Spatial Analysis and Modeling Tool (SAMT), a spatial modeling toolkit written in Python

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SAMT

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- Matlab: matrix operations, powerful visualization
- GIS: points, lines, polygons, raster with geographic coordinates, database connection
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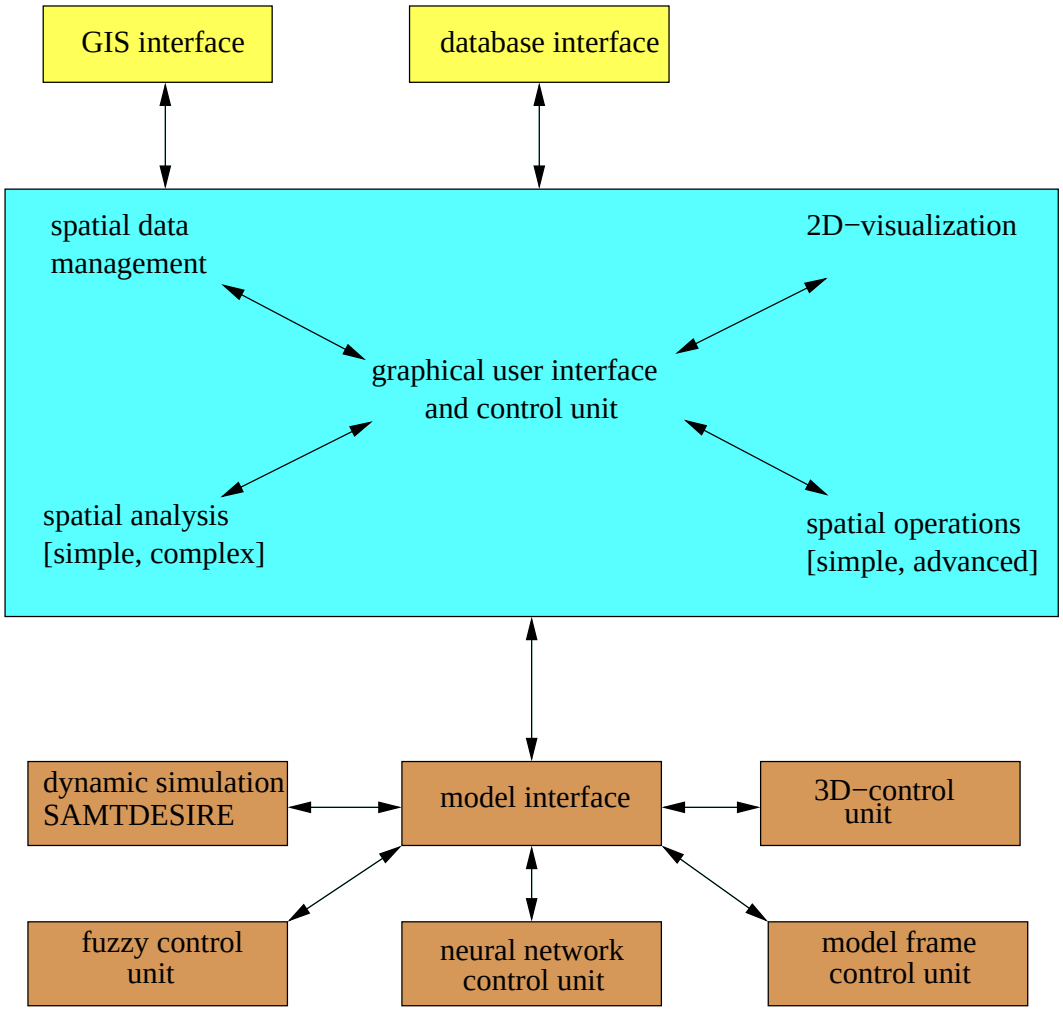
- Open Source Project: https://github.com/Ralf3/samt2
- Toolkit consists of: SAMT, SAMTFUZZY, SADATO
  - Can be used with a graphical user interface,
  - as a part of a simulation on the computer cluster,
  - as a tool to build a bridge between the modeler and the stakeholder: "Open Science"

Structure of SAMT



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- Other modules helps for daily work: datetime, **hdf5**, pandas,...

