

Join the FREEWAT family FREE and open source software tools for WATer resource management

Pieter Jan Haest

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FREEWAT



AGENTSCHAP
INNOVEREN &
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Adviesbureau
Grondwater
Technieken

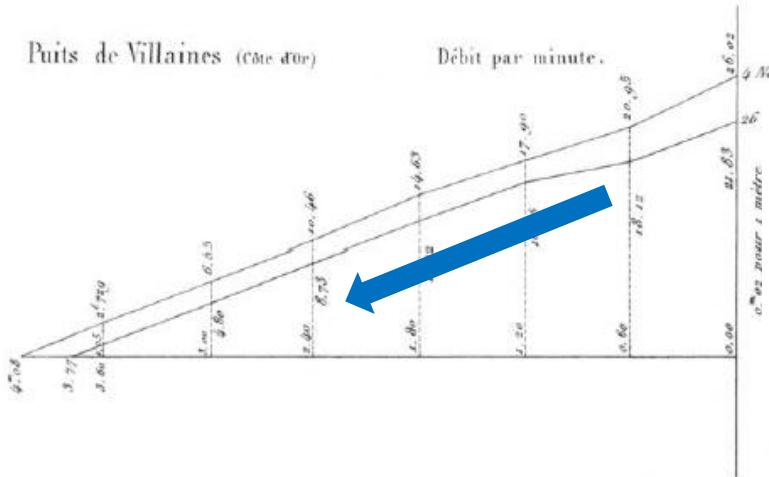


Introduction

Hydrogeology?

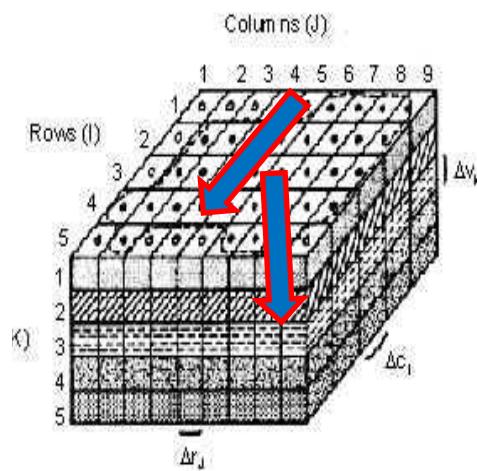
Introduction

Puits de Villaines (côte d'or)



Source: Brown, 2002, 10.1029/2001WR000727

$$\frac{\partial}{\partial x} \left[K_{xx} \frac{\partial h}{\partial x} \right] + \frac{\partial}{\partial y} \left[K_{yy} \frac{\partial h}{\partial y} \right] + \frac{\partial}{\partial z} \left[K_{zz} \frac{\partial h}{\partial z} \right] - W = S_s \frac{\partial h}{\partial t}$$



Explanation

- - - - - Aquifer Boundary

● Inactive Cell

■ Active Cell

Dimension of cell along the column direction.
Subscript (J) indicates the number of the column.

Dimension of cell along the row direction.
Subscript (I) indicates the number of the row.

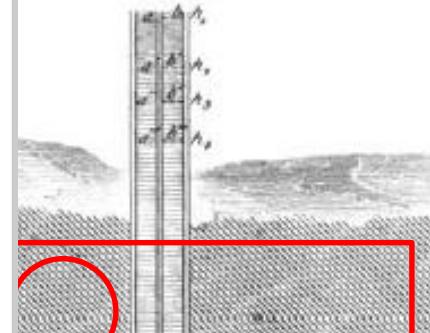
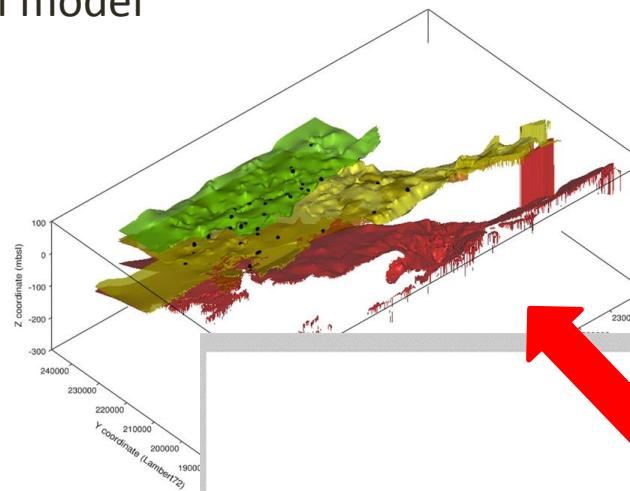
Dimension of cell along the vertical direction.
Subscript (K) indicates the number of the layer.

Figure 16-1 (after figure 1, McDonald and Harbaugh, 1988).
A discretized hypothetical aquifer system.

Introduction

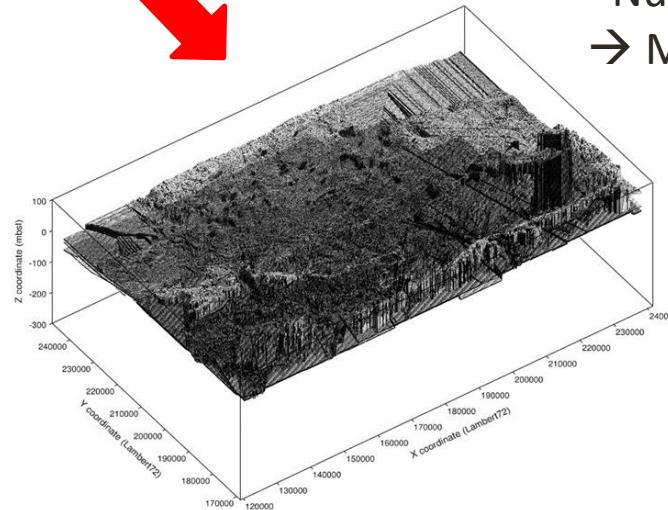
Conceptual model
→ GIS

The main hydrogeological units of the Campine Aquifer System



Numerical model
→ MODFLOW GUI

value value value



The H2020 FREEWAT project

- FREEWAT (FREE and open source software tools for WATer resource management):
 - **Open source and public domain, GIS-integrated** modelling platform
 - **Promote** scientifically and technically sound decision making by a **participatory, data-driven** approach
 - Move money from license to **human capital**

