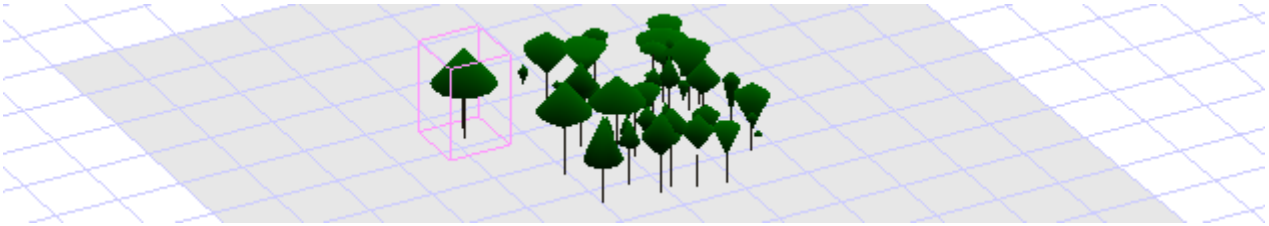


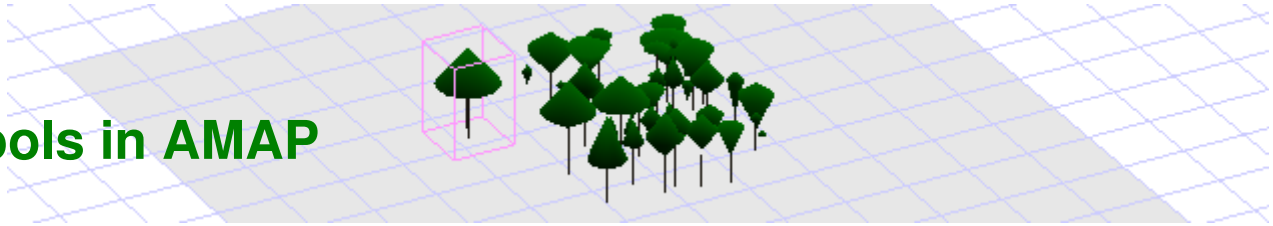
Simeo

Scene Implantation Management and Edition by Outline

A Scene Editor for AMAP
September 2009 milestone

Francois de Coligny
INRA - AMAP

From 2006: a need for new tools in AMAP



Some tools are now **too old** (Landmaker...),

- run on old platforms (Silicon Graphics)
- difficult to upgrade

In 2006, AMAP decided to work on **new tools**

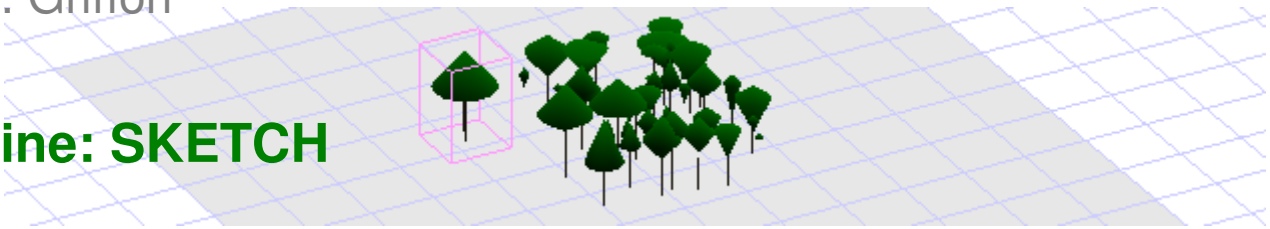
- interviews
- specifications
- proposals

Resulted in the **JEEB** project (Just Enough Elements for bioModelling)

- main language: Java
- the AMAP developers try to work more together
- develop some key applications

Focus:

- The **Sketch** library (3D edition by outline)
- At the scene level: **Simeo** (F. de coligny)
- At the individual level: **Xplo** (S. Griffon)



Managing a 3D scene by outline: SKETCH

Generic management of 3D scenes by outline: **not realistic**

- A Model-View-Controller library
- Rough objects are located on a scene (x,y,z) / twists / bounding box...
- Several Views: 3D panel, tables...
- Management of the selection
- Objects can be added, removed, moved...
- All the views listen to the data model and are always synchronized

3D view

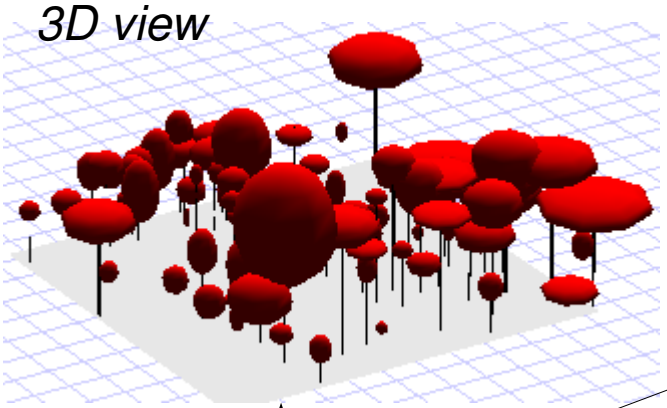


Table view

- Arbre FireParadox (48)
- Grille
  - Grille 1
- Polygone
  - Polygone 51
- Terrain
  - Terrain 2

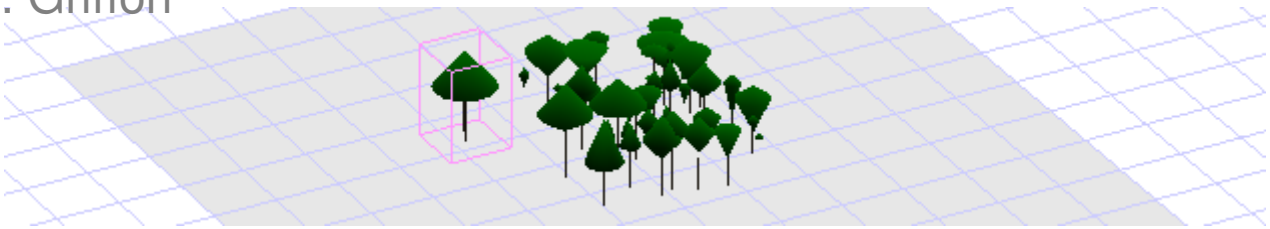
☑	Polygone	Polygons
☑	FireParadox Tree	Pattern Sketcher
☑	Terrain	DTM
☑	Grid	Grid

