Raster Image Marker

- 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

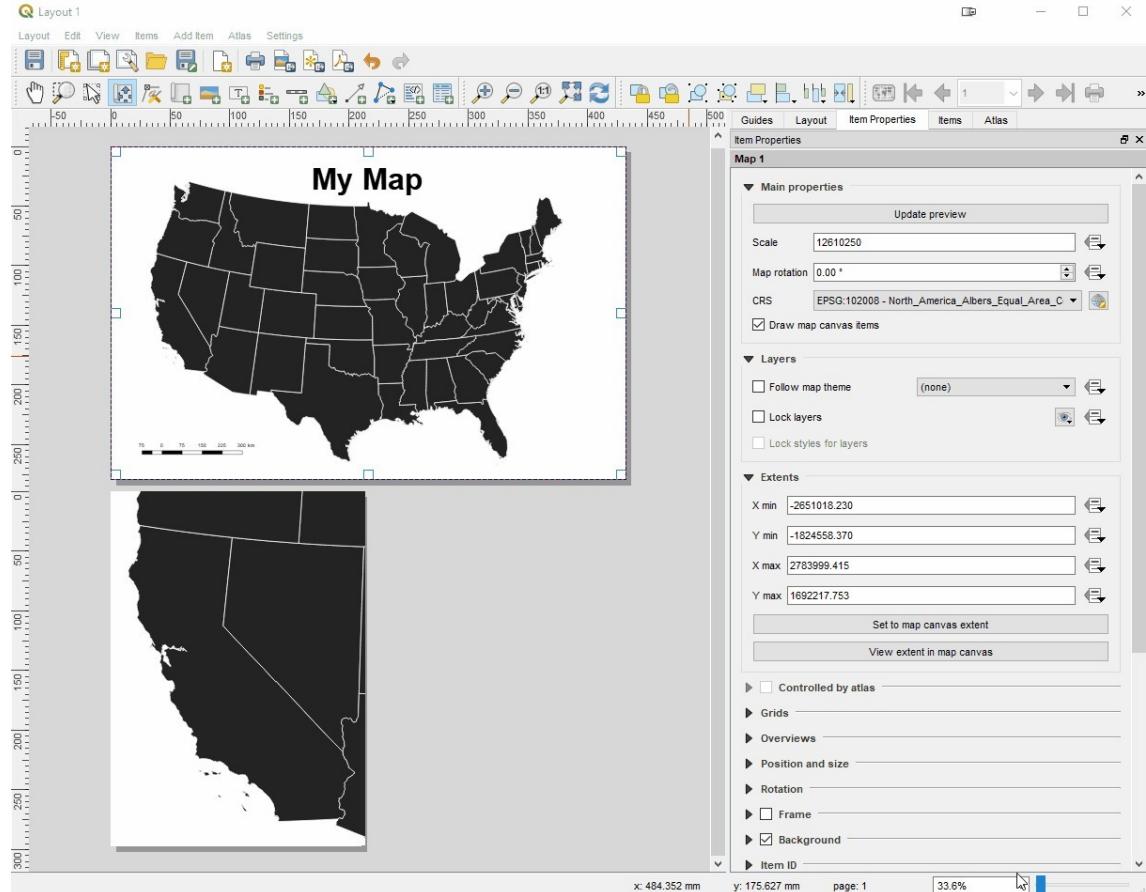


Even More Expressions | Variables & Data Defined Overrides