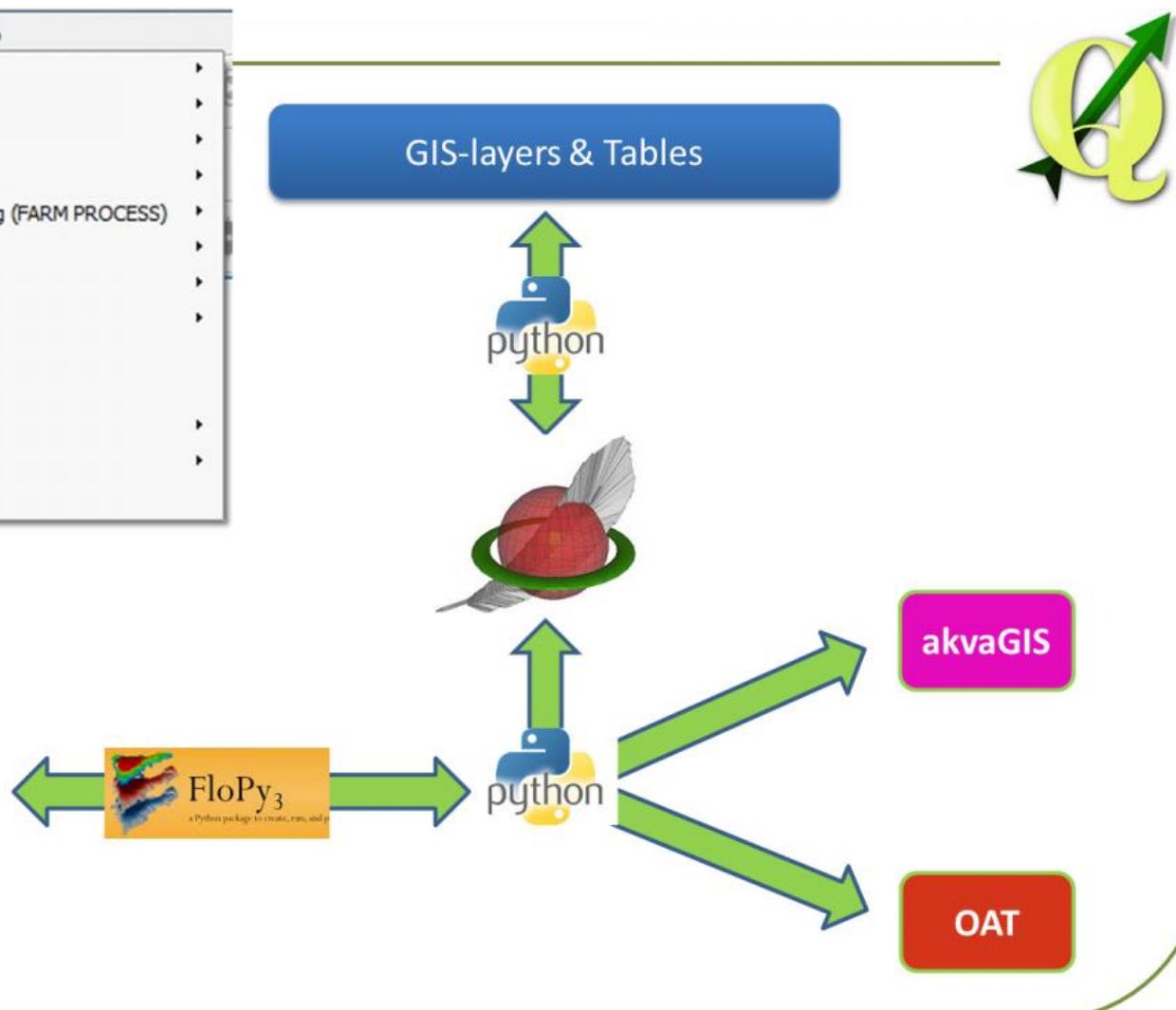
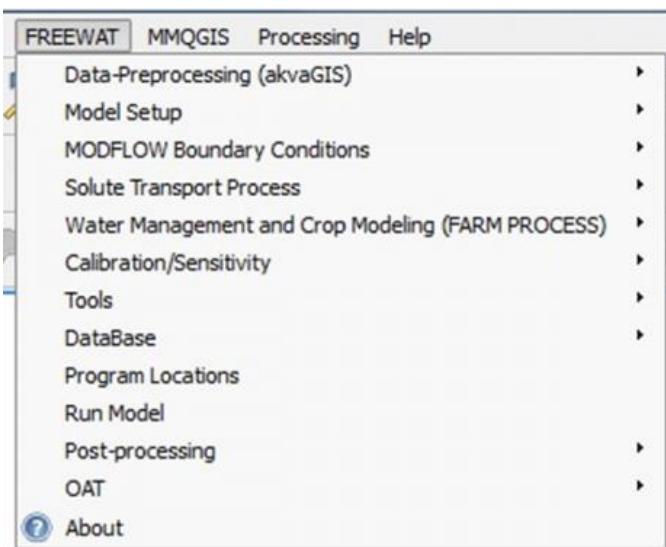