Top view | Selection : | Up | Down

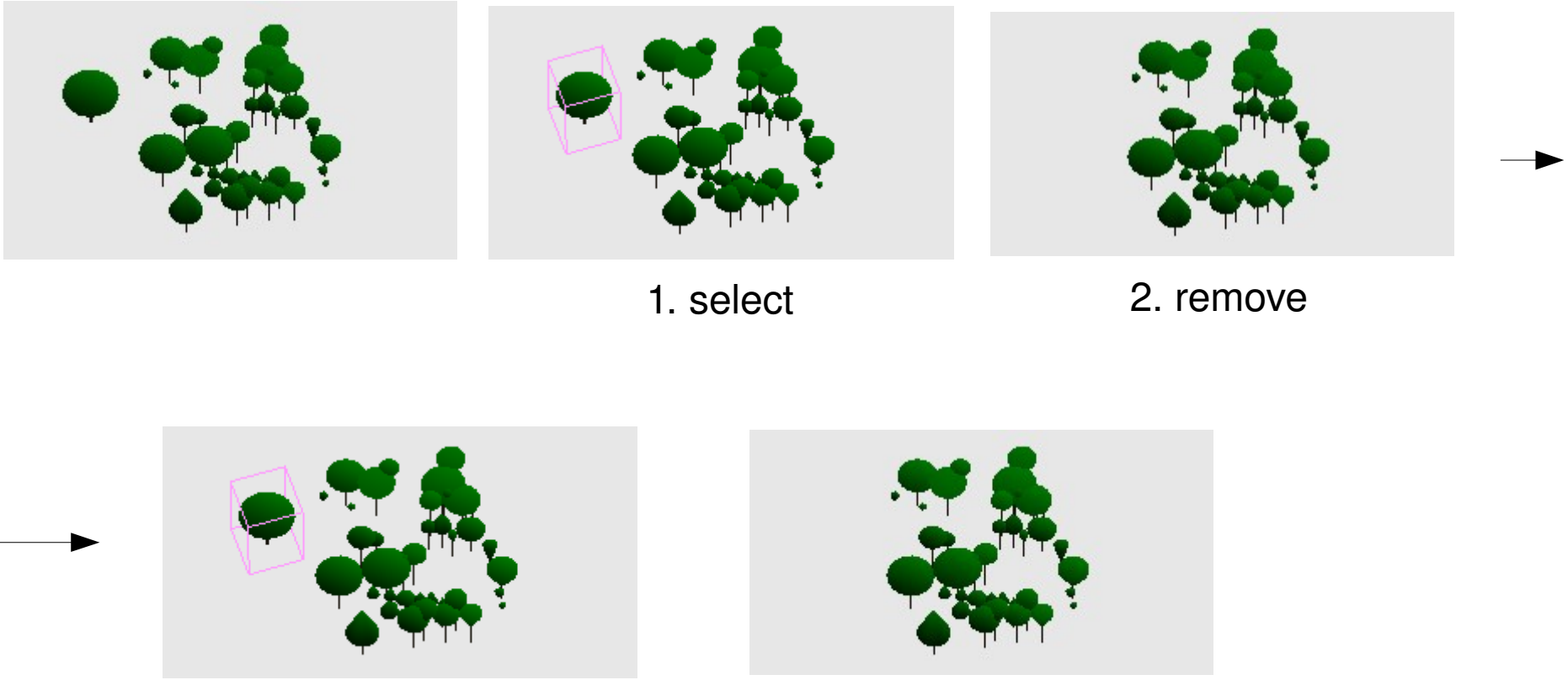
SketchModel

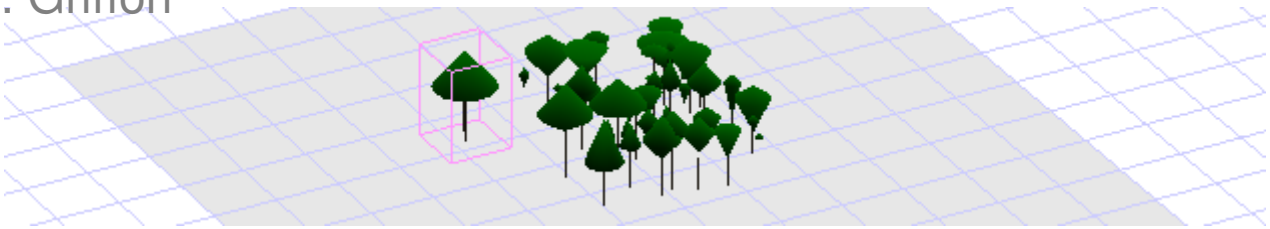
Data model

Multiple outline renders
(can be swapped)



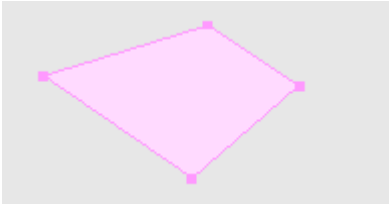
Integrated undo / redo



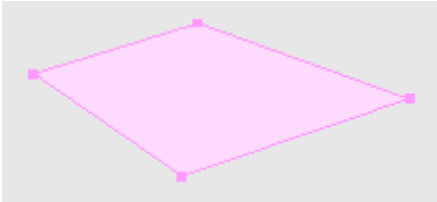


Polygons / Polylines

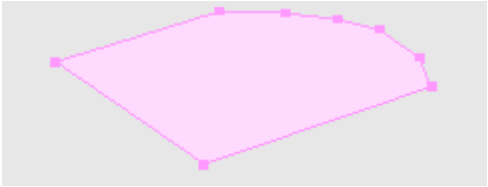
A simple polygon...



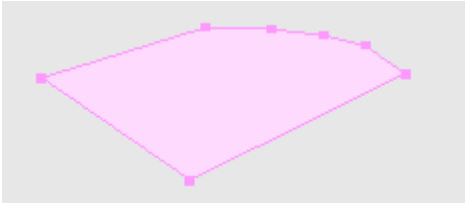
move a vertex:



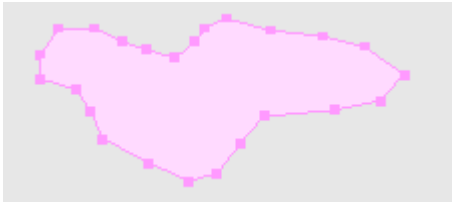
add vertices:



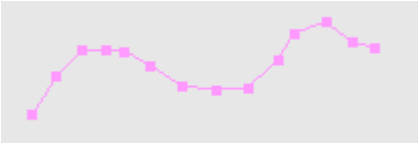
remove a vertex:

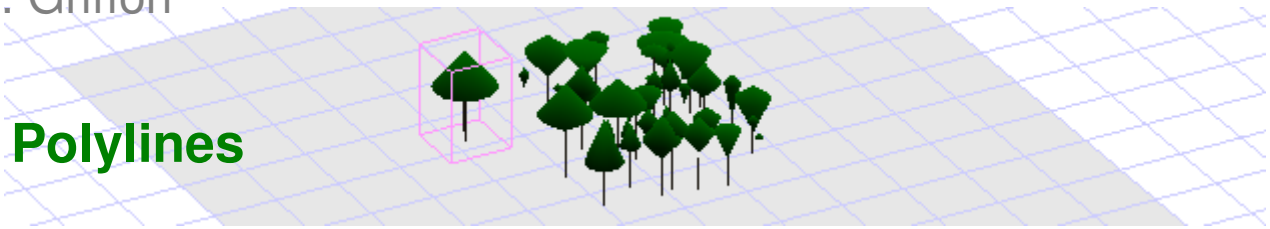


combine:



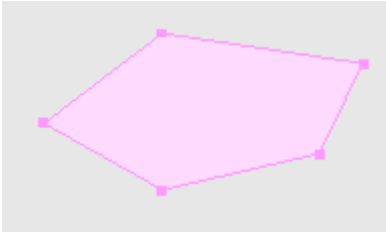
...the same with polylines:

