

Version 8

Import Topography

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1 Import Satellite Ground Image and Data in PVsyst

In this chapter, we will explore an efficient method to import both ground topography and ground images in just a few easy steps using the V8 feature, "**Download a satellite ground image and/or ground data**". This approach offers a significant improvement over the previous method (described in the next chapter), as it eliminates the need for manually selecting map points and converting data to CSV format.

- **Access the Download Tool**
 - In the **3D Scene** of PVsyst, go to **File > Import > Download a satellite ground image and/or ground data**.

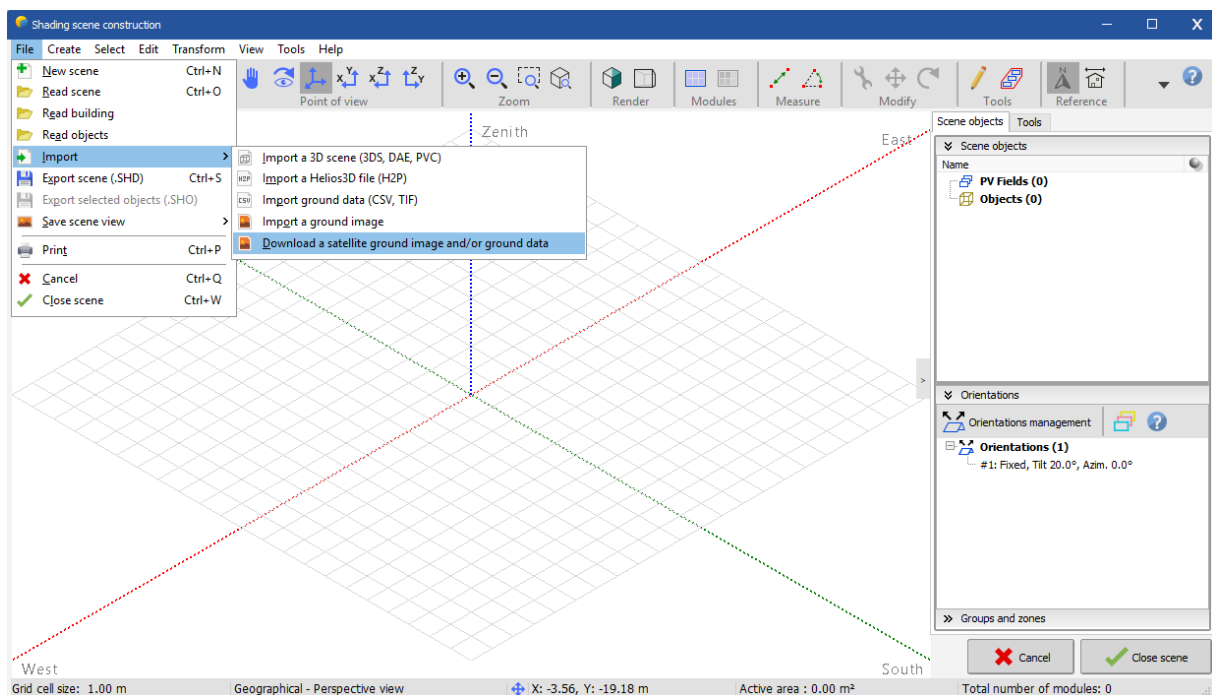


Figure 1: Download satellite image and ground data

- **Explore the Interactive Map**

An interactive map will appear, centered on your project location. You can zoom in, zoom out, and drag the map to adjust the view. Note that the map is limited to

an approximately 11 km x 11 km area to maintain consistency between the project's location and the imported terrain data.

- **Select Topography Data**

For this tutorial, we will import both the ground image and its topographic data. To do this, tick the box labeled **"Also import topography data"** at the bottom of the map window.

