An AMAPstudio quick tutorial
Layout several plants in Simeo, launch a MMR-Archimed1 radiative balance on the vegetal scene, explore the organs irradiance in Xplo

fc, June 2013

This is an example of use of the Simeo – MMR-Archimed1 (May 2012)

Launch Simeo (*)
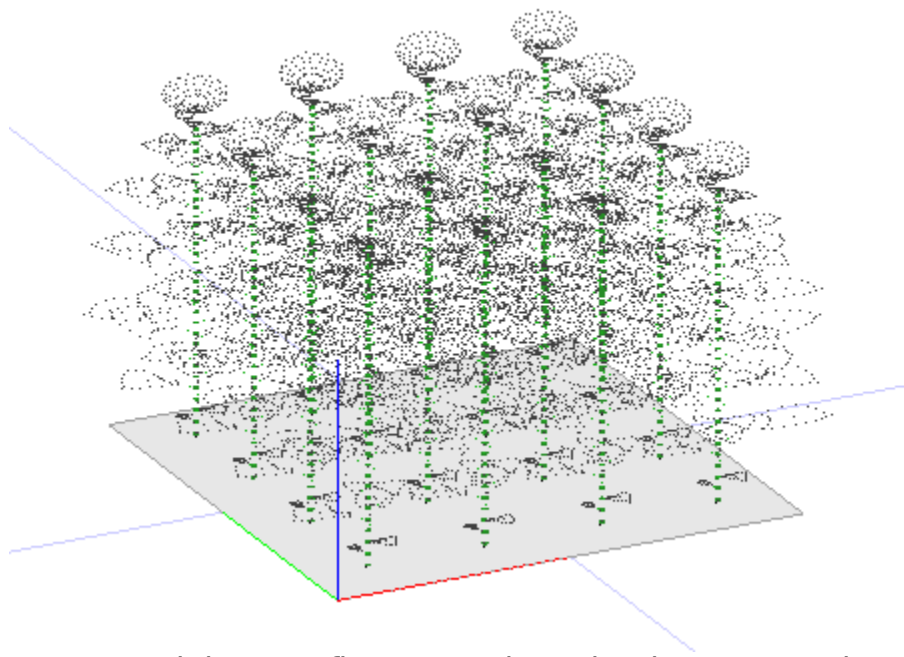Window > Edition layout

New project > Edito (Simeo scene editor)
Open plant format
From a bare soil
Terrain extension : 2 x 2m
Flat

16 Greenlab1- Sunflower mockups in Simeo's 3D View

Add plants
Add what ?
Method : File selector
Add files,
amapstudio/tmp/sunflower_100.opf
(or amapstudio/data/opf/sunflower_100.opf)
Select sunf.opf in the candidate files list
Add where ?
Method : In rows

Between plants : 0.5
Between rows : 0.5
Add in scene

3D View
Zoom, Rotate by clicking / moving mouse in the 3D view
Rendering panel
Select line Open Plant Format (.opf) > Right click > Edito Outlines
Uncheck / recheck 'Open plant format' in the table: visible or not
Select the 'Open plant format' type, then Color > Items
Click on the 'Z' blue button: see the plants from top
Click on the '3D View Configuration' gears button
Check / uncheck 'Orthographic view'
and 'Light comes from the camera'

Export to MMR-Archimed1
Export > MMR-Archimed1 (May 2012)
In the 'Interception models' table
Select the 'Root' type
Remove model for the selection
Clockwise angle between the Y axis and the North : 45
Use the bounding box of the scene
Latitude : 45
Clearness index : 0.5
Time 1 : 2012/1/0
Time 2 : 2012/365/24
Number of pixels : 100 000
Activate toricity
Overwrite colors

Validate and wait until the export is completed

MMR-Archimed1 (may 2012) Export

Plants in the scene (16)

```
p5-sunf.opf
p6-sunf.opf
p7-sunf.opf
p8-sunf.opf
```

Interception models

Only the nodes with a 3D mesh are considered

Type	#Nodes	Interception model
2_GLType.FruitFem...	16	TranslucentModel, transparency: 0.0
2_GLType.Leaf	528	TranslucentModel, transparency: 0.0
2_GLType.Root	16	
4_GLType.Internode	528	TranslucentModel, transparency: 0.0

Total #nodes: 1072   [Remove model for the selection] [Edit model for the selection]

Scene

Clockwise angle between the Y axis and North (deg) : `45`

(•) Use the bounding box of the scene

(○) Set the plot limits manually (rectangle on the ground, X et Y only)