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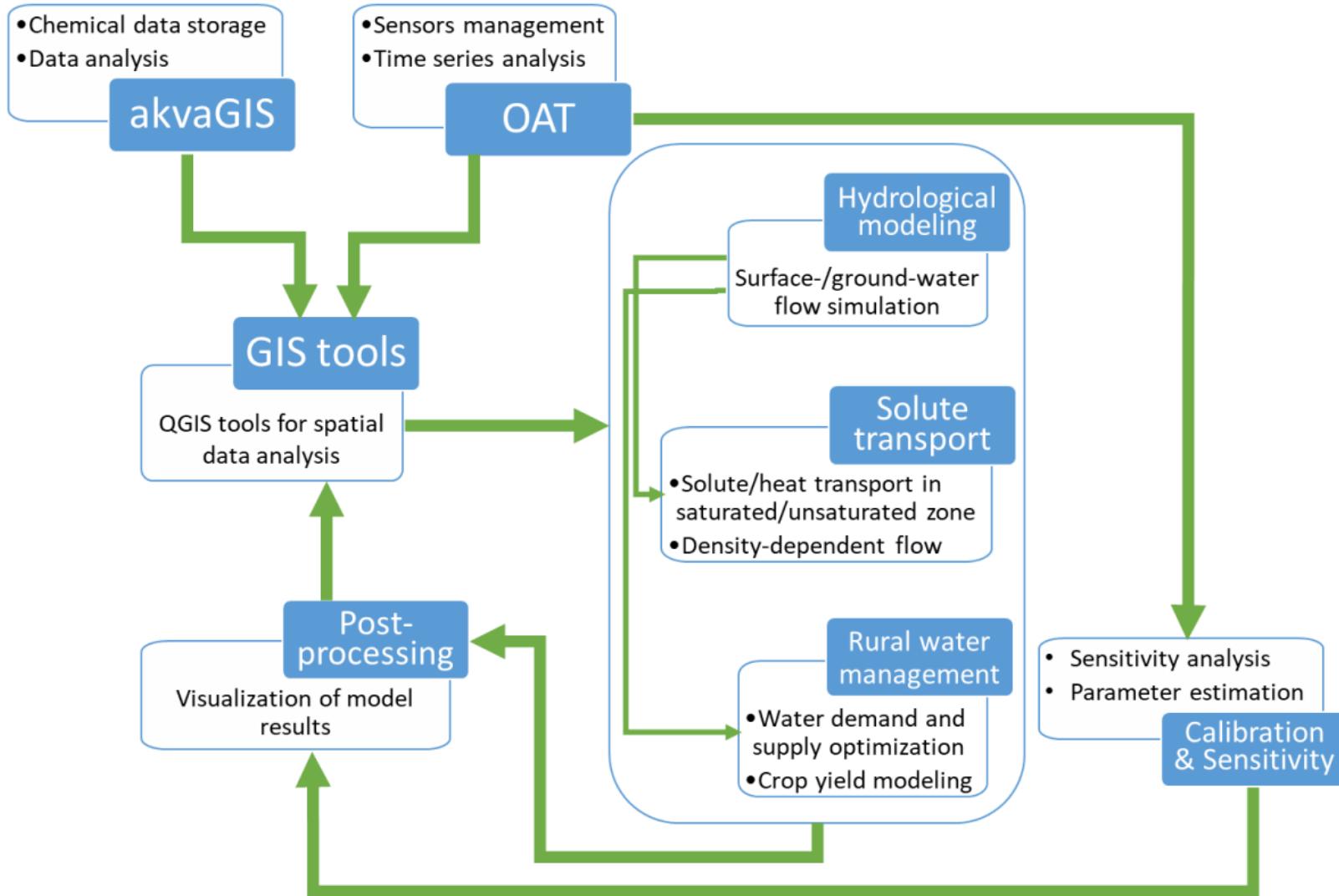
Free and Open Source Software Tools for Water Resource Management
EU HORIZON 2020 Project



