

# QGIS Feature Frenzy



Kurt Menke



# QGIS Versions

1. Long-term release

Recommended for most – stable

Released each spring and supported for a year

Updated with bug fixes throughout the year but no new features

2. Latest release

Released every 4 months (3 per year)

Use to have the latest features

3. Development (nightly) version

Use to test future features

# QGIS Major Version History

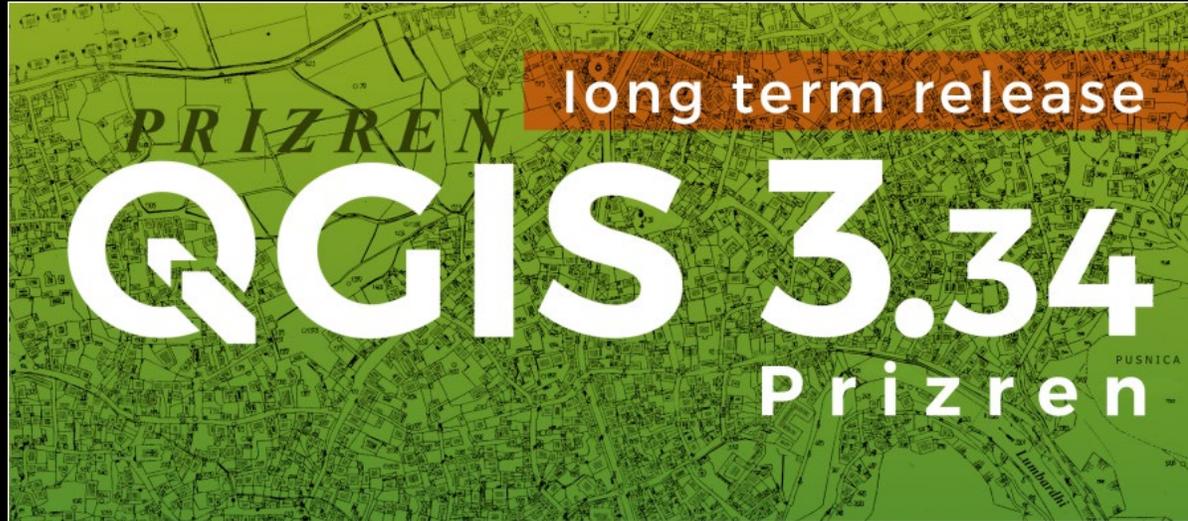
- 1.0 → 2009
- 2.0 → 2013
- 3.0 → 2019
- 4.0 – expected in the coming weeks!

# Visual Changelogs

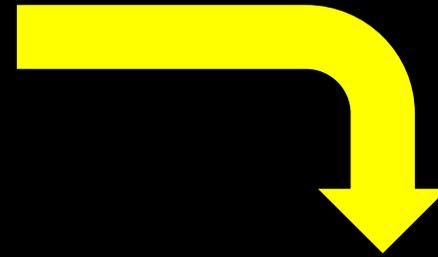
<https://qgis.org/project/visual-changelogs/>



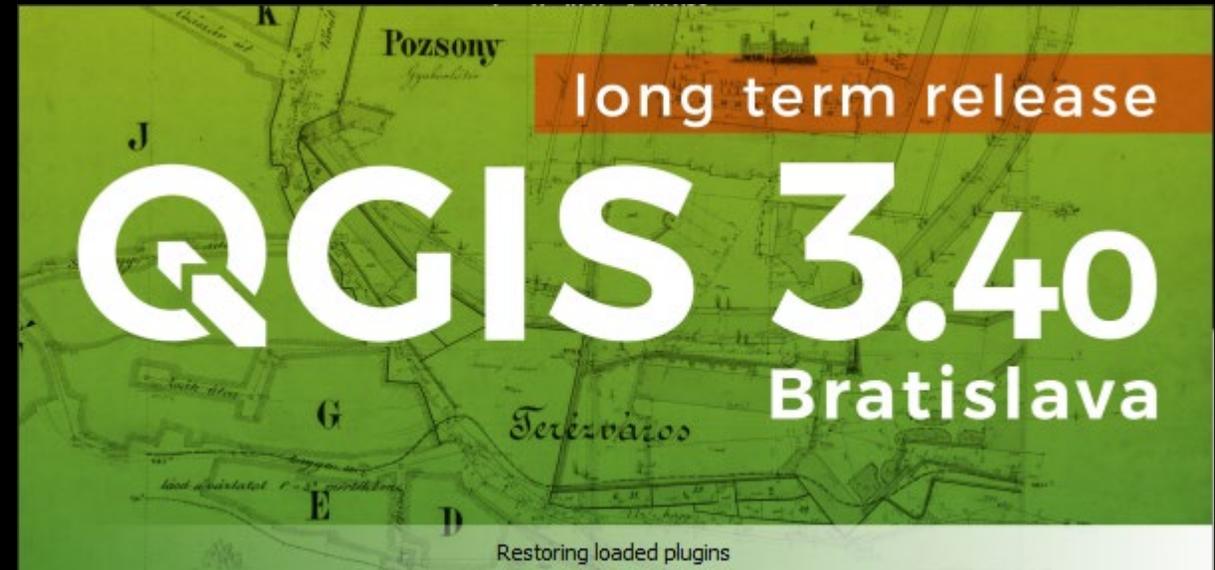
# What's New in the latest Long-term Release (LTR)



2024



2025



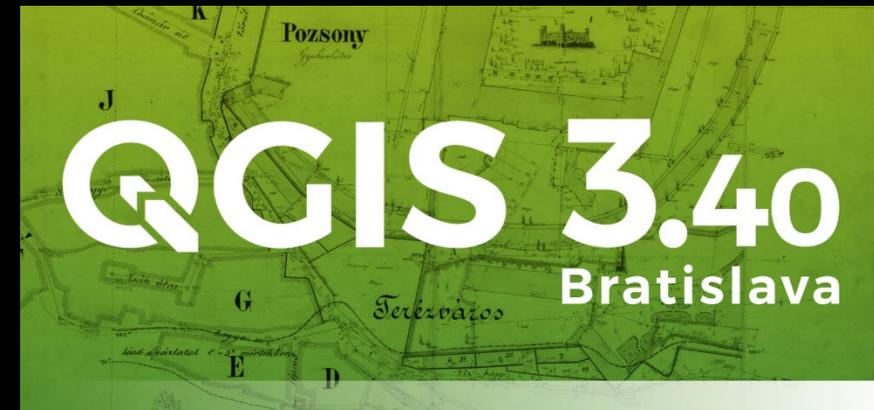


2024-02-23

The new LTR (3.40)  
includes features released  
in each of these Latest releases



2024-06-21



2024-10-25



# Processing: Output paths in processing Log

The screenshot displays the QGIS 3.36 interface. The main map area shows a network of connectivity paths in shades of purple and blue, overlaid on a light green background. The map includes labels for 'Dodge Lake County State Wildlife', 'Chittaro', 'Togatic River State Wildlife', 'Sturtevant', and 'Lumb'. The 'Layers' panel on the left lists several layers, with 'Biodiversity connectivity' selected. The 'Layer Styling' panel on the right shows the 'Biodiversity connectivity' layer with a 'Paletted/Unique values' color ramp. The 'Processing Log' panel at the bottom right is partially visible, showing the 'Processing Toolbox' and 'Layer Styling' tabs.

**Layers Panel:**

- riparian\_road\_crossings
- StudyArea
- barriers
- Study Area
- state\_lines\_clip
- Great Lakes
- Rivers
- Biodiversity connectivity
  - Band 1 (Gray)
    - Low-quality
    - High-quality
    - Channelized
- Potential Beaver Population
  - < 25
  - 25 - 75
  - 75 - 125
  - 125 - 175
  - 175 - 250
  - 250 - 425
  - > 425
- huc12\_web [3446]
- cum\_currmap
- huc8\_Connectivity2\_redux\_ICDCR
- huc10\_Connectivity2\_ICDCR
- huc\_Connectivity2\_ICDCR
- barriers
- padus\_protected\_lands\_for\_source
- allforests\_copy

**Layer Styling Panel:**

Biodiversity connectivity

Paletted/Unique values

Band: Band 1 (Gray)

Color ramp: Random colors

Value	Color	Label
1	Light Purple	Low-quality
2	Medium Purple	High-quality
3	Dark Purple	Channelized

Buttons: Classify, +, -, Delete All, ...

**Layer Rendering Panel:**

Blending mode: Normal

Brightness: 0

Buttons: Live update, Apply

**Processing Log Panel:**

Processing Toolbox

Layer Styling

Coordinate: 348051, 2568726 | Scale: 1:240600 | Magnifier: 100% | Rotation: 0.0° | Render | EPSG:5070

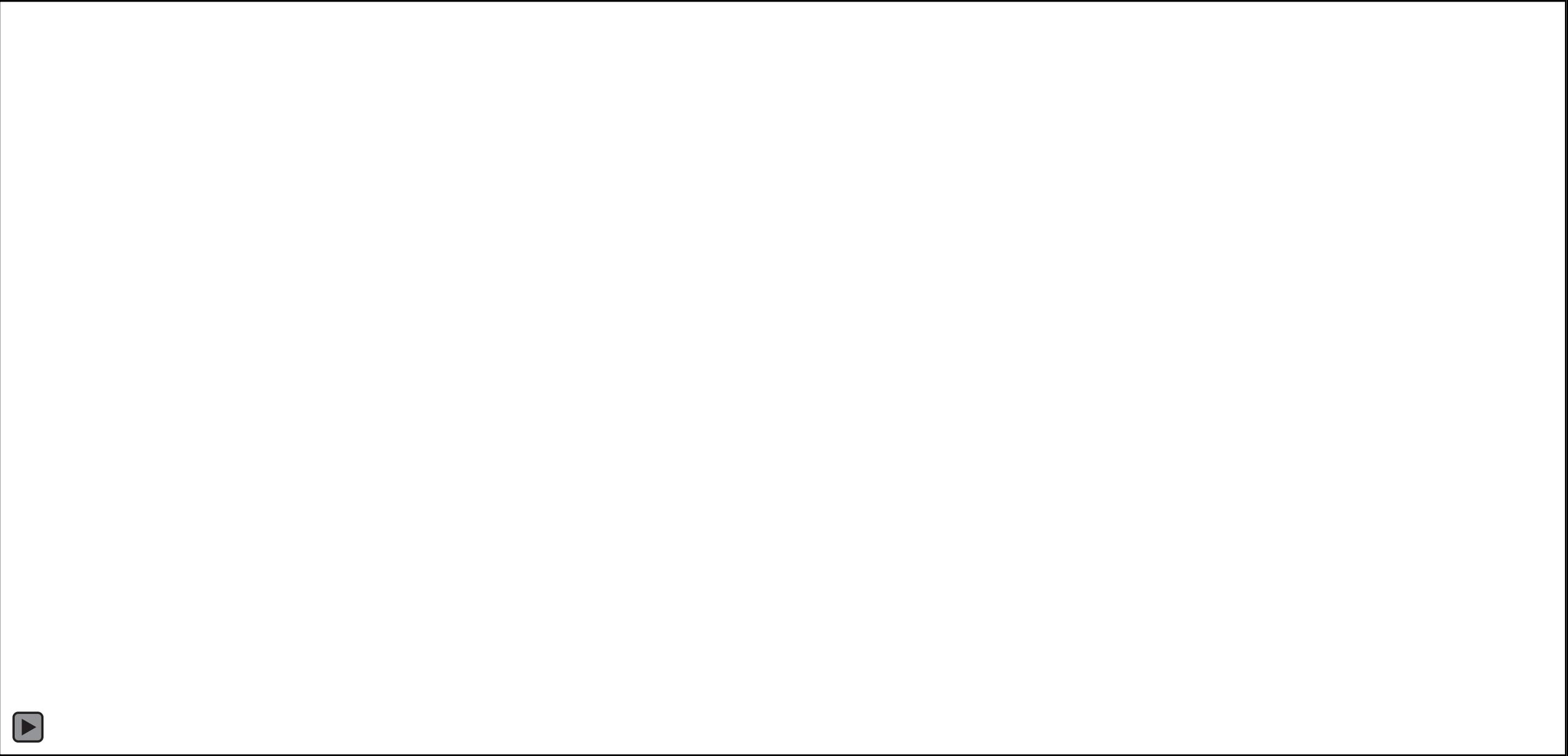
# Processing: Vector coverage algorithms