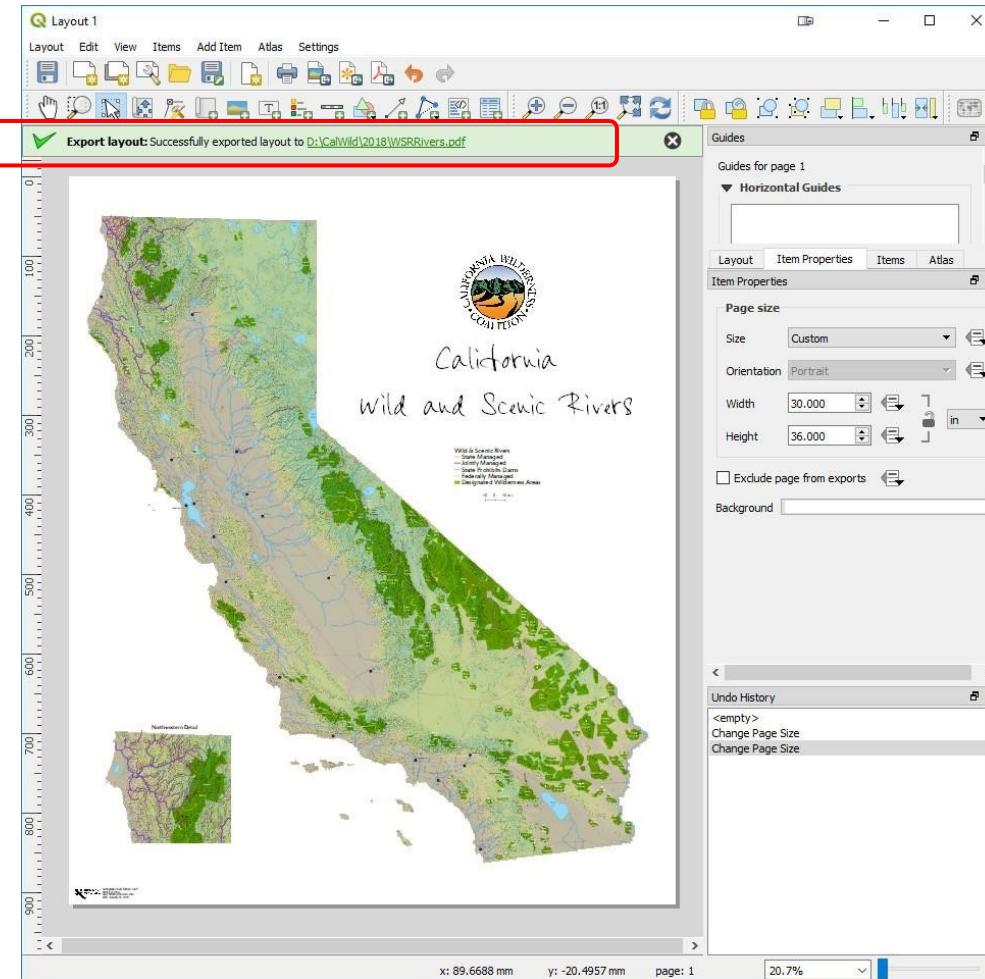


Print Composer

- Completely rewritten
- Can have multiple sheets per layout of different orientation and sizes
- New Reports

