



**FOSS4G 2015**

# **QGIS Plugins**

## **From Must-Haves to insider tips**

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**Sourcepole AG, Switzerland**

**[www.sourcepole.com](http://www.sourcepole.com)**



**SOURCEPOLE**  
Linux & Open Source Solutions

- › **Full featured desktop GIS**
- › **Support for many vector and raster formats**
- › **Extensible with Python and C++ plugins**
- › **Customizable**
- › **Web mapping services with QGIS Server**
- › **Windows, Linux, Mac OS support**
- › **Open Source**

**[plugins.qgis.org](https://plugins.qgis.org)**



# Plugin Manager

Suchen

- Alle
- Installiert
- Nicht installiert
- Aktualisierbar
- Einstellungen

Accuracy Assessment

AccurAssess

Affine Transformations

AniMove for QGIS

ArcGIS REST API Connector

ArcGIS REST API Connector

ArcheoCAD

Area Along Vector

Arrows

Astrogeology POW

Attribute painter

autoSaver

AutoTrace

Azimuth and Distance Calculator

Azimuth and Distance Plugin

BLN Exporter

Buffer by Percentage

Bulk vector export

cadastre

CADDigitize

CadInput

CadTools

## Accuracy Assessment

Generate an error matrix and measures of mapping accuracy for raster and reference data.

★★★★☆ 14 Bewertung(en), 24949x heruntergeladen

Elemente: confusion matrix,map comparison,error matrix,accuracy assessment,remote sensing  
Weitere Informationen: [Homepage](#) [Fehlerverfolgung](#)  
[Quellcode-Repositoryum](#)

Autor: Jared Kibble

Verfügbare Version 0.4.2 (in Offizielles QGIS-Erweiterungsrepository)

Alle aktualisieren

Erweiterung installieren

Hilfe

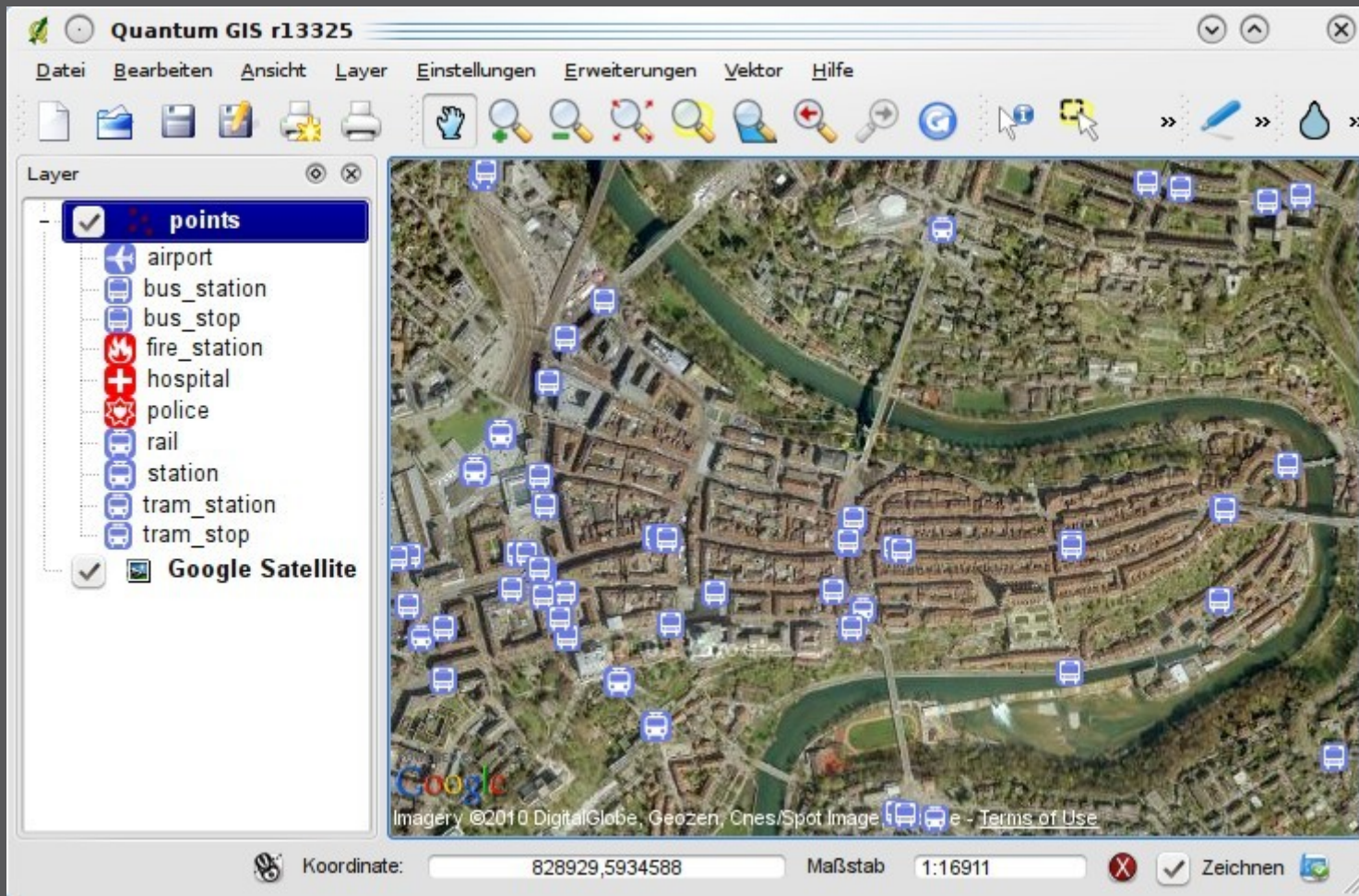
Schließen

➤ Plugins → Manage and Install Plugins

# **Top Downloads (non-core)**



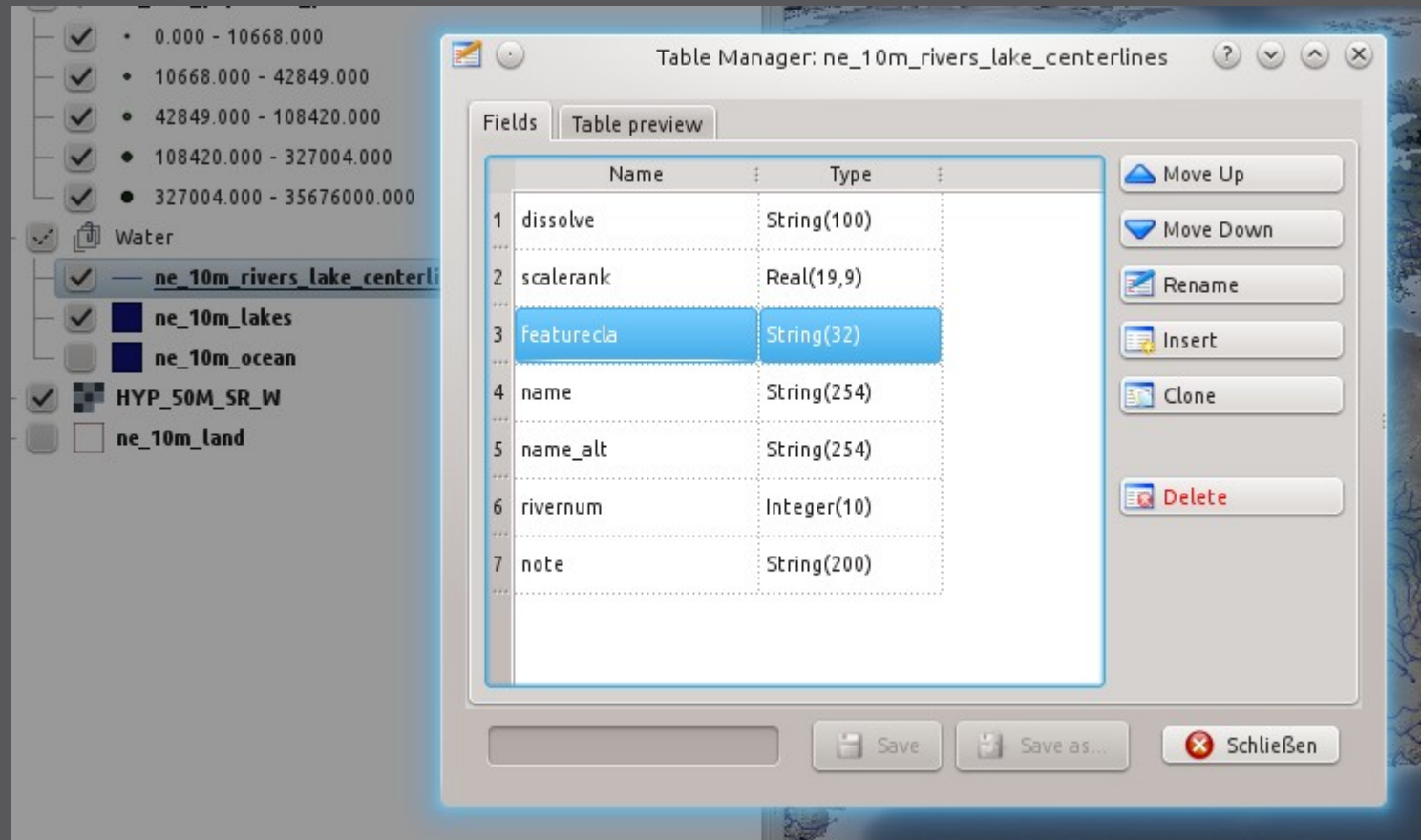
# #1: OpenLayers Plugin



- Google Maps, Bing, OSM background maps
- 460'000 downloads



# #2: Table Manager



## ➤ Table structure modification



# #3: mmqgis



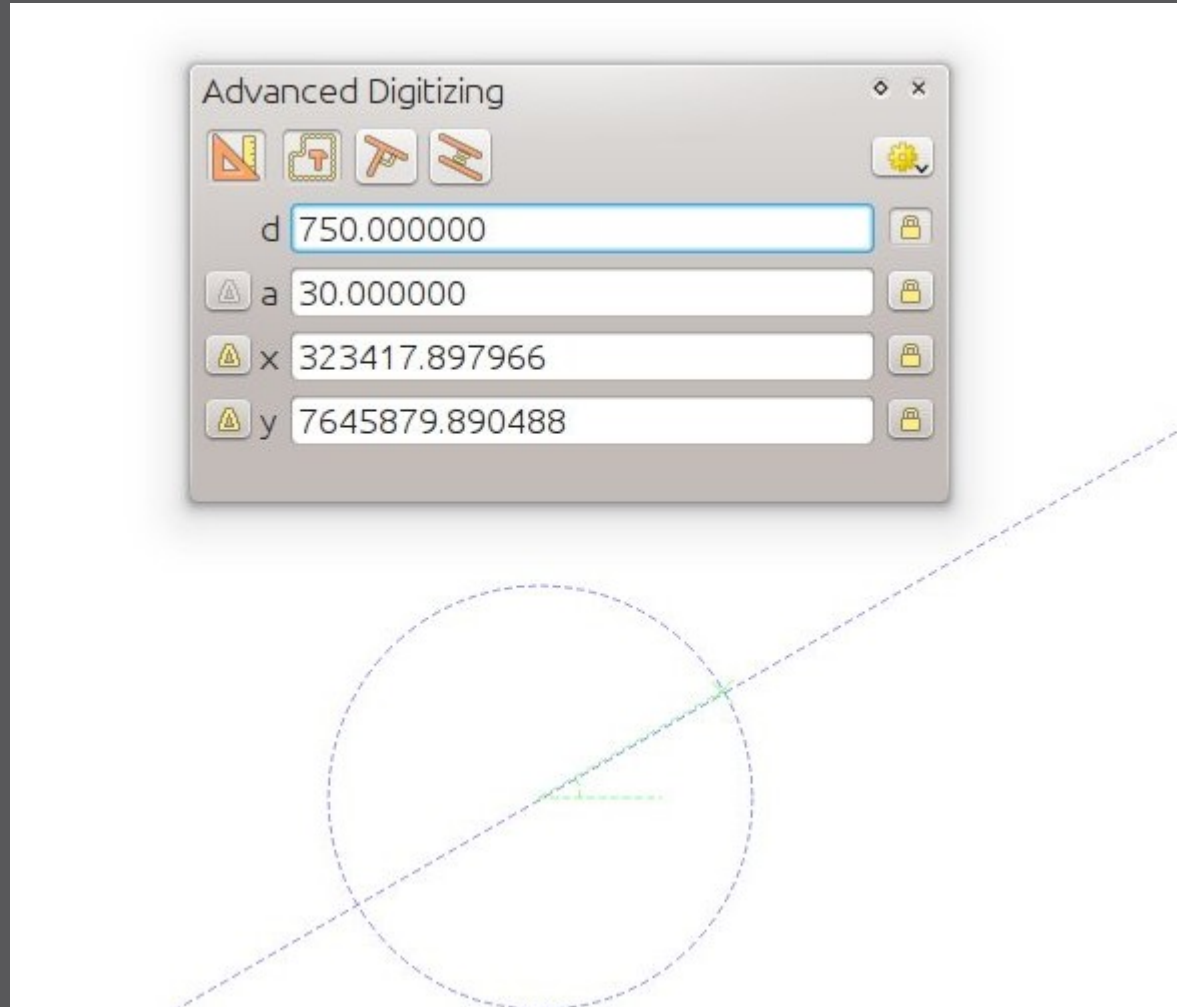
- Collection of algorithms for data processing, analysis, etc.