# Size overrides for point cloud classification



# Render Point Cloud as Surface





# CMYK Support!



# Processing: Enhanced History



# Models:

- ✓ Run selected steps
- ✓ Run from here
- ✓ View Output layers





# Mesh Wind Barbs

QGIS 3.38  
Grenoble

Layers

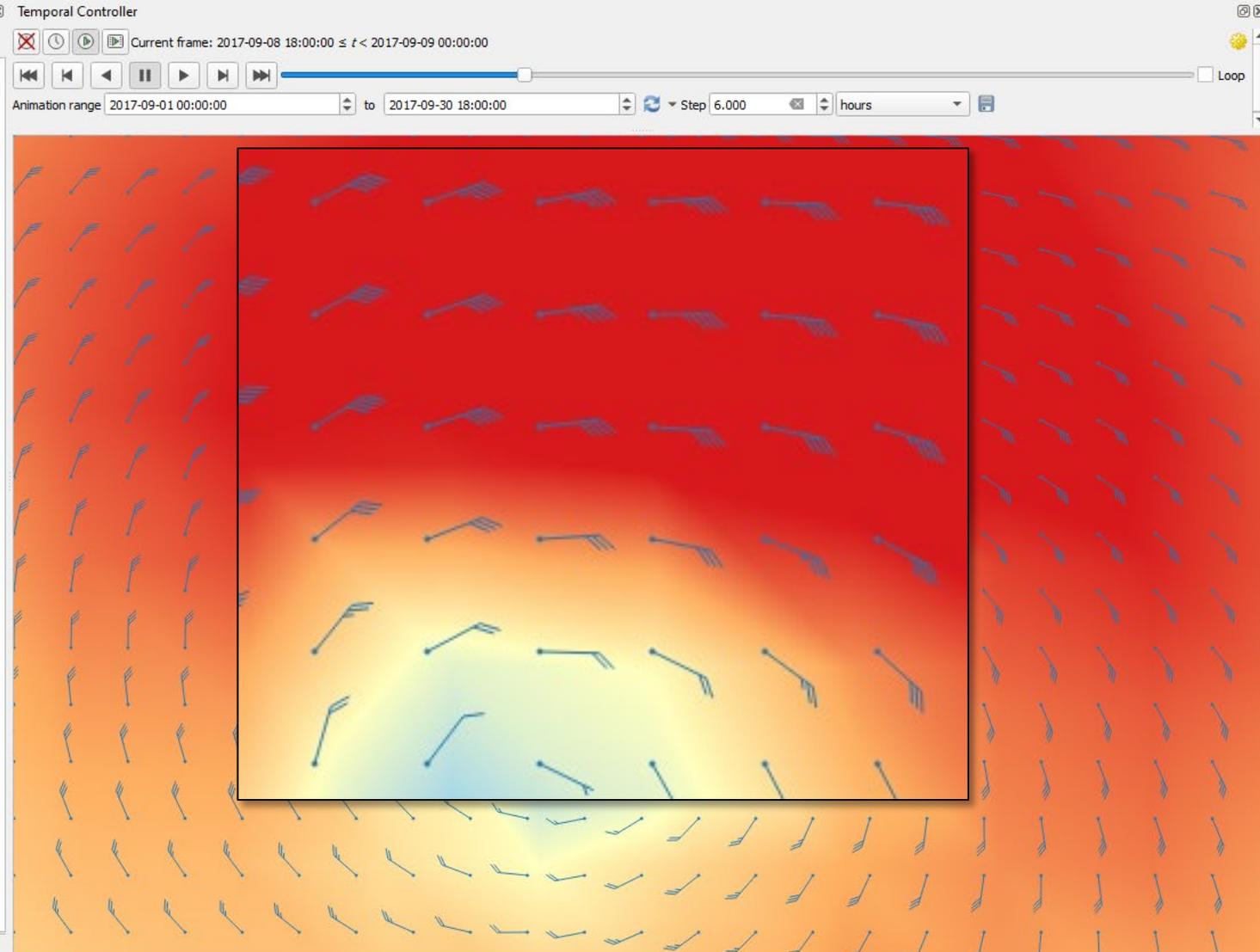
- ne\_10m\_admin\_0\_countries
- Atlantic\_Sept2017

10 metre wind



20

0



Layer Styling

Atlantic\_Sept2017

**Show Vectors**

Symbology: Wind Barbs

Line width: 0.26

Coloring Method: Single Color

Color: [Blue]

Filter by magnitude: Min [ ] Max [ ]

**Display on User Grid**

X Spacing: 50 px

Y Spacing: 50 px

**Wind Barbs**

Length: 7.00 Millimeters

Data units: m/s

Live update [checked] Apply



# Support drag and drop for multi-layer parameters



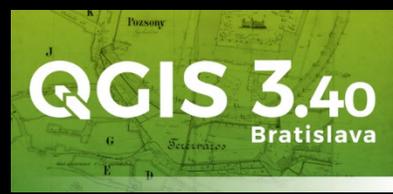
# Processing Favorites



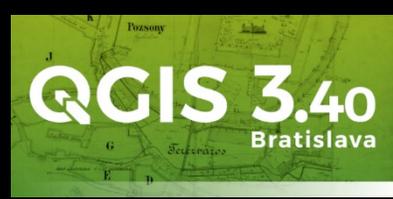
# Linear Referencing – Symbol layer type



# Copy/Paste Raster Style Categories

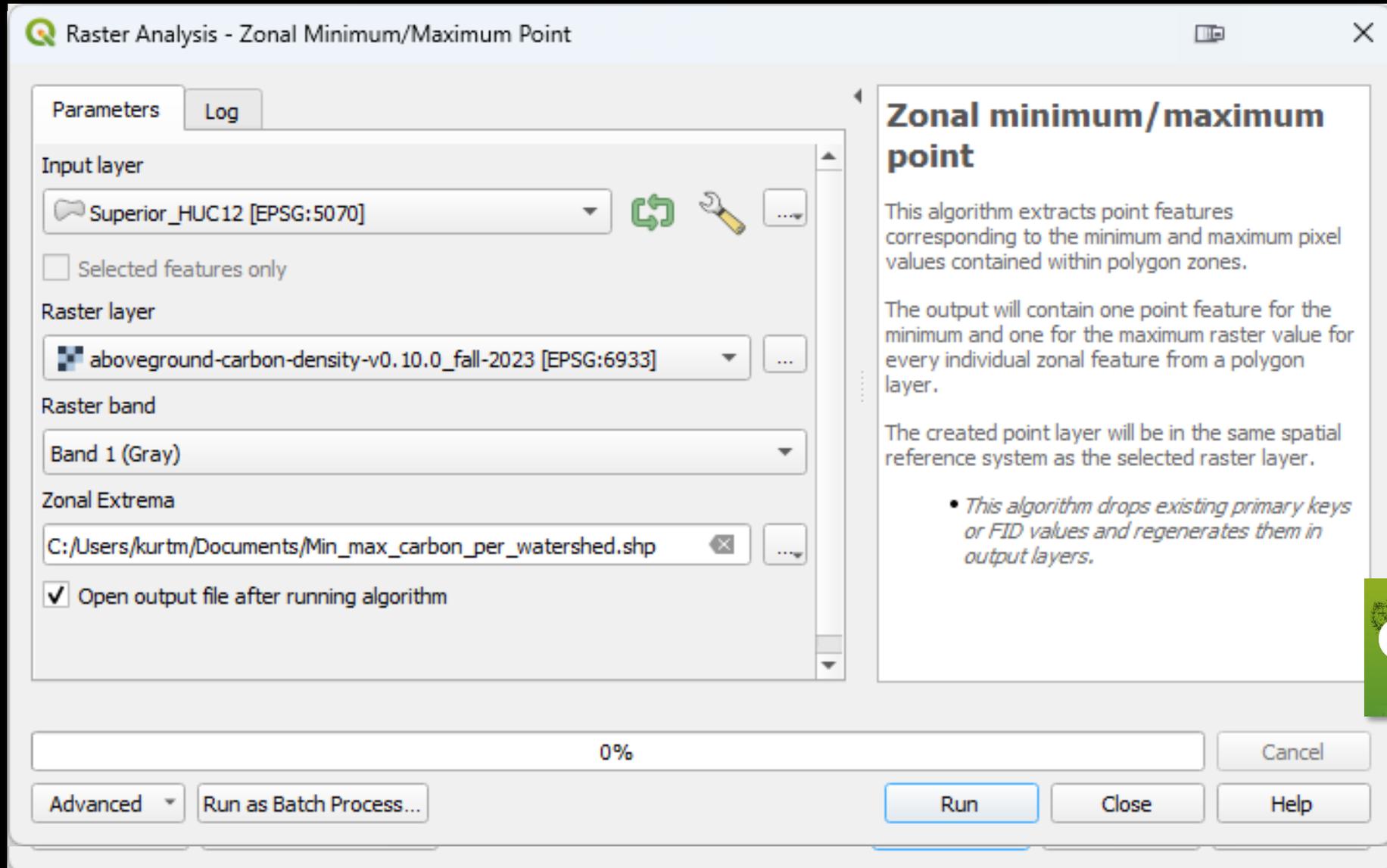


# Cloud provider in Browser panel





# New Processing Algorithms: Metadata Tools & Raster Minimum/Maximum



# Data Source Manager: STAC enhancements



# Raster Labeling



# Virtual Point Cloud Options





# More Model Builder Improvements



# Layer context menu – Execute SQL



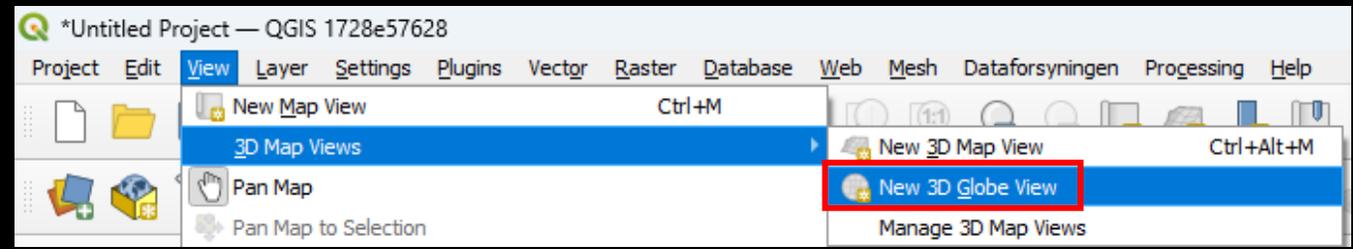
# Editing of Point Cloud Data



# Point Cloud Cross Section Tool



# 3D Globe View





QGIS

4.0

Norrköping



Major foundation change from Qt5 → Qt6

This change will:

- ✓ Future-proof the QGIS codebase.
- ✓ Take advantage of modern libraries with significant performance and security improvements.
- ✓ Simplify long-term maintenance and development.



## When?

- Initially targeted for October 2025, now scheduled for February 2026.
- NOT an LTR (Long-Term Release): 4.0 will be a regular release
- The next LTR in the 4.x series (v4.2) will be released in June 2026.

## What users should do:

- Begin testing Qt6 builds, check plugin compatibility, and plan for migration in organizations.