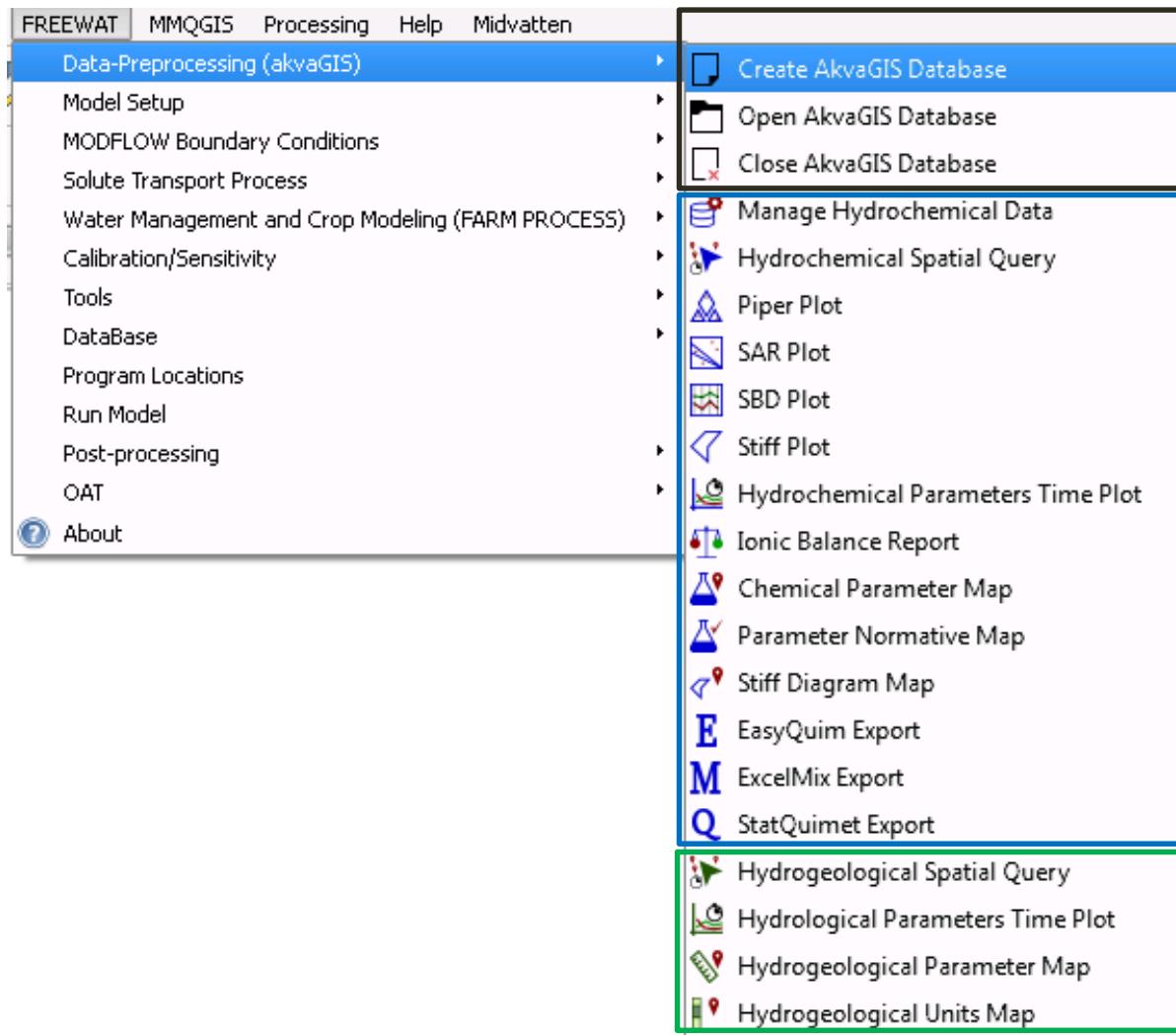
FREEWAT: QGIS plugin architecture



FREEWAT: modules



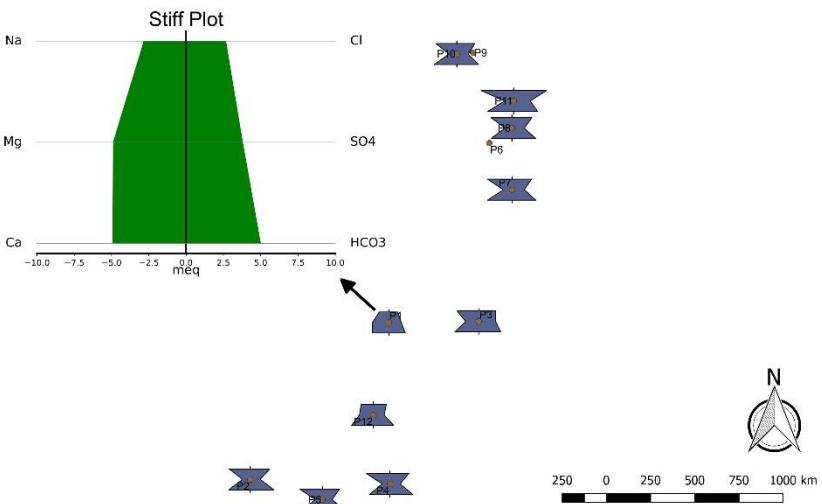
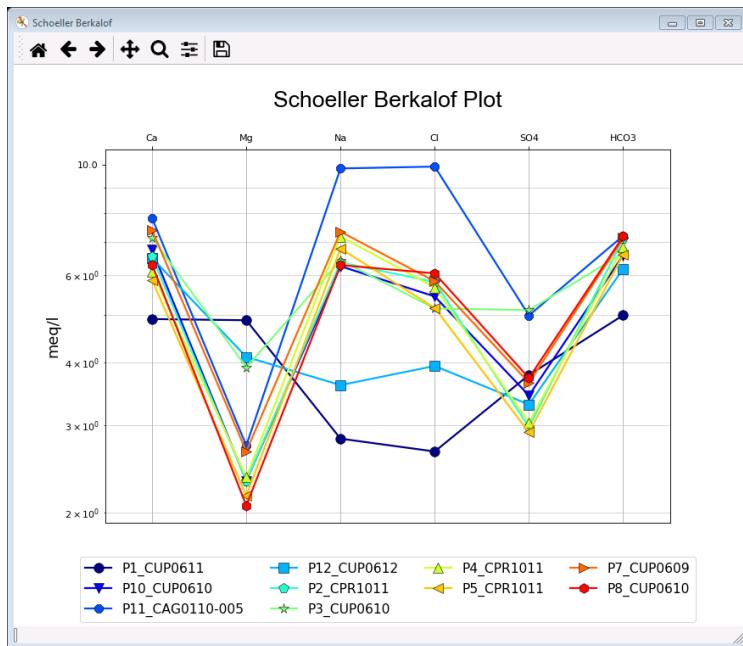