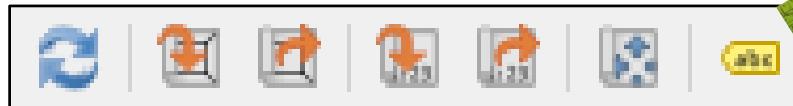


Hyperlinks to export folder



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



QGIS 3.6
Noosa

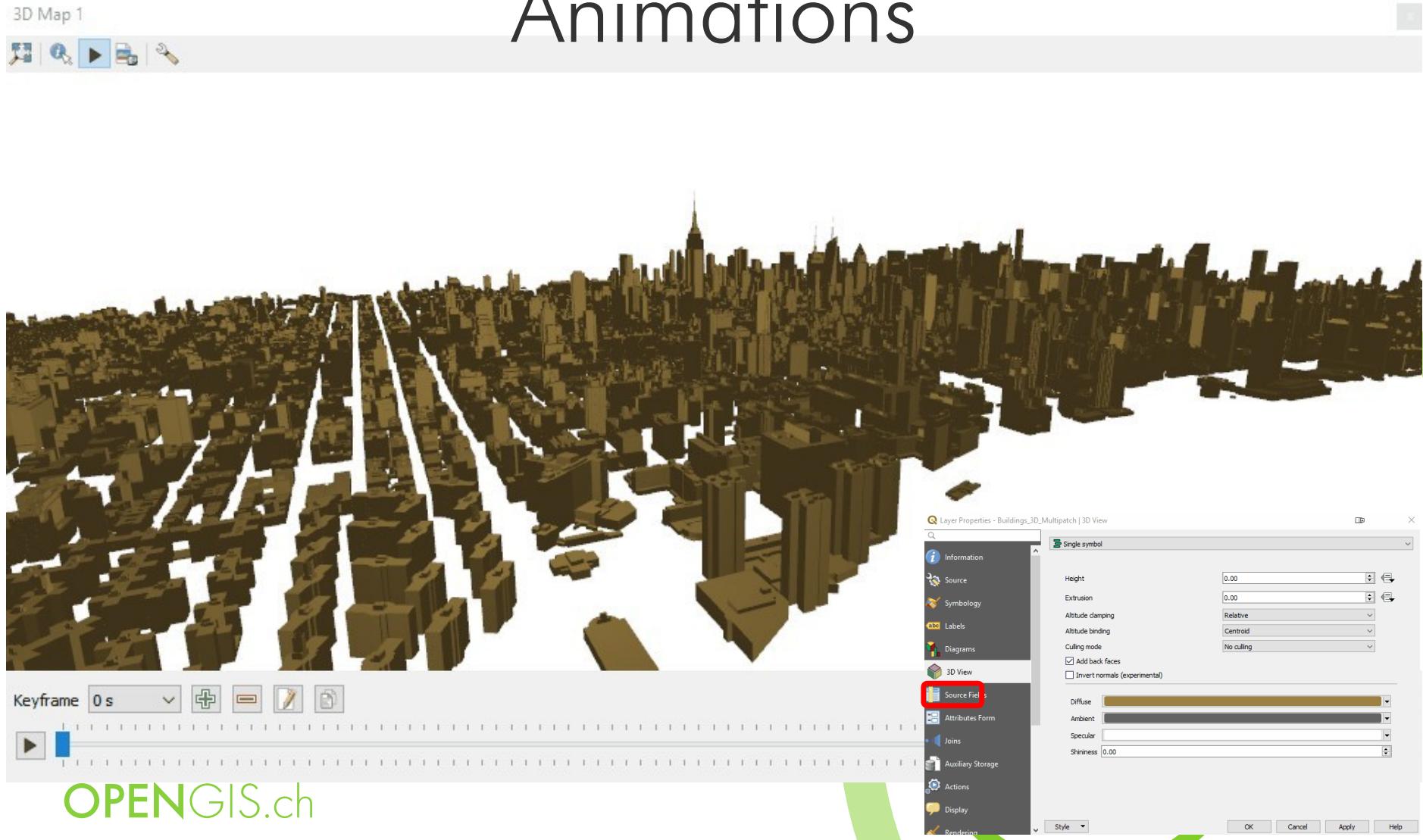
- Expressions supported for legend items