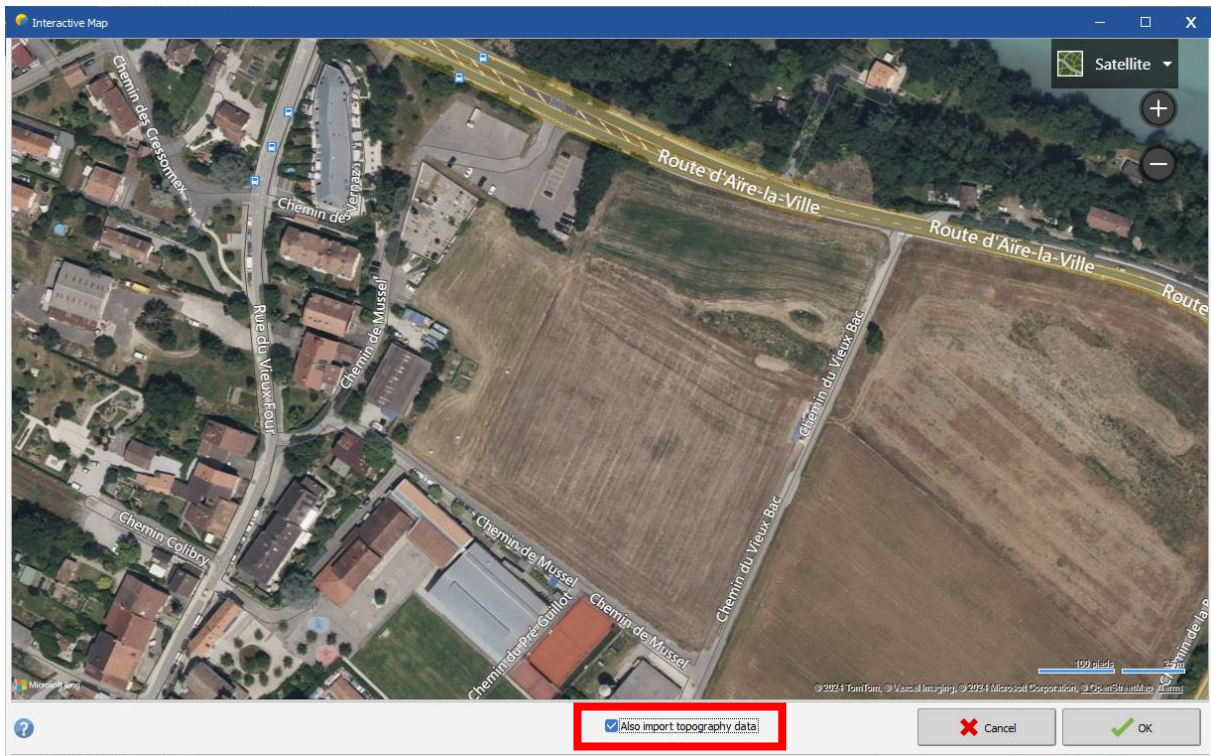


Figure 2: Selected area on Bing Interactive map

Once you have selected the desired area, click **OK**. PVsyst will then download the image and topographic data for the displayed region.

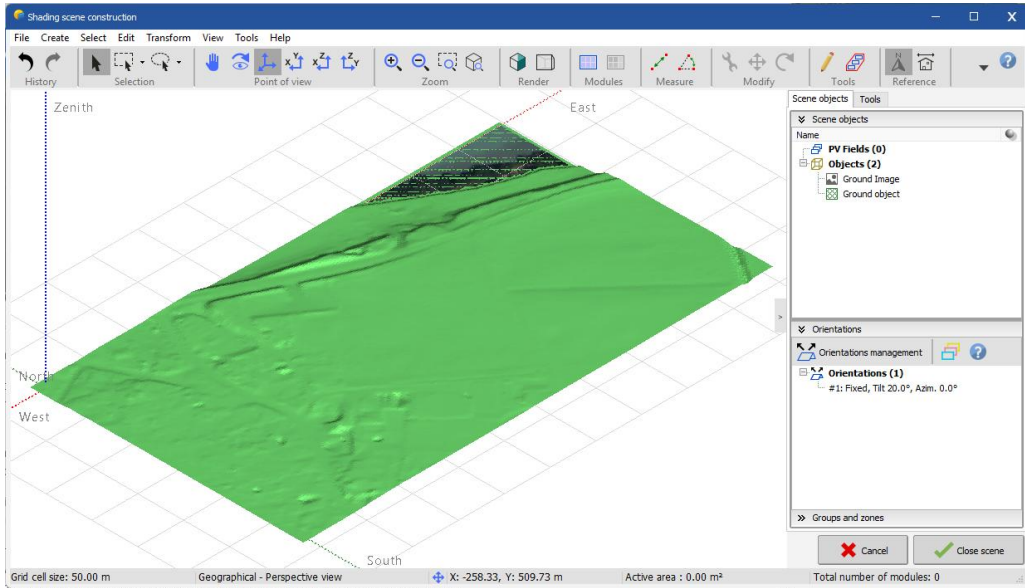


Figure 3: Imported ground image and object in 3D Scene

- Crop the Ground Image (Optional)

If the imported image is too large, you can crop it to focus on the desired area:

- Double-click **Ground Image** in the **Scene objects** panel on the right side of the **Shading Scene Construction** window. This will open the **Ground Image Edition Tool**.

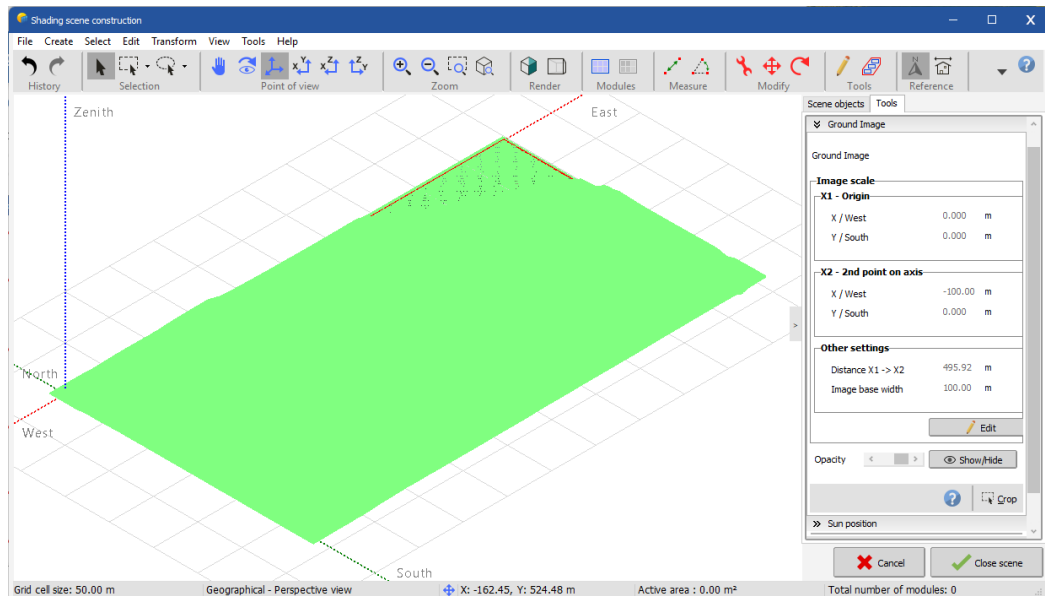


Figure 4: Ground Image edition tool

- At the bottom of the panel, click on 'Crop' icon.