**Digitizing**



# CAD Tools et al

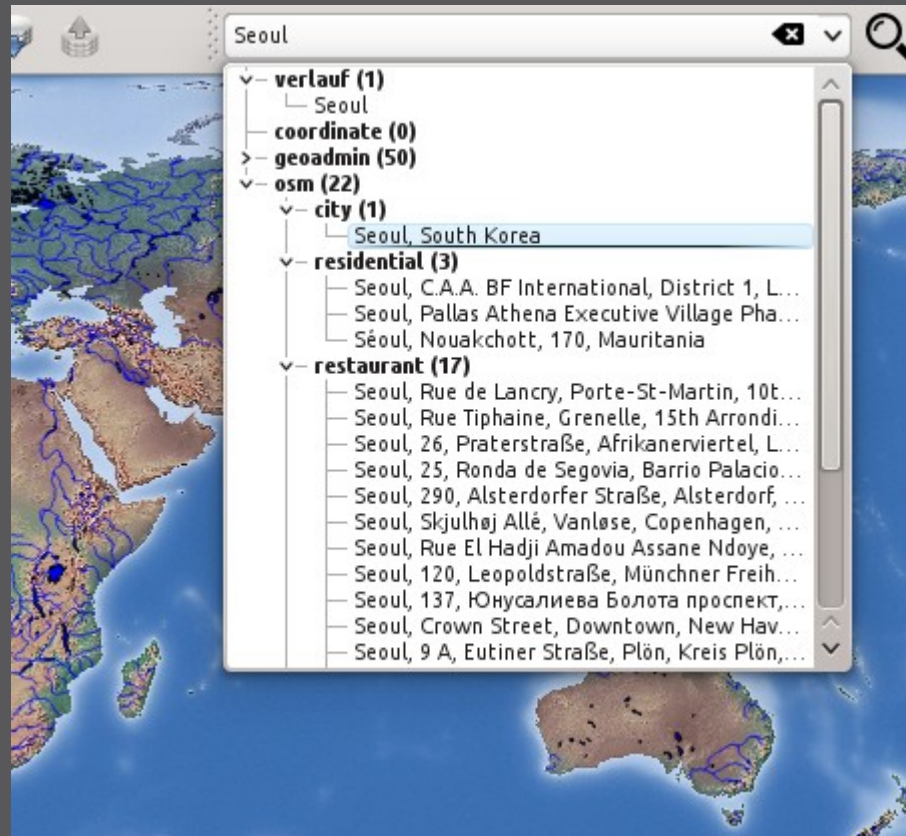


- › Integrated since QGIS 2.8
- › Plugins: CAD Tools, CADDigitize, ...

# Daily Helpers

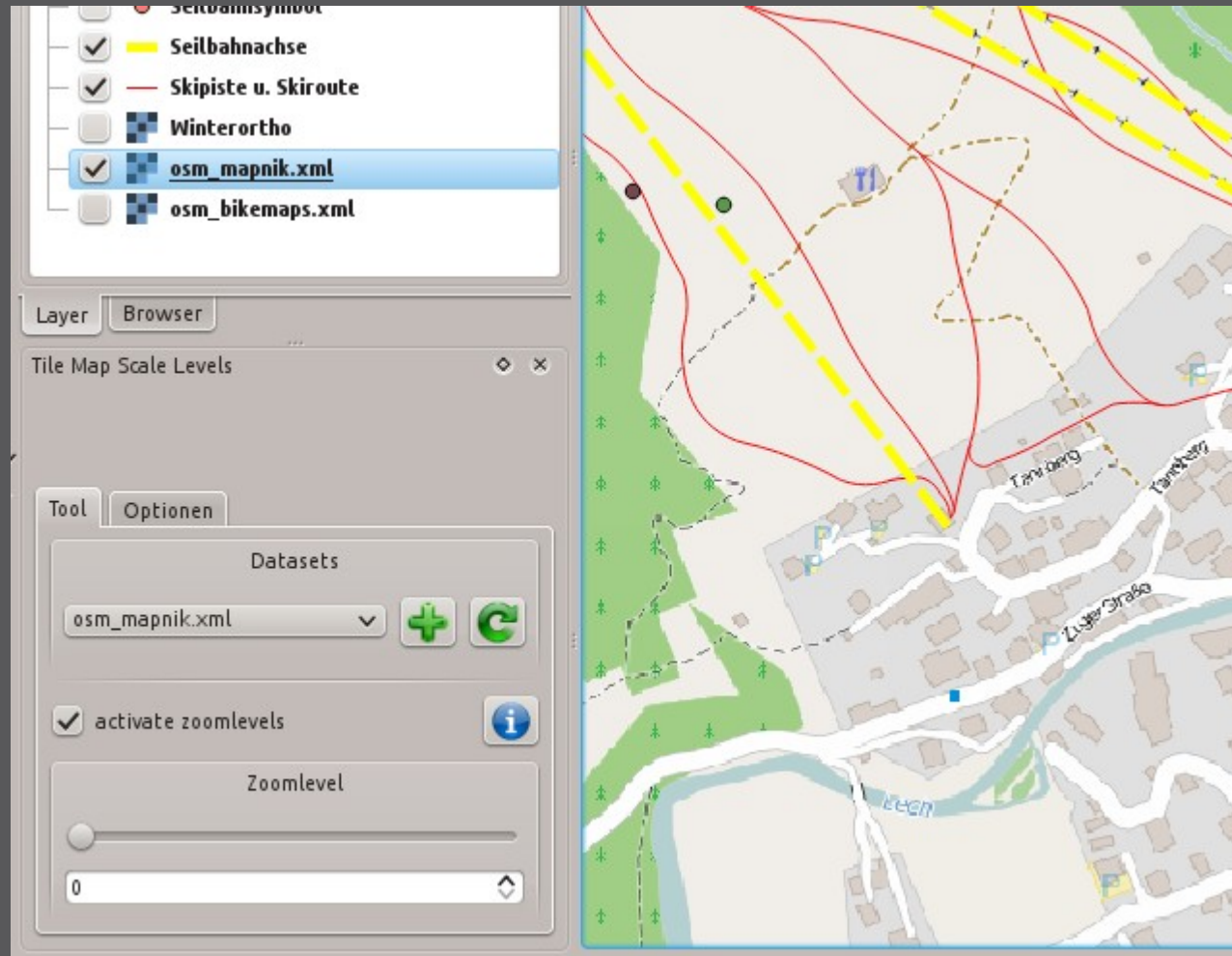


# Place search



- Quick Finder: OSM + other providers
- Alternatives: OSM Place Search, GeoCoding

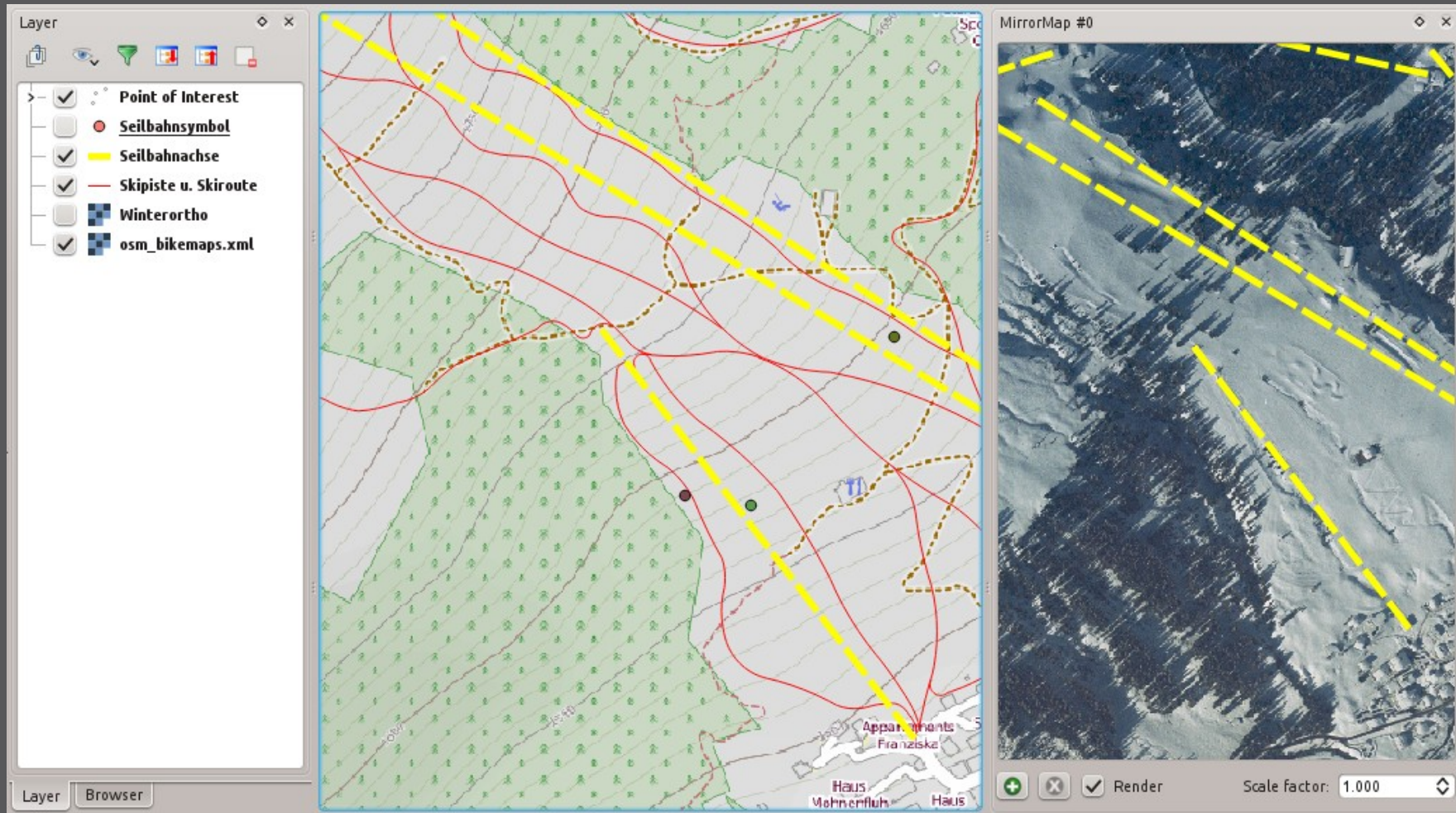
# Tile Map Scale Plugin



- OSM and other XYZ background layers
- Alternatives: OpenLayers, TileLayer Plugin