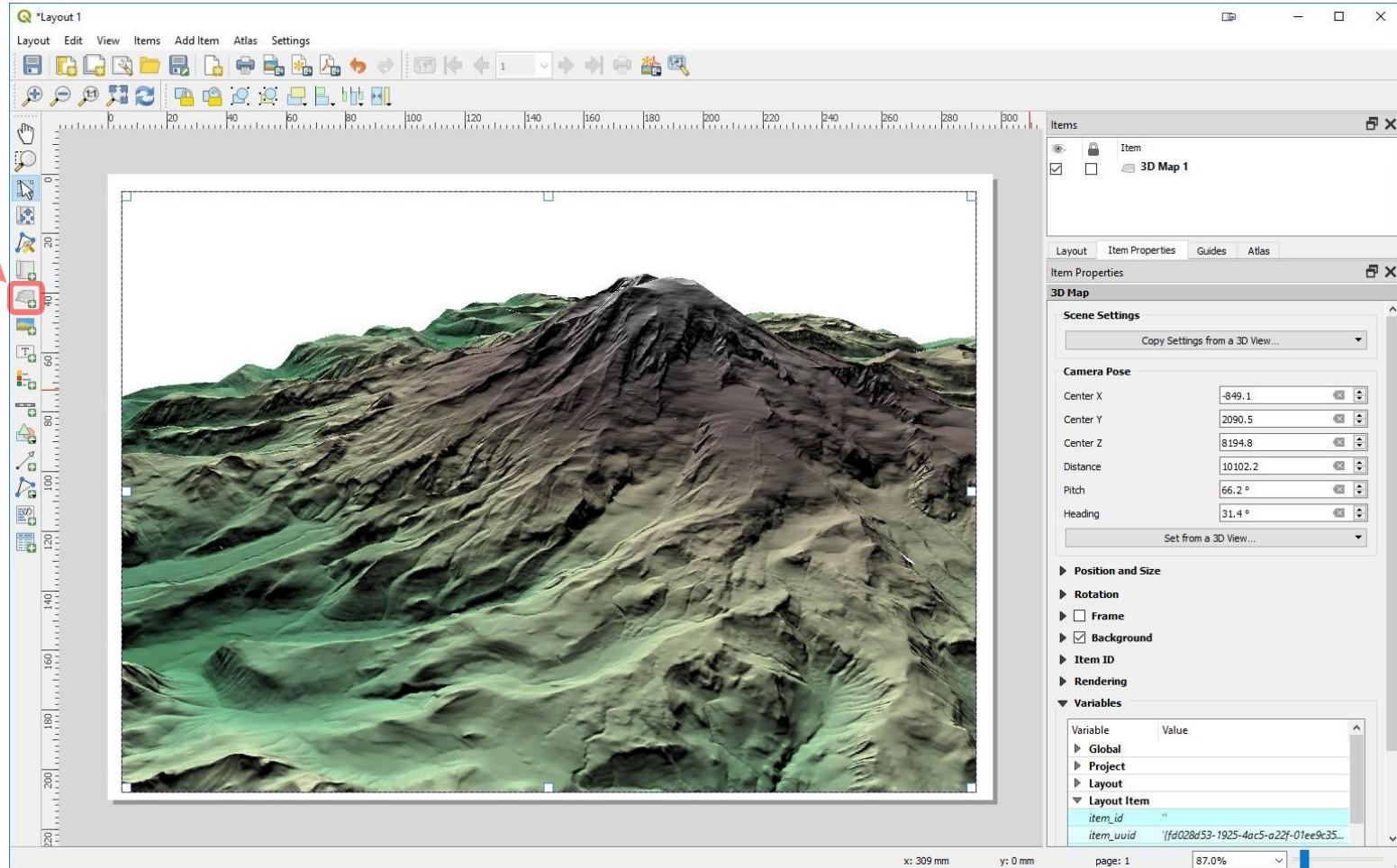
Print Composer - Layout items can “block” map labels