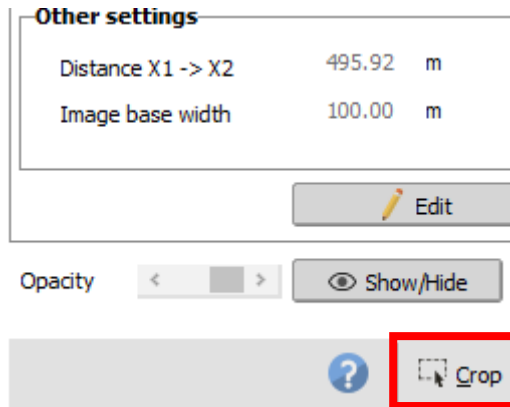


Figure 5: Crop button in edition tool

- In the **Ground Image Cropping** window, drag the sides of the cropping box and center it on the desired section.

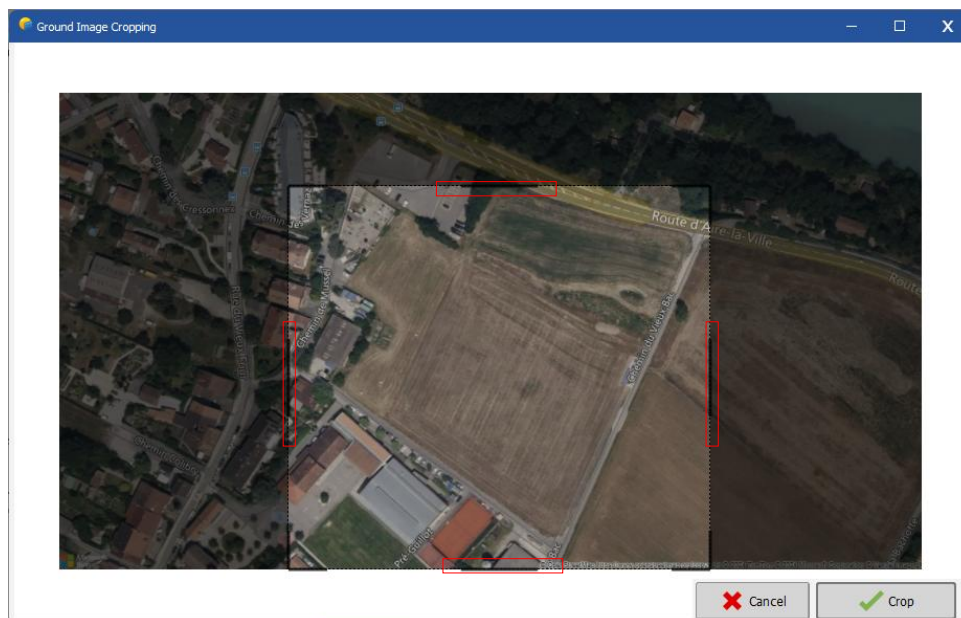
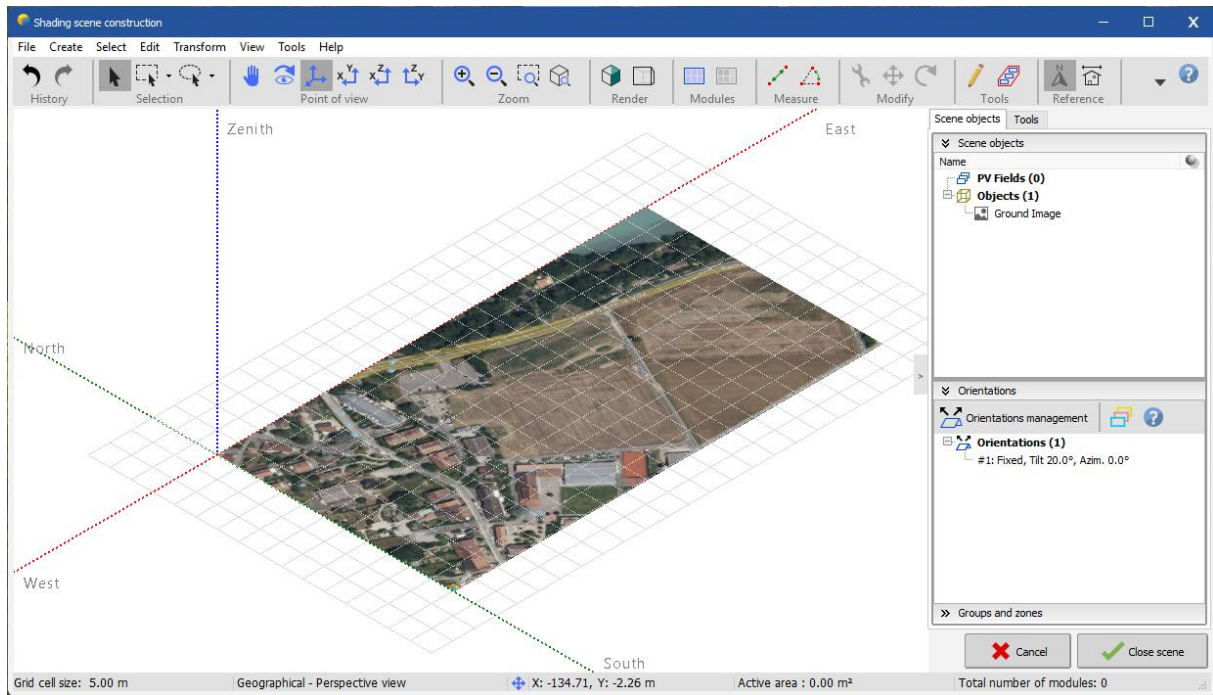