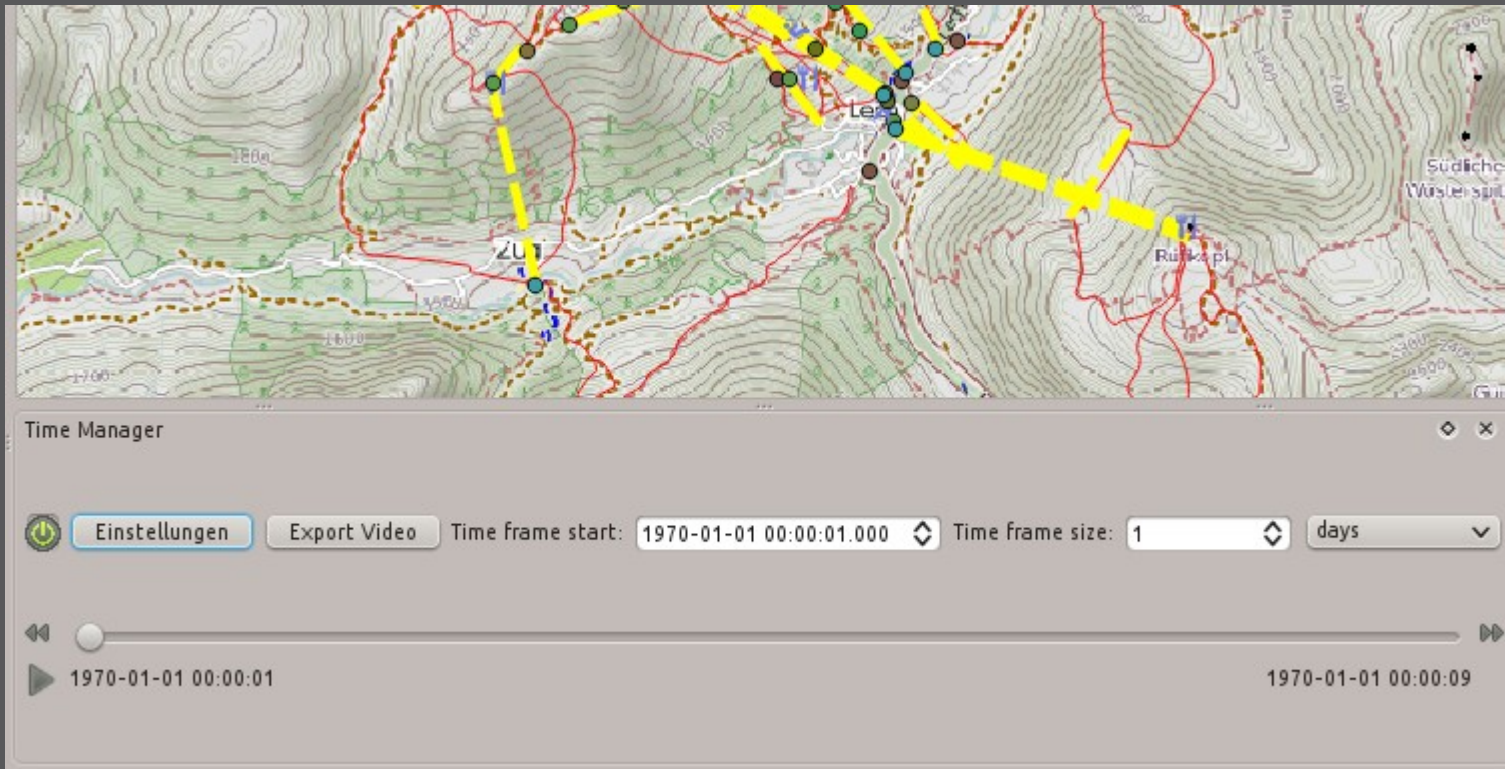


# Dockable MirrorMap



- Synchronized map views
- Alternative: Auxiliary Window

# Time Manager



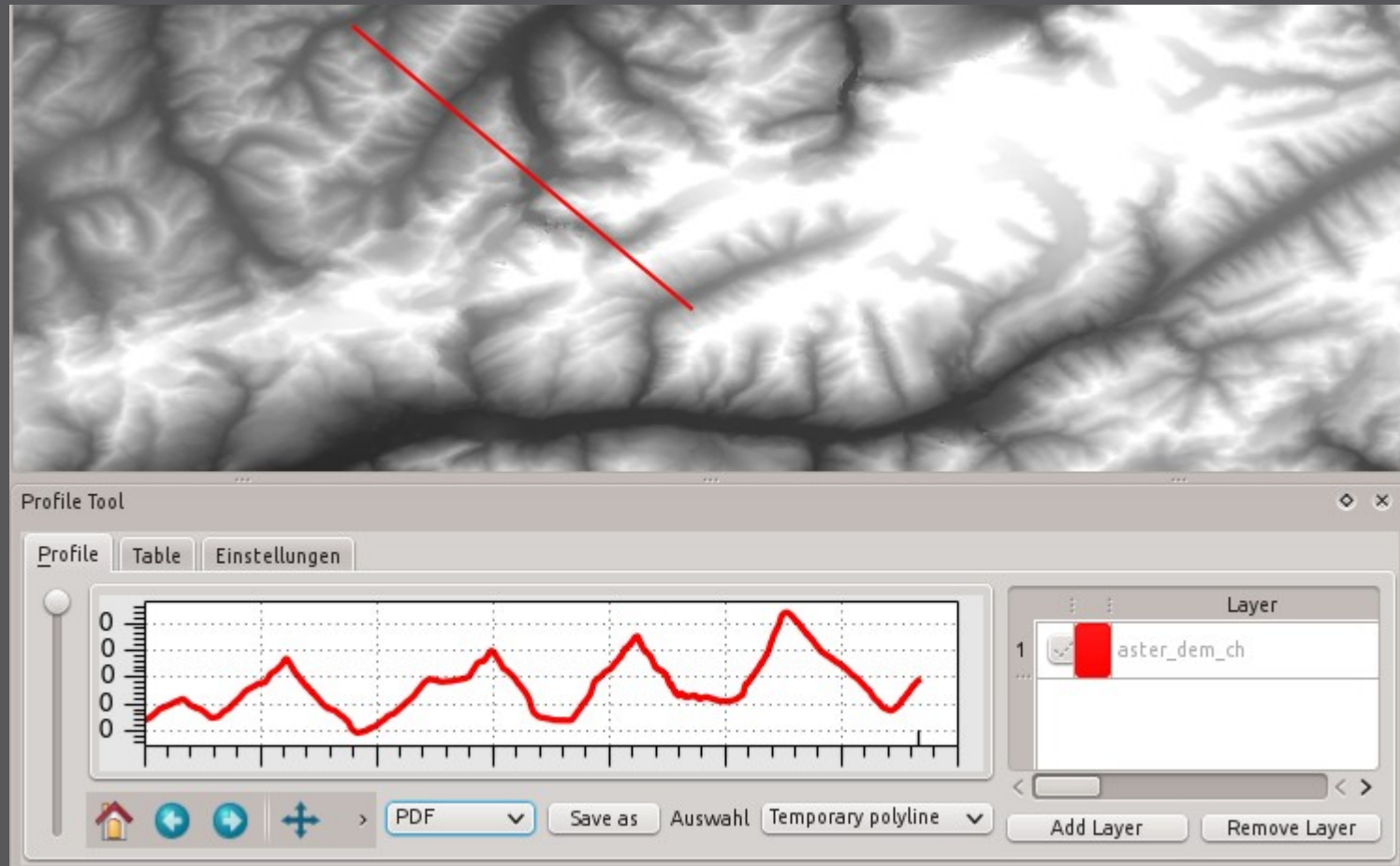
## Animation of temporal Data (Exp.)

**Raster**





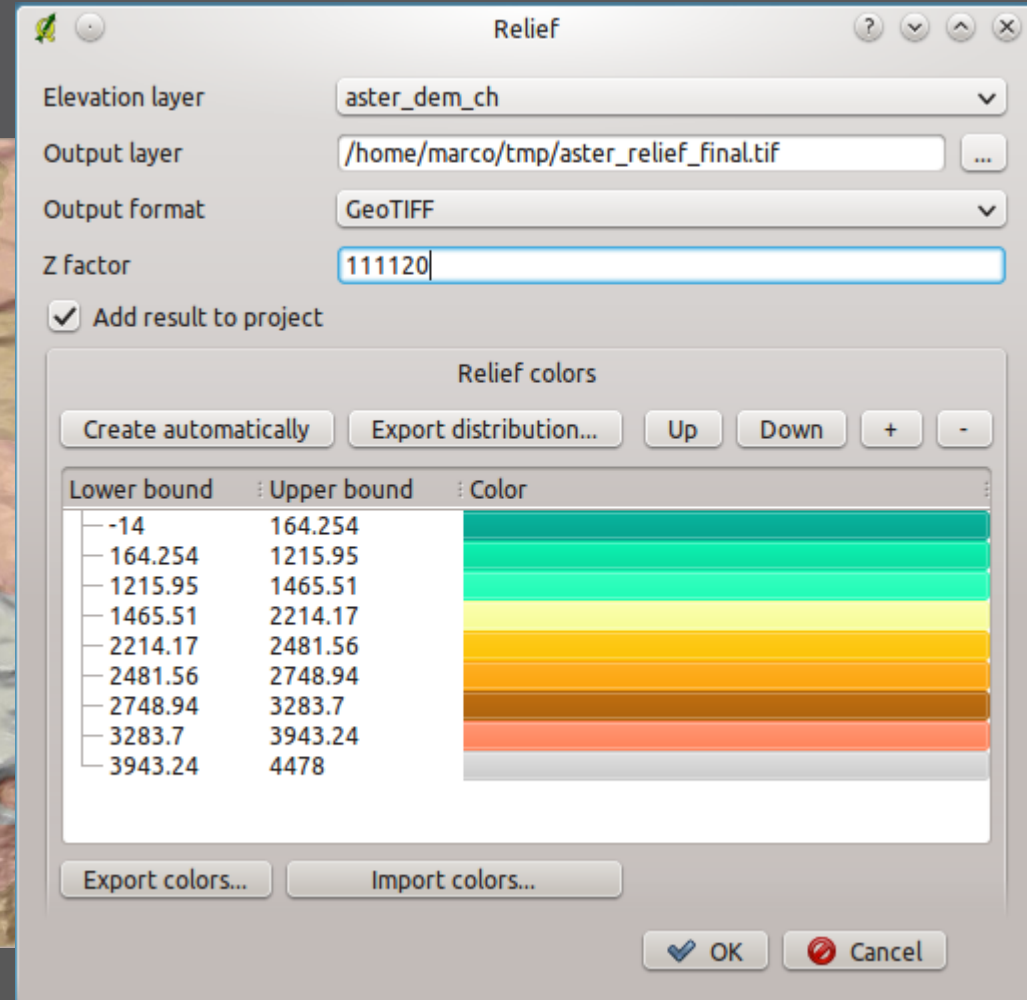
# Profile tool



➤ Elevation profile, layer comparison, export, ...