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- Point: transform, interpolation, voronoi, distance
- Flow: d4, d8, grad_d4, grad_d8, floodFill

Additionally: **full access to all scientific Python modules**

Graphical User Interface

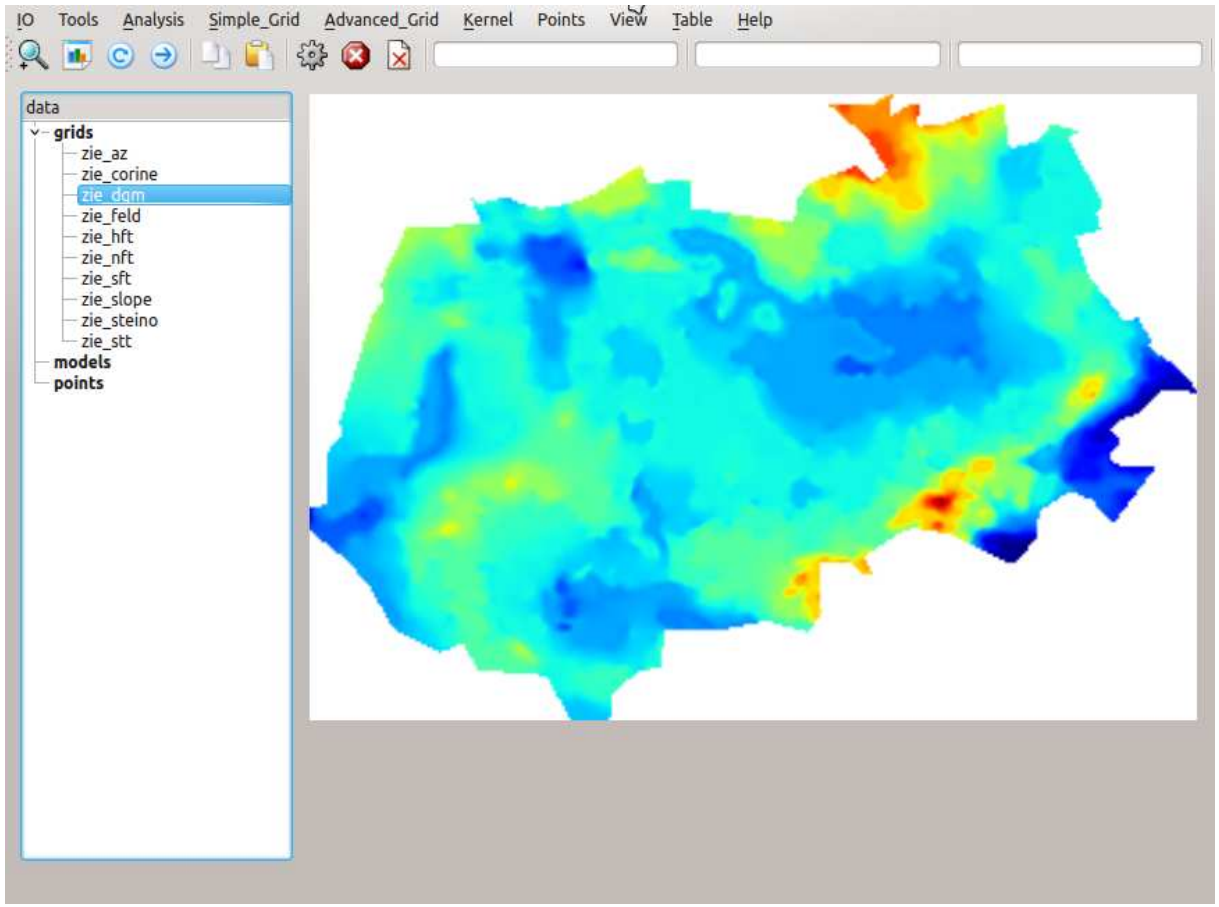


Figure 1: SAMT2 with some data

Graphical User Interface

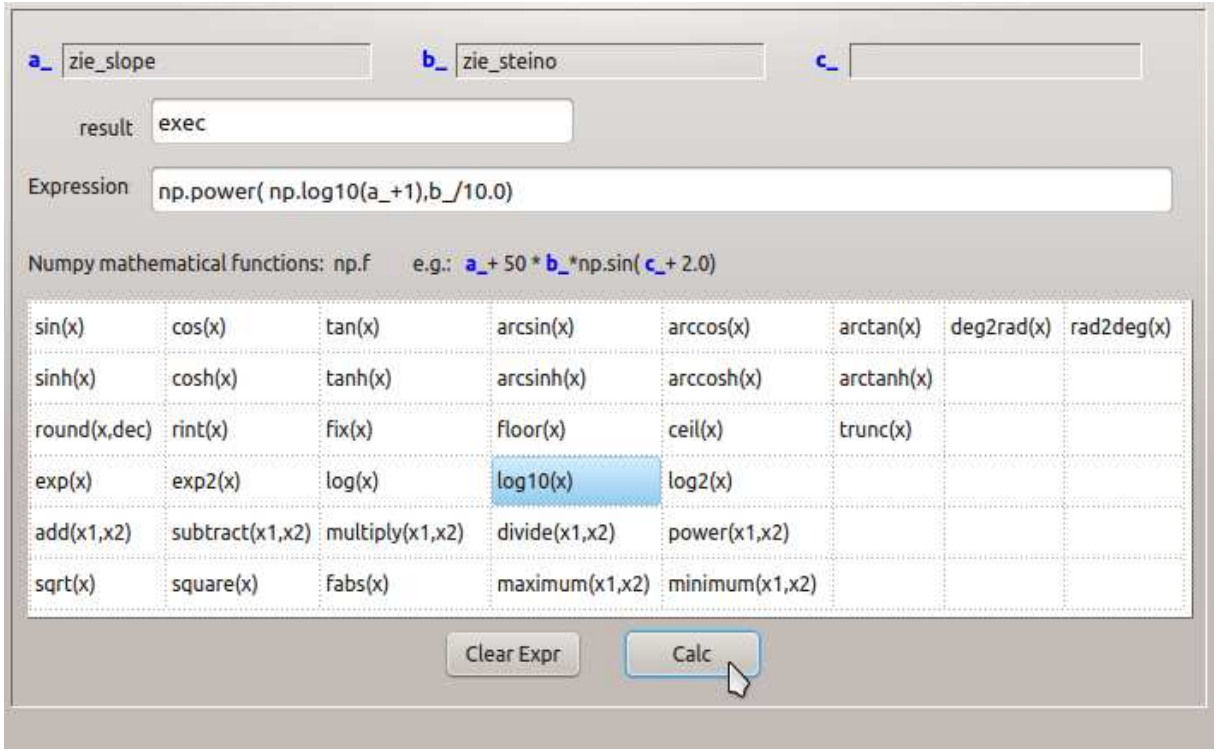
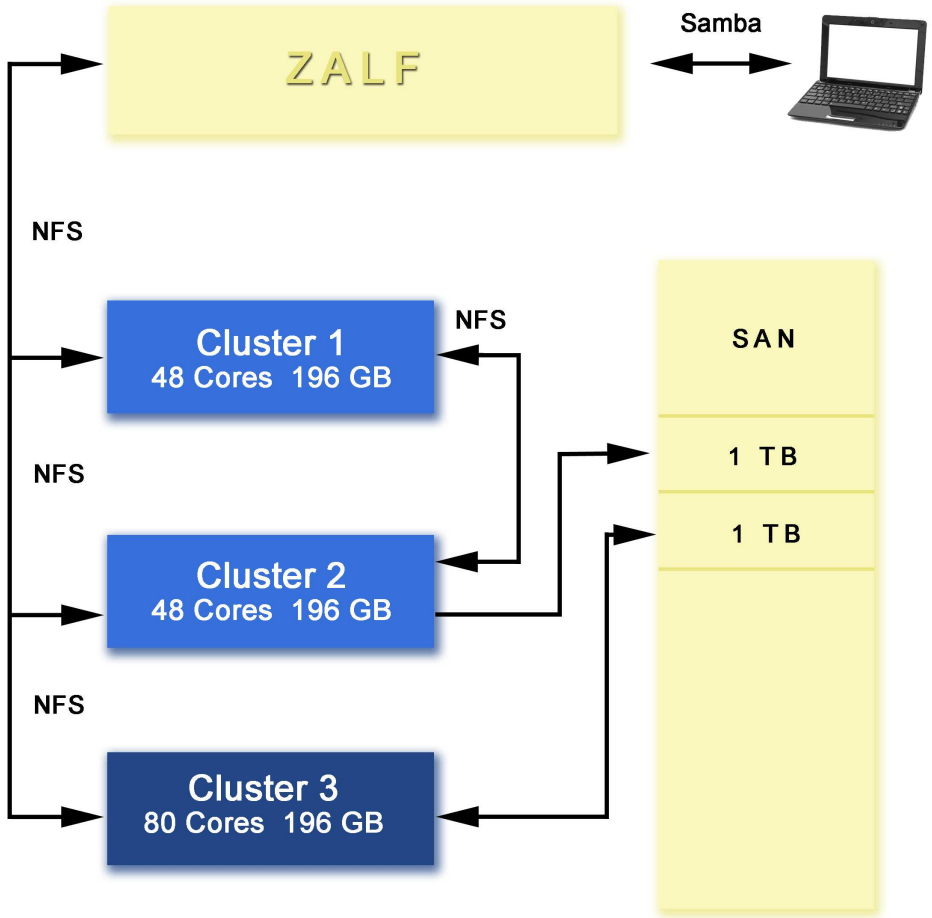


