

Cloud.rb

```
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#-----
# Import a points clouds in SU, assuming the format of the input file is:
# x delimiter y delimiter z
# for instance: 1.0,2.0,3.0 (a CSV file format in this case)
#-----
# Versions history:
# 30.07.04: first release, just reads the points
# 01.08.04: some delimiters added, layer selectable
# 18.06.07: better and single dialog box (more user-friendly).
#   better layer support
#   more delimiters, sample of file line for reference
#   invalid data file detection, more than 3 data per line detection
#   select XYZ locations option
#   flatten Z cordinate option
#   zoom extend at command end
#   ScriptOrganizer compatible
#   Triangulation option
# 09.11.07: Point click to redefine cloud origin
#-----
```

This script is intended to help SU users to manage digital elevation model data. It loads and reads various file formats and triangulate the resulting 3D imported points cloud.

Script can be downloaded here: <http://www.crai.archi.fr/RubyLibraryDepot/Ruby/EM/cloud.rb>

Example data file can be downloaded here: <http://www.crai.archi.fr/RubyLibraryDepot/Ruby/example.dat>

1. Installation:

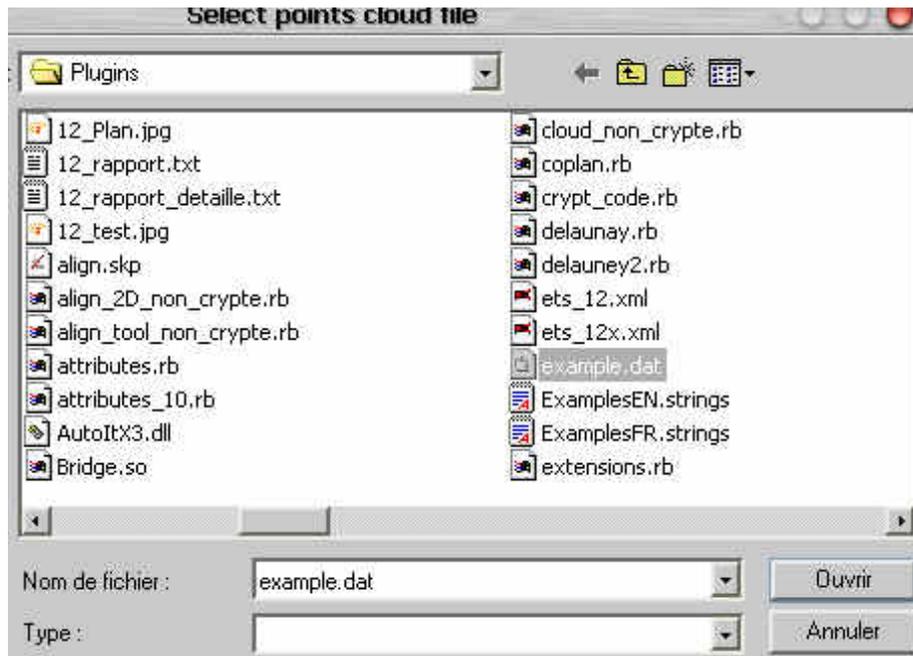
Put the script in your "Plugins" folder of SketchUp and you're ready...

2. How to use:

Under the Plugins menu, you will find a "Import points cloud" item:



When you select this menu item, a file selection dialog is displayed to let you choose which file you want to import:



In this example, I select "example.dat" and click on "Open" ("Ouvrir" in french).

What kind of files are supported ?

First thing to say is that the file must be an ASCII text file. No binary formats supported !
No matter the file extension, but text only please !

What kind of data in the file ?

Since the purpose of the script is to import 3d points data, at least X,Y, and Z coordinates are required for each point.

XYZ coordinates are stored one line per point in the file, at least one point per file.

There should be more than XYZ data per line, in this case the script detects it and prompts you to locate the coordinates in the line (see below for further details).

In most cases, the file is organized this way:

```
Xp1 delimiter Yp1 delimiter Zp1
Xp2 delimiter Yp2 delimiter Zp2
Xp3 delimiter Yp3 delimiter Zp3
...
Xpn delimiter Ypn delimiter Zpn
```

where delimiter is the character which separates X data from Y data and Y data from Z data.