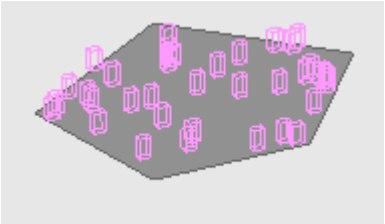


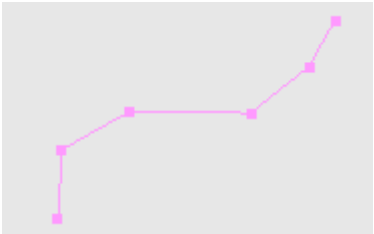


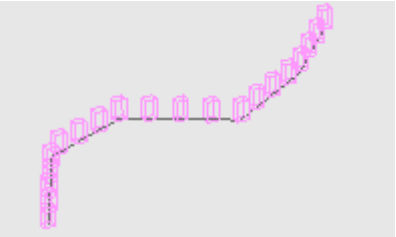
Actions based on Polygons / Polylines

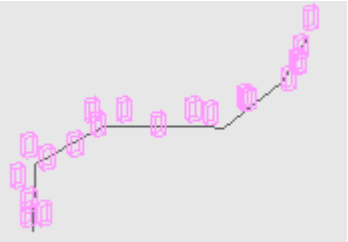
Create a Polygon / Polyline and add items based on it

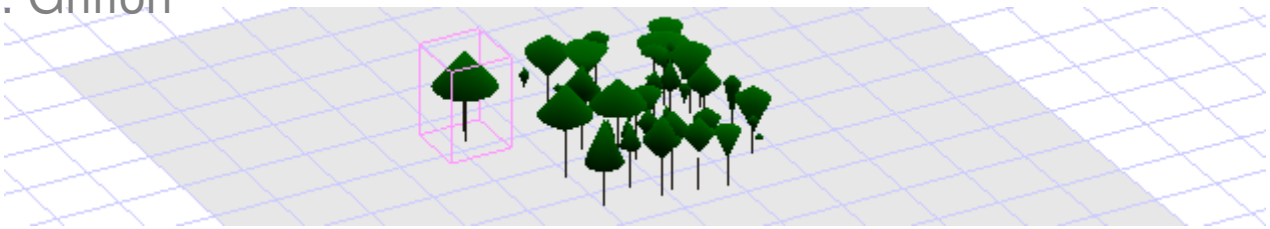






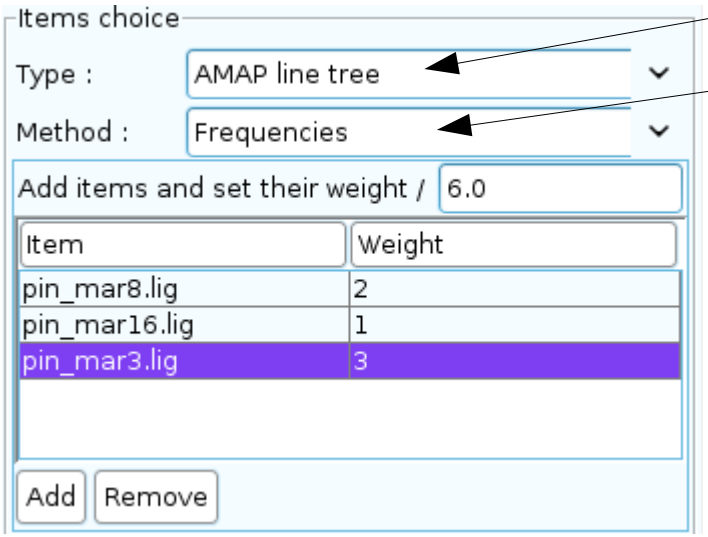






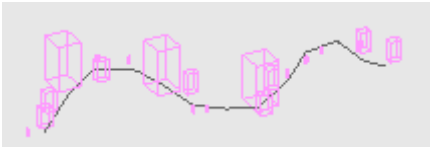
Plugins

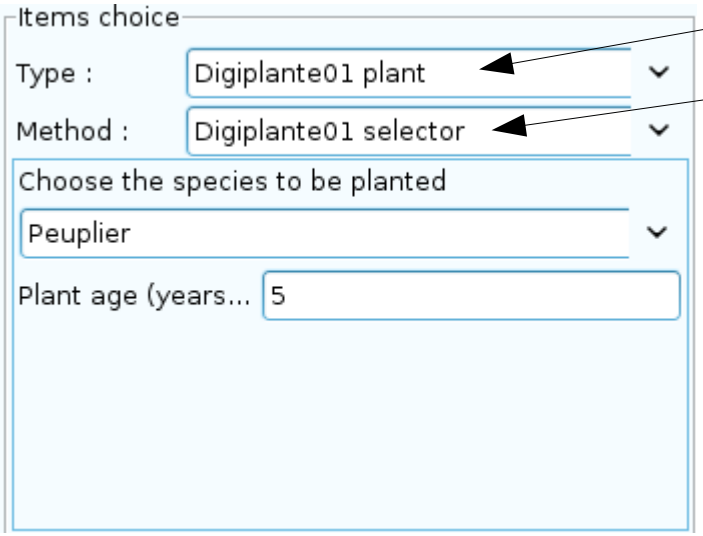
What to add in the scene: **type** and **selection method**