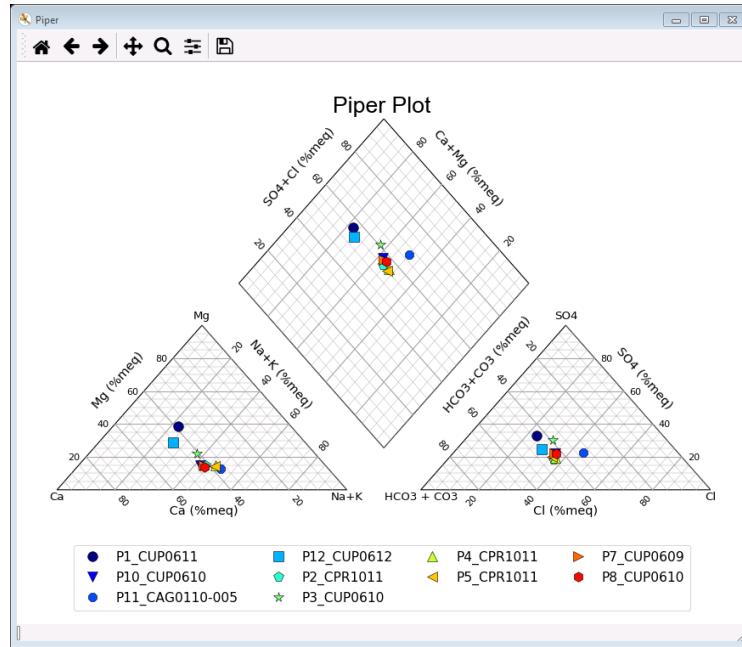
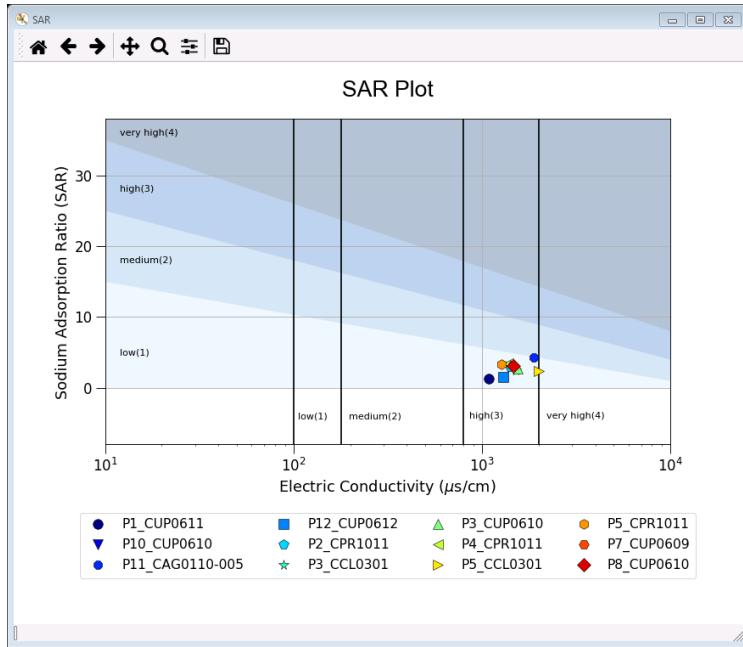
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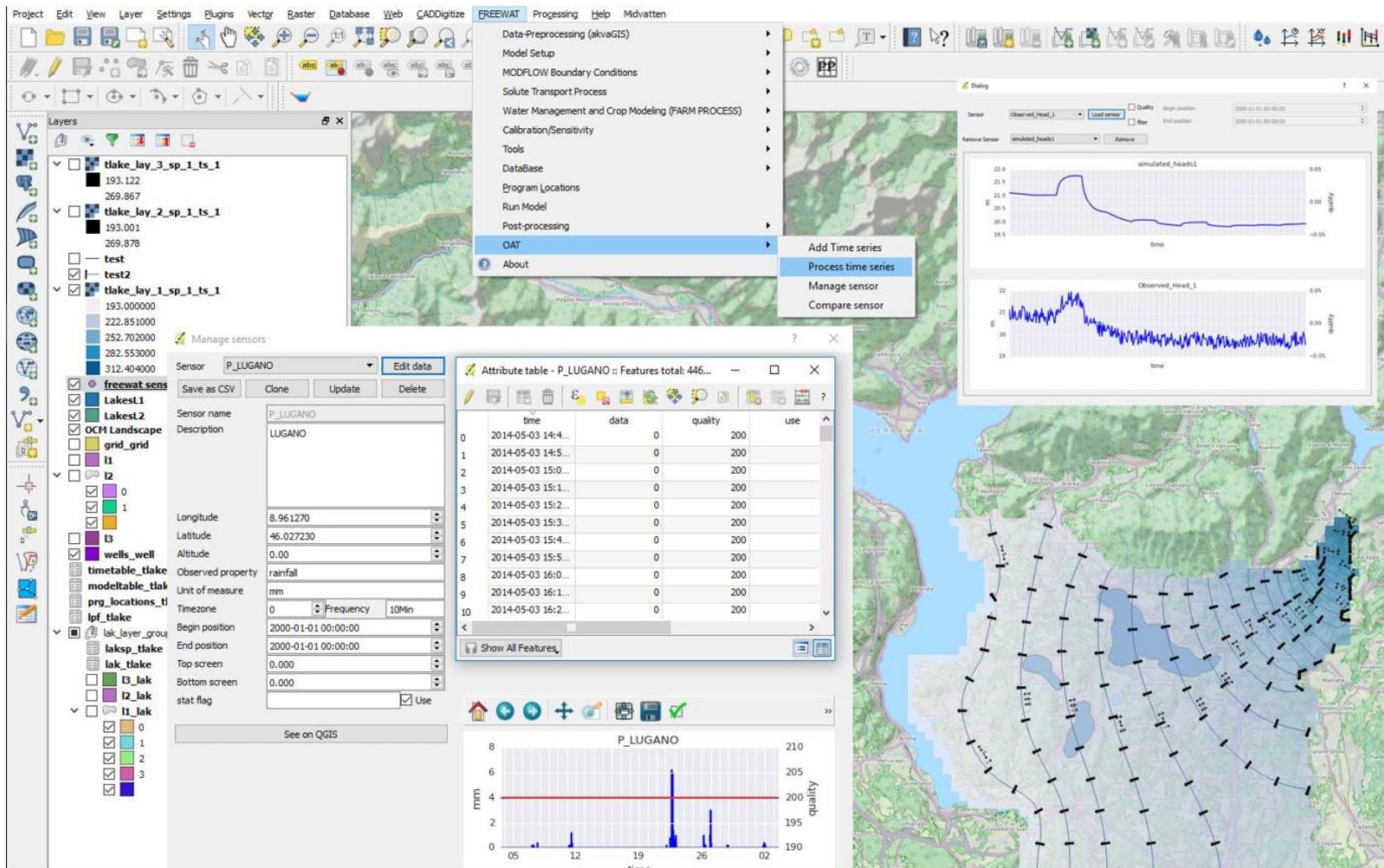
Database management