3D Extrusion of Vector Data & Animations

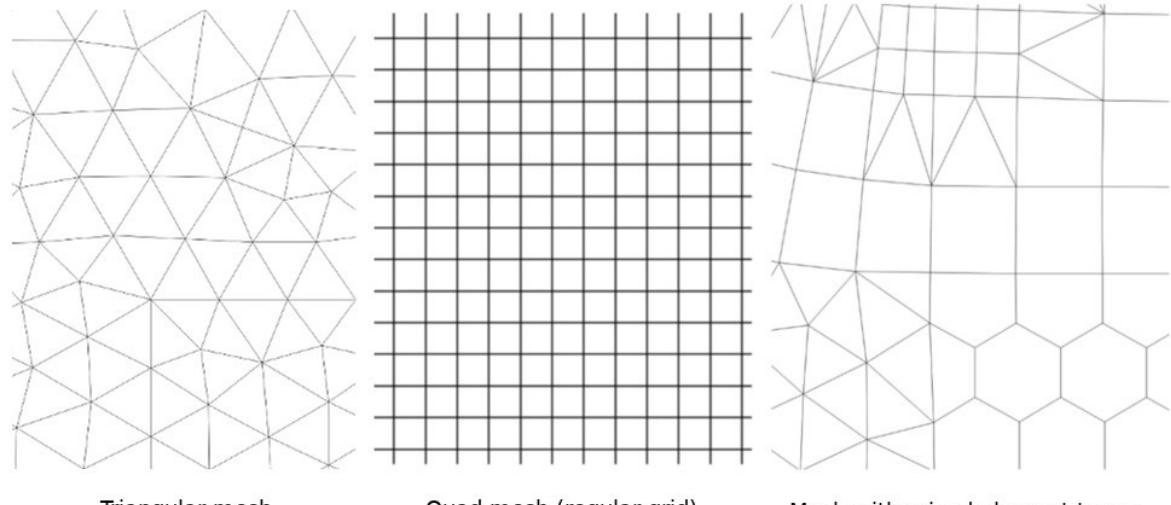


3D Support in Print Layout

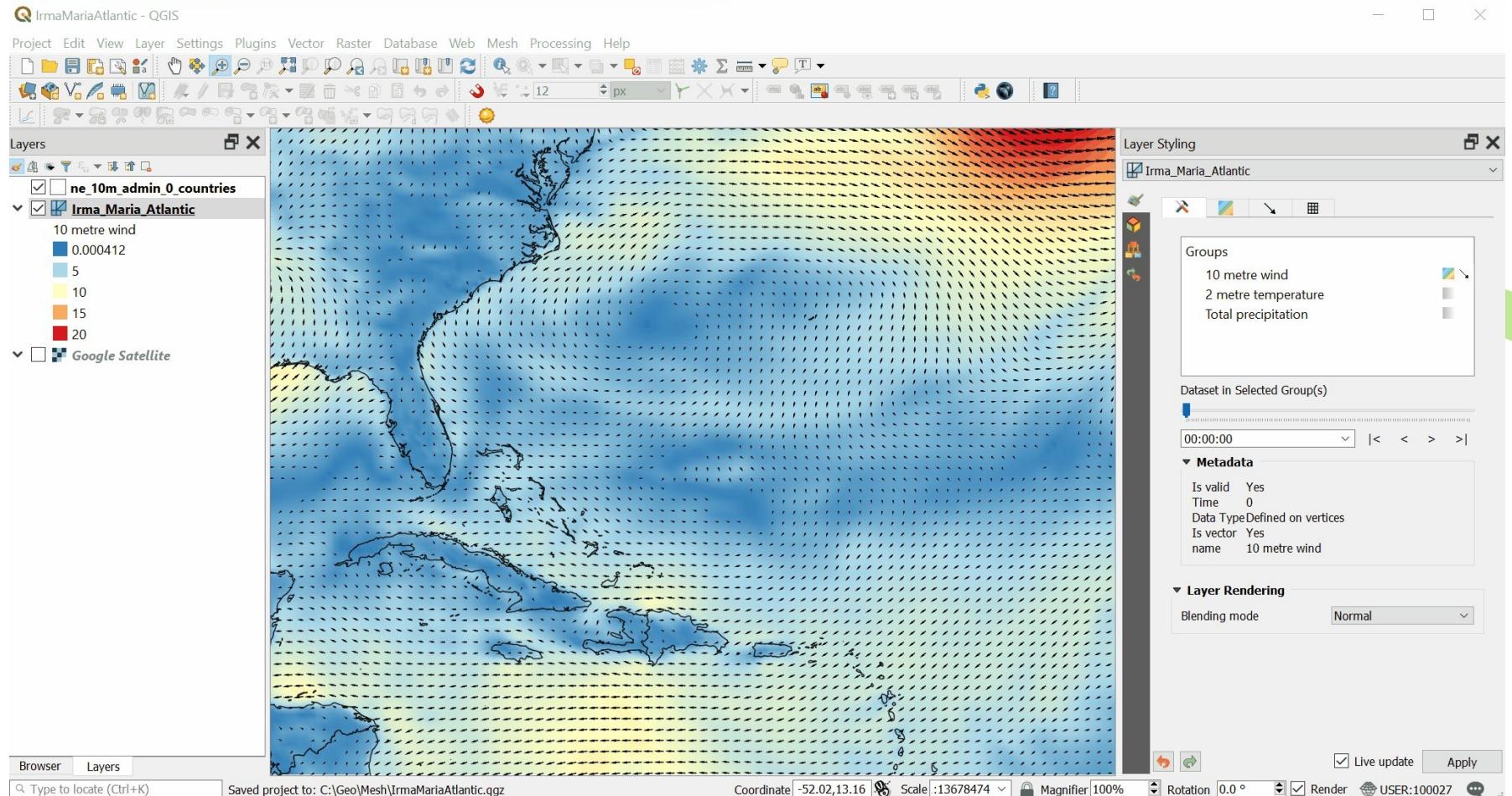


Support for Mesh Data

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