what

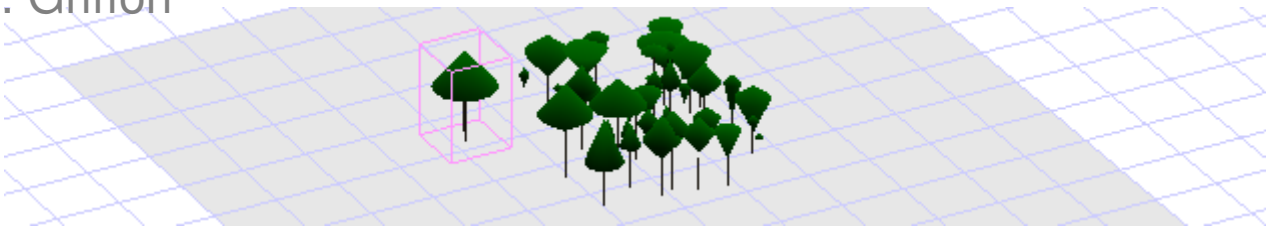
selection





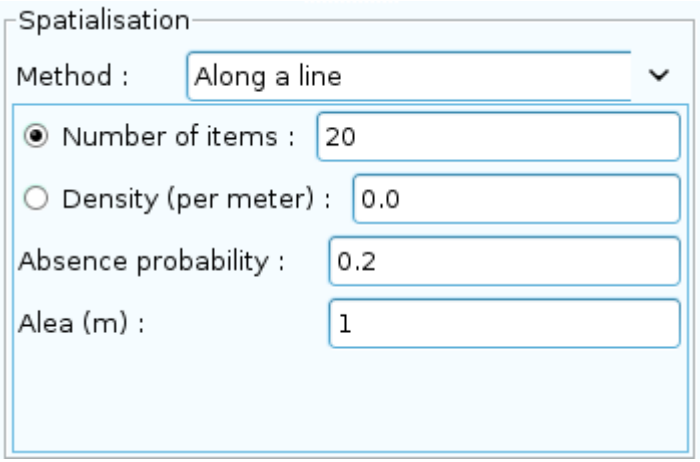
what

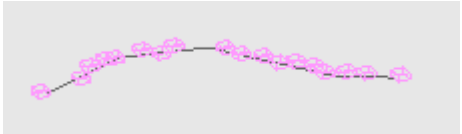
selection

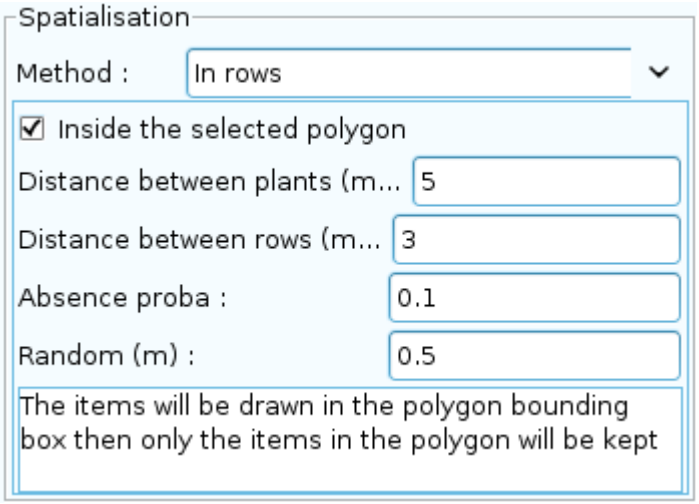


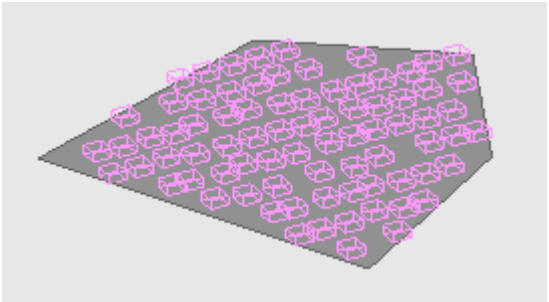
Plugins

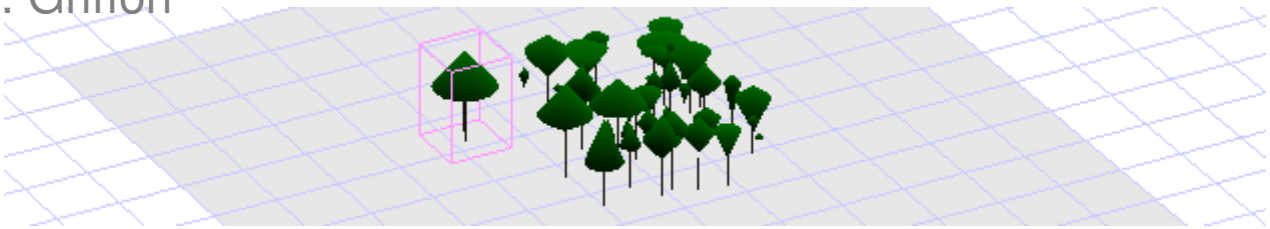
Where to add and **planting patterns 1/2...**