Figure 6: Ground Image Cropping tool

- Once the desired area is selected, click **Crop**.
- The ground image may be hidden by the ground object. To see the ground image after resizing, delete the ground object (you can restore it with ctrl-z afterward)



2 Importing a ground topography from Google Earth

- Open Google Earth Pro (this software is free even if it's called "Pro")
- From the menu "Tools>Options>Navigation", check "Do not automatically tilt while zooming" (in order to be always in a 90° top view from the ground)
- Select a location by setting and address or by scrolling with the mouse
- Click on the "Path" tool  and draw as many points as possible with the mouse to define the desired area (the polygon tool will only generate the elevation data for the polygon's corners, it's not sufficient to extract the topography of the polygon area)
- On "Altitude tab", select "Ground level"

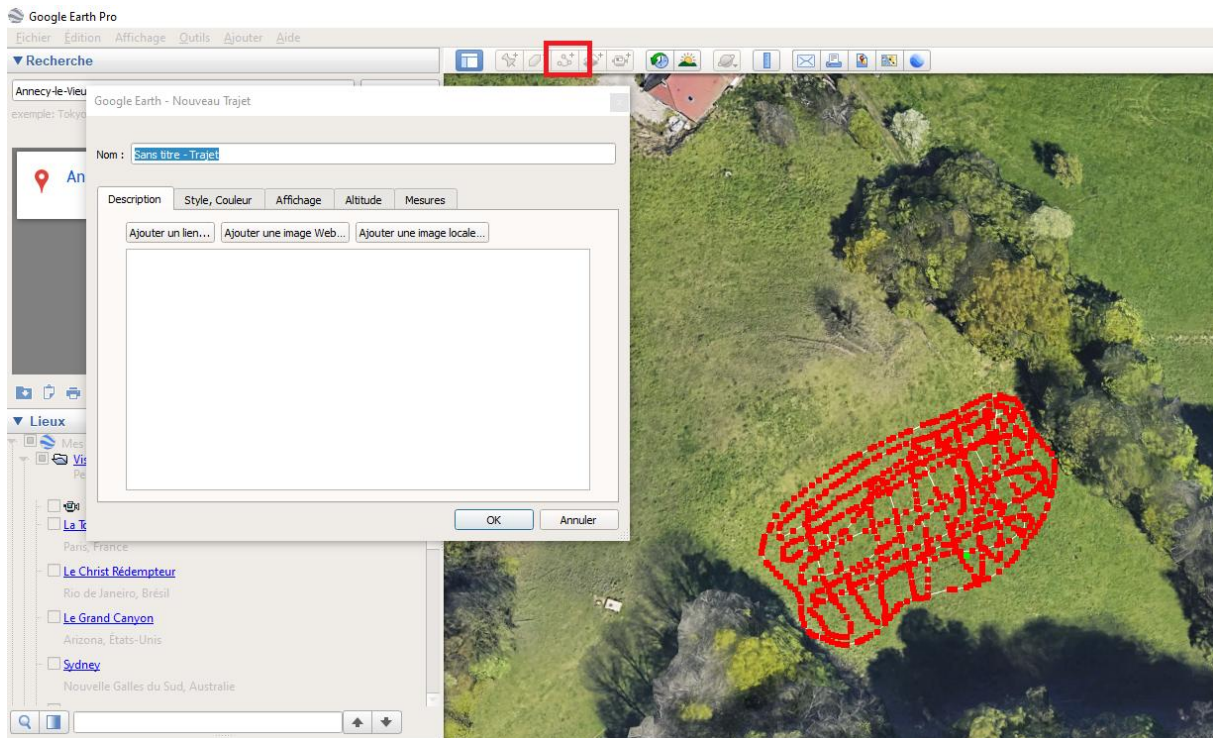


Figure 7 : Google Earth Pro

- Click on "OK" to close the path tool

- Select the generated path and save it as a KML file :