Hydrochemical analysis tools

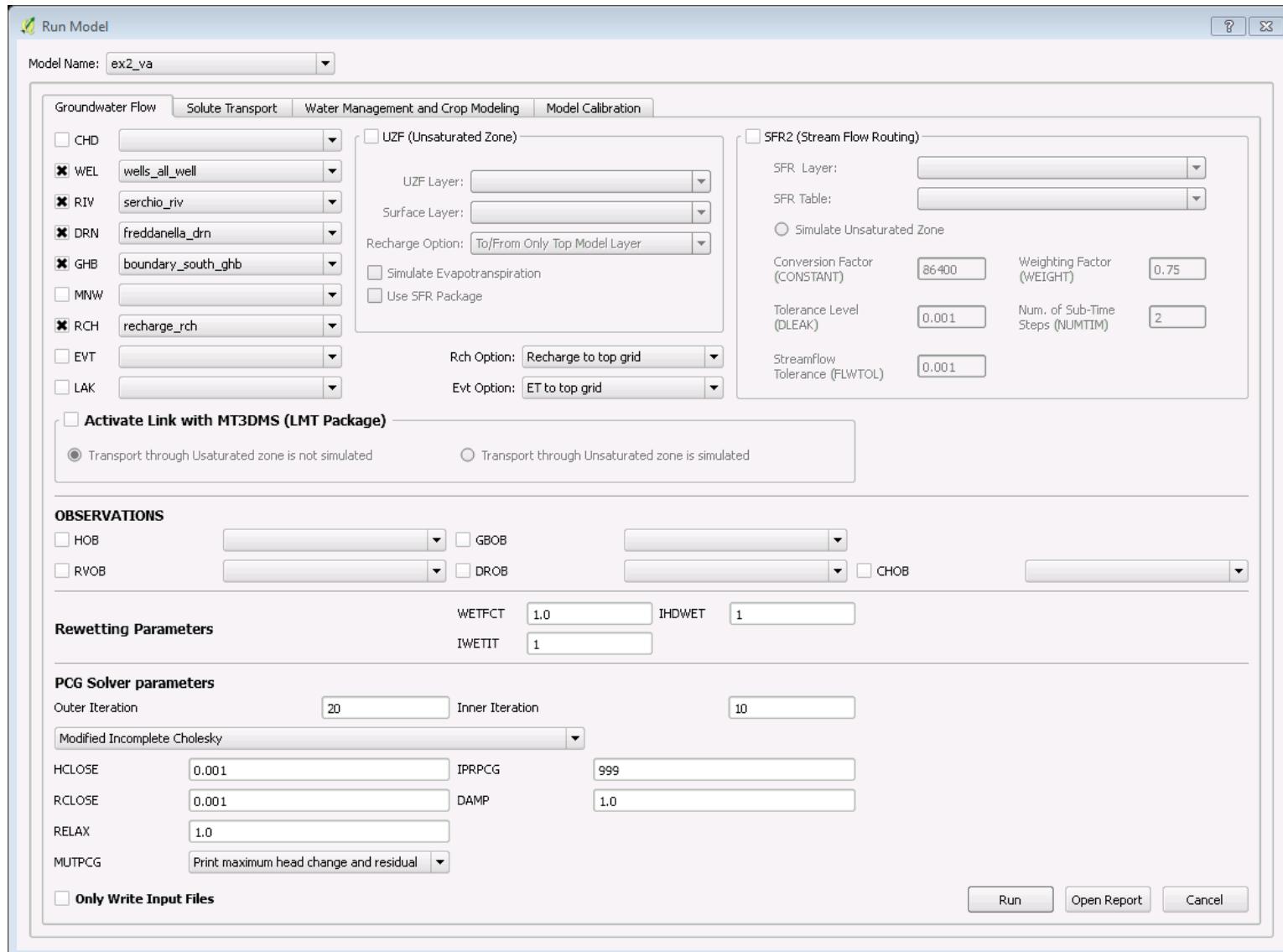
Hydrogeological analysis tools



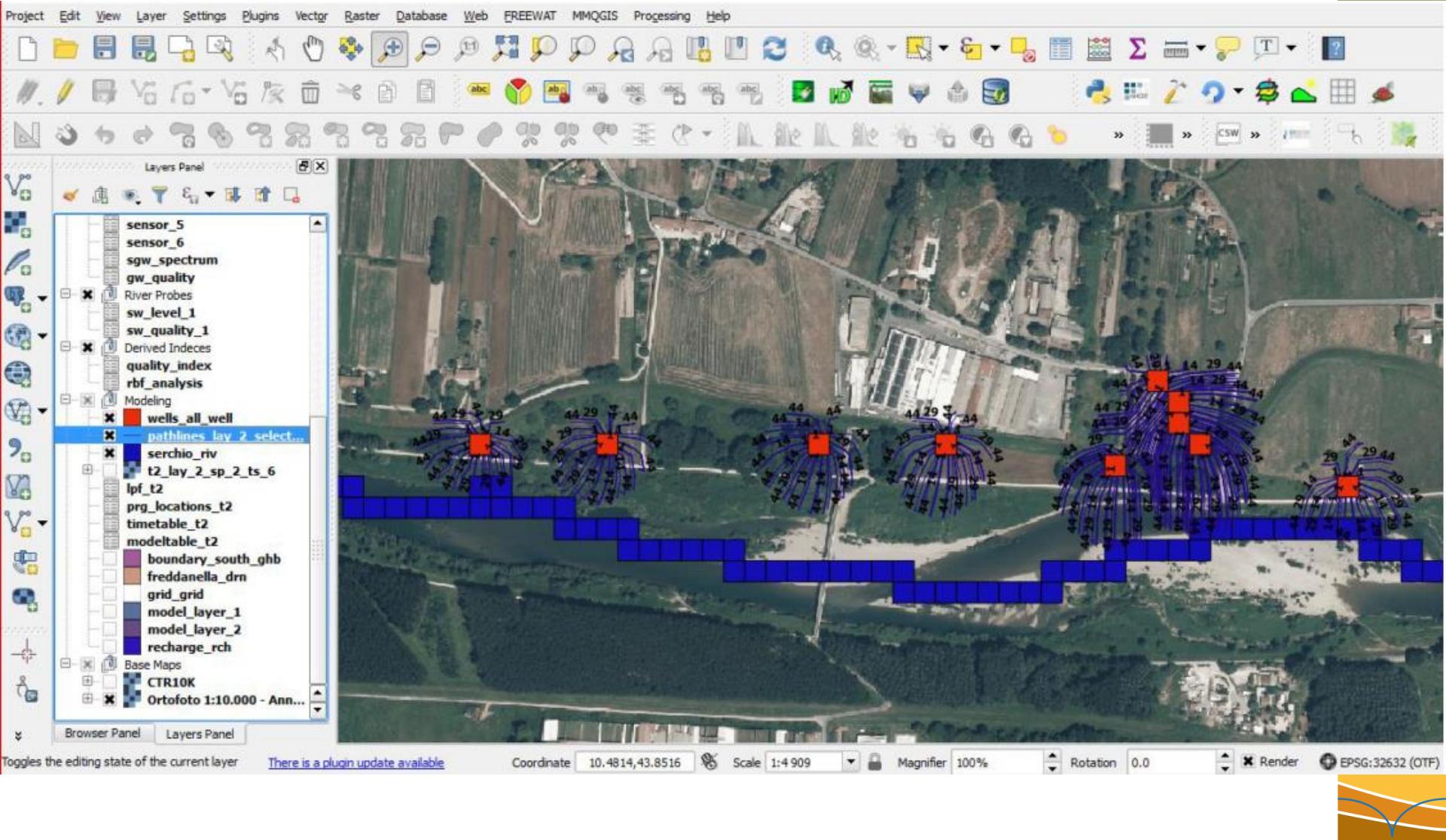