Edge min X (m) : `0`   Edge min Y (m) : `0`

Edge max X (m) : `0`   Edge max Y (m) : `0`

Incident radiation (Turtle model, 46 directions)

Latitude (degrees) : `45`

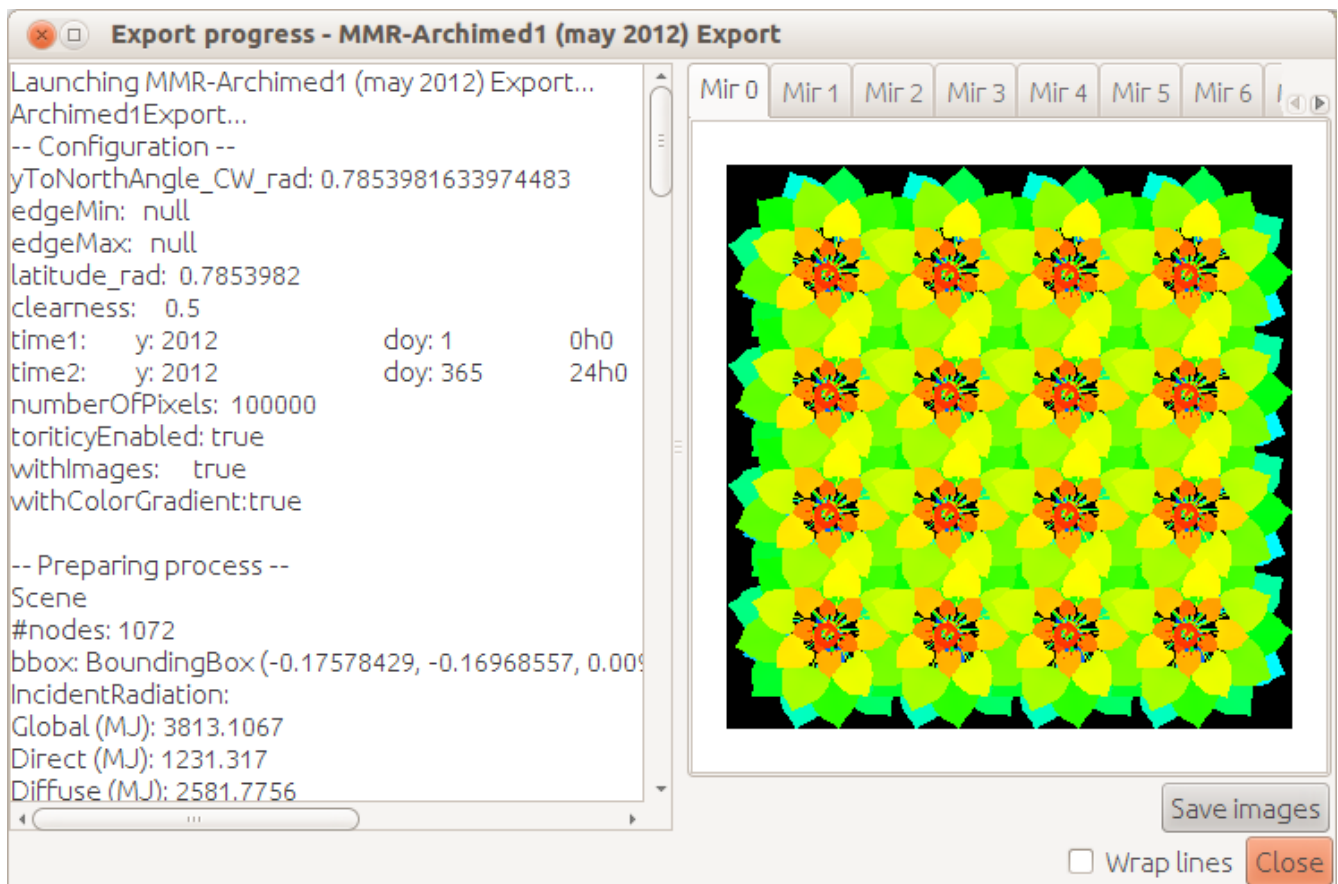Clearness index [0-1] : `0.5`

Time 1 (YYYY/ddd/hh.mm) : `2012/1/0`

Time 2 (YYYY/ddd/hh.mm) : `2012/365/24`

Number of pixels: : `10000`

☑ Activate toricity ☑ View the MIR images `HEIGHTS` ▼ ☑ Overwrite colors

[OK] [Cancel] [Help]