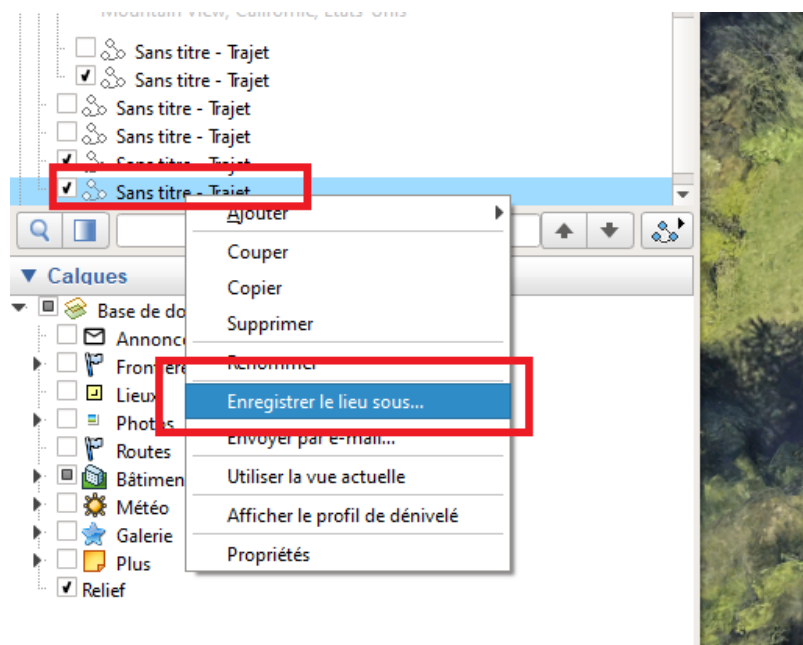


Figure 8 : google earth - Save as

- Go to https://www.gpsvisualizer.com/convert_input
- Select “Plain text” as “Output format”
- Select your KML file from “Upload your files here”
- Select “Semi-colon” for “Plain text delimiter”
- Select “Best available source” in “Add DEM elevation data” list

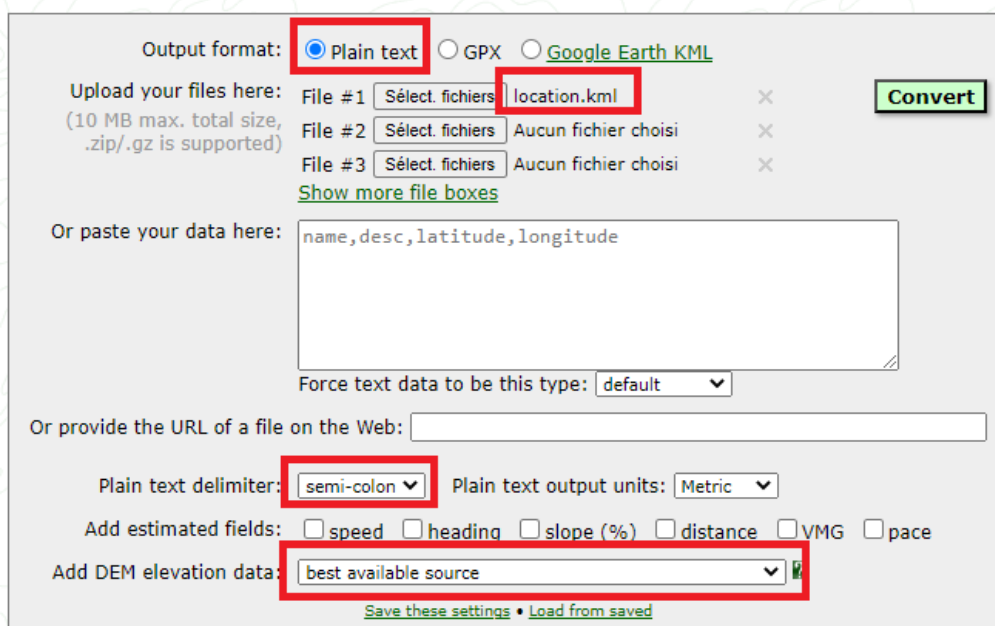


Figure 9 : Google earth - Output format

- Click on “Show advanced parameters”
- Select “No” for “Repeat header row in plain-text output”
- Select “Yes” for “Output UTM coordinates”

Misc. Options

Repeat header row in plain-text output: **No** (If no, a "new_track" field will be used)

Output UTM coordinates: **Yes** (in plain-text output only)

Time offset: hours

Moving average range for estimated fields (speed, slope, etc.): point(s)

Check this box if your GPX input file uses the wrong unit (km/h) for speed data:

Figure 10 : Misc. Options

- Click on “Convert”
- Copy the generated content

The contents of your file are also displayed in this box, if you'd rather cut and paste:

```
type;latitude;longitude;utm_zone;utm_easting;utm_northing;altitude (m);name;desc
T;44.3644893882;3.870649091;31T;569374.8;4912725.7;1437.1;Sans titre - Trajet;
T;44.364472991;3.870588669;31T;569370;4912723.9;1438.4;;
T;44.364468877;3.870533200;31T;569365.6;4912723.4;1439.5;;
T;44.364460992;3.870499121;31T;569362.9;4912722.5;1440.1;;
T;44.364453448;3.870461007;31T;569359.9;4912721.6;1440.7;;
T;44.364453612;3.870456815;31T;569359.6;4912721.6;1440.8;;
T;44.364445267;3.870435609;31T;569357.9;4912720.7;1441.2;;
T;44.364425931;3.870372310;31T;569352.9;4912718.5;1442.1;;
T;44.364414733;3.870338587;31T;569350.2;4912717.2;1442.6;;
T;44.364409141;3.870321745;31T;569348.8;4912716.6;1442.8;;
T;44.364406322;3.870313318;31T;569348.2;4912716.2;1443.0;;
```

Map this data: [Leaflet](#), [Google Maps](#), [Google Earth](#), [JPEG map](#), [SVG map](#), or [elevation profile](#) — or go to the [map!](#)