# QGIS Transition to 4.x!

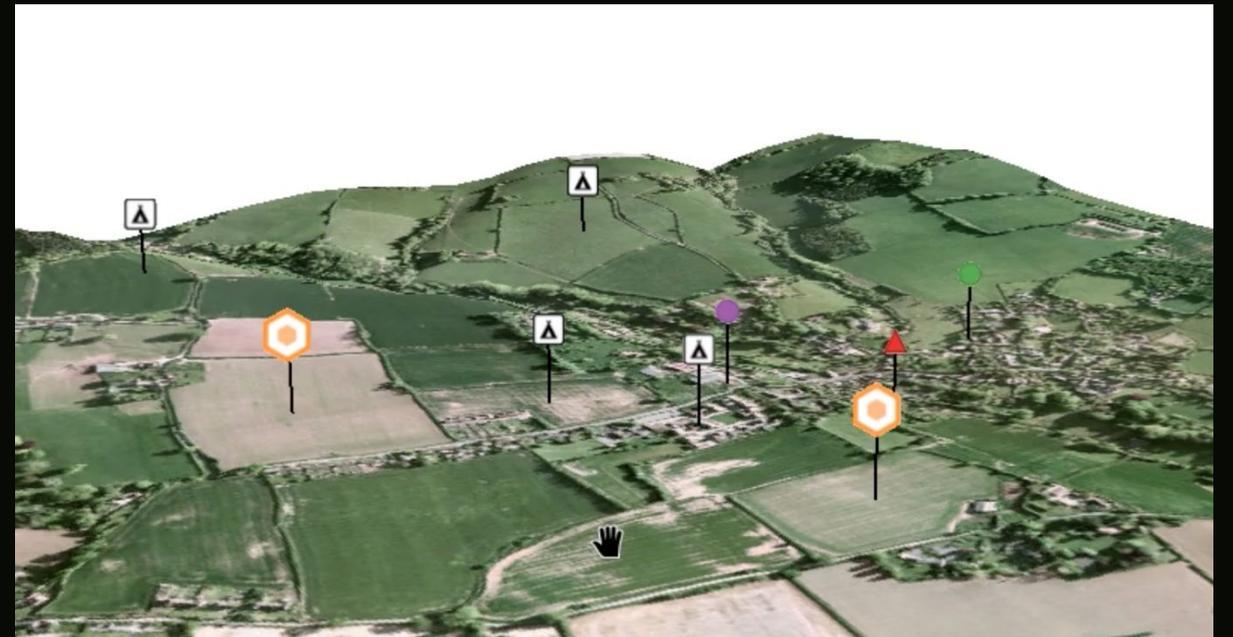
	Now	Soon (weeks)	Summer	Fall
Long-term release	3.40.15 Bratislava	3.44.8	3.44.12	4.2.4
Latest release	3-44.7 Solothurn	4.0	4.2.0	4.4

<https://qgis.org/resources/roadmap>

# New Welcome Page



# Annotation Markers as 3D Billboards



# Model Builder Updated

The screenshot displays the QGIS Model Designer interface with a workflow for processing boundary data based on road presence. The workflow includes several processing tools: Boundary, Boundary Buffer, Buildings, Roads, Conditional branch, Selection of Buildings/Boundary (Roads), Roads Buffer, Intersection, and Intersection of Buildings/Boundary (No Roads). The workflow is divided into two paths: 'With Roads' (green background) and 'Without Roads' (tan background).

**Color coded sockets and connecting lines:** A callout box points to the 'Conditional branch' tool, which has a blue socket for the 'In' parameter and a red socket for the 'Out' parameter. The connecting lines between tools are color-coded to match these sockets.

**Show the feature count flowing through a model inside the model designer:** A callout box points to numerical values (e.g., [1], [6486], [1041], [3713], [1041], [4918]) placed on the connecting lines, indicating the number of features at each stage of the process.

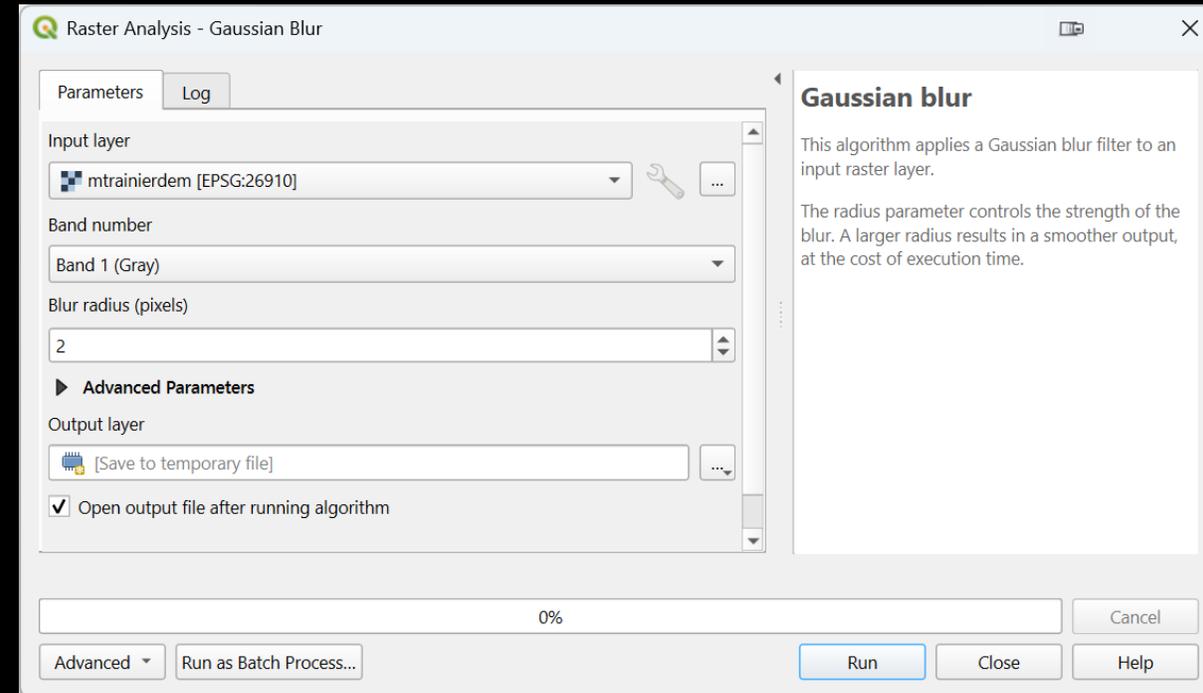
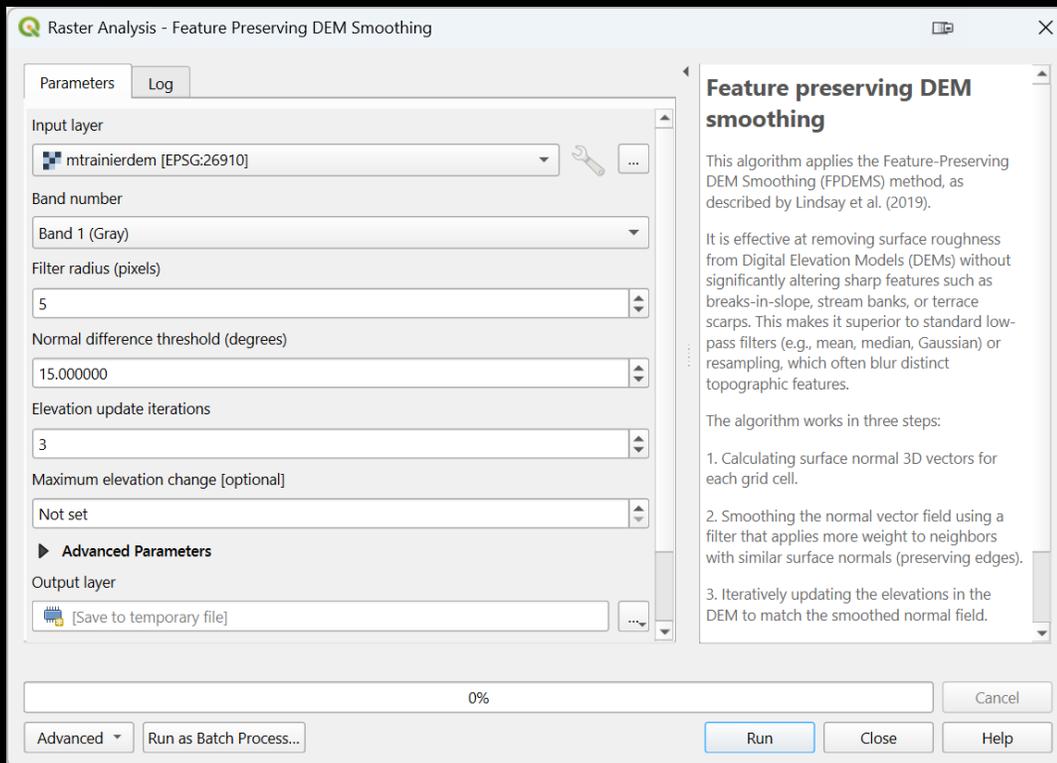
**New Panel for configuring both Inputs and Algorithms:** A callout box points to the 'Configuration' panel on the right, which allows for setting conditions for different branches of the model.

Branch Name	Condition
1 Roads	@roads is NOT NULL
2 No roads	@roads is NULL

# New DEM Algorithms

## Raster Gaussian Blur

## Feature Preserving DEM Smoothing



# Compare Point Clouds



# Elevation Profile Manager



**A heartfelt thank you to the amazing QGIS  
community for making these features possible!**



# Thanks! Questions?

Kurt Menke



[kurt@septima.dk](mailto:kurt@septima.dk)

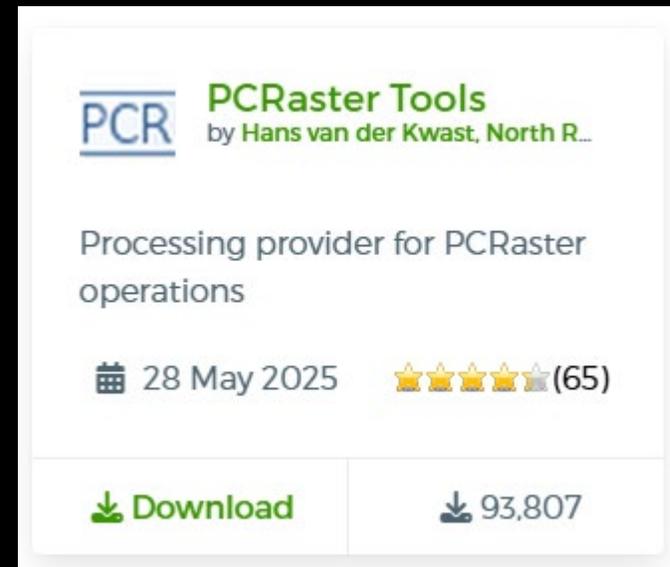
# QGIS Plugins and Tools for Water

The screenshot shows the QGIS 4 Ready Plugins website. The page features a navigation bar with links for About, Resources, Community, Download, and Donate. Below the navigation bar, there are buttons for 'Upload a plugin' and 'Create empty plugin'. The main content area displays a list of 297 approved plugins ready for QGIS 4. The plugins are shown in a grid view, each with a 'New' badge, a description, a download button, and a download count. The plugins listed are:

- AutoAtlas Pro** by Jorge Ulloa Roa: Automated cartographic report generator. Create professional atlas reports with thematic maps in one click. 18 hours ago, 2 stars, 65 downloads.
- Layer Multiply Toggle** by Mike Elstermann (@geoObserver): Switches the blending mode for all or selected layers and groups to "Multiply". 6 hours ago, 2 stars, 39 downloads.
- Sort and Group Layers** by Australis Asset Advisory Group: Sort and group layers by file path, name, date, geometry, feature count, or file size. 18 Feb 2026, 0 stars, 146 downloads.
- Regio API Plugin** by Regio OÜ: Estonian, Latvian and Lithuanian geocode, reverse geocode, routing and WMS basemap via Regio API (api.regio.ee). 65 downloads.
- Geochemistry Plotting Tools** by Mark Jessell: Create spider diagrams, discrimination diagrams, and custom XY plots for geochemical data. 39 downloads.
- Kumoy** by MIERUNE inc.: Turn your QGIS into cloud-native. 146 downloads.

# The PCRaster Tools plugin

- 2020 – 2021: Prototype with scripts via the Resource Sharing plugin. Worked only in a Conda environment
- Developed as plugin together with Nyal Dawson (North Road)
- 24 September 2021: Launch
- >90k times downloaded
- 2022: used in chapter 4 of the book QGIS for Hydrological Applications – 2nd Edition
- Easy install on windows with the OSGeo4W installer, thanks to Jürgen Fischer
- Works great on Conda for all operating systems



Fixing the last bugs for porting  
to Qt6 as we speak!

# PCRaster Tools

Based on PCRaster Python functions

- ▼ [PCR](#) PCRaster
  - ▶ Area operations
  - ▶ Conditional and boolean operators
  - ▶ Data management
  - ▶ Derivatives of digital elevation models
  - ▶ Hydrological and material transport operations
  - ▶ Map operations
  - ▶ Mathematical operators
  - ▶ Missing value creation, detection, alteration
  - ▶ Order
  - ▶ Proximity analysis
  - ▶ Relations in tables
  - ▶ Window operations

- ▼ Hydrological and material transport operations
  - [PCR](#) [accucapacityflux](#) and [accucapacitystate](#)
  - [PCR](#) [accuflux](#)
  - [PCR](#) [accufractionflux](#) and [accufractionstate](#)
  - [PCR](#) [accuthresholdflux](#) and [accuthresholdstate](#)
  - [PCR](#) [accutraveltimelflux](#) and [accutraveltimestate](#)
  - [PCR](#) [accutraveltimefractionflux](#), [accutraveltimefractionstate](#) and [accutraveltimefractionremoved](#)
  - [PCR](#) [accutriggerflux](#) and [accutriggerstate](#)
  - [PCR](#) [catchment](#)
  - [PCR](#) [catchmenttotal](#)
  - [PCR](#) [downstream](#)
  - [PCR](#) [downstreamdist](#)
  - [PCR](#) [lddcreate](#)
  - [PCR](#) [lddcreatedem](#)
  - [PCR](#) [ldddists](#)
  - [PCR](#) [lddrepair](#)
  - [PCR](#) [path](#)
  - [PCR](#) [pit](#)
  - [PCR](#) [slopelength](#)
  - [PCR](#) [streamorder](#)
  - [PCR](#) [subcatchment](#)
  - [PCR](#) [transient](#)
  - [PCR](#) [upstream](#)

# Crayfish plugin

## Crayfish

### What is Crayfish?

Crayfish is a plugin (extension) developed by Lutra Consulting for QGIS.