The MMR-Archimed1 (may 2012) configuration dialog in Simeo

MMR-Archimed1 export : progress monitoring
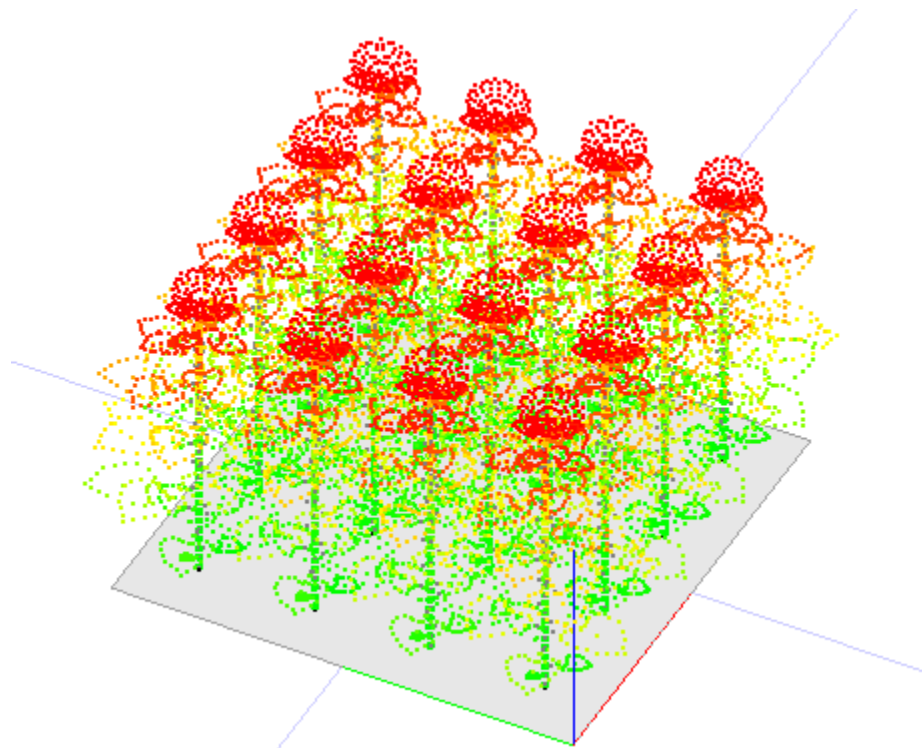
Watch the irradiance colors in Simeo
      Rendering panel
            Select Open Plant Format (.opf) in the table
                  Color : Attributes → all becomes gray in the 3D view
                  Refresh button : → gradients appear in the 3D view
                  Points size (pixels) : 2

Sunflower irradiance overview in Simeo 3D View

Open the scene in Xplo

This scene can be processed in Xplo because it contains only few plants
1. Open Xplo from Simeo for the selected plants
      Simeo Scene panel
          Select all the plants in the table (click – shift click)
      Selection > Open Xplo on selection
2. or Export the Simeo scene into an .ops file to be imported in Xplo
      In Simeo: Project > Export
          Open Plant Scene (.ops) Export
          Check 'Write the .ops file in a custom directory...' > Browse
          Create a directory somewhere > Ok
      In Xplo: Project > Import
          OPS (*.ops)
          Browse and select the .ops file you exported > Ok

Explore the results in Xplo

Plot the irradiance of the leaves as a function of height

3D view panel
      Center the view on the scene :

Extraction panel
      All scene > Input
      Filter first column: *Leaf
      Right click > Add column > Attribute > irradiance_MJ_m2
      Add another column: Topology > Height

Select irradiance_MJ_m2 and Height columns
    Right click > Plot
    In the Plot: Mode > Point
Select both columns again
    Ctrl-C copies all data in the system clipboard
    The extracted data can be pasted in another application

* How to launch Simeo

If you have no shortcut on your desktop, launch it from a Terminal:

Under Windows
    Open a terminal
        Programs > Accessories > MS DOS Prompt
    Go to AMAPstudio's install directory
        cd amapstudio\install\direstory\
    Run Simeo in english
        simeo -l en

Under Linux (e.g. Ubuntu)
    Open a Terminal
        Dash (lateral bar, top icon) > Terminal
    Go to AMAPstudio's install directory
        cd amapstudio/install/direstory/
    Run Simeo in english
        sh simeo.sh -l en