Figure 11 : Google Earth - Data format

- Past the content to Excel

- Click on menu “Data>Convert” and select “Delimited” file

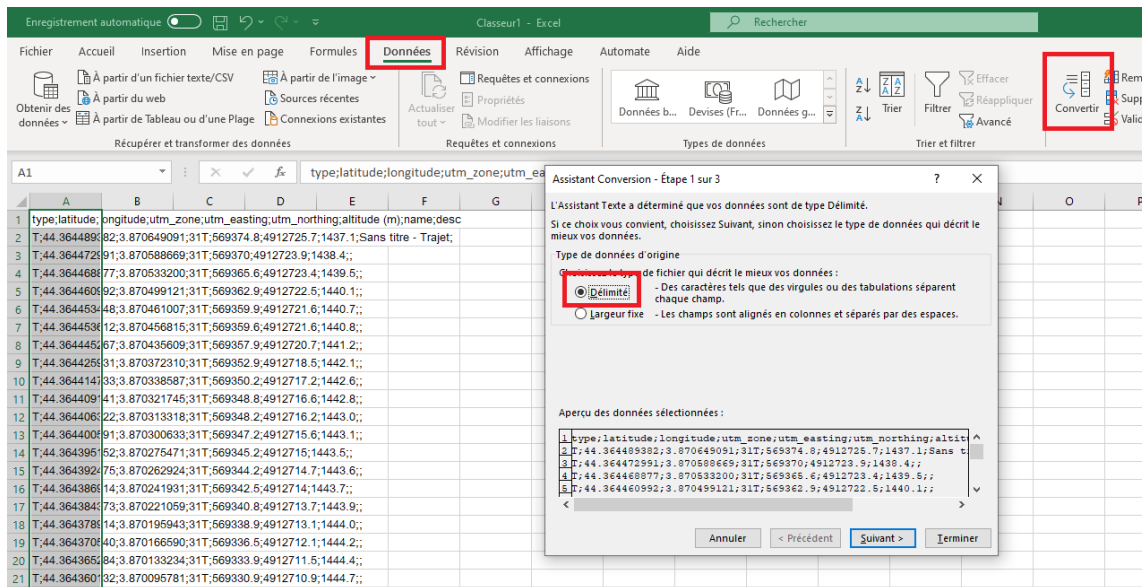


Figure 12 : Excel data

- Click on “Next” and select “Semi-colon” as delimiter, click on “Next”
- Remove the first 4 columns (from “type” to “utm_zone”), keep only columns “utm_easting”, “utm_northing” and “altitude”

	A	B	C	D
1	utm_easting	utm_northing	altitude (m)	
2	569374.8	4912725.7	1437.1	
3	569370	4912723.9	1438.4	
4	569365.6	4912723.4	1439.5	
5	569362.9	4912722.5	1440.1	
6	569359.9	4912721.6	1440.7	
7	569359.6	4912721.6	1440.8	
8	569357.9	4912720.7	1441.2	
9	569352.9	4912718.5	1442.1	
10	569350.2	4912717.2	1442.6	
11	569348.8	4912716.6	1442.8	
12	569348.2	4912716.2	1443	
13	569347.2	4912715.6	1443.1	
14	569345.2	4912715	1443.5	
15	569344.2	4912714.7	1443.6	
16	569342.5	4912714	1443.7	

Figure 13 : Data

- Save as .CSV and close excel

- In PVsyst 3D scene, from the menu “File>Import>Import ground data (CSV)”, select and import your file

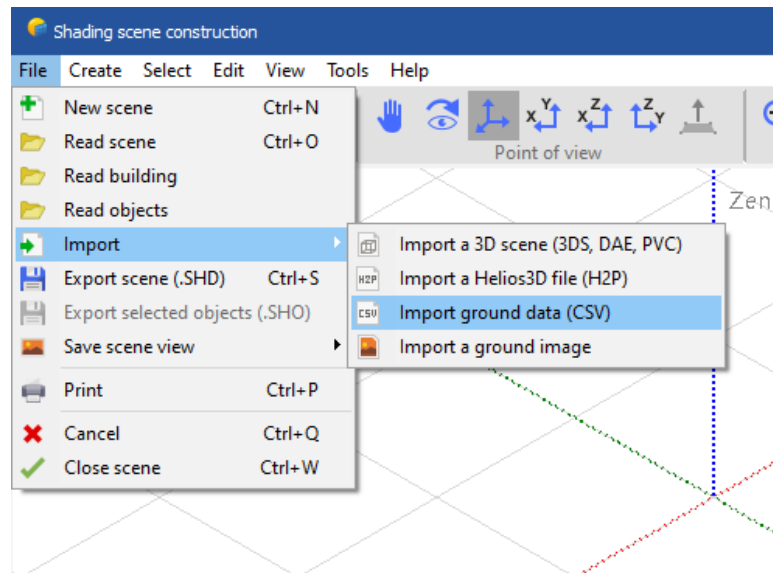


Figure 14 : PVsyst - Import ground data

- Your topography should be correctly imported. Please note that if you are in the Northern hemisphere you might need to rotate the ground object by 180° around the scene origin in order for it to be properly placed