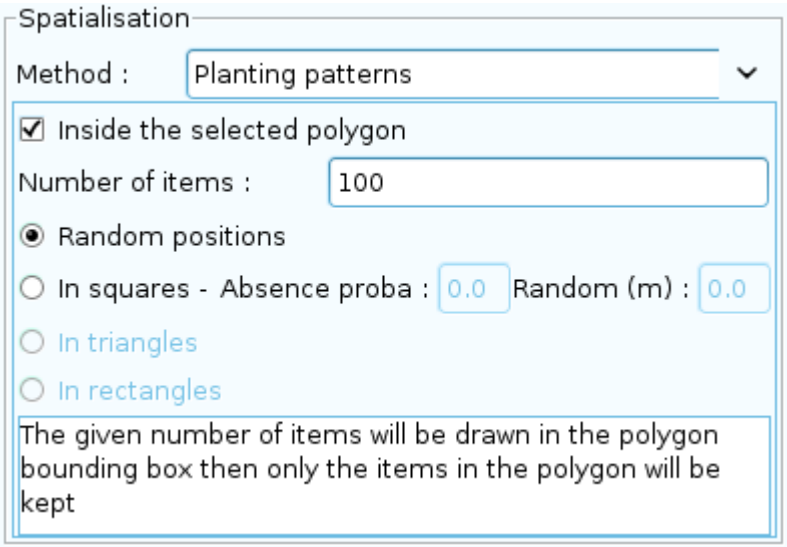


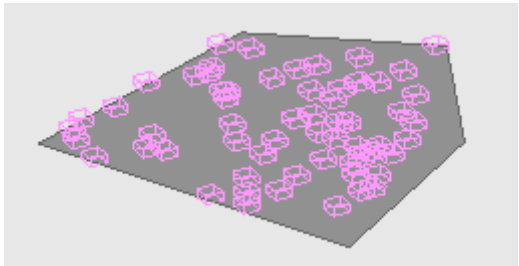


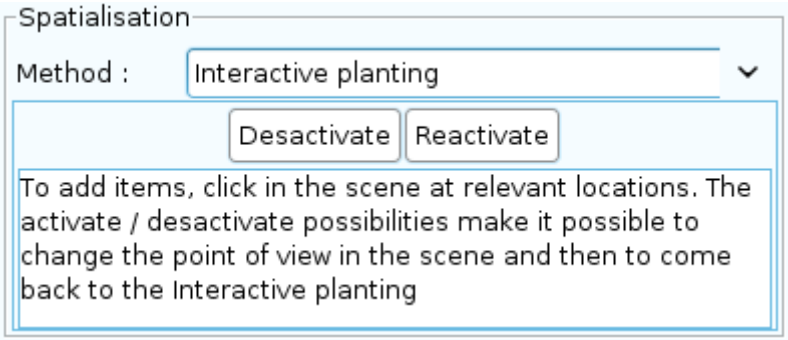


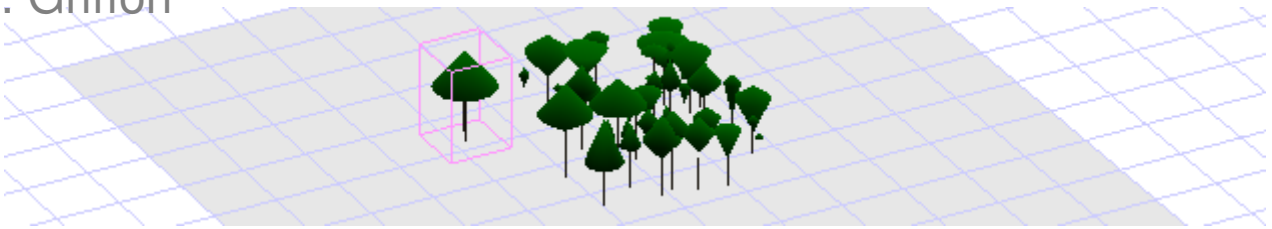
Plugins

Where to add and **planting patterns 2/2**



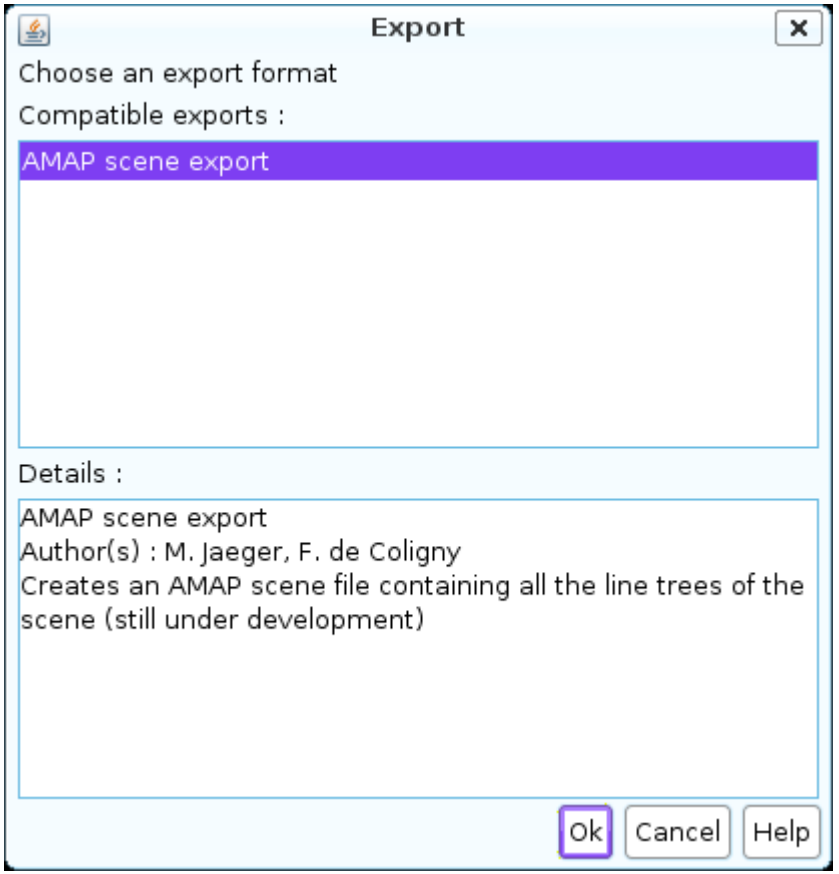