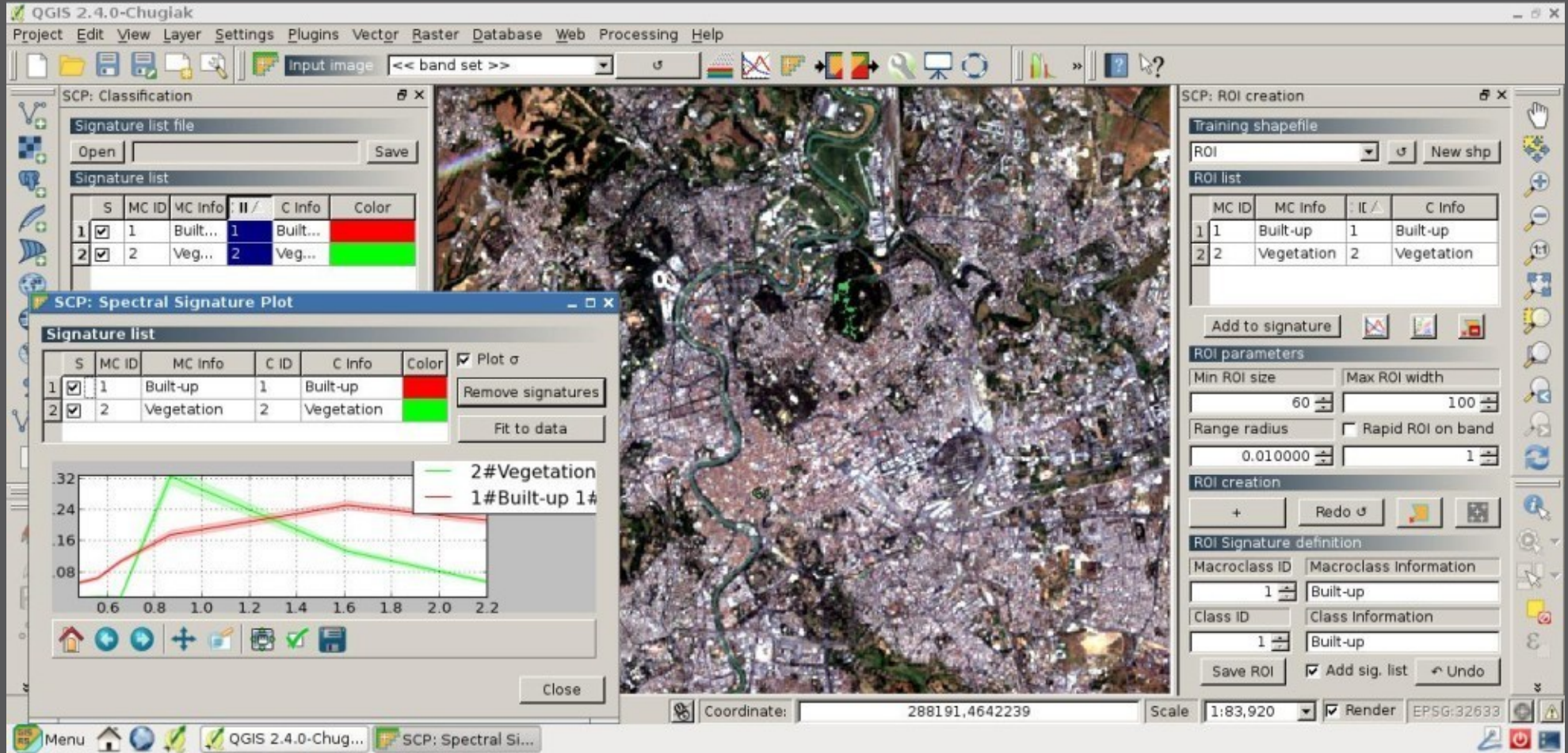


# Raster terrain analysis



- Raster based terrain analysis (C++ core plugin)
- Slope, aspect, hillshade, relief, ruggedness index

# Semi-Automatic Classification Plugin



QGIS 2.4.0-Chugiak

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

SCP: Classification

Signature list file

Open Save

Signature list

S	MC ID	MC Info	II /	C Info	Color
1	1	Built...	1	Built...	Red
2	2	Veg...	2	Veg...	Green

SCP: Spectral Signature Plot

Signature list

S	MC ID	MC Info	C ID	C Info	Color	Plot $\sigma$
1	1	Built-up	1	Built-up	Red	<input checked="" type="checkbox"/>
2	2	Vegetation	2	Vegetation	Green	<input checked="" type="checkbox"/>

Remove signatures

Fit to data

Close

SCP: ROI creation

Training shapefile

ROI New shp

ROI list

MC ID	MC Info	II /	C Info
1	Built-up	1	Built-up
2	Vegetation	2	Vegetation

Add to signature

ROI parameters

Min ROI size Max ROI width

60 100

Range radius Rapid ROI on band

0.010000 1

ROI creation

+ Redo

ROI Signature definition

Macroclass ID	Macroclass Information
1	Built-up

Class ID	Class Information
1	Built-up

Save ROI Add sig. list Undo

Coordinate: 288191,4642239 Scale: 1:83,920 Render EPSG:32633

 Classification of raster data



# Georeferencer Plugin

on/off	id	srcX	srcY	dstX	dstY	dX[pixels]	dY[pixels]	residual[pixels]
<input checked="" type="checkbox"/>	0	594324.70	4925379.62	594323.07	4925378.72	-0.07	0.66	0.67
<input checked="" type="checkbox"/>	1	600163.35	4925580.09	600162.18	4925582.35	-0.16	-0.90	0.92
<input checked="" type="checkbox"/>	2	608468.69	4924874.29	608468.40	4924874.14	-0.17	0.27	0.32

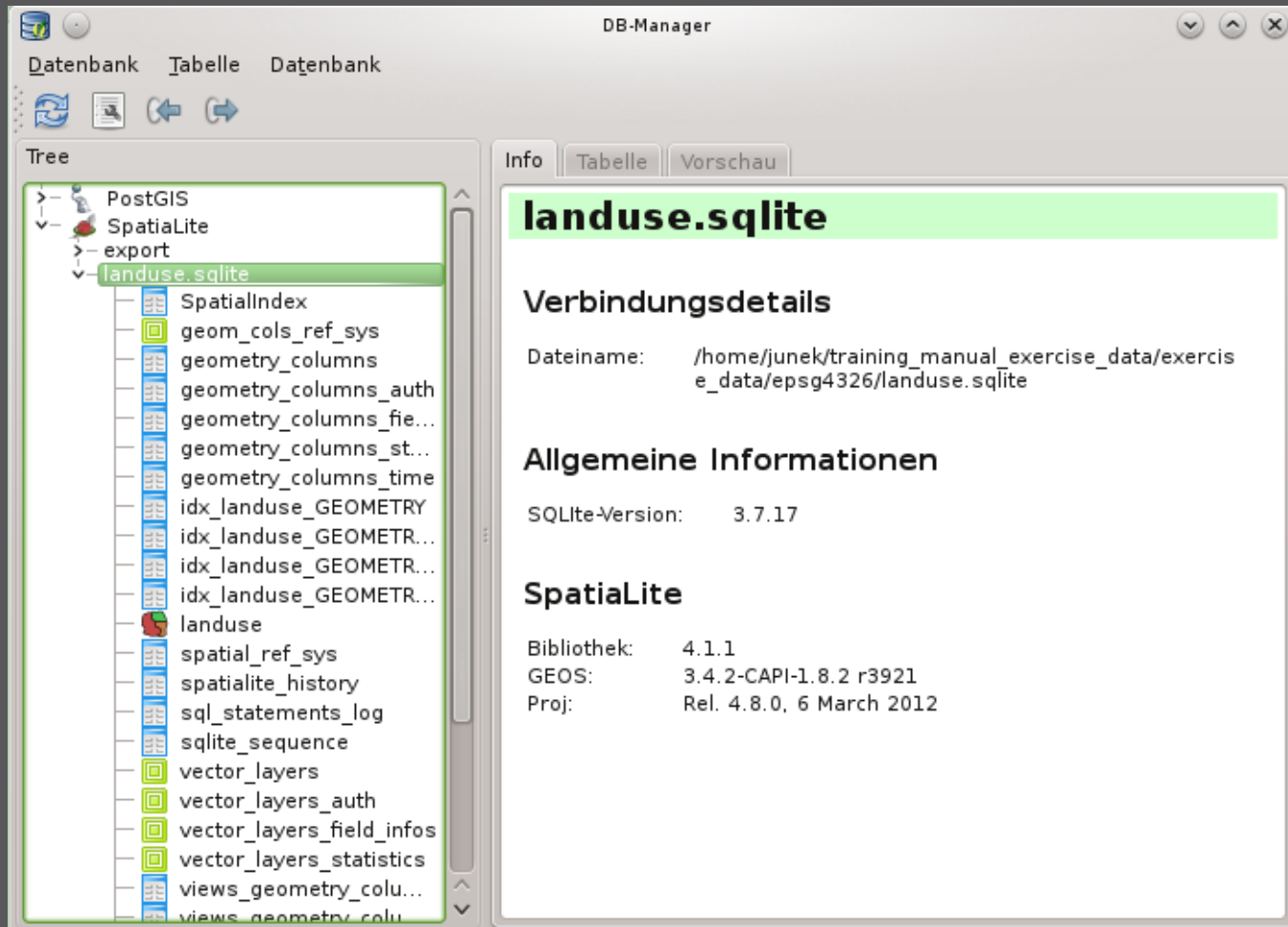
n: Linear Translation (589998, 4.928e+06) Scale (2.00019, 2.00019) Rotation: 0 Mean error: ( 98113,492324)