The Crayfish plugin provide extra functionalities to [work with mesh data](#) in QGIS.

In addition to rendering data, users can manipulate the temporal data using its built-in grid calculator.

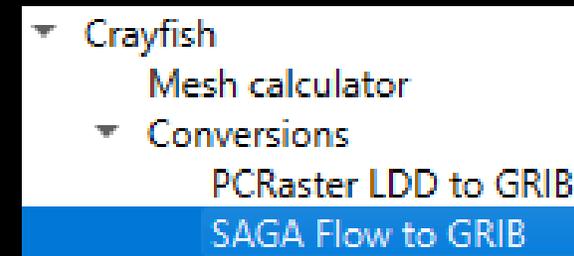
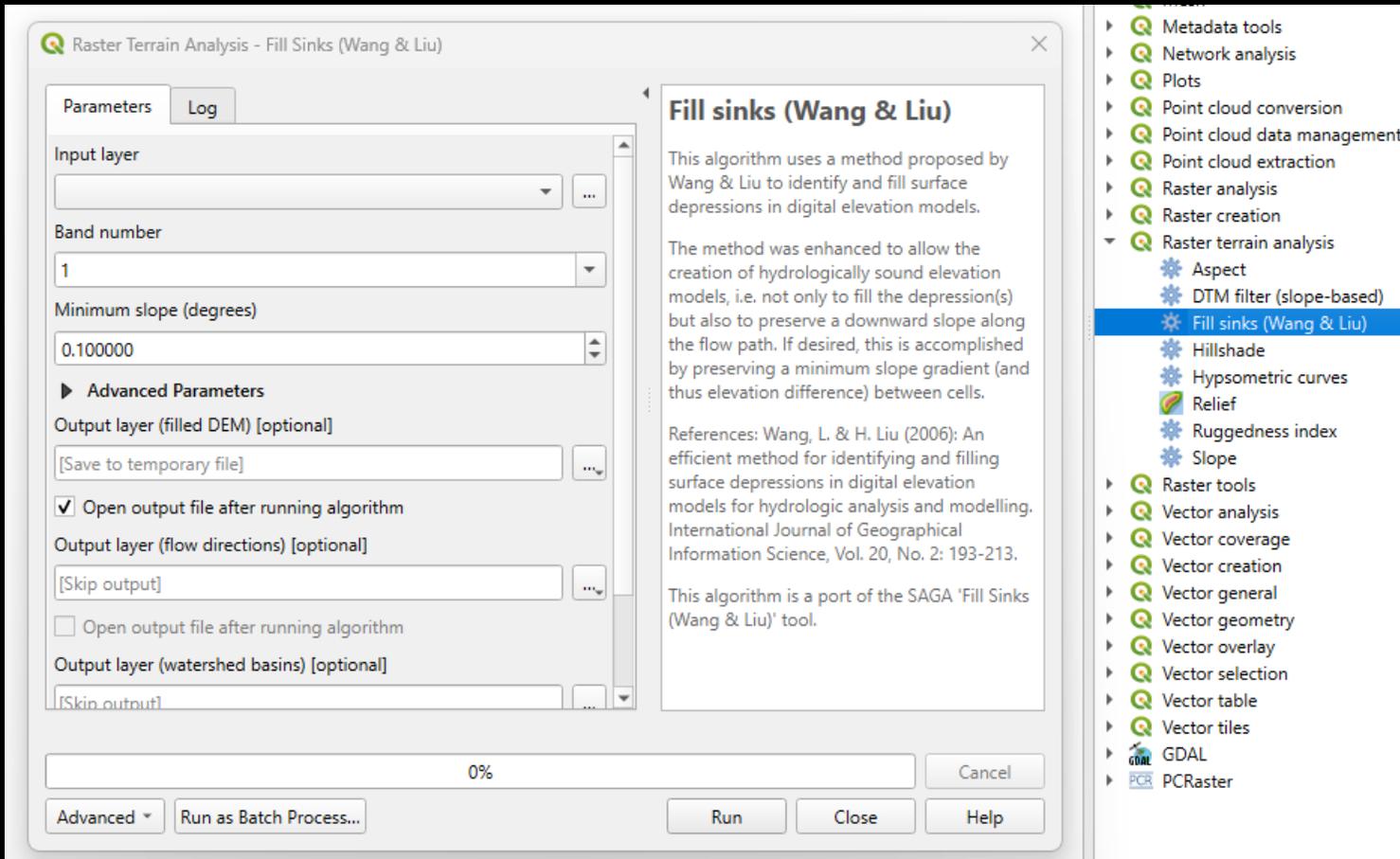


With Crayfish plugin, users can export their mesh data as an animation, raster or vector and plot graphs.



The screenshot shows the QGIS Plugin Repository interface for the Crayfish plugin. At the top, there is a red circular logo with a white shape inside, followed by the text "Crayfish by Lutra Consulting". Below this, the title "Tools for mesh layers QGIS" is displayed. A calendar icon indicates the release date "14 Nov 2025", and a star rating shows "4.5 (202)". At the bottom, there are two buttons: a green "Download" button with a download icon, and a grey button with a download icon and the number "194,788".

# Crayfish plugin + fill sinks = flow direction mesh



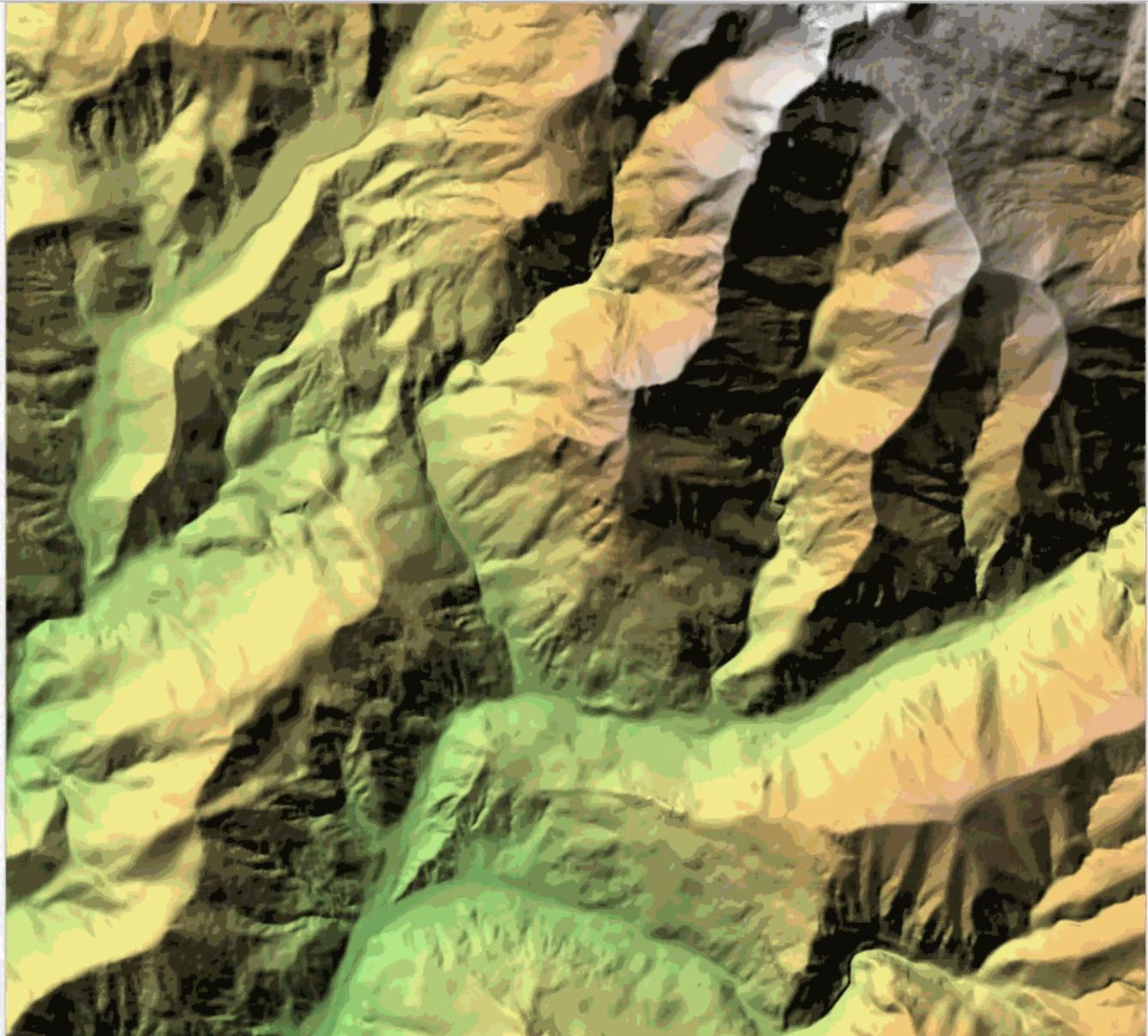


Browser

- ☆ Favorites
  - E:\30DayMapChallenge2025\Day\_23
    - DTM.tif
- Spatial Bookmarks
- Home
- C:\ (Windows)
- D:\ (HP Port Rep)
- E:\ (Data)
- Z:\ (Data)
- GeoPackage
- SpatialLite
- PostgreSQL
- SAP HANA
- STAC
- MS SQL Server
- WMS/WMTS
- Cloud
- Scenes
- SensorThings
- Master Tiles

Layers

- DTM
  - Band 1 (Gray)  
2,932.949951
- Hillshade



Processing Toolbox

Search...

- 3D Tiles
- Cartography
- Check geometry
- Database
- File tools
- Fix geometry
- GPS
- Interpolation
- Layer tools
- Mesh
- Metadata tools
- Network analysis
- Plots
- Point cloud conversion
- Point cloud data management
- Point cloud extraction
- Raster analysis
- Raster creation
- Raster terrain analysis
  - Aspect
  - DTM filter (slope-based)
  - Fill sinks (Wang & Liu)
  - Hillshade
  - Hypsometric curves
  - Relief
  - Ruggedness index
  - Slope
- Raster tools
- Vector analysis
- Vector coverage
- Vector creation
- Vector general
- Vector geometry
- Vector overlay
- Vector selection
- Vector table
- Vector tiles
- GDAL
- GRASS

# QGIS Resources Hub

The screenshot displays the QGIS website's navigation and main content. At the top left is the QGIS logo. The navigation bar includes 'About', 'Resources' (highlighted with a dropdown menu), 'Community', 'Download', 'Donate', and a gift icon. The 'Resources' dropdown menu lists: Documentation, Resources Hub (with an external link icon), Plugins (with an external link icon), Books, Certification Programme, Visual Style Guide (Logos and Graphics), and Compliance Reports. The main content area features a dark blue background with a faint map pattern. A news snippet reads 'News: Getting ready for the QGIS User Conference 2026?'. Below this are 'Free and Open Source' and 'DPG' badges. The main headline is 'Spatial without Compromise', followed by the tagline 'Spatial visualization and decision-making tools for everyone'. A 'Download' button and the text 'Available on Windows, Mac, Linux' are positioned at the bottom left. On the right, there is a search bar and a large green 'Q' logo with a 3D cube and arrow.

**QGIS**

About ▾ **Resources** ▾ Community ▾ Download Donate

News: Getting ready for the QGIS User Conference 2026? ↗

Free and Open Source DPG

## Spatial without Compromise

Spatial visualization and decision-making tools for everyone

Download Available on Windows, Mac, Linux

Search

Documentation  
Resources Hub ↗  
Plugins ↗  
Books  
Certification Programme  
Visual Style Guide (Logos and Graphics)  
Compliance Reports

# QGIS Model Hub

The screenshot shows the QGIS Model Hub website interface. At the top, there is a navigation bar with the QGIS logo, links for 'QGIS HOME', 'ABOUT PLUGINS', 'PLUGINS', 'PLANET', 'HUB', and 'LOGOUT', a search bar, and a user profile icon. Below the navigation bar, on the left, is a blue 'Upload Model' button and a 'Model' sidebar with filters for 'Approved', 'Waiting Review', and 'Requiring Update', along with a 'Model Tags' icon. The main content area is titled 'QGIS Model' and 'All Models', indicating 23 records found. A 'Upload date' filter is visible on the right. The grid displays three model cards: 1. 'Viewshed and viewpoint (vector output)' by Asj, dated 03 October 2024, with 64 downloads and a modified date of 16 October 2024. The card features a 3D terrain view with a viewpoint and a compass. 2. 'Fix Directional Network' by Cadieux, dated 10 March 2023, with 430 downloads and a modified date of 30 May 2024. The card shows a network diagram with red nodes and green lines. 3. 'Antipode from click' by V, dated 11 January 2023, with 222 downloads and a modified date of 29 May 2024. The card features the QGIS logo. The bottom of the page shows the start of a fourth model card with a satellite image.