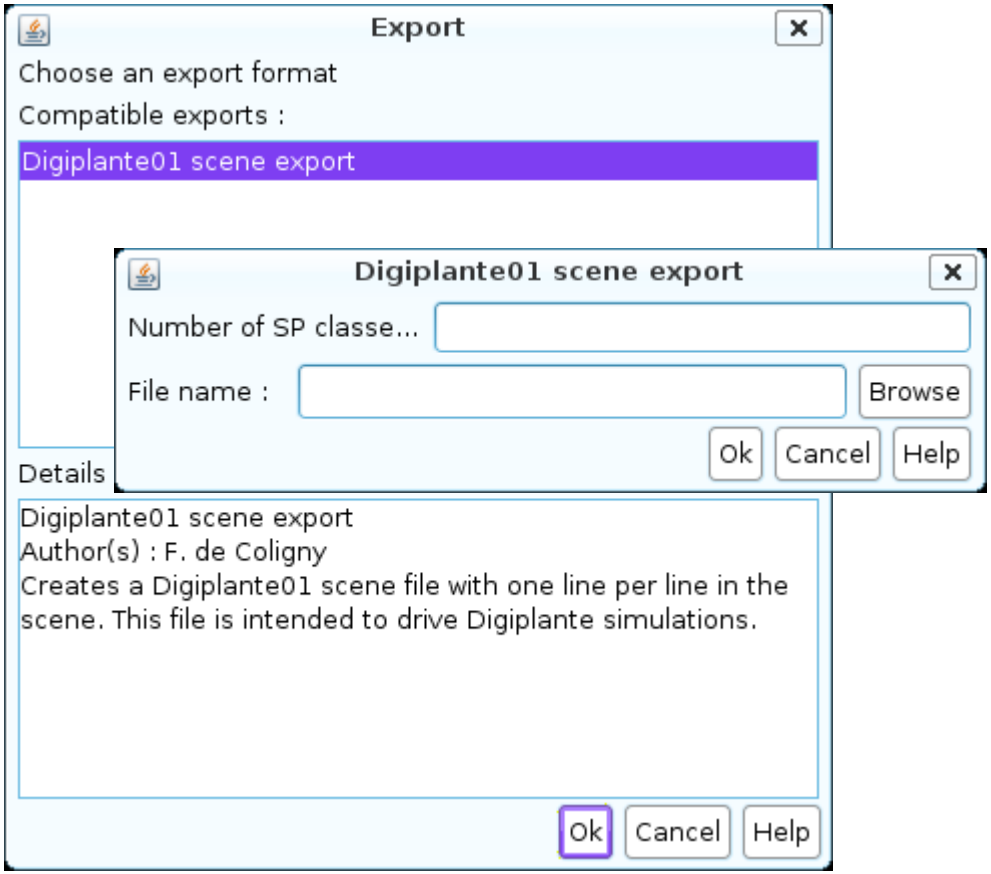


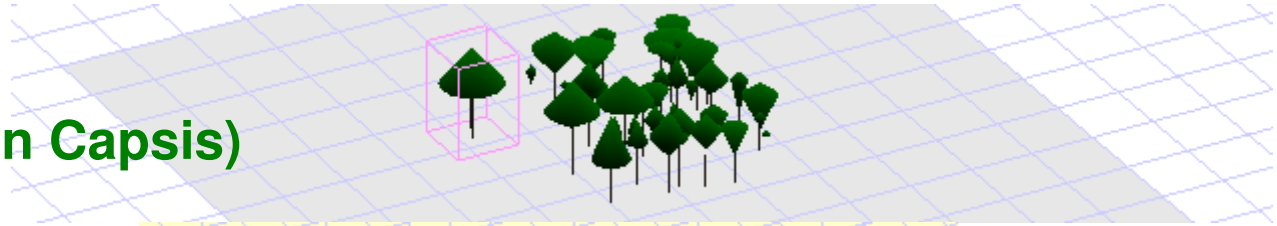


Plugins

Export or **connect** to other software

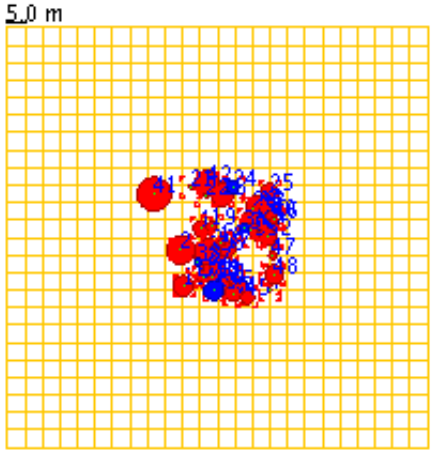


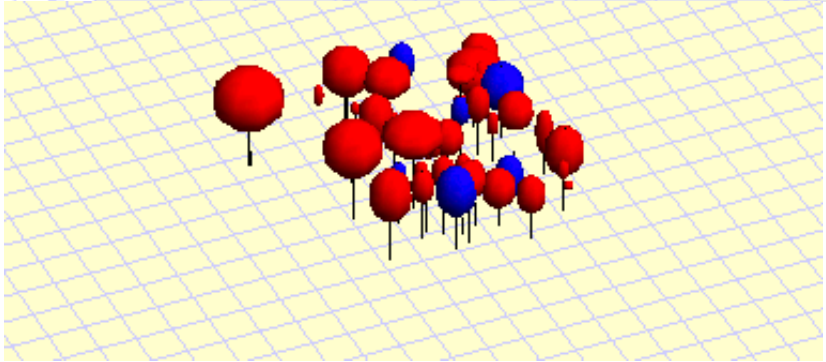




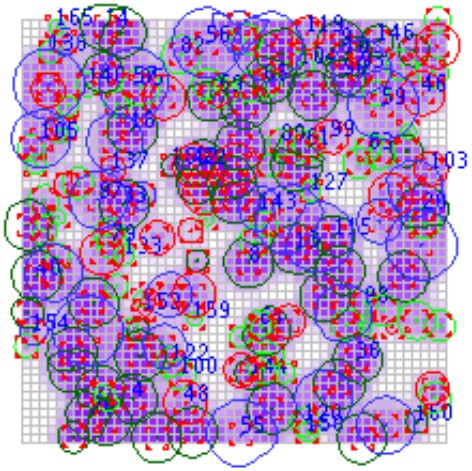
Simple stand-level viewers (in Capsis)