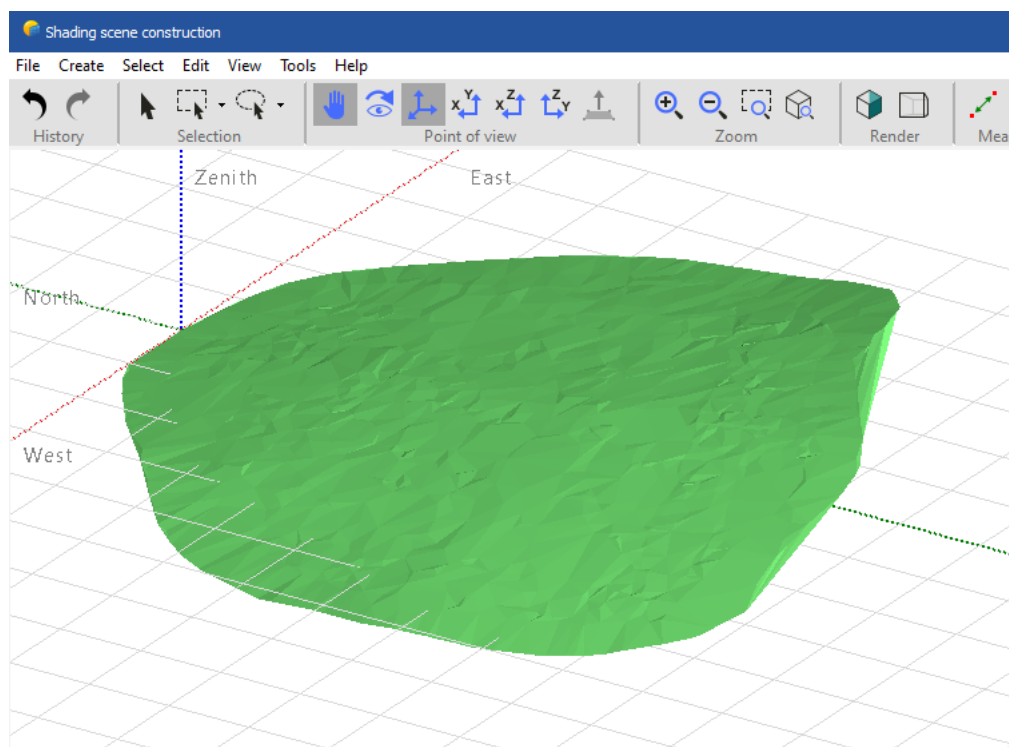


Figure 15 : PVsyst ground

3 Converting an Autocad .DWG to .DAE from sketchup

- Open Sketchup Pro
- Click on “File>Import” and select an Autocad .DWG file
- Click on “File>Export>3D model”
- Select “Collada (*.DAE)” and save your file.
- In PVsyst 3D scene, from the menu “File>Import>Import a 3D scene (3DS, DAE,PVC)”, select and import your file

4 Importing a ground from sketchup

- Open Sketch Pro
- Click the "Add Location tool" on the Location toolbar or select "File>Geolocation>Add Location".
- In the “Add Location” window that appears, type an address or intersection where your desired terrain is located.
- Click the "Search" button, and an aerial view of your location appears in the window.
- Click “Select Region” in the upper right.
- Drag the corners of the selection box to refine the location.
- Click the “Grab” button in the upper right, and your location’s terrain is imported into your model as a layer.

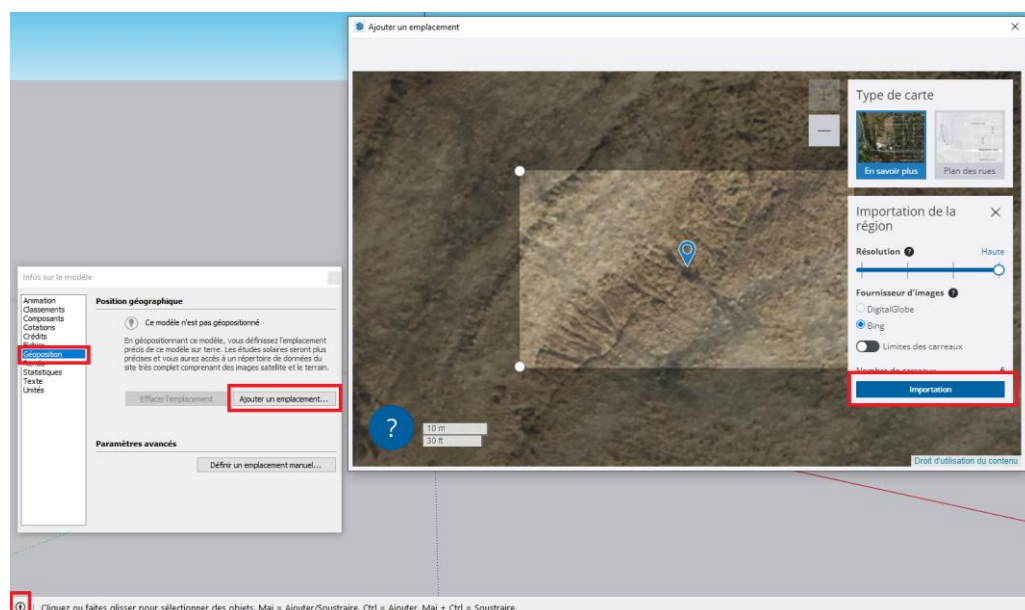


Figure 16 : Sketchup Import ground

- In the layers list, make “Snapshot” layer invisible and “Terrain” layer visible :