Upload Model

## Model

Approved

Waiting Review

Requiring Update



## QGIS Model

### All Models

23 records found.

Upload date



#### Viewshed and viewpoint (vector output)

Asj | 03 October 2024 | 64 downloads

Modified Date: 16 October 2024

This model automates viewshed analysis in QGIS, converting raster output to vector polygons. GDAL is ...



#### Fix Directional Network

Cadieux | 10 March 2023 | 430 downloads

Modified Date: 30 May 2024

Is your directional linear network driving you crazy? These 3 interdependent models will help you ...



#### Antipode from click

V | 11 January 2023 | 222 downloads

Modified Date: 29 May 2024

Calculates the antipode, opposite point on earth, for any location selected by click



# ArcGeek Calculator Plugin

**ArcGeek Calculator**

A comprehensive toolset for coordinate calculations, conversions, spatial operations, watershed analysis, land use analysis, flood simulation, and more in QGIS. Includes tools for geometry calculations (area, perimeter, length), basemaps from Google Maps, Fm, Bing, and others.

The plugin provides a stack of tools for GIS analysis, cartography, surveys, and workflows. Key features include:

- 1. Calculate Coordinates: Add, delete, and update points, convert to Decimal Degrees, and provide tool for UTM, NAD83, and WGS84.
- 2. Calculate Line Geometry: Calculate length and azimuth for lines.
- 3. Calculate Polygon Geometry: Calculate area and perimeter for polygons.
- 4. Coordinate X/Y: Quickly navigate to specific coordinates on the map, and quickly create point markers.
- 5. Extract Ordered Points from Polygons: Extract and order points from the vertices of input polygons with 1 to 1000000 points.
- 6. Order the Points: Convert the vertices to ordered point features.
- 7. Calculate Line from Coordinates and Table: Generate a line and provide tabular coordinates, table of distances, and area.
- 8. Draw a Network with Order: Generate stream network, and other tools.
- 9. Generate Basin Delineation: Delineate watershed basins from a DEM or raster.
- 10. Generate Morphometric Analysis: Perform comprehensive morphometric analysis of a watershed, calculating various parameters and providing color-coded maps.
- 11. Land Use Change: Define and analyze changes in land use between two dates.

**Layers**

- DEM
- Band 1 (Gray)
- 1,439
- 250
- hillshade

**Layer Styling**

DEM

Singleband pseudocolor

Band: Band 1 (Gray)

Min: 250 Max: 1439

Min / Max Value Settings

Interpolation: Linear

Color ramp: [Color Ramp]

Label unit suffix: [Label Unit Suffix]

Label precision: 0

Value	Color	Label
250	[Color]	250
258	[Color]	258
266	[Color]	266

Mode: Continuous Classes: 151

Classify Legend Settings...

Clip out of range values

**Layer Rendering**

Blending mode: Multiply

Brightness: 0

Saturation: 0

Contrast: 0

Gamma: 1.00

Invert colors

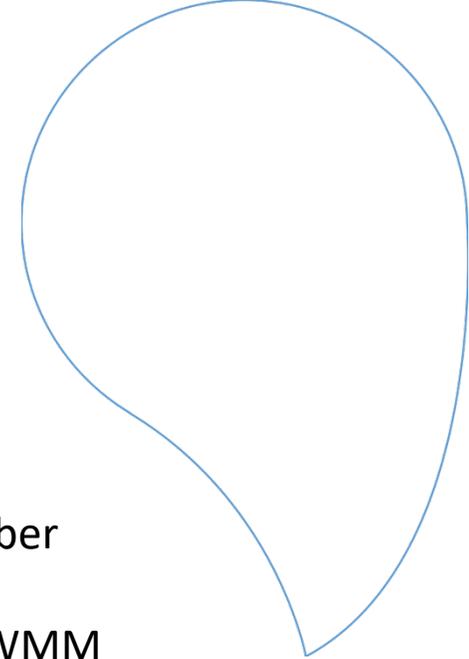
Grayscale: Off

# IBER-SWMM AS UD 2D/1D MODEL

Free distribution 2D/1D high-resolution dual drainage model

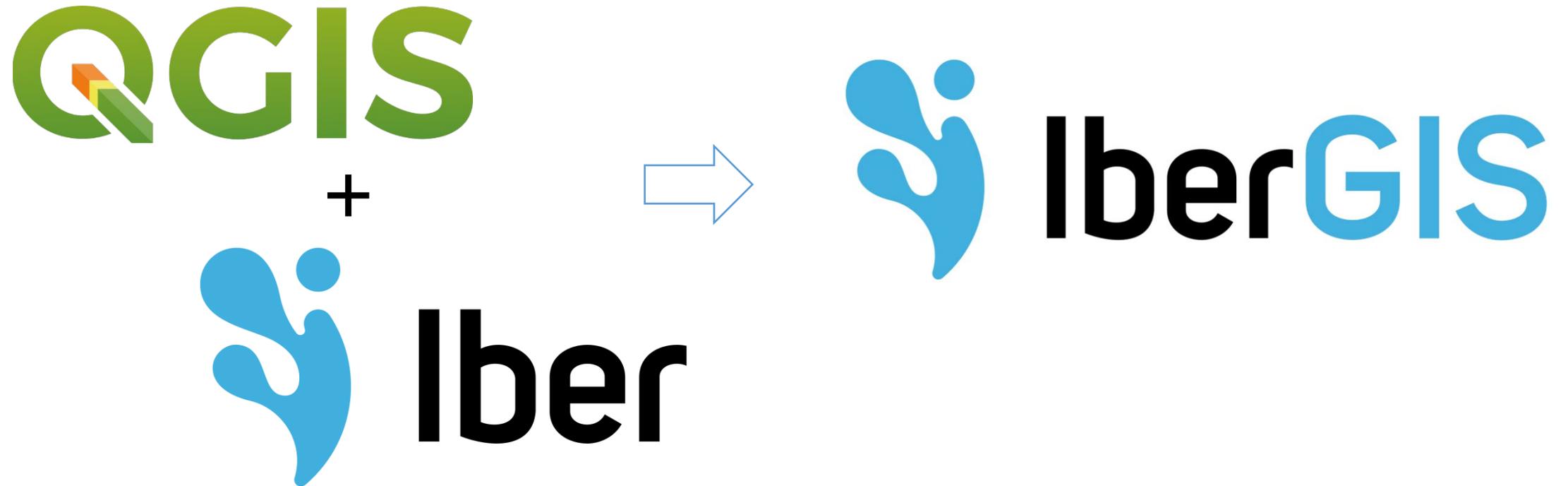


- ✓ 2D surface flow computed with Iber
- ✓ 1D sewer flow computed with SWMM
- ✓ Bidirectional flow exchange
- ✓ Specific modelling of roofs and buildings
- ✓ Parallelization for GPU via HPC
- ✓ Fully distributed hydrological approach

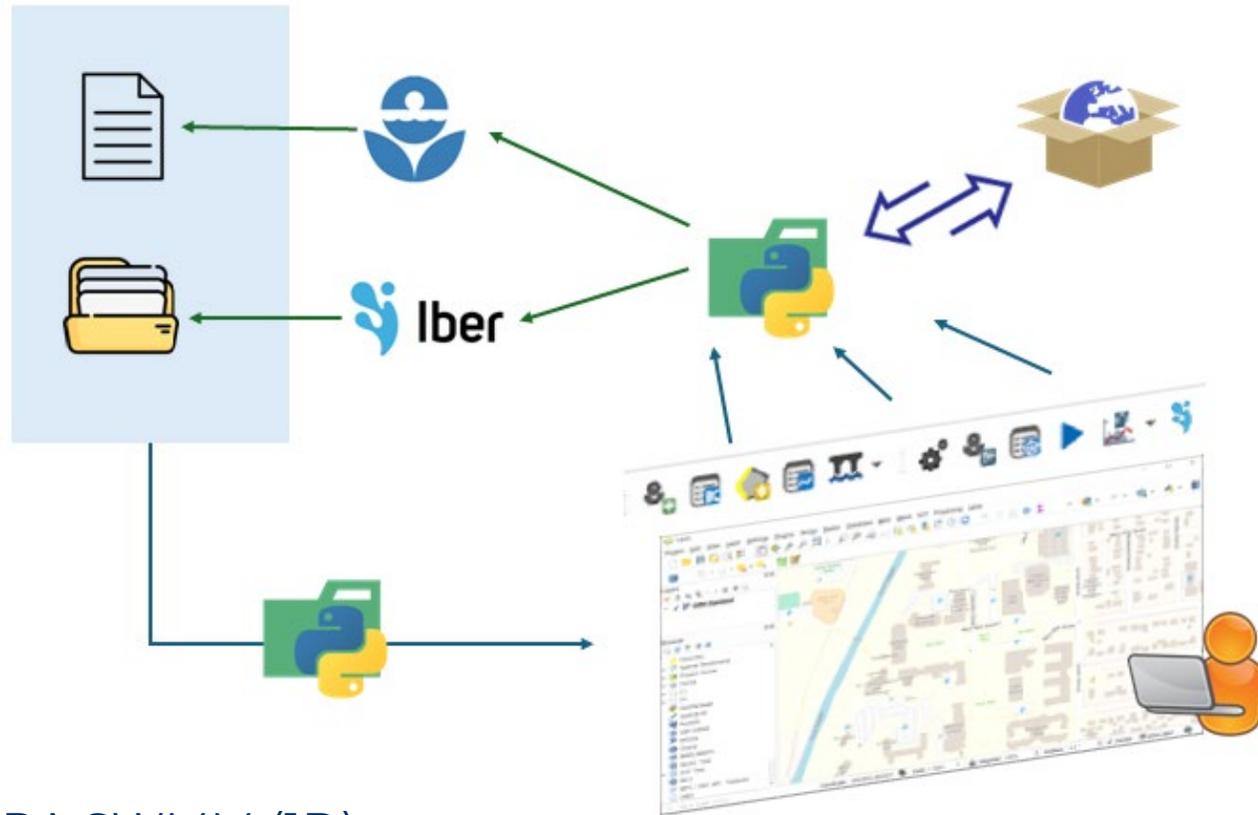


# IBERGIS

... INTEGRATION OF ALL PROCESSES IN A SINGLE INTERFACE



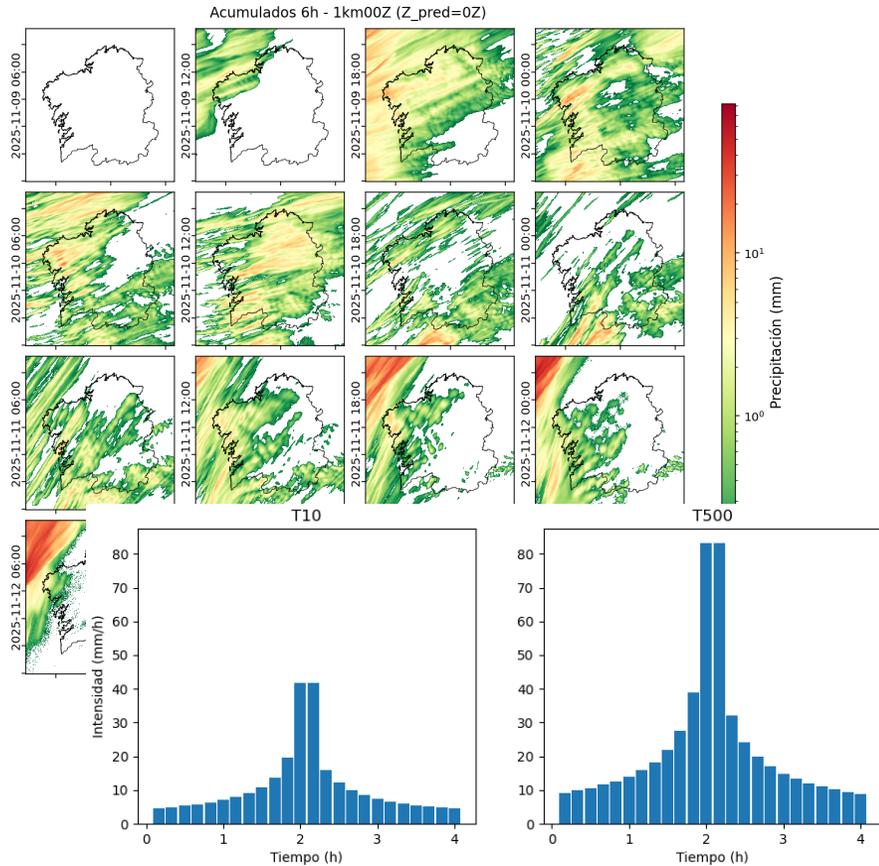
# IberGIS : URBAN DRAINAGE COUPLED MODEL 1D/2D