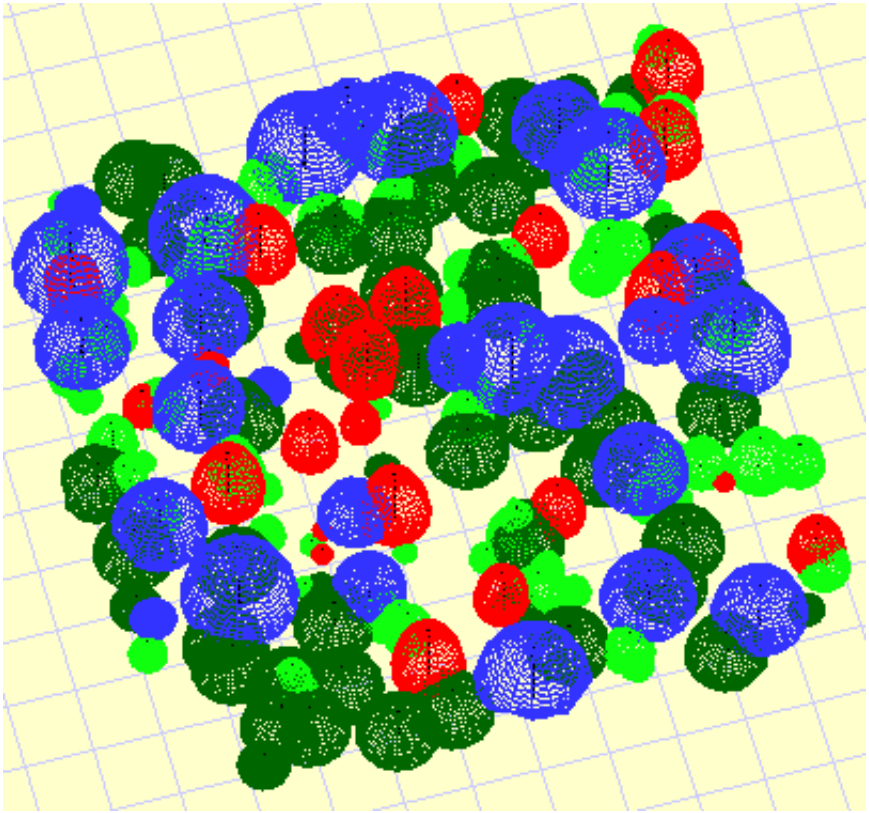
Visu générique

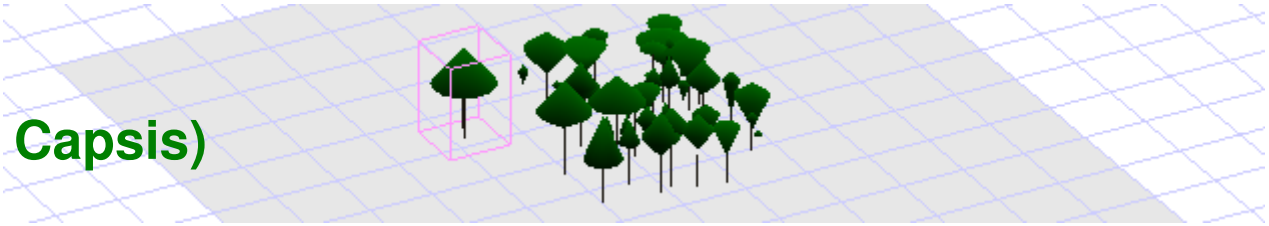




Visu spécifique Stretch

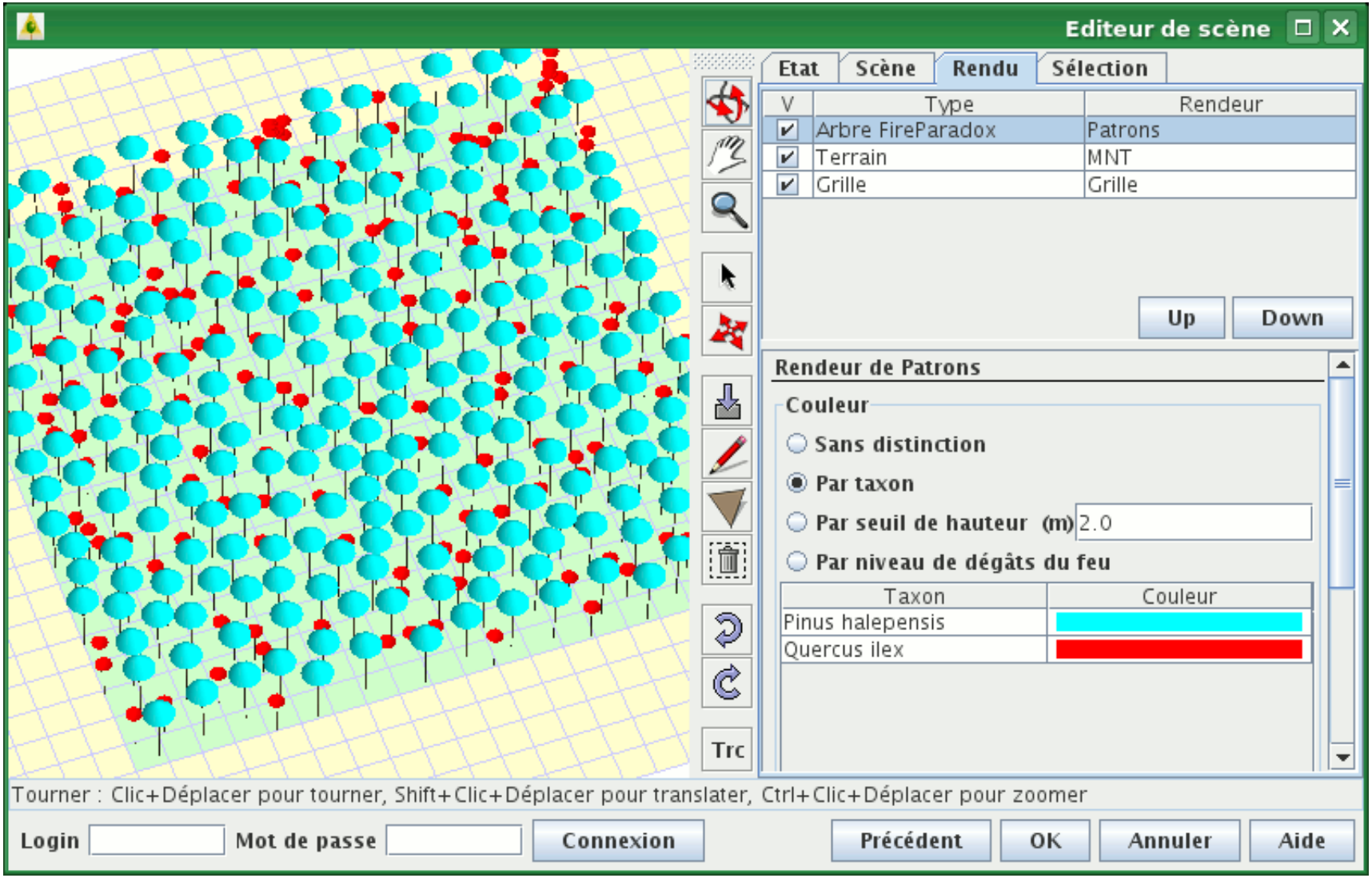




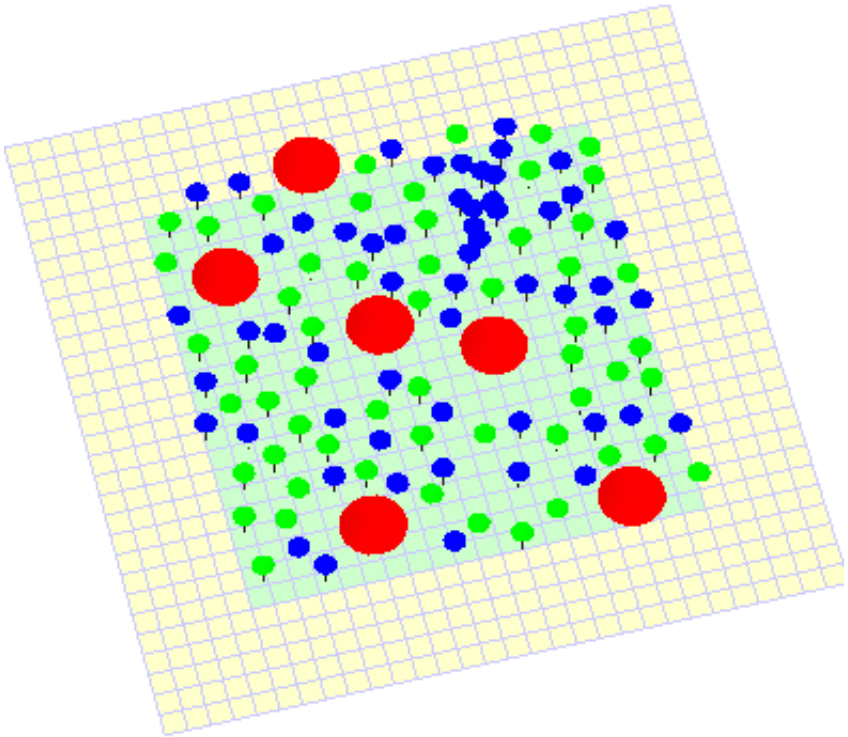


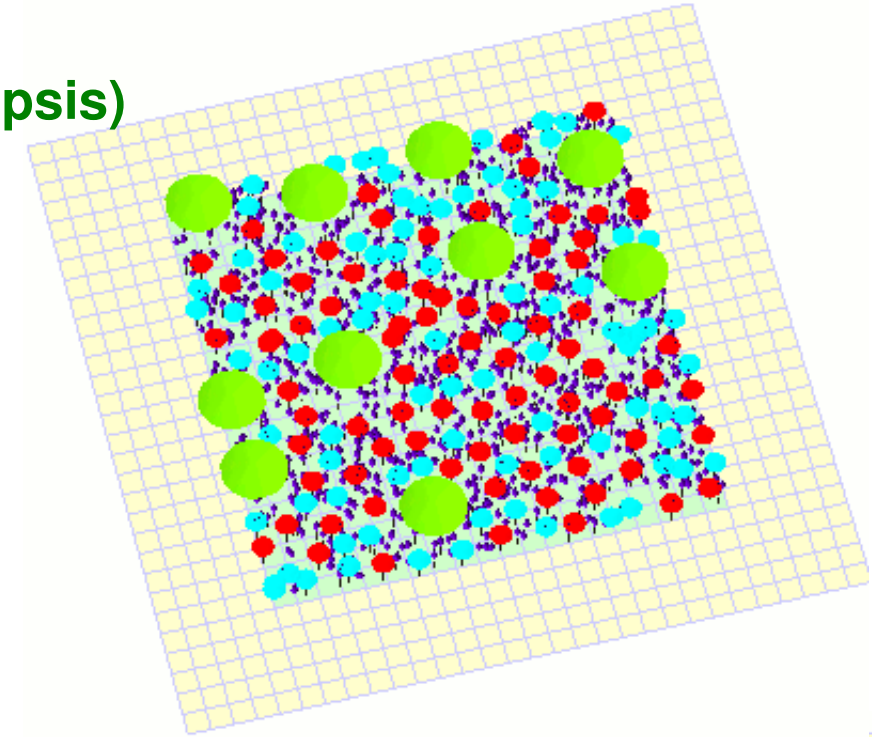
FireParadox scene editor (in Capsis)

A specific scene editor based on Sketch (in Capsis)

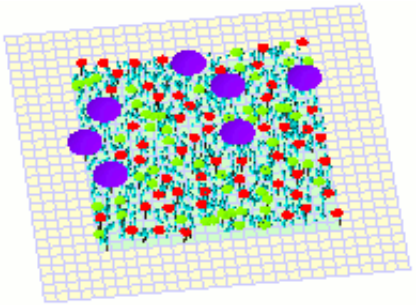


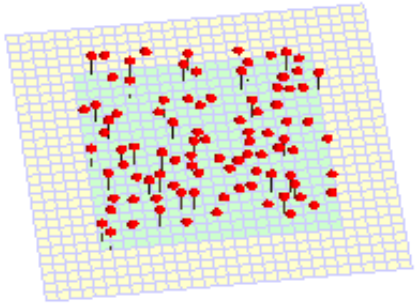
FireParadox scene editor (in Capsis)