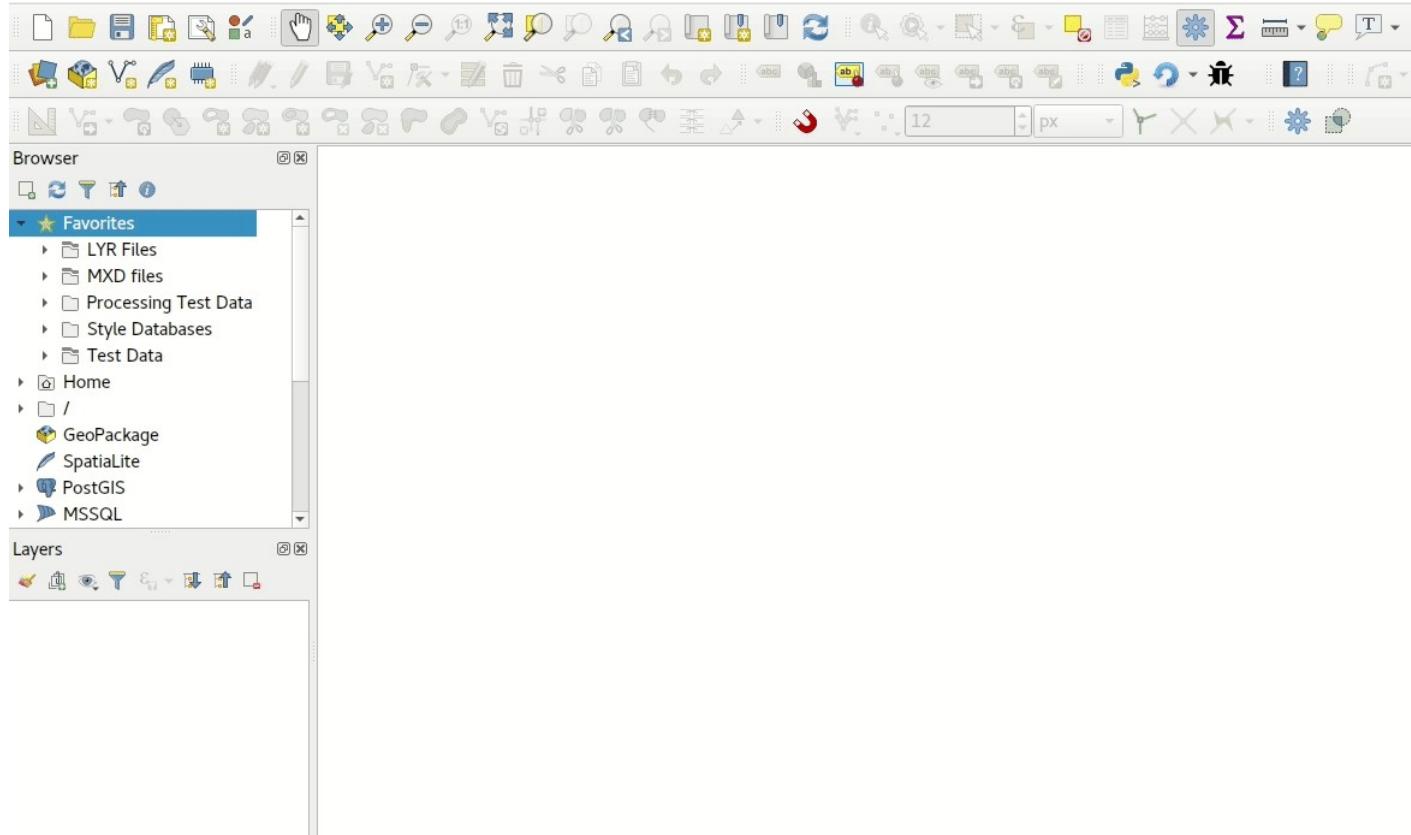
Style Contour and Vectors & Use Time Slider



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ESRI .mdx to .qgs (Beta, in foundrising)