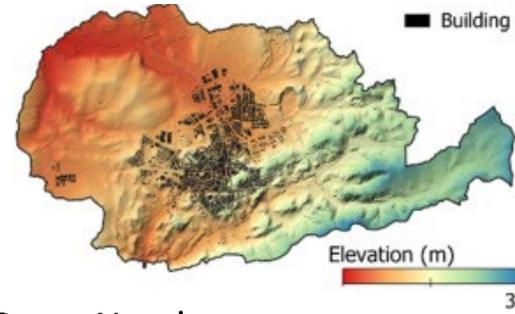
- Integrates EPA SWMM (1D)
- IBER (2D) for calculations in a GIS interface (QGIS) using Shallow water Equations

# INPUT DATA

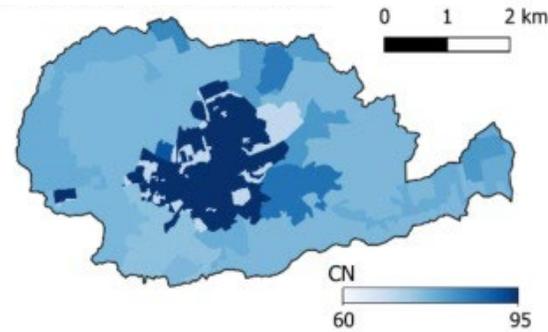
## Rain (raster or hyetograph)