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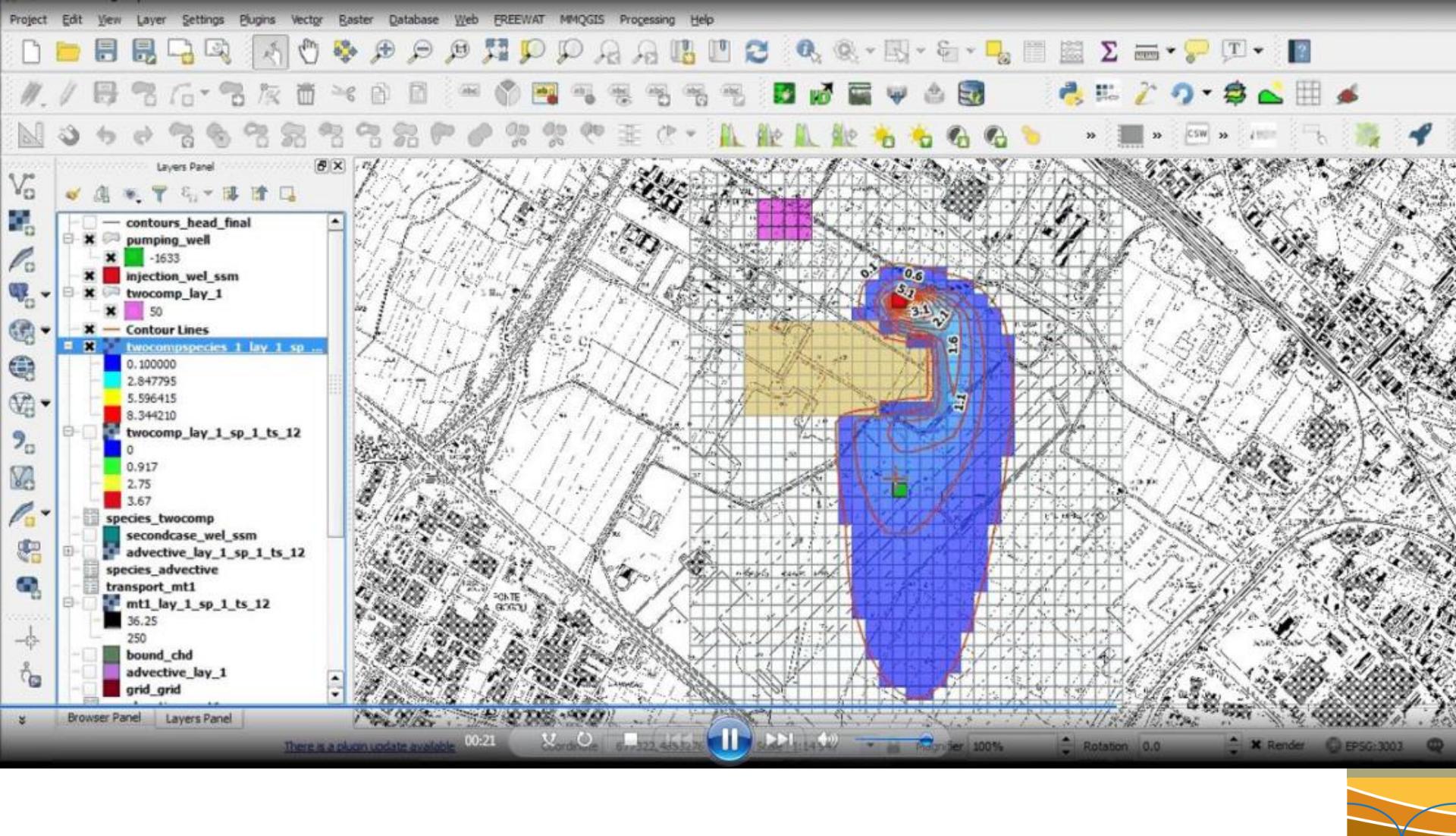
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FREEWAT: gallery