- Georeferencing and resampling of rasters
- C++ core plugin

# Database tools

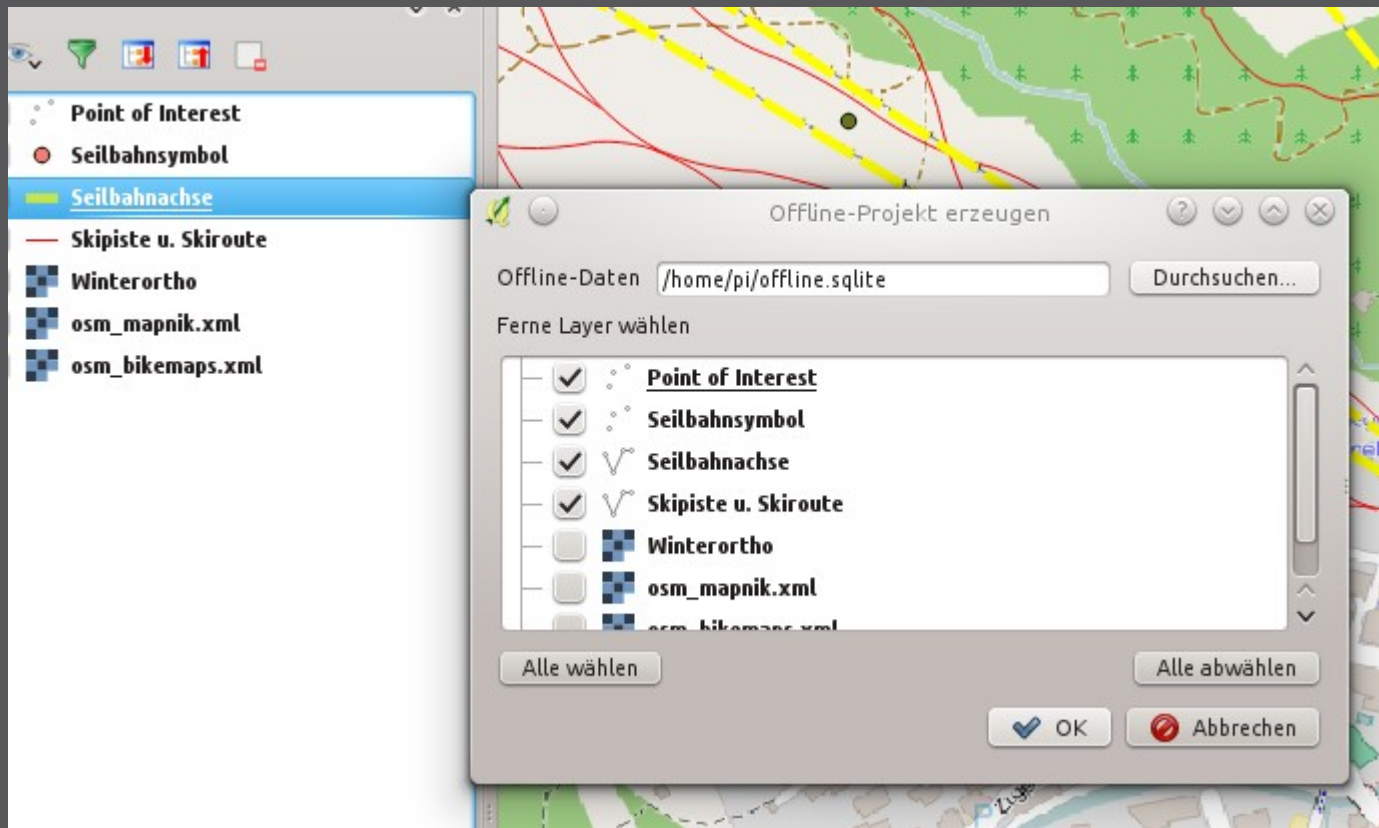


# DB Manager



- Data transfer and schema editing
- Core plugin

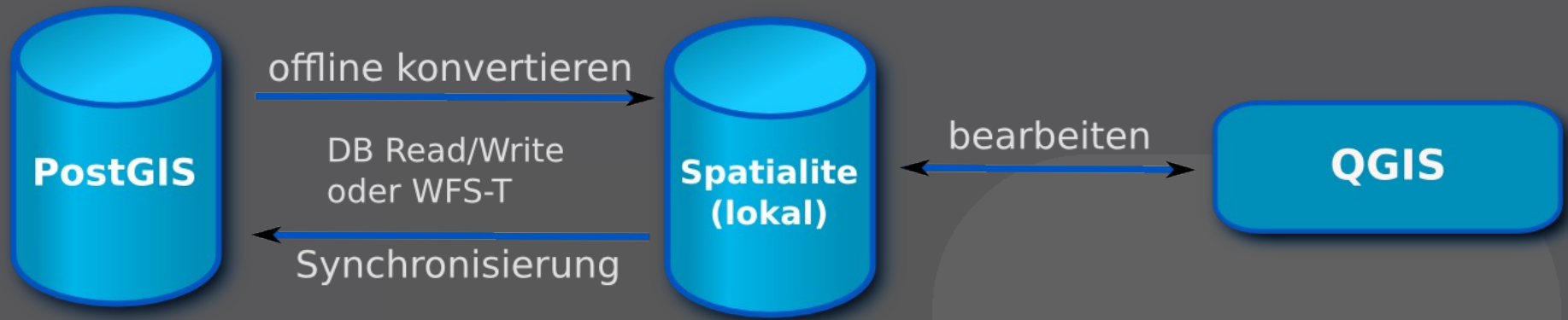
# Offline Editing



- Offline editing and database synchronization
- C++ Core Plugin



# Offline Editing



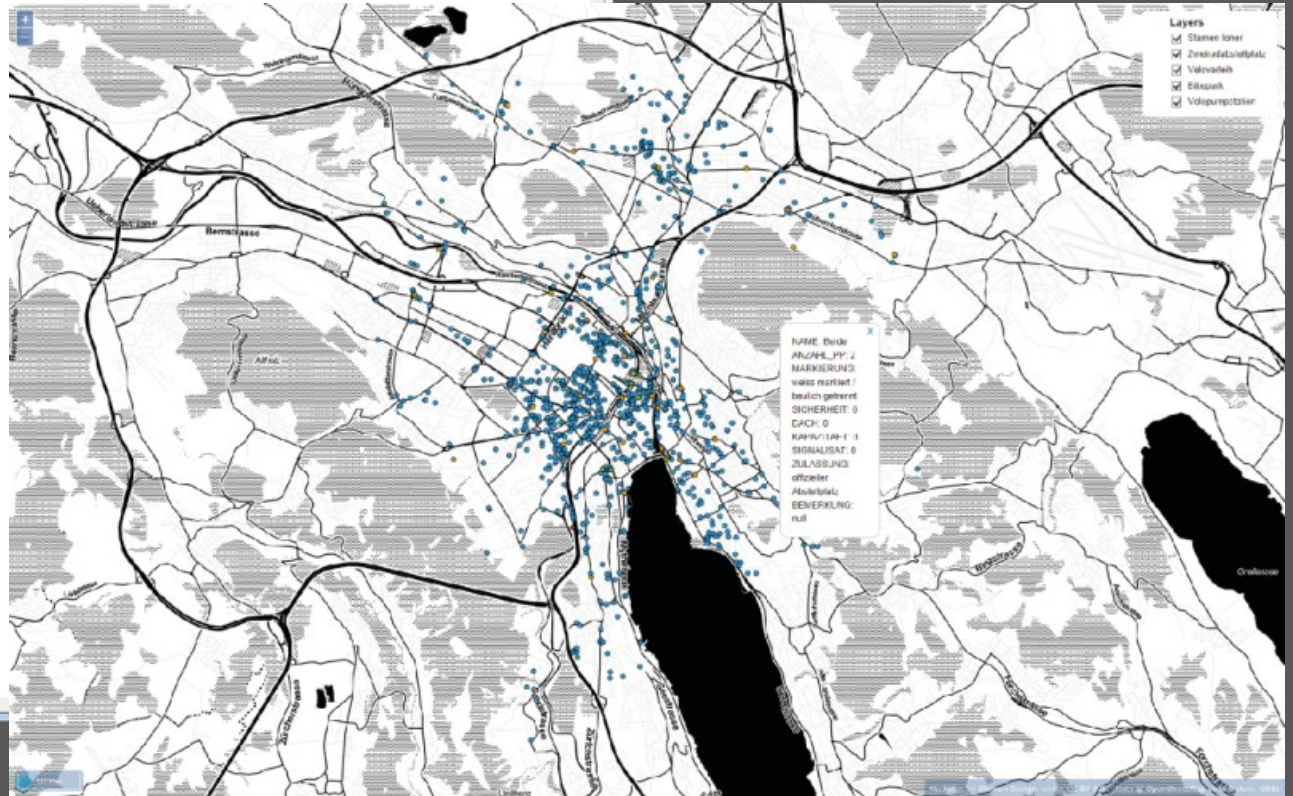
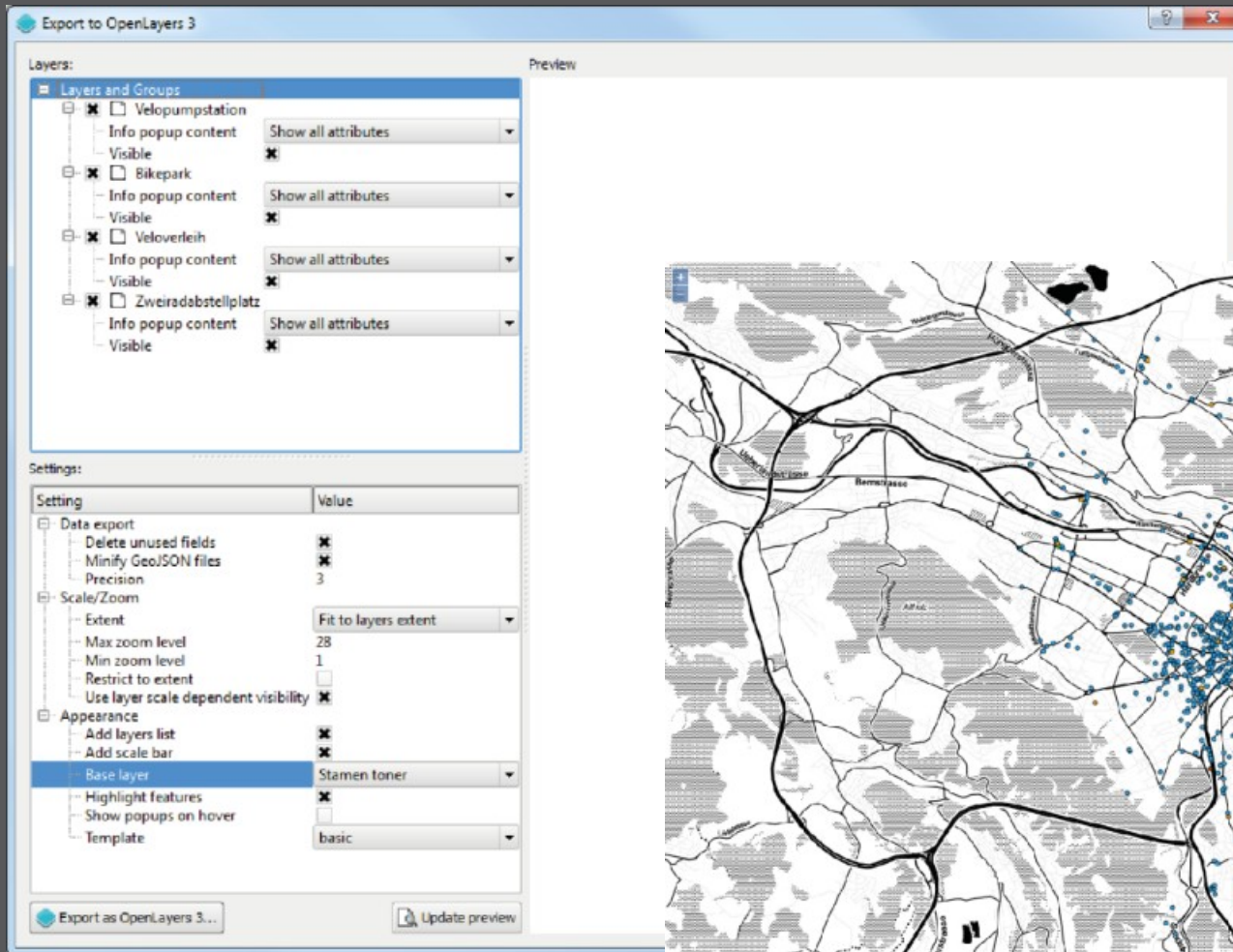
- › Local copy of data in Spatialite DB
- › Synchronization with master DB