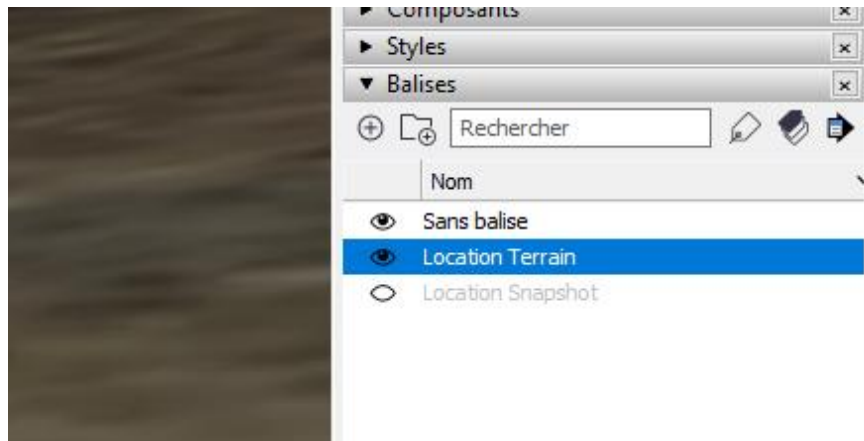


Figure 17 : Location terrain

- Right click on the ground image and select “Unlock” then “Explode”

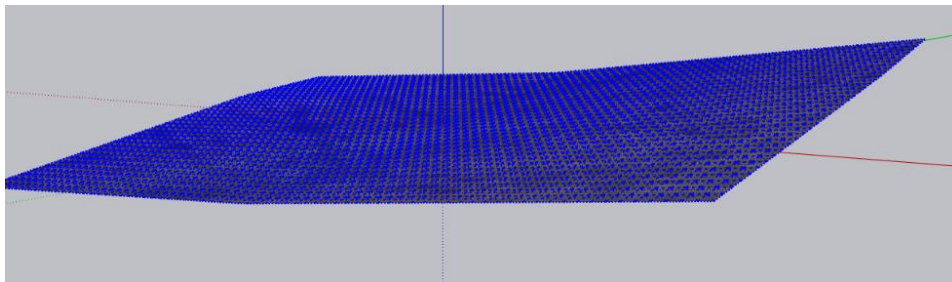


Figure 18 : Ground under Sketchup

- From menu “File>Export>3D model”, save the terrain as “.DAE” file
- In PVsyst 3D scene, from the menu “File>Import>Import a 3D scene (3DS, DAE,PVC)”, select and import your file
- Click on “OK” in the import dialog: your 3D object is imported in the 3D scene
- Right-click on it and select “Transform to a ground object”

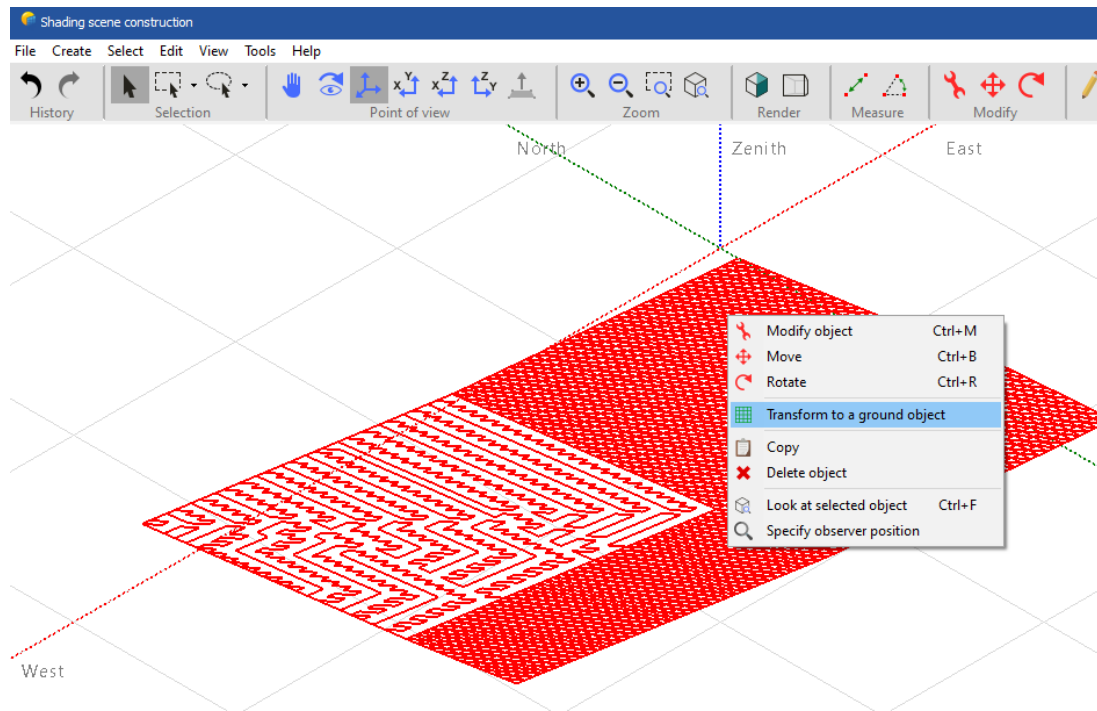


Figure 19 : PVsyst - Transform to a ground object