Figure 2: Expression builder of SAMT2

Graphical User Interface

Figure 3: Access to OSM data

Number crunching



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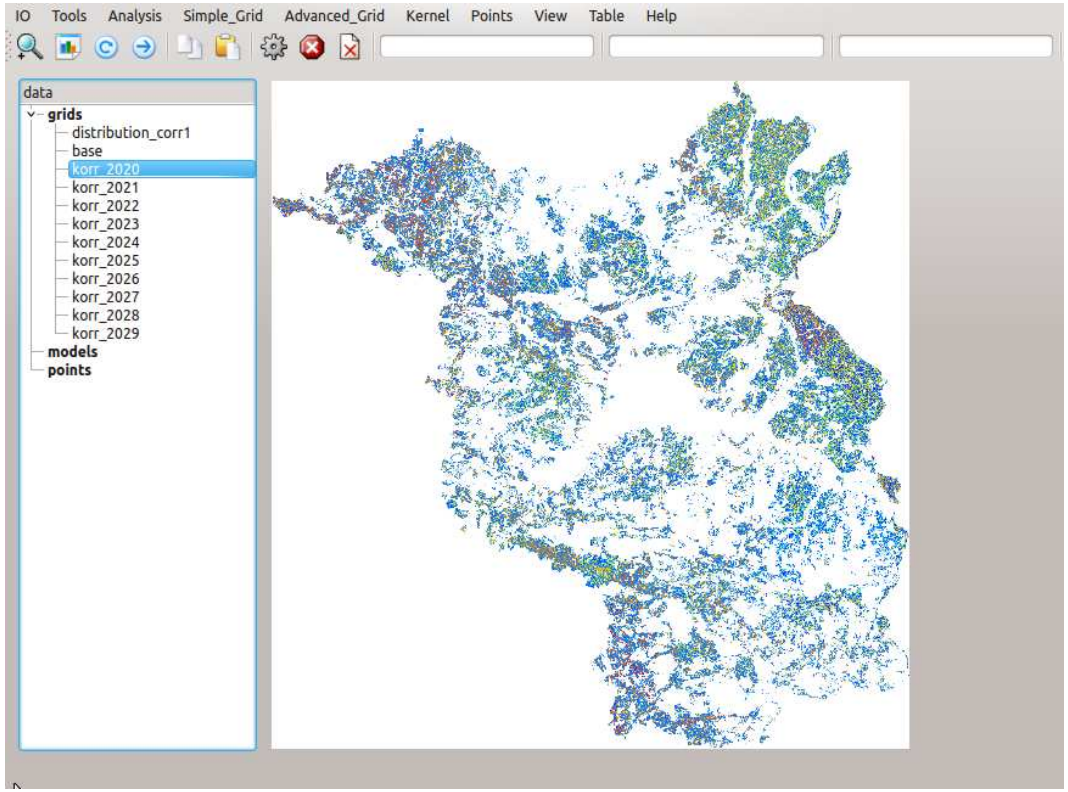
- Python controls the cluster using MPI
  load data, calc, collect data

Number crunching

yield estimation based on market scenarios and climate change with 1ha resolution



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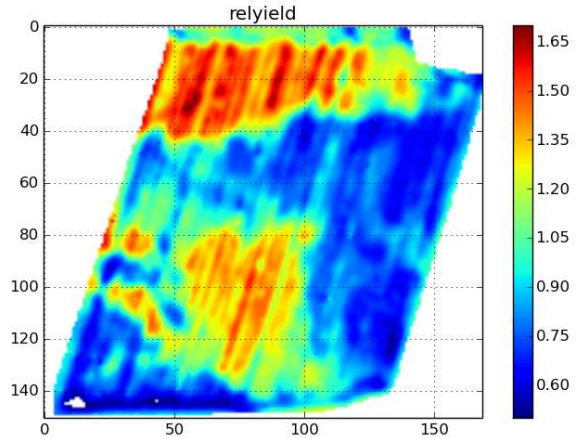
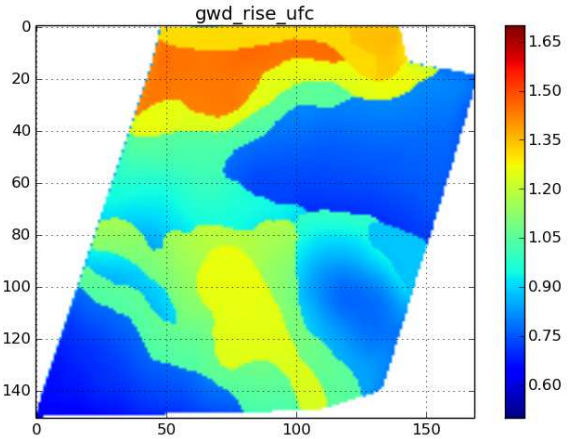
relyield from equipment



measured yield

SVM



**ground water distance,
capillary rise,
usable field capacity**

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- We have the software and the interactive environment: "ipython notebook",
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- the stakeholders have knowledge (models) and knows the problems, why do we not include them in science?