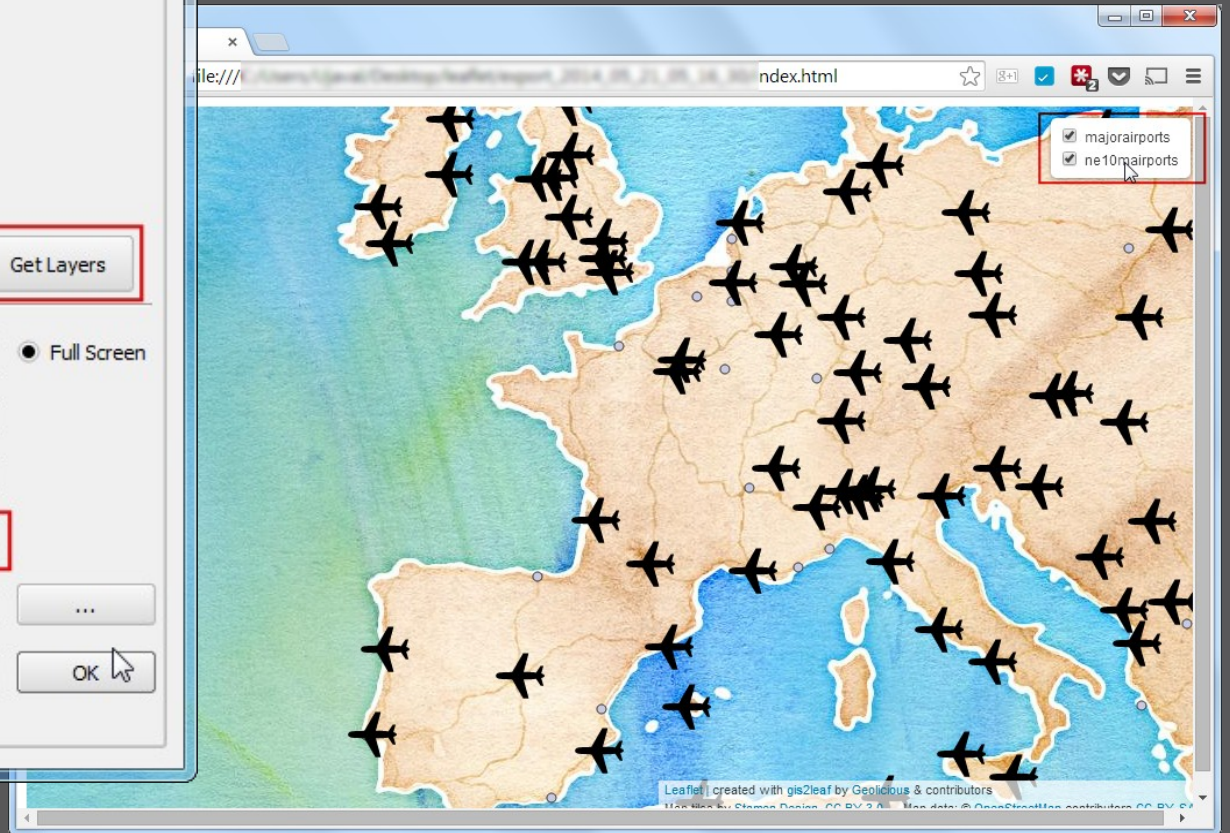
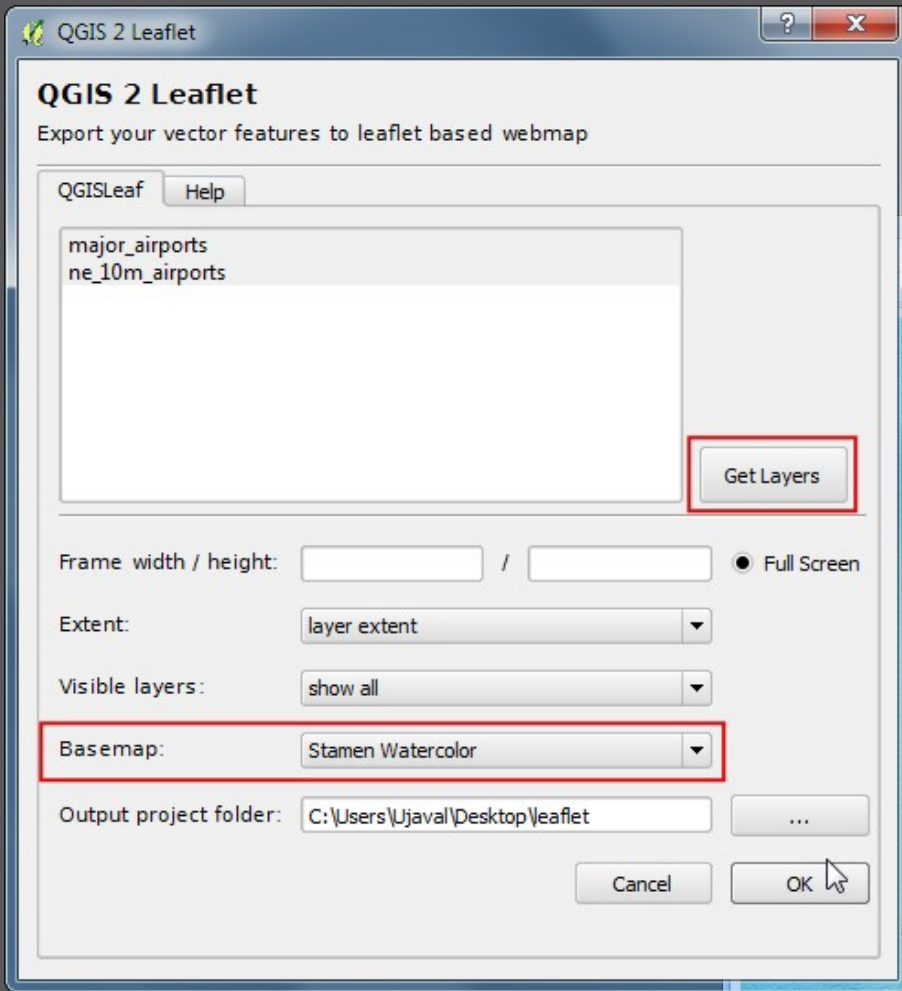
# Web mapping



# Export to OpenLayers 3



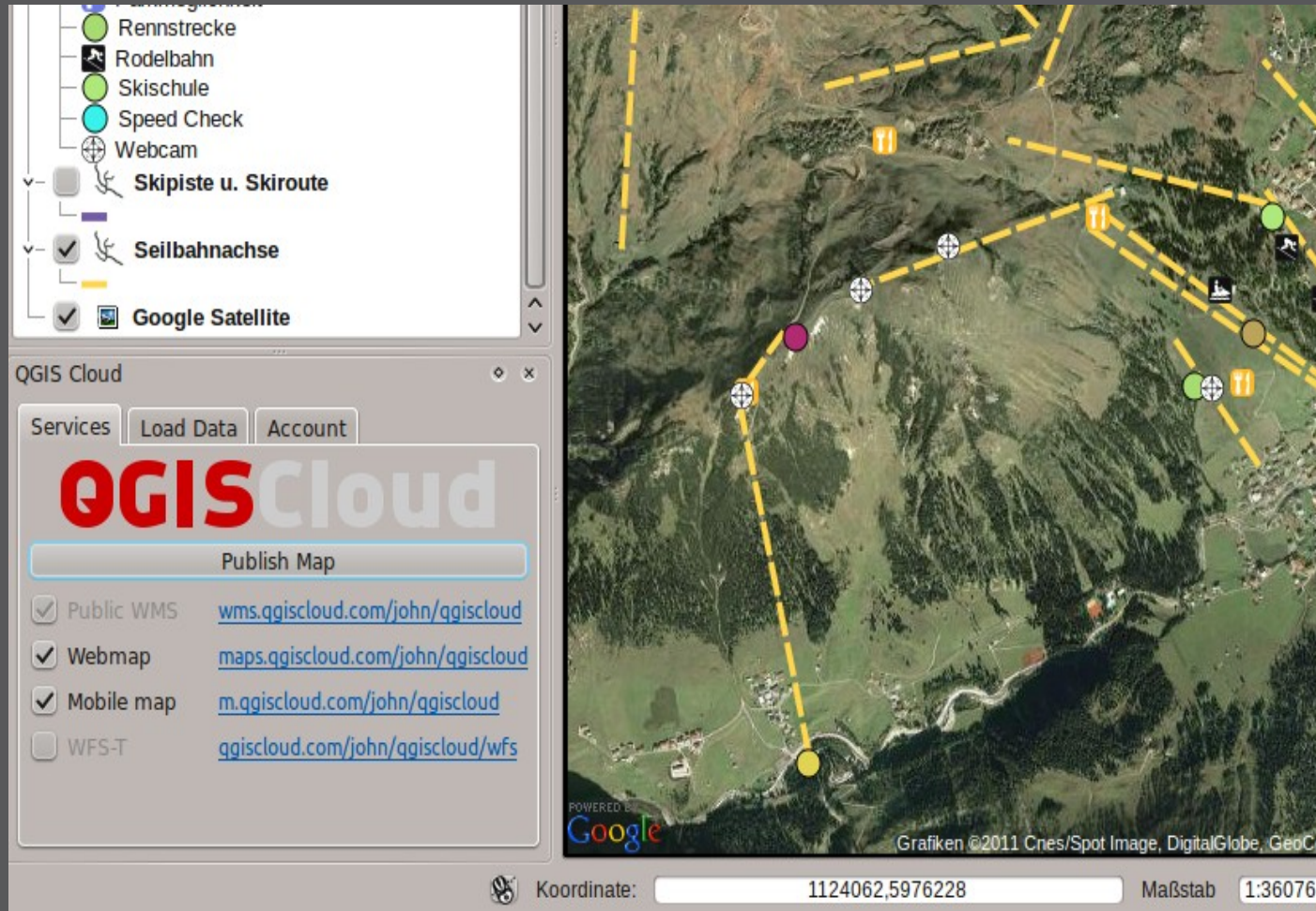
## ➤ Generating HTML/Javascript for OL 3



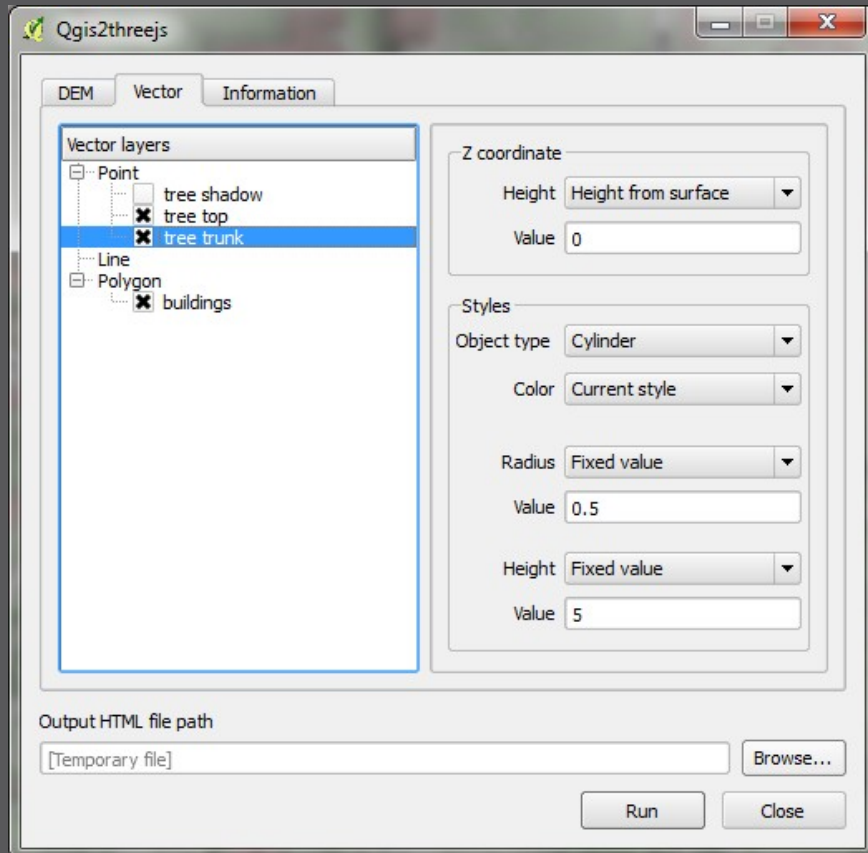
## ➤ Generating HTML/Javascript for Leaflet



# QGIS Cloud Plugin



- Publication of maps from QGIS desktop
- → OGC services, web map, mobile map, ...