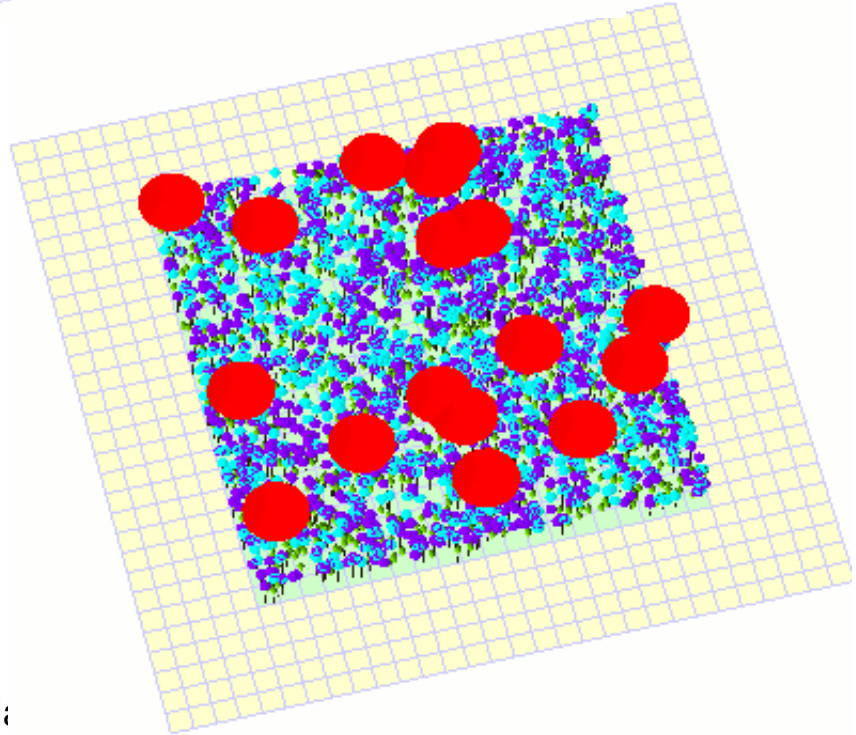




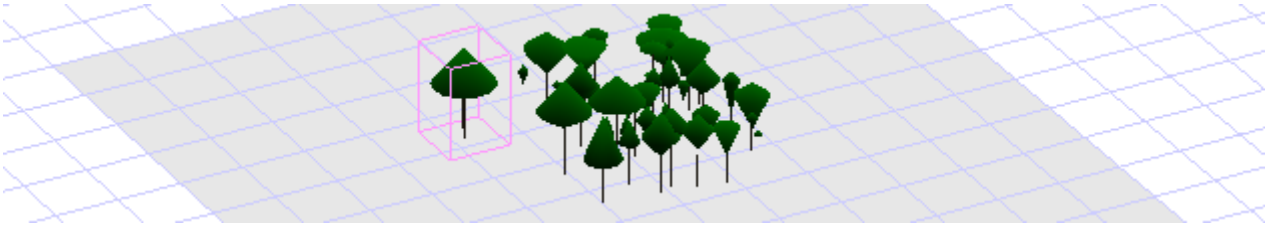
Various scenes







Simeo: the 3D Scene Level



Based on SKETCH

Based also on the **Capsis kernel**

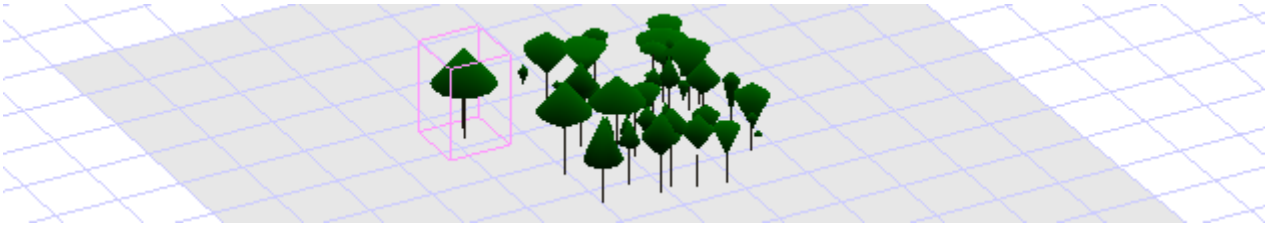
- multi-projects (done)
- possibility of evolution models with temporal history management
- Combining an evolution model and interventions plugins to make scenarios
- Multi-language, modular and extensible...

Objectives: easy integration of **many studies**

- scenes for wildland fires management (in Capsis, under progress)
- geometrical sparing of the scene between plants, Voronoi (done)
- realistic visualisation, AMAP scenes (first results, planned at short-term)
- biomass calculation
- integration of radiative balance models
- creation of scenes with mathematical methods (Gibbs, Neyman Scott...)
- integration of temporal dynamics models at the scene level

...

Simeo overview



Two projects at present time in Simeo

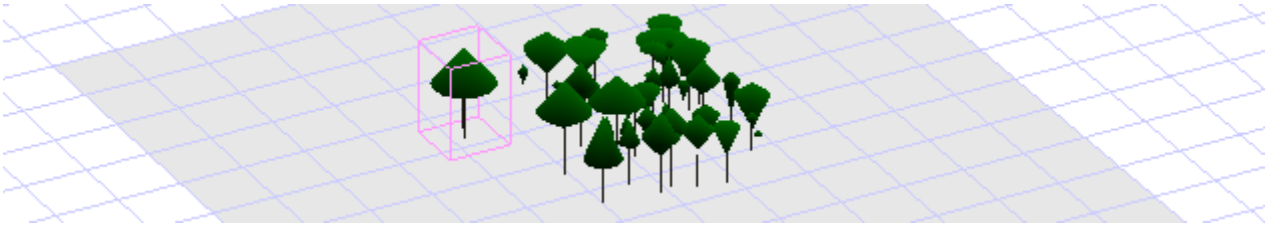
- **Digiplante01** by Ph. de Reffye, P.H. Cournède, Ph. Borianne, F. de Coligny, S. Griffon, M. Jaeger

Plant trees and plants with various patterns, Delaunay triangulation and associated Voronoi diagram, export to Digiplante with the surface for each plant, viewing in SLE and AMAP renderers. Context: a paper for PMA09.

- **AMAP scenes** by F. de Coligny, M. Jaeger

Plant AMAP line trees in Simeo and export to AMAP scene level renderers by Marc Jaeger through an AMAPscene file

Simeo overview



Adding Objects

Object selection plugin

Plantation pattern plugin

Projects

Simeo 0.9 - [a]

Project Tools Help

Addition

Choice/Spatialisation | Technical

Items choice

Type : Digiplante01 plant

Method : Digiplante01 selector

Choose the species to be planted

Peuplier

Plant age (years... 5

Spatialisation

Method : Interactive planting

Desactivate | Reactivate

To add items, click in the scene at relevant locations. The activate / desactivate possibilities make it possible to change the point of view in the scene and then to come back to the Interactive planting

Add | Help

Projects

Project Digiplante 01 - a

0a

Added 1 items in the scene

3D View

Scene

Digiplante01 plant 18
Digiplante01 plant 19
Digiplante01 plant 20
Digiplante01 plant 21
Digiplante01 plant 22
Digiplante01 plant 23
Digiplante01 plant 24
Digiplante01 plant 25
Digiplante01 plant 26
Digiplante01 plant 28
Digiplante01 plant 29
Digiplante01 plant 30
Digiplante01 plant 31
Digiplante01 plant 32
Digiplante01 plant 33
Digiplante01 plant 34

Collapse all | Expand all | Selection: 1

Rendering

V	Type	Renderer
☑	Delaunay / Voronoi ...	Delaunay / Voronoi R...
☑	Digiplante01 plant	Bounding boxes
☑	Terrain	DTM
☑	Grid	Grid

Top view | Selection : | Up | Down

Bounding Box Sketcher

Box color :

Rendering | Selection | Edition

3D View

Renderers

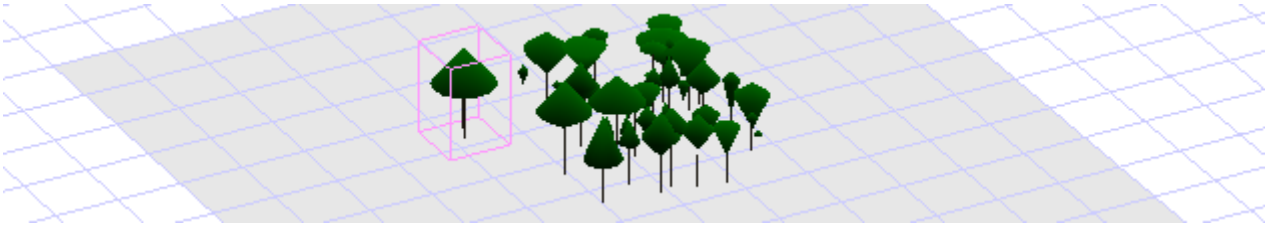
Edit selection

Table View

Selected renderer

View selection

Perspectives



Set an integrated connection to AMAP renderers by Marc Jaeger (short term)