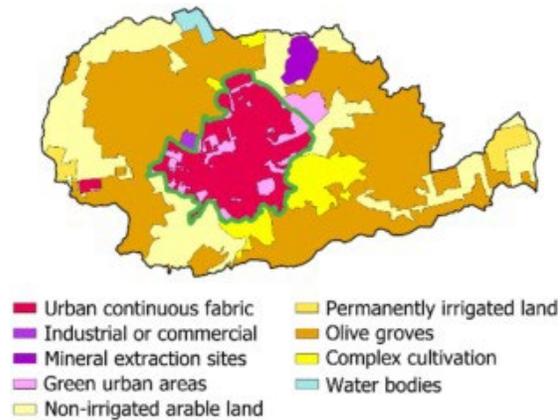
## DTM



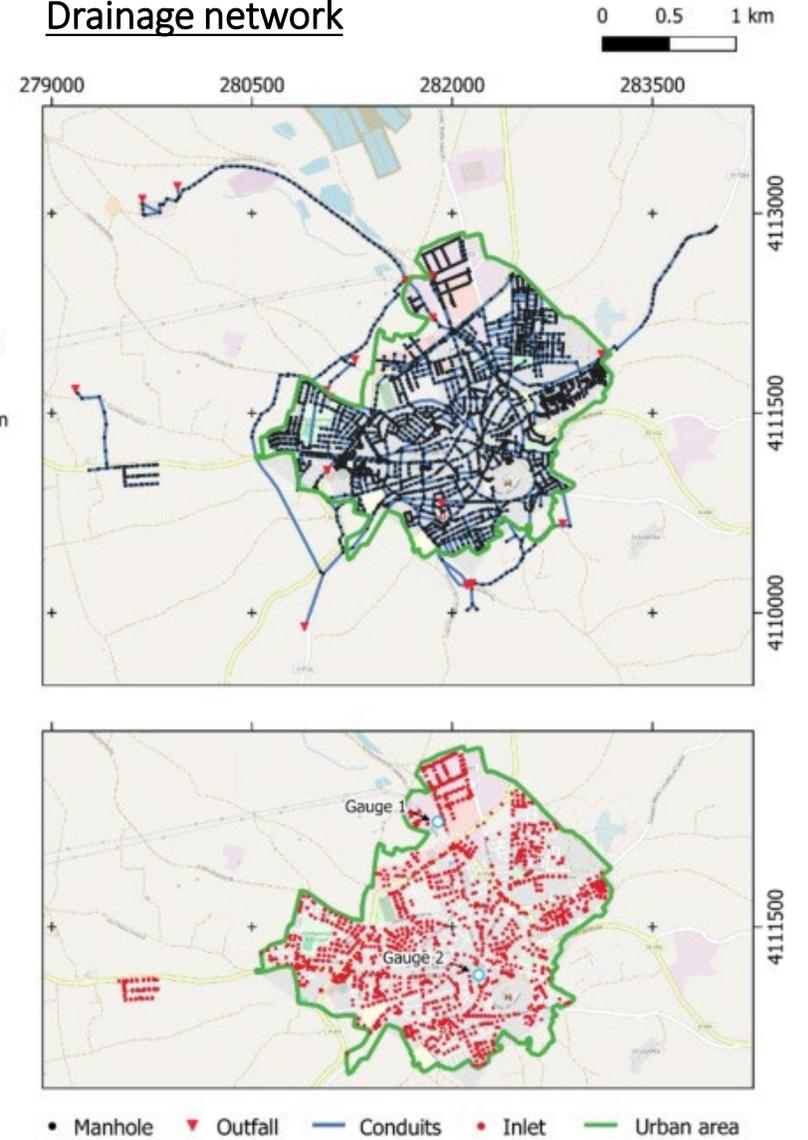
## Curve Number



## Land uses

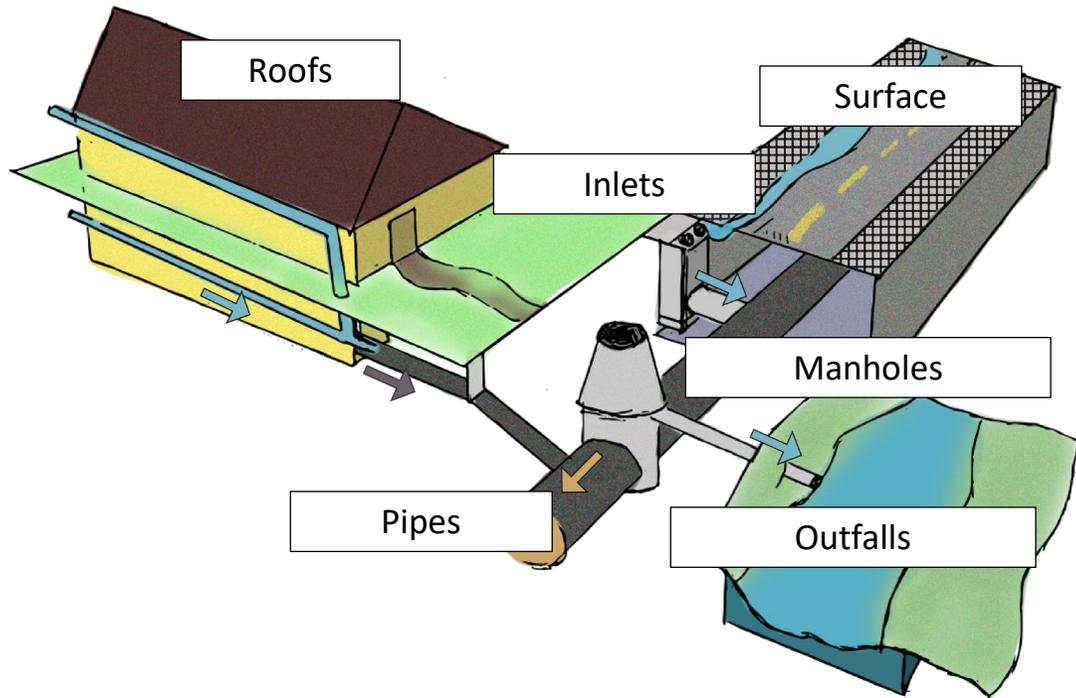


## Drainage network



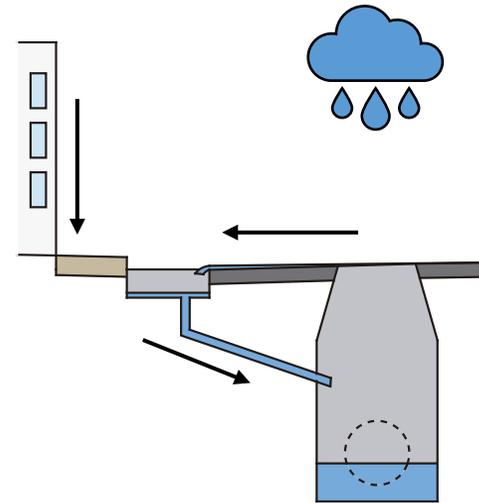
# URBAN HYDROLOGY

## Drainage System Components

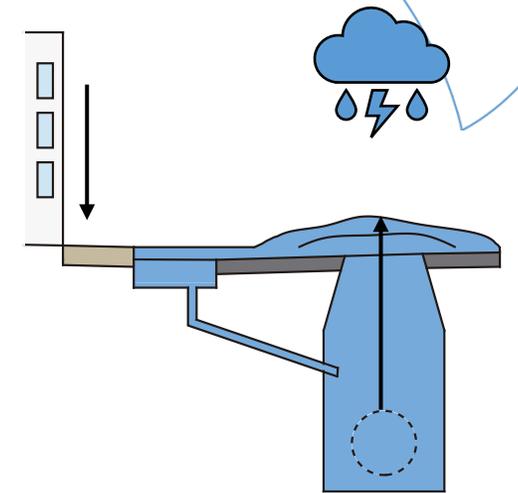


## Operating Scenarios

### 1. Normal conditions



### 2. Surcharged Conditions

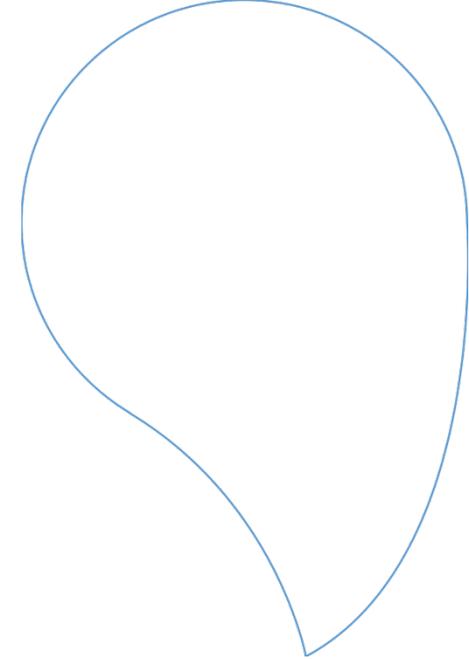
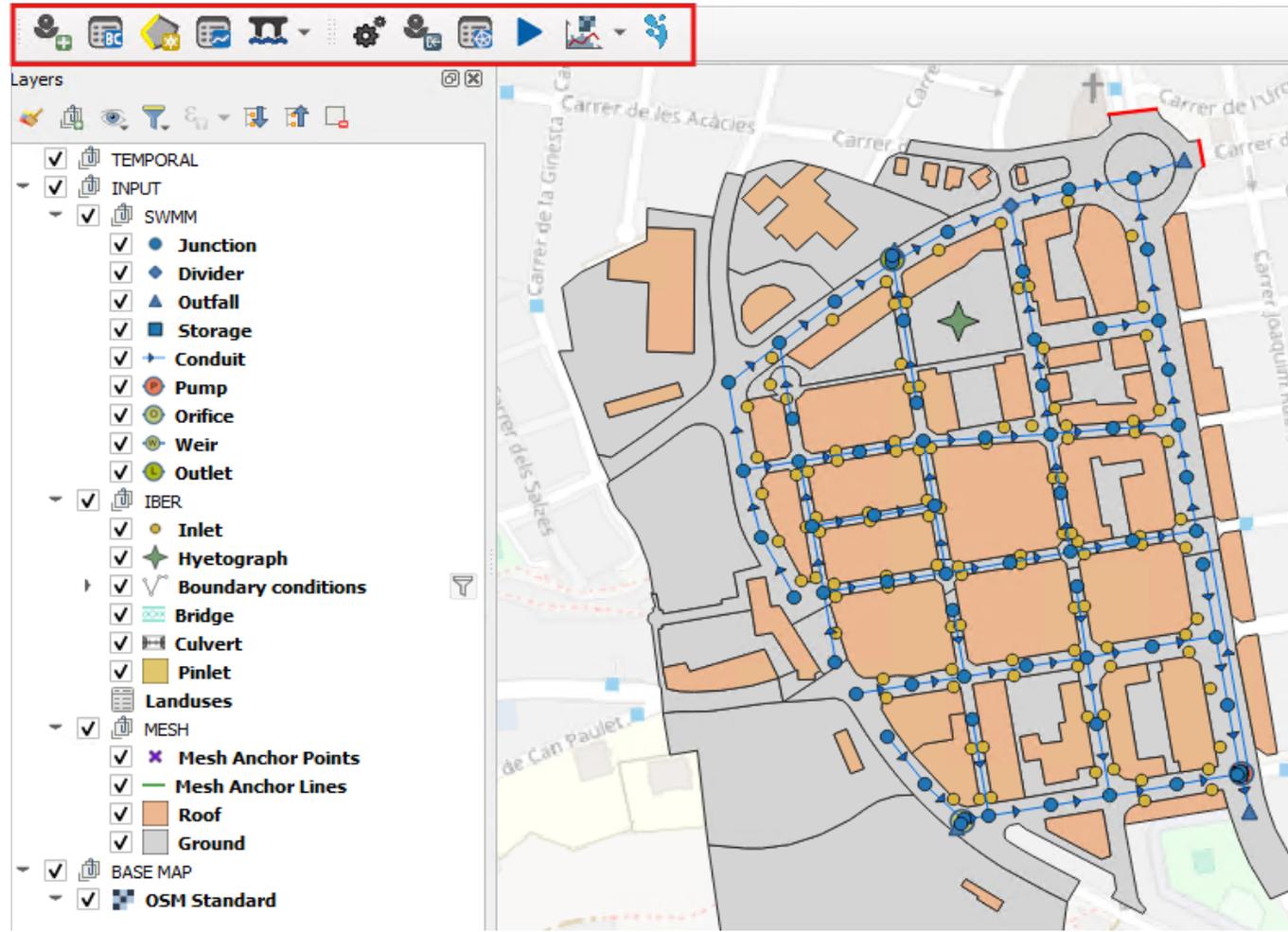


2D/1D DUAL URBAN DRAINAGE MODELS

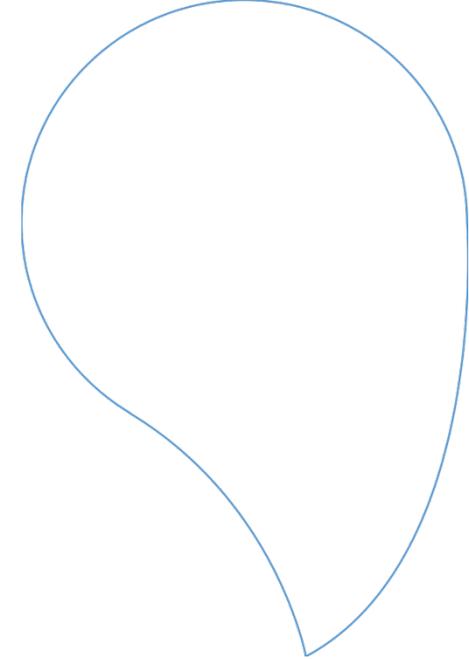
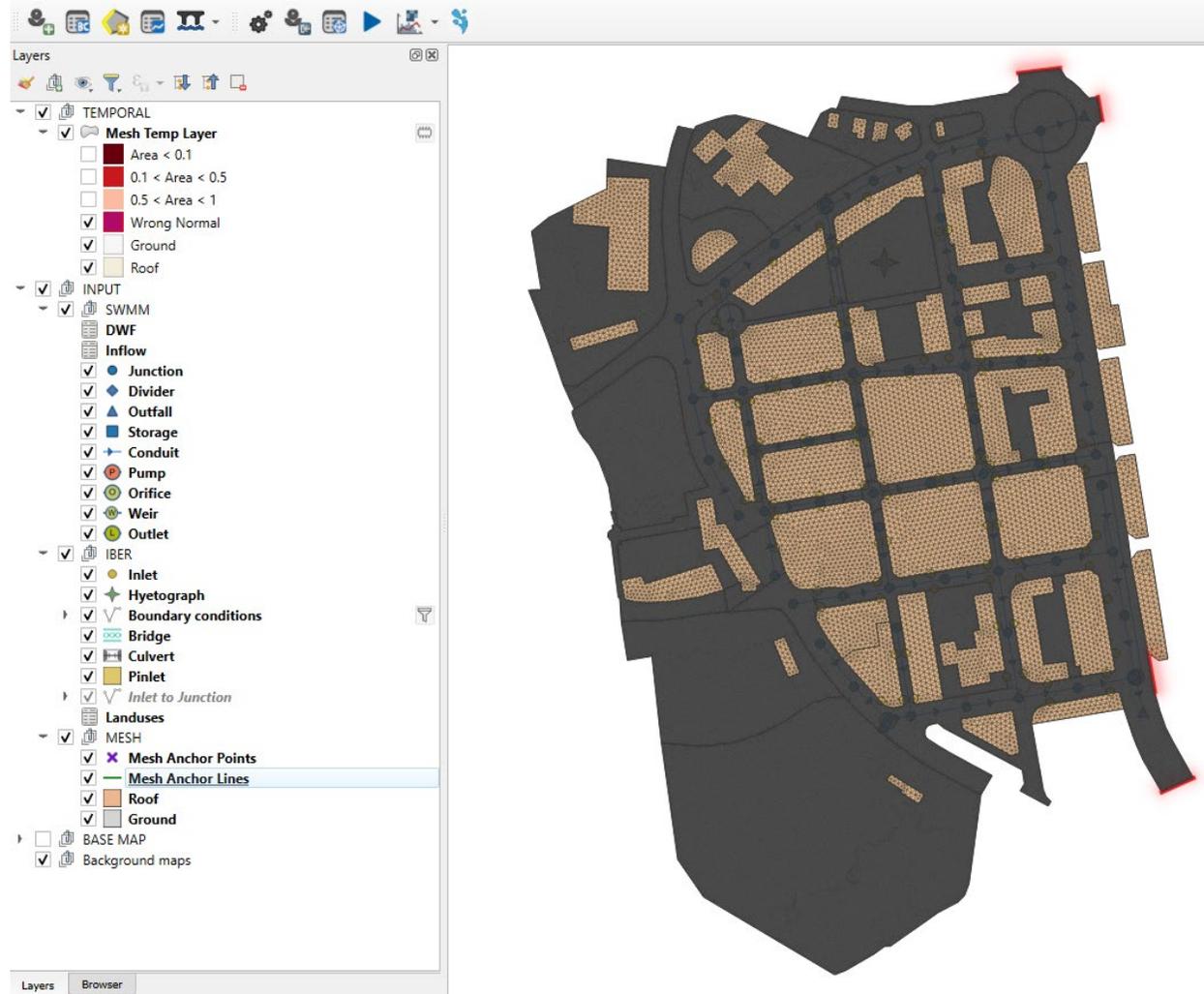
# INPUT DATA – DRAINAGE ELEMENTS

SPACE ENTITY	TYPE OF DATA	REPRESENTATION	ATTRIBUTES
	Point		Manhole / Outfall ID Upper Dimension Lower Elevation Diameter (...)
	Line		Collector ID Start and end Diameter Material (...)
	Polygon		Roof ID Area Slope Material (...)

# USER INTERFACE : INPUT



# USER INTERFACE : MESH CREATION



# USER INTERFACE : RESULTS

The screenshot displays a software interface for simulation results. The main window shows a map with a blue and green flow visualization overlaid on a street grid. The flow starts from a central point and spreads outwards, with a color gradient from blue to green. A detailed inset view on the right shows a zoomed-in view of the flow visualization, highlighting a specific area of the map. The interface includes a 'Layers' panel on the left, a 'Temporal Controller' at the top, and a status bar at the bottom.

**Layers Panel:**

- RESULTS - simulation\_demo
  - simulation\_demo - Depth timeseries
  - simulation\_demo - Velocity timeseries
  - sub-group1
- RESULTS - simulation
- TEMPORAL
- INPUT
  - SWMM
    - DWF
    - Inflow
      - Junction
      - Divider
      - Outfall
      - Storage
      - Conduit
      - Pump
      - Orifice
      - Weir
      - Outlet
  - IBER
    - Inlet
    - Hyetograph
    - Boundary conditions
      - Bridge
      - Culvert
      - Pinlet
      - Inlet to Junction
    - Landuses
  - MESH

**Temporal Controller:**

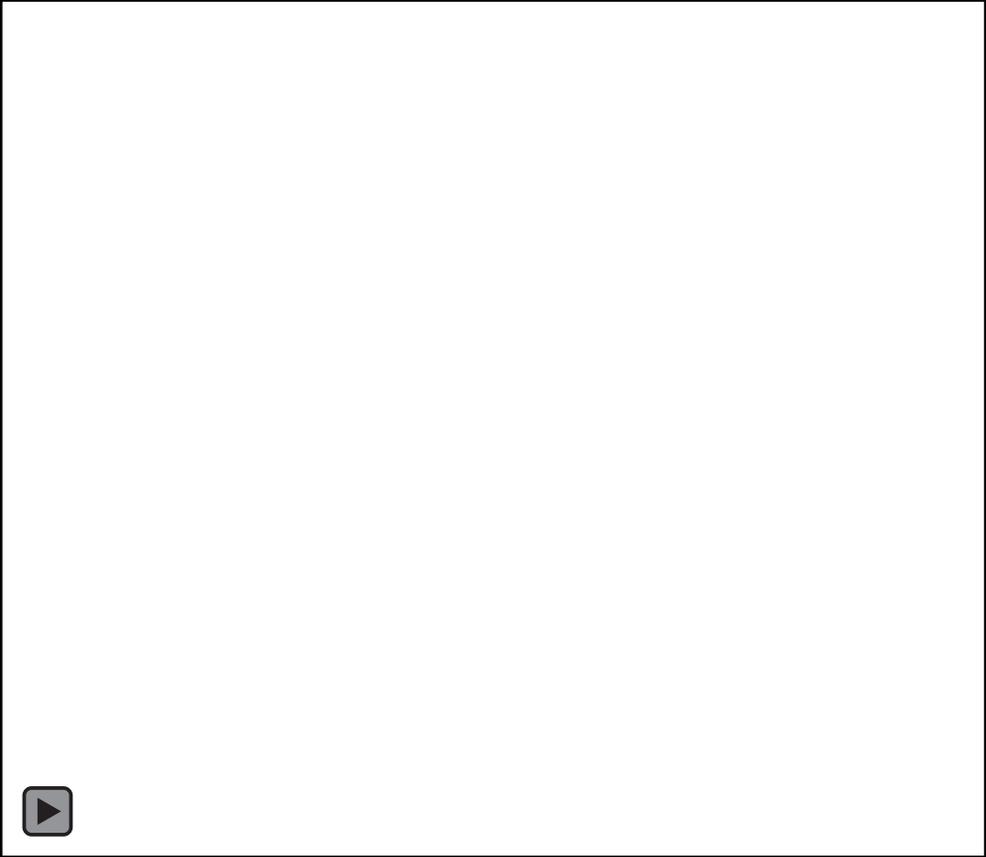
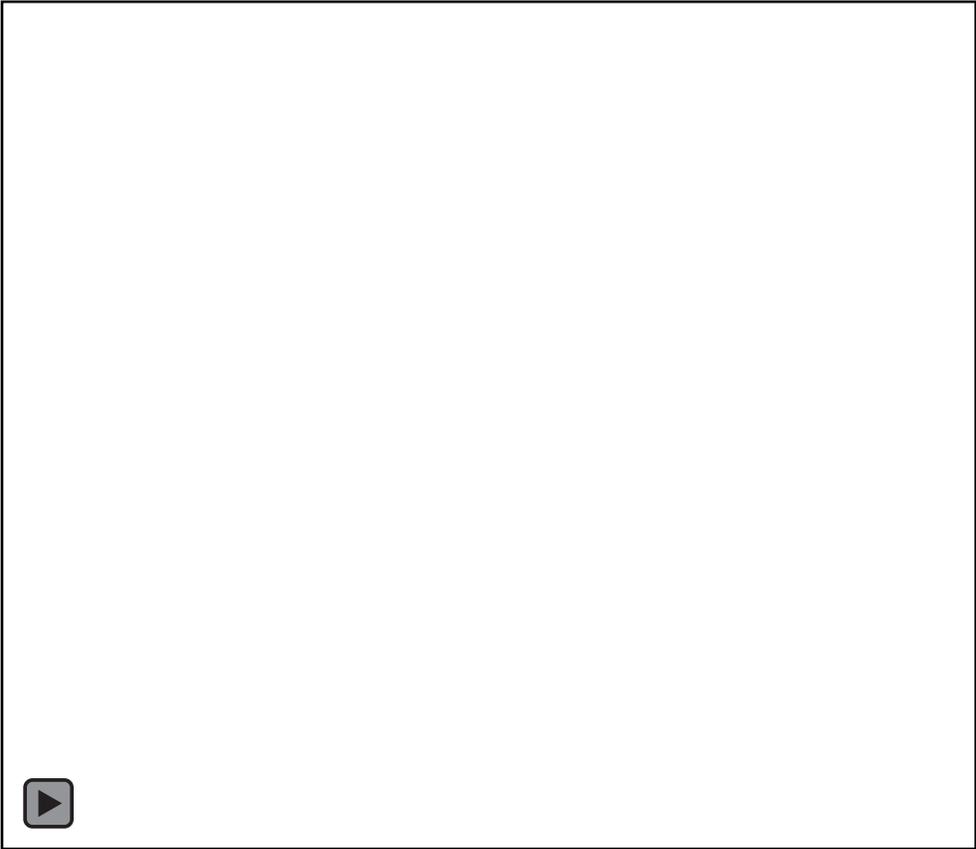
Current frame: 2017-01-01 02:30:00 ≤ t < 2017-01-01 02:35:00