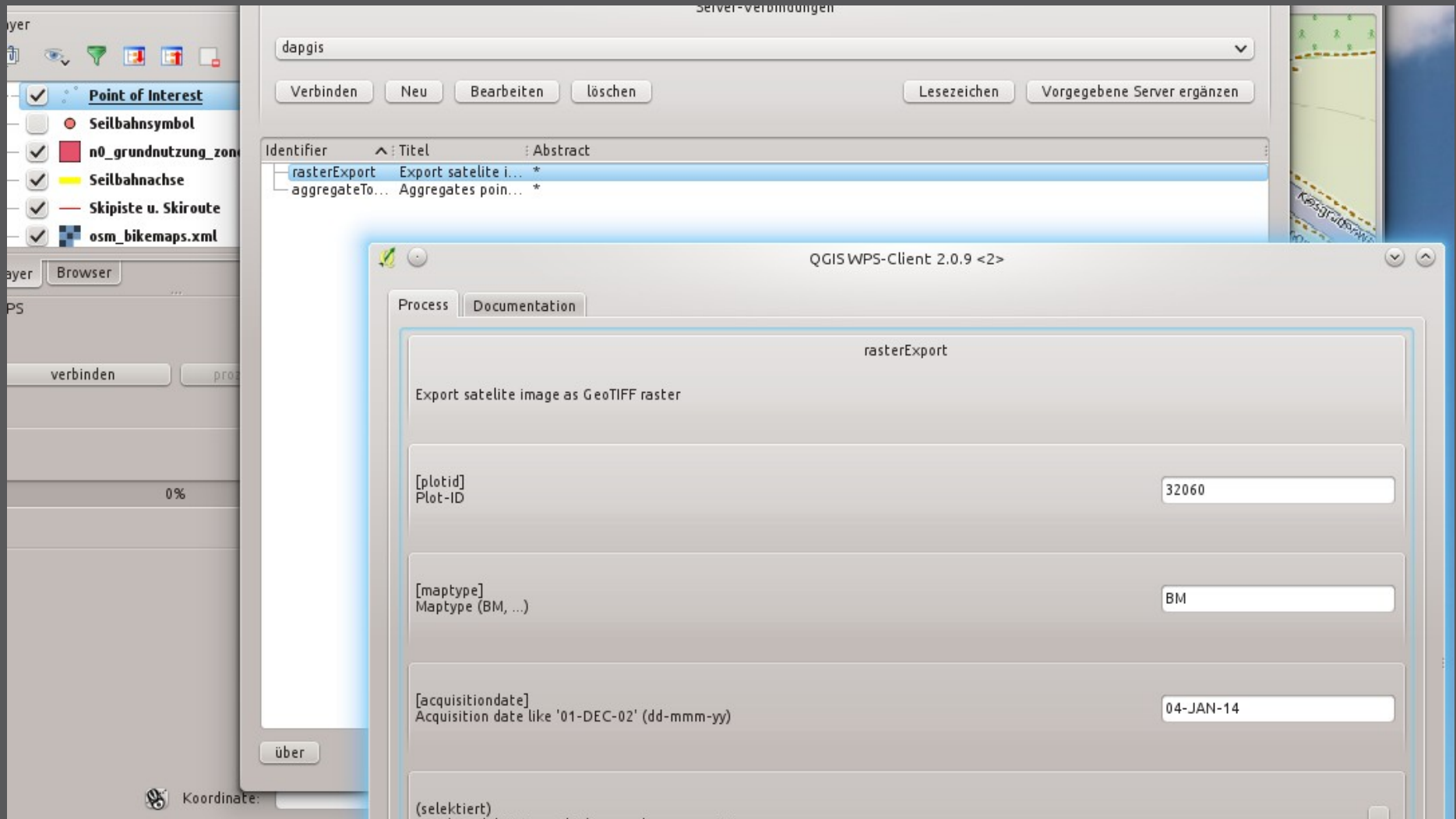


## ➤ Generating HTML/Javascript for threejs

# **OGC services**



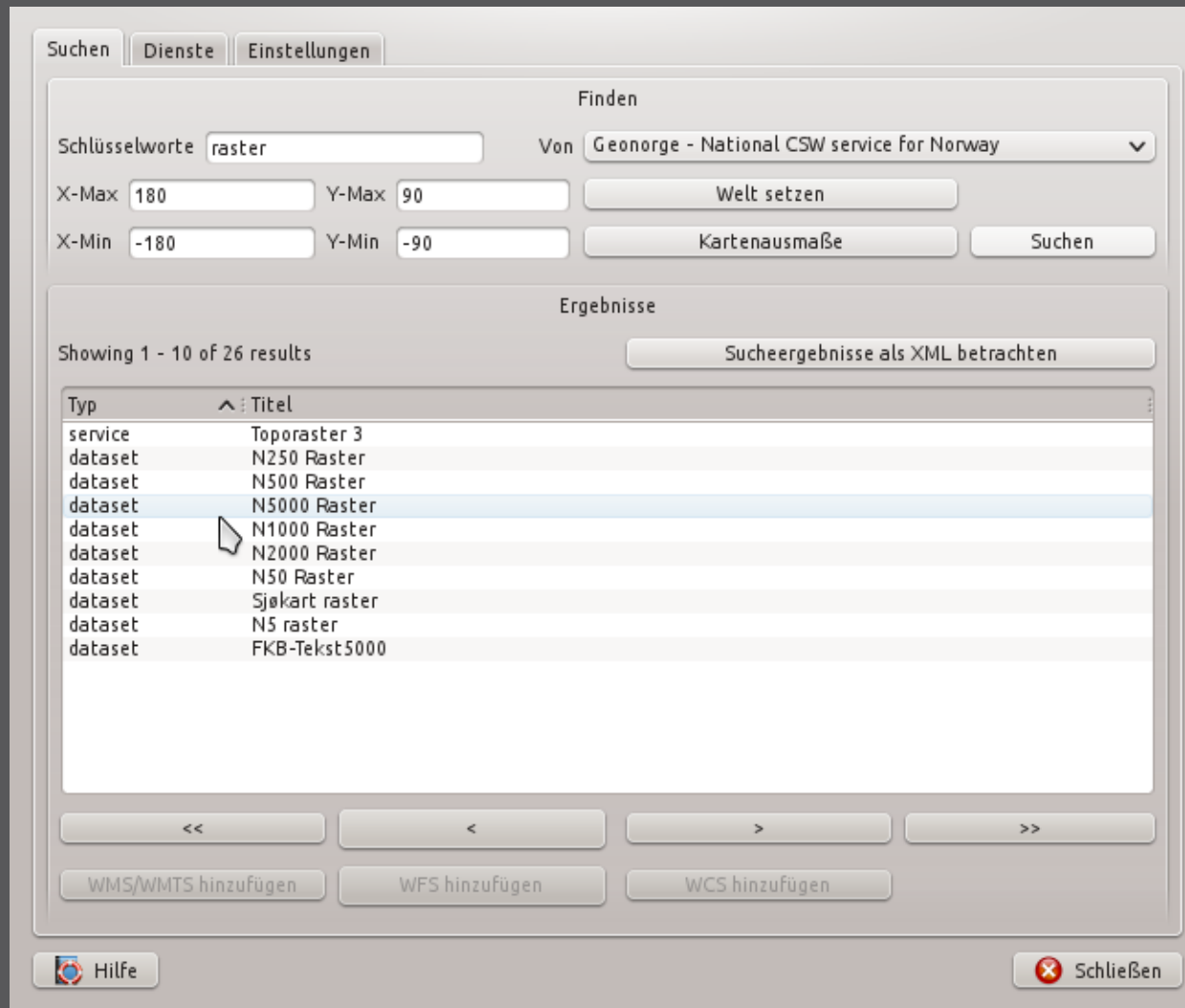
# WPS client



## Client for Web Processing Services



# MetaSearch Catalogue Client



➤ Search CSW catalog services (Core plugin)





# WFS 2.0 client

**WFS 2.0 OnlineResource**

Authentication required

**StoredQueries**

▼

CRS  string

DataSetIdCode  string

DataSetIdNamespace  string

Language  string

➤ WFS 2 client (Built-in WFS-Provider supports WFS 1.0)

**Custom solutions**

MOLUSCE

Inputs Evaluating correlation Area Changes **Transition Potential Modelling** Cellular Automata Simulation Validation Messages

▼ Define Samples

Mode Random Number of samples 2000 Save Samples...  Add to canvas

Method Artificial Neural Network (Multi-layer Perceptron)