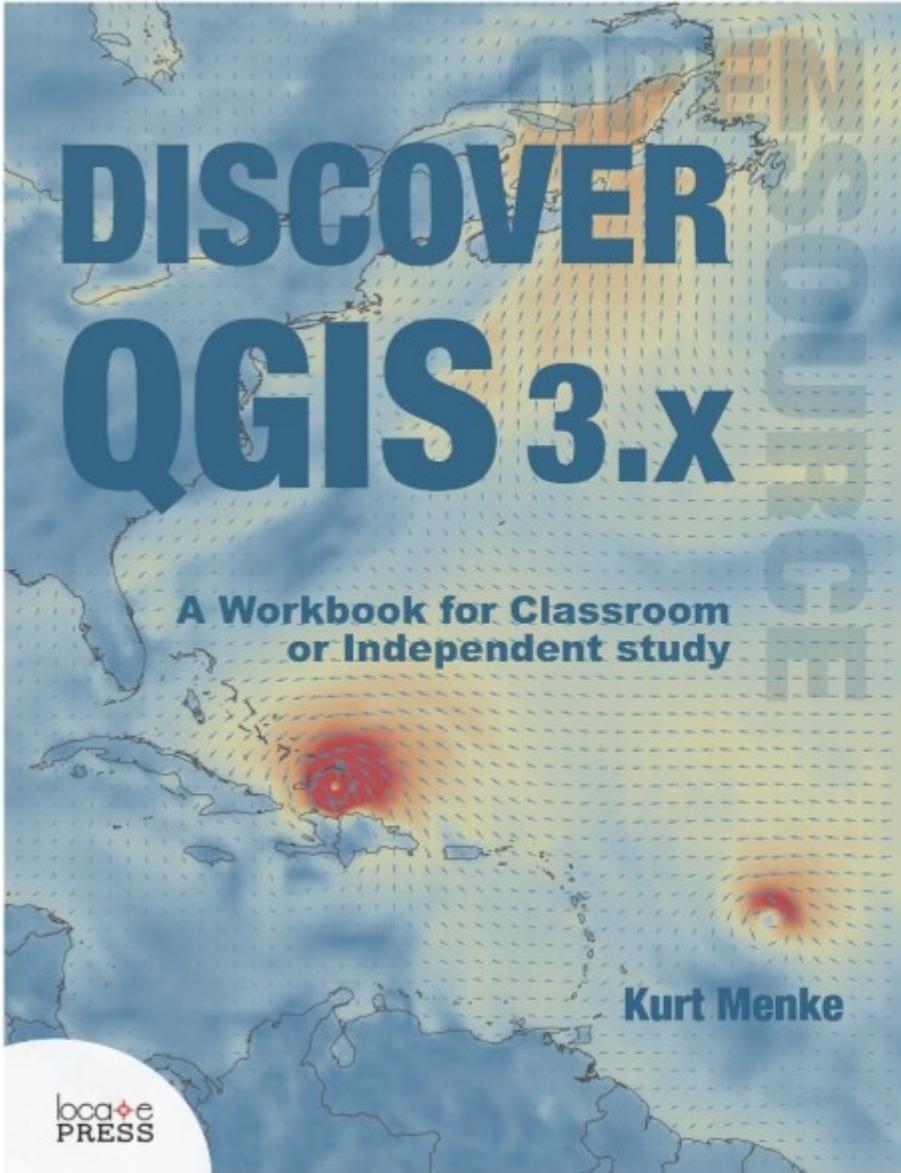
QGIS Server

- 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



Shameless Plug #1

Spring 2019



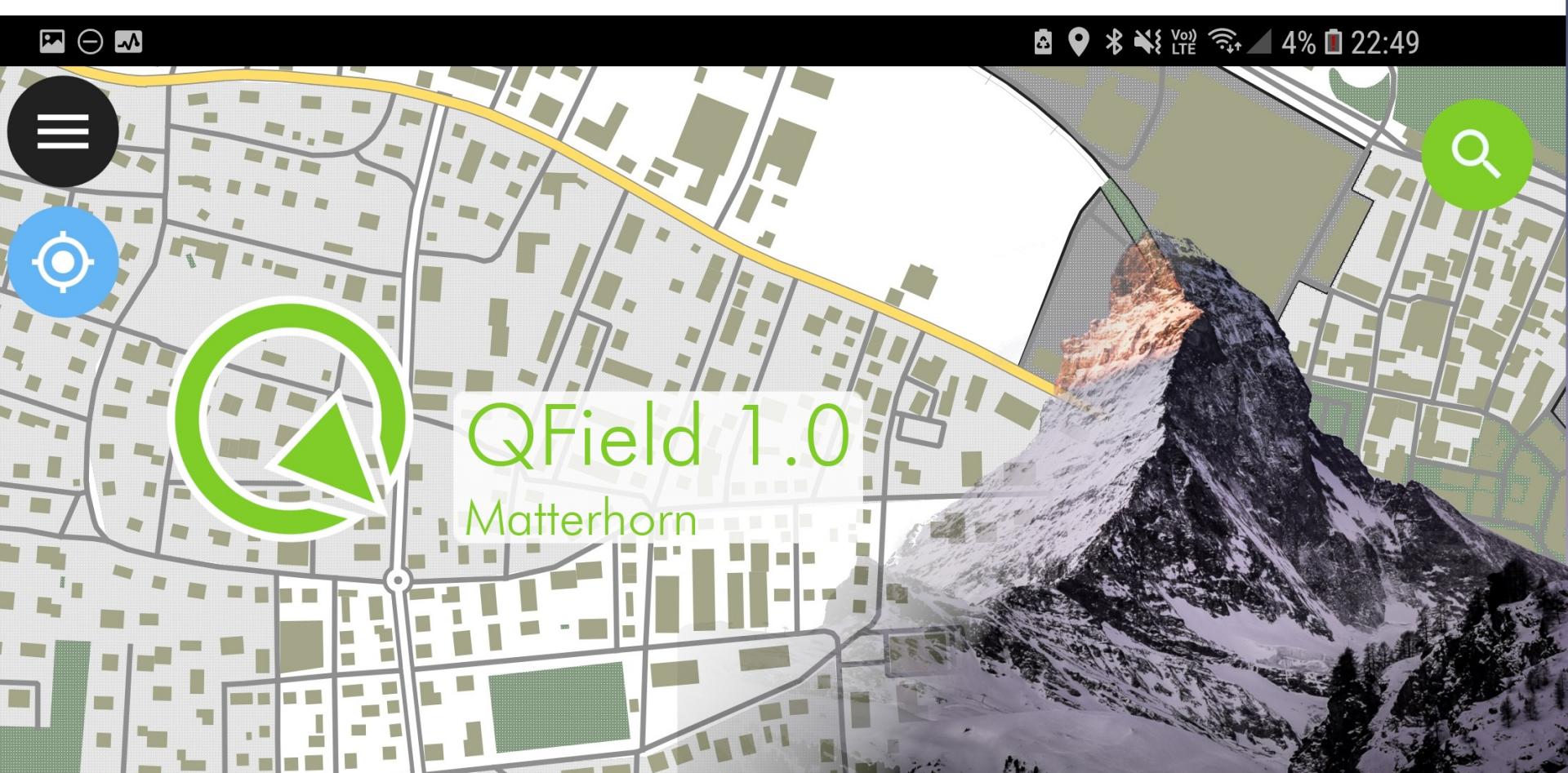
- ✓ Updated for QGIS 3.6
- ✓ A workbook for classroom or independent study
- ✓ Lab exercises based on the GeoAcademy
- ✓ Data, Discussion questions & Solution files included
- ✓ Challenge exercises
- ✓ Learn enhanced workflows with QGIS 3.x
- ✓ Covers Spatial analysis, Data management & Cartography
- ✓ 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



<https://locatepress.com/dq3>

Shameless Plug #2



OPENGIS.ch

MOBILE · QGIS · POSTGIS

Shameless Plug #3



<https://opengis.ch/qgis-on-the-road>



QGIS needs you!

QGIS needs more contributors



- Users, Testers
- Contributors of case studies
- Documentors and Translators
- Hosts of meetings and hackfests
- Developers
- Sysadmins for infrastructure
- Funders, Donors, Sponsors



We strive for a friendly, welcoming and diverse worldwide community!

Visit <https://www.qgis.org/> for more information or follow @QGIS on Twitter

Thanks! Questions?



Get in touch
@OPENGISch
info@opengis.ch