Animation range: 2017-01-01 00:00:00 to 2017-01-01 03:00:00 Step: 300.000 seconds

**Status Bar:**

Coordinate: 417874, 4577857 Scale: 1:7244 Magnifier: 100% Rotation: 0,0 ° Render: EPSG:25831

USER INTERFACE : RESULTS



## RESULTS THROUGH WEB



# USER INTERFACE : SWMM RESULTS



# Nature based resilience to cities and assets



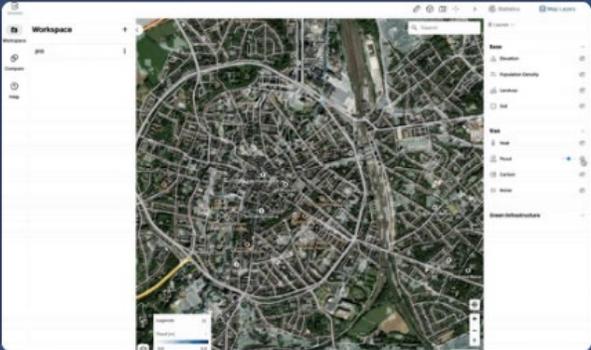
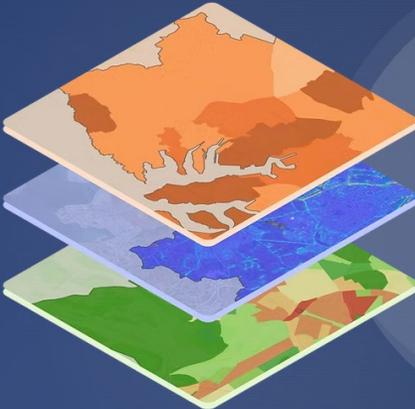
## RISK EXPOSURE ANALYSIS

Assess **urban infrastructure and population vulnerabilities** by mapping **environmental hazards**, climate risks and socio-economic factors. Identify where **extreme heat, flooding and pollution** pose the greatest threats and require urgent intervention



## SCENARIO MODELING

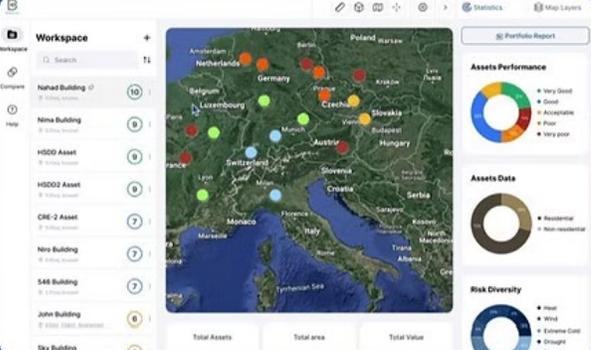
Simulate the impact of various climate adaptation measures and develop targeted resilience strategies to reduce risk, enhance public health, improve mobility, and optimize environmental outcomes



### For cities

Seamlessly integrate nature-based solutions into urban planning, enabling the transformation of vulnerable areas into resilient, green spaces through advanced geospatial analysis and data-driven strategies.

[See more](#)



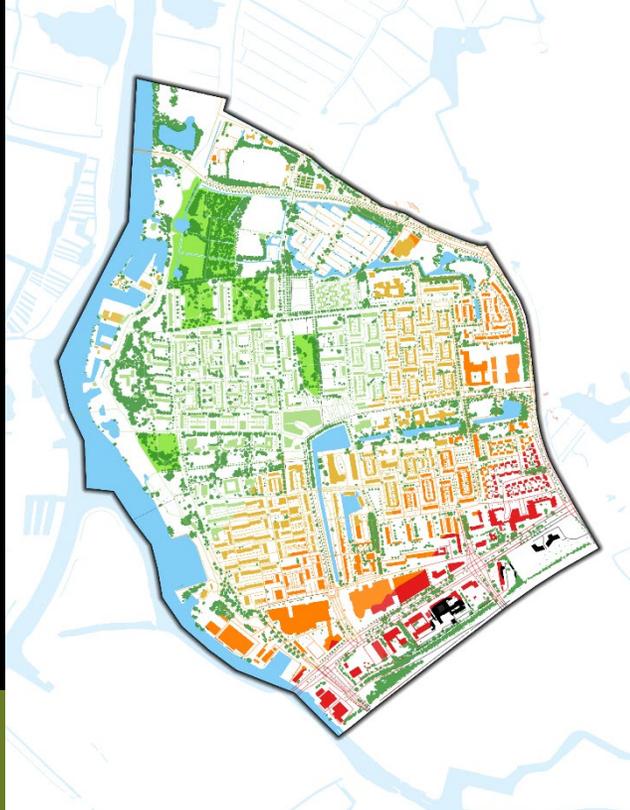
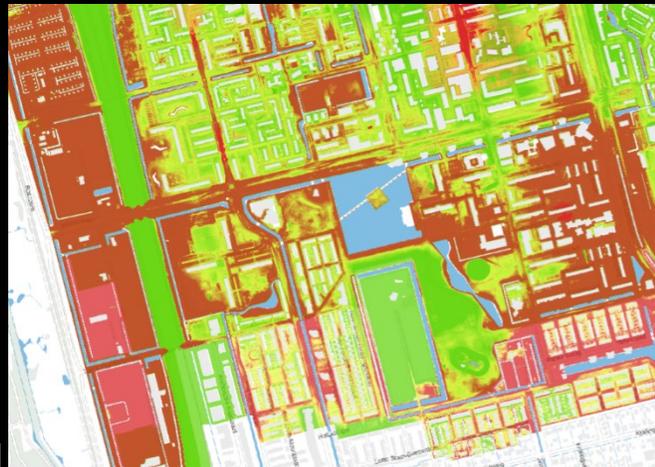
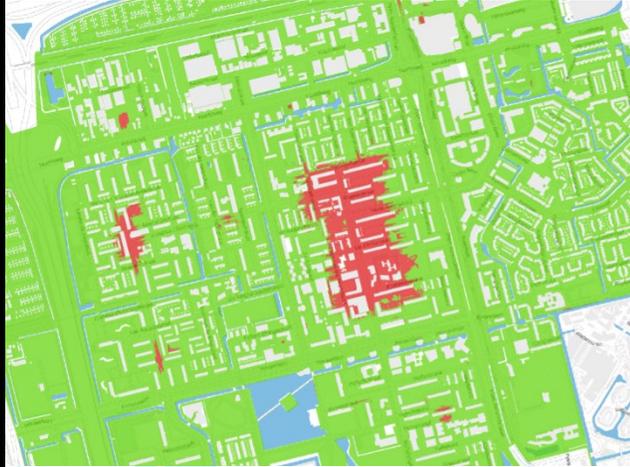
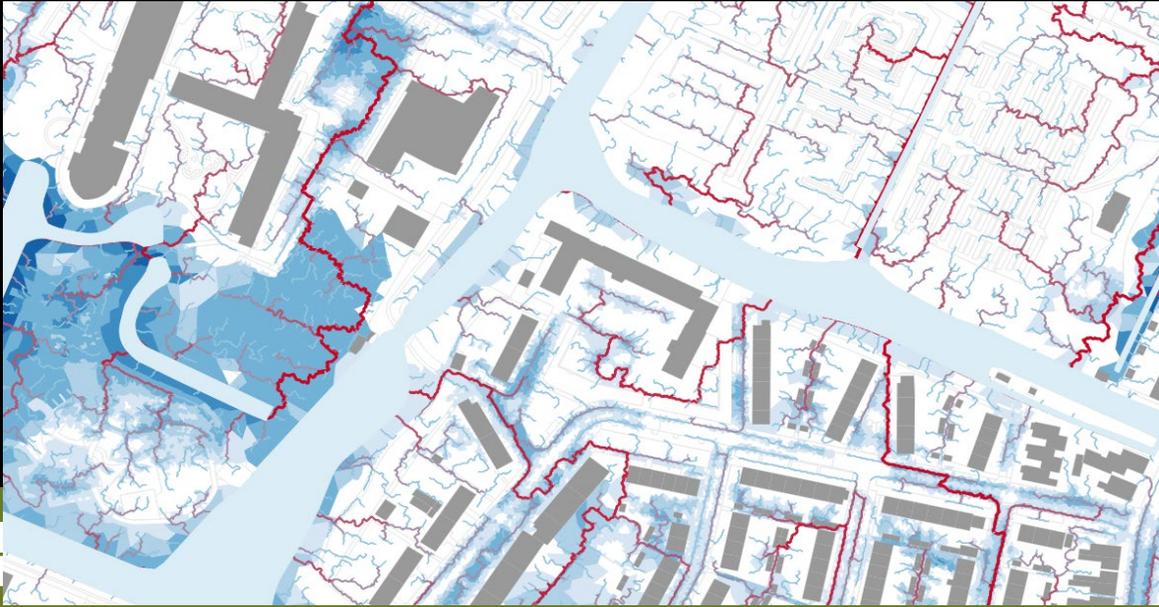
### For asset managers

Optimize investments by integrating nature-based resilience into projects, enhancing property value while ensuring compliance with sustainability standards. It provides tools for impact assessment, scenario modeling, and risk analysis.

[See more](#)

# Geospatial analysis for urban hydrological applications

- Waterlogged areas
- Infiltration zones
- Flow direction and accumulation
- 3/30/300
- Graphical models for automations
- ...



**A heartfelt thank you to the amazing QGIS  
community for making these features possible!**



# QGIS Masterclass

Build confident, practical QGIS skills to transform raw terrain data into powerful hydrological insights

 <b>Date</b>	Wednesday, 15 April 2026 - Wednesday, 3 June 2026
 <b>Time</b>	3:00pm (Australia/Sydney; <a href="#">find your local time</a> )
 <b>Location</b>	Online
<b>Format</b>	x8, 2hour recordings; pre and post course materials to go through via the learning platform
<b>Cost</b>	AUD \$1,995.00 (INC GST)
<b>Code</b>	LC-26-8-170
<b>Contact</b>	<a href="mailto:training@awschool.com.au">training@awschool.com.au</a>

<https://awschool.com.au/training/qgis-masterclass/>

# Field Data Collection with QGIS and Merjin Maps

Collect, edit and manage your field data using Merjin Maps and QGIS

 <b>Date</b>	Tuesday, 17 March 2026 - Tuesday, 24 March 2026
 <b>Time</b>	4:00pm (Australia/Sydney; <a href="#">find your local time</a> )
 <b>Location</b>	Online
<b>Format</b>	2 x 2-hour sessions + course material & resources
<b>Cost</b>	AUD \$645.00 (INC GST)
<b>Code</b>	LC-26-2-147
<b>Contact</b>	<a href="mailto:training@awschool.com.au">training@awschool.com.au</a>

<https://awschool.com.au/training/field-data-qgis-merjin-maps/>