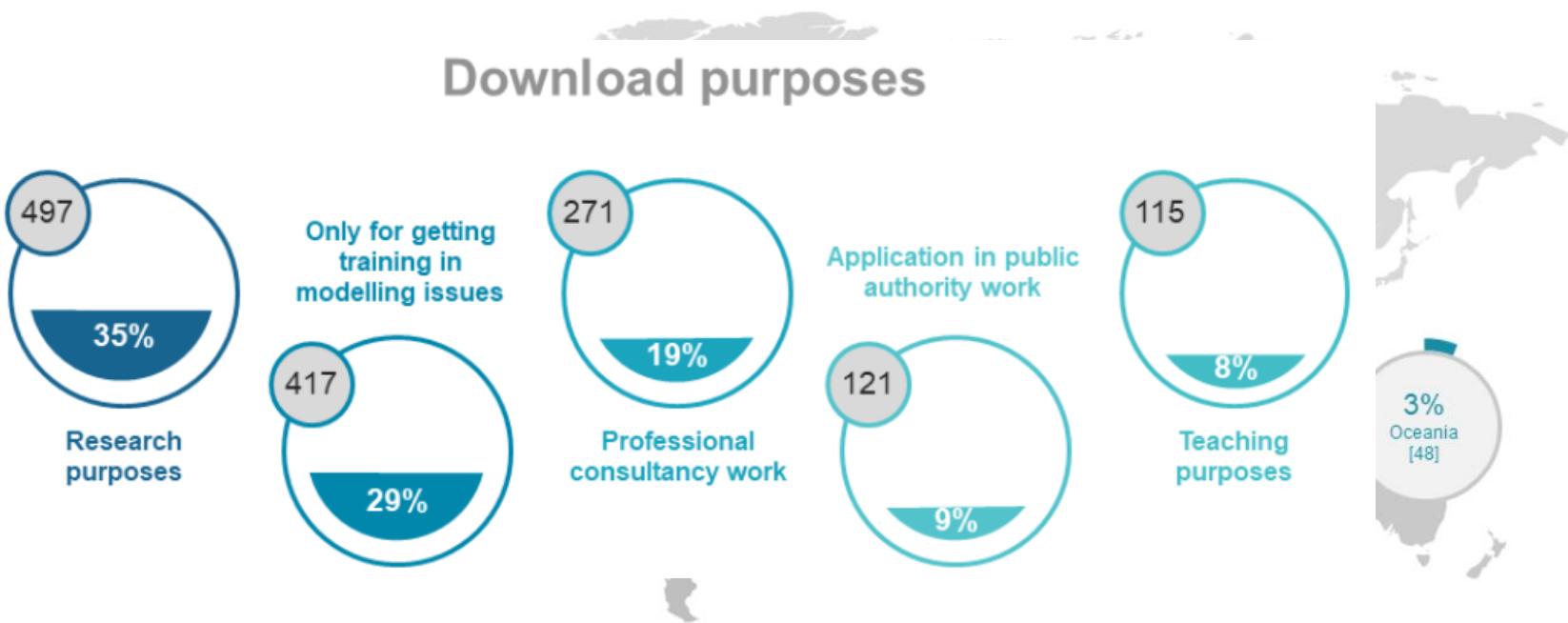
FREEWAT: gallery



FREEWAT: state of play

- Large stakeholder involvement (>> 500)
- Growing network:
 - LinkedIn group: > 700 followers
 - Twitter: > 865 followers (@h2020freewat)
- > 3000 downloads

Downloads per continent



FREEWAT: connect!

- Download code, manuals and tutorials from
 - <http://www.freewat.eu/download-information>
- Q&A in Google groups:
 - Uses, application, bug reporting:
 - <https://groups.google.com/forum/#!forum/freewat-users-group>
 - Development:
 - <https://groups.google.com/forum/#!forum/freewat-developers-group>

FREEWAT: connect!

Veilig | https://gitlab.com/freewat/freewat

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Overview Details Activity Cycle Analytics

Repository Issues (52) Files (62.7 MB) Commits (927) Branches (27) Tags (13) Readme GNU GPLv2

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Updating address of repos Iacopo authored 3 months ago 72591101

Name	Last commit	Last update
akvaGIS	removed resources	5 months ago
crop_growth	first *backup* commit for cropGrowth module	a year ago
csv_templates	Updating CSV templates - Thanks Giovanna!	6 months ago
dialogs	Cleaning print commands in Dialogs and mdoCreate_...	4 months ago
flopyaddon	Small bug fix in TemplateWriter when applied to EVT ...	6 months ago

FREEWAT: what's next?

- Desiderata:
 - Python 2 → 3
 - Computational grid: new architecture + management
 - Database interaction: include more DBMS
 - Managing time-dependent data: new architecture
 - Additional packages of MT3D-USGS
 - Extend Farm Process package
 - Couple with other QGIS plugins
 - Docs
 - Unit-tests
 - ...
 - And of course your ideas!

FREEWAT: what's next?

- Project continuation after Horizon2020:
→ **community development!**



Join the FREEWAT family!



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