Neighbourhood 1 px

Learning rate 0.001

Maximum iterations 100

Hidden Layers 12

Momentum 0.001

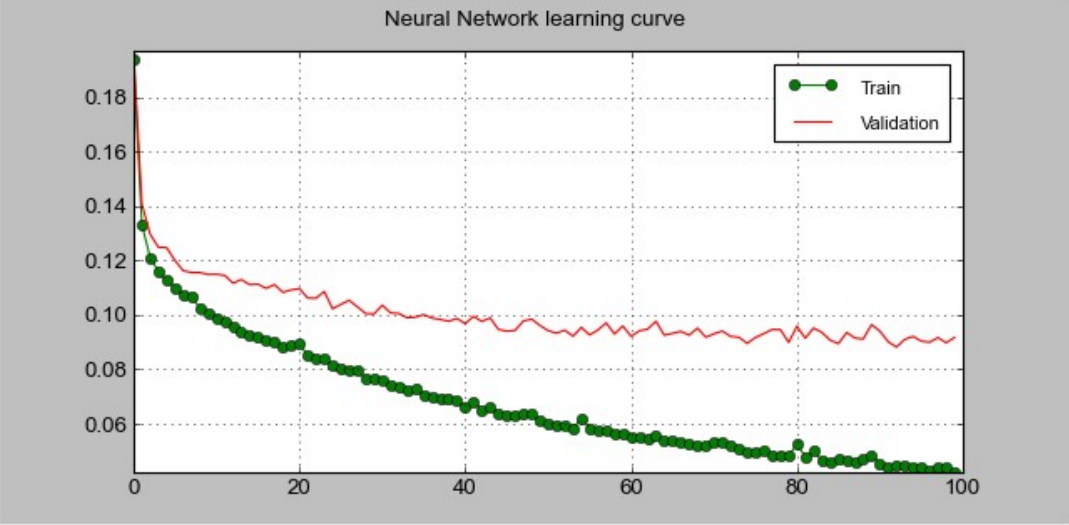
Δ Overall Accuracy -0.00353

Min Validation Overall Error 0.08819

Current Validation Kappa 0.81642

Train neural network Stop

Neural Network learning curve

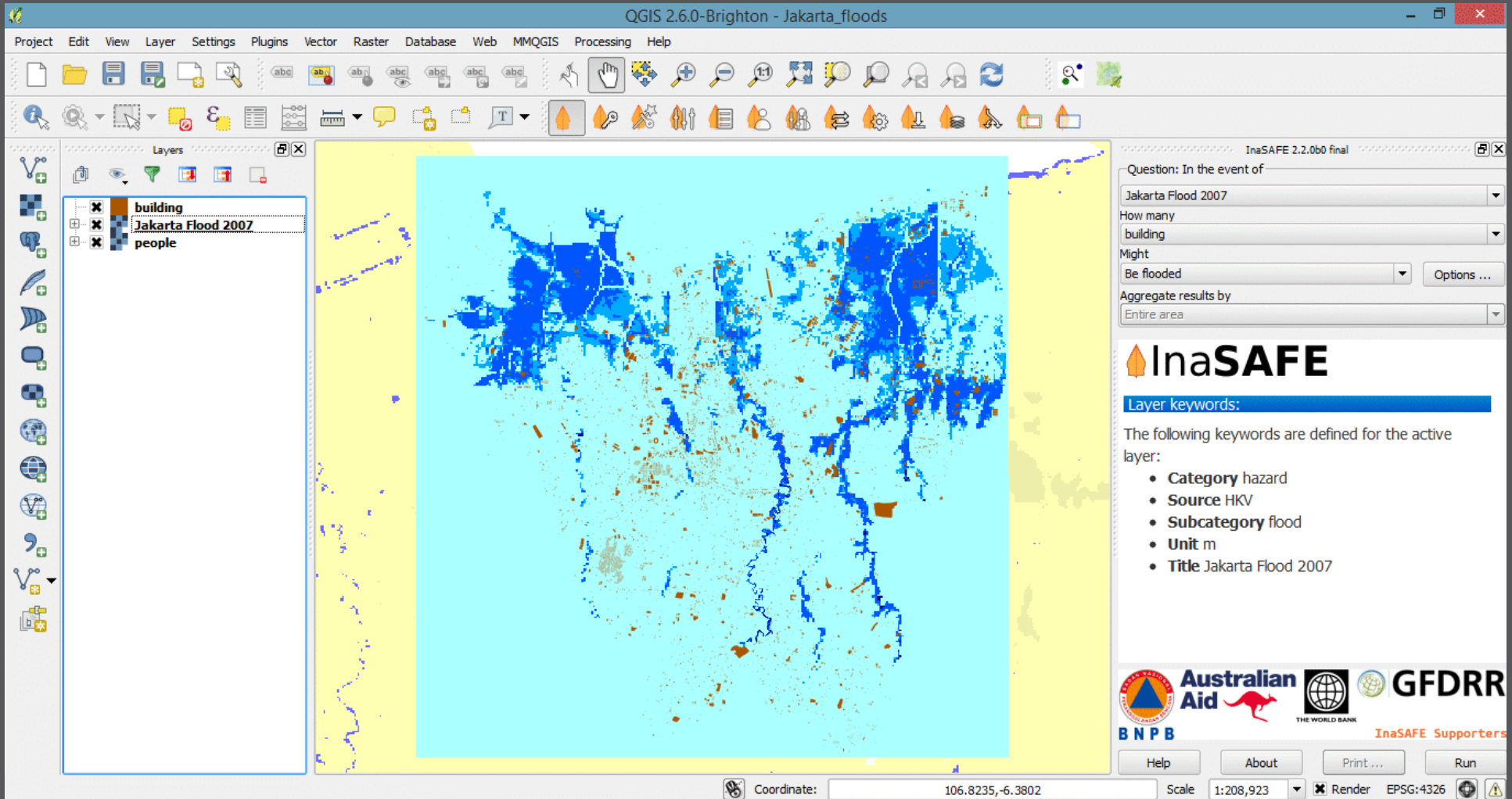


The graph displays the training and validation performance of a neural network over 100 iterations. The y-axis represents a performance metric ranging from 0.06 to 0.18. The x-axis represents the number of iterations from 0 to 100. The training curve (green line with dots) starts at approximately 0.18 and decreases steadily to about 0.05. The validation curve (red line) starts at approximately 0.18 and decreases to about 0.10, showing some fluctuations after 20 iterations.

Iteration	Train	Validation
0	0.18	0.18
5	0.12	0.12
10	0.10	0.11
20	0.08	0.10
30	0.07	0.10
40	0.065	0.10
50	0.06	0.10
60	0.055	0.10
70	0.05	0.10
80	0.05	0.10
90	0.05	0.10
100	0.05	0.10

0%

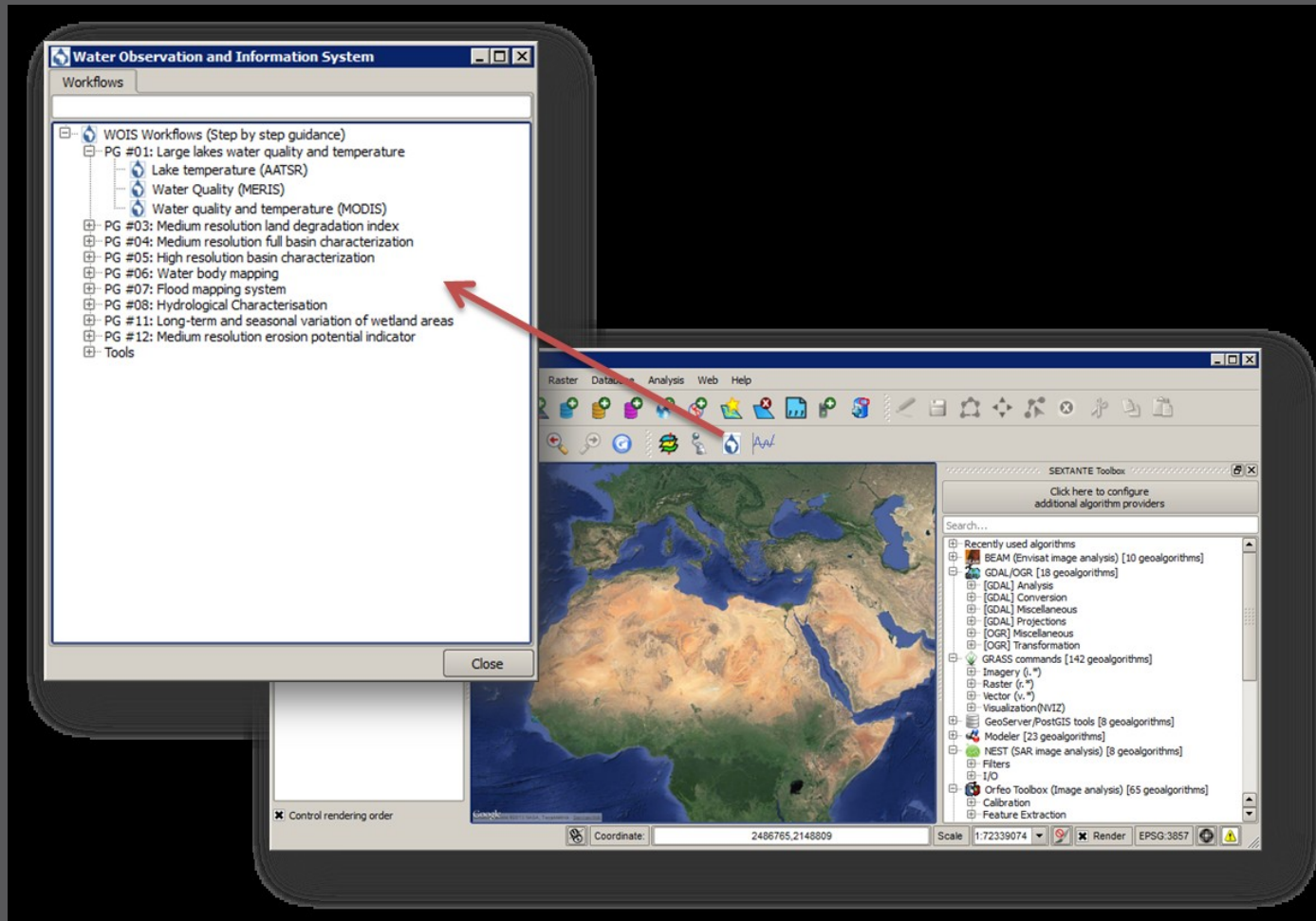
➤ Analyse, model and simulate land use changes



# ➤ Natural hazard impact scenarios for response planning



# TIGER-NET Water Observation and Information System (WOIS)



➤ Satellite image processing for water resource management in Africa (ESA)

# Plugin development





# Plugin Builder

QGIS Plugin Builder - Version 2.8.3

## QGIS Plugin Builder

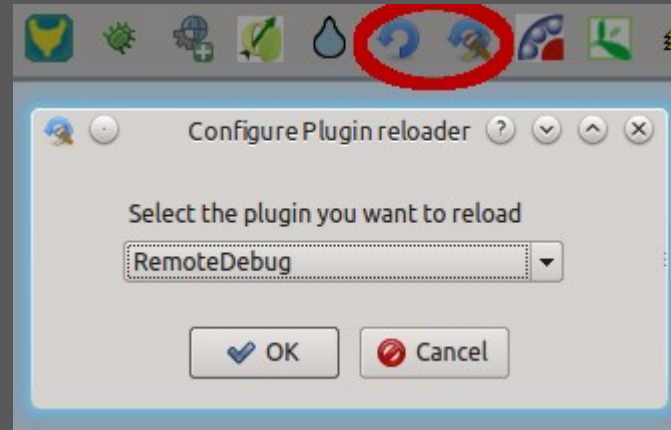
Class name	<input type="text" value="e.g. PhotoLinker"/>
Plugin name	<input type="text" value="e.g. Photo Linker"/>
Description	<input type="text" value="e.g. This plugin links points to photos"/>
Module name	<input type="text" value="e.g. photo_linker"/>
Version number	<input type="text" value="0.1"/>
Minimum QGIS version	<input type="text" value="2.0"/>
Author/Company	<input type="text" value="e.g. Acme widgets Inc."/>
Email address	<input type="text" value="e.g. jack@qgis.org"/>

 Help    <Previous    Next >     Cancel

➤ Plugin template generator



# Plugin Reloader

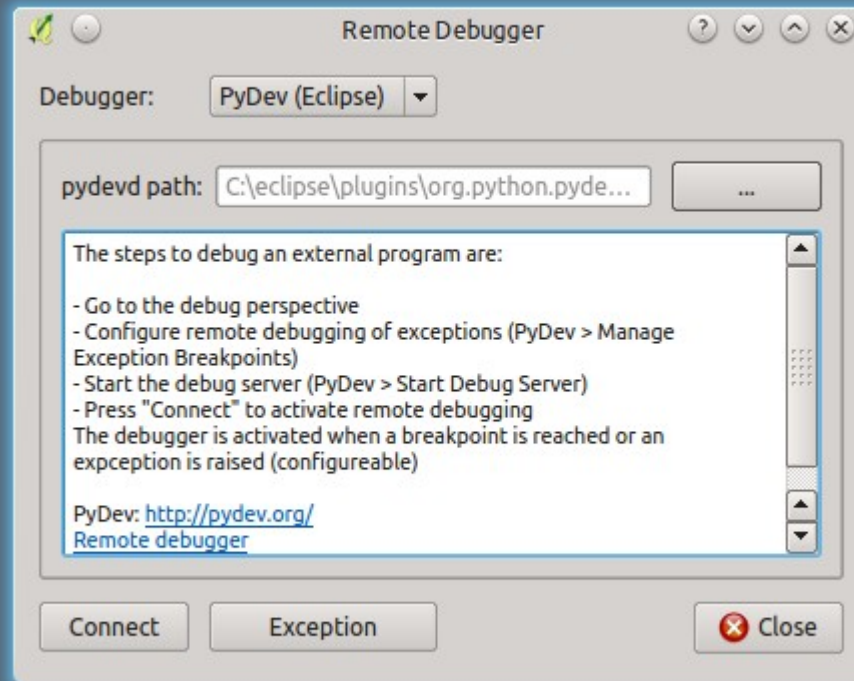


- Reloading Plugins after code changes (Exp.)
- Plugins → Settings → Show also experimental plugins





# Remote Debug



- Remote Debugging of QGIS plugins (Exp.)
- Bonus hint: [geoapis.sourcepole.com](http://geoapis.sourcepole.com)

## › News sources:

- › Blogs: [planet.qgis.org](http://planet.qgis.org)
- › Twitter #qgis

## › Check [plugins.qgis.org](http://plugins.qgis.org)

- › Recently updated?
- › Tickets?



# Thank you! - Questions?



**@PirminKalberer**  
**@sourcepole**