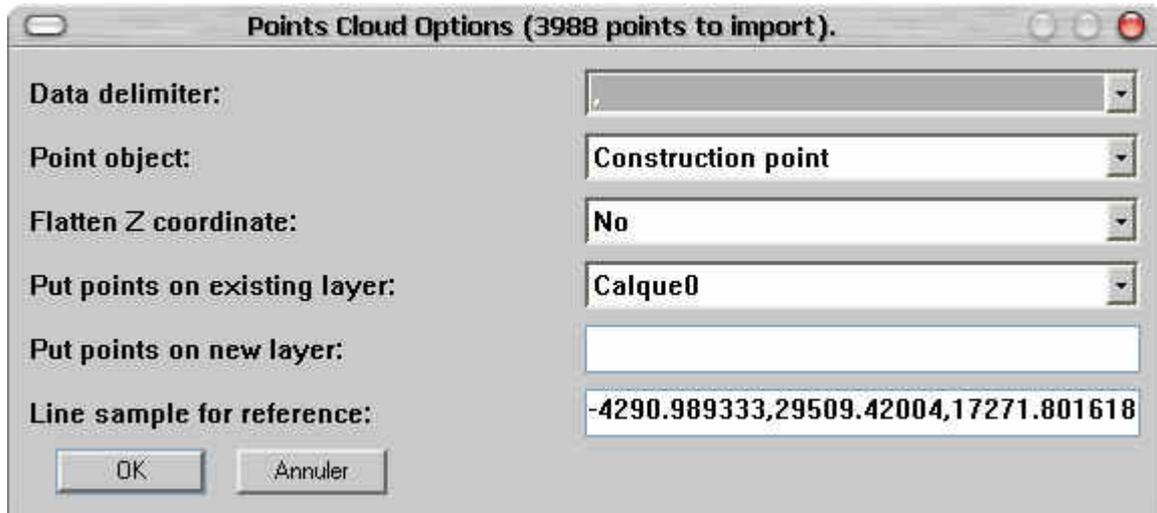
Delimiter can be one of the following:

SPACE , ; . # - _ ! ? / ' *

For instance, comma or semicolon delimiter is the CSV format exported by Excel separating each column in the Excel sheet, and DGM data files have the space delimiter (AFAIK).

Here is an example of the first 3 lines of the "example.dat" file, the delimiter is the comma.

```
-4290.989333,29509.42004,17271.801618
-4274.989333,29511.005136,17286.136452
-4289.989333,29488.014542,17264.960225
```



Note that the dialog box title shows how many points will be created.

Data delimiter:

Select the delimiter of the file you have opened. The bottom field of the dialog box shows the first line of your file so you can see which delimiter to choose.

Point object:

Select whether you want a construction point at each point location or a component. The list lets you select a component present in your SketchUp file. If you select a component, the insertion point of the component will be located at the XYZ coordinates of each 3D point, it will be inserted scaled at 1,1,1, no rotation.

Flatten Z coordinate:

Selecting "No" will import each 3D point with the real Z coordinate, selecting "Yes" will replace each Z coordinate with zero, resulting in a flat 2D points cloud.

Put points on existing layer:

Select a layer in the list, all points will be inserted on this layer.

Put points on new layer:

Type a layer name in the field, a new layer will be created and all points will be inserted on this layer. Selecting an existing layer in the above list and typing a name in this field will result in a new layer creation and all points on the new layer.

Line sample for reference:

See "Data delimiter". You have nothing to type, select or change in this field.

Origin of points cloud:

When the OK button is hit, you are prompted for the points cloud origin. Click on the SketchUp origin for no change, or click a point which will be the "0,0,0" point for the cloud of points you are importing.

For instance if you click the point (100,200, 25), all the coordinates in the imported file will be translated 100 units along X axis (red), 200 units along Y axis (green), and 25 units along Z axis (blue).

Once the new origin point has been clicked, watch the status bar. You will see a prompt "Adding point X / T", where X is the current point count and T the total points number.

At the end of the import, the script makes a zoom extents to let you see all points selected (in yellow), and prompts you wheter you want to triangulate the points or not.

Answering "No" will end the script, answering "Yes" will start the triangulation process. This can take some time, even minutes when importing huge files.

(The "example.dat" file take around one minute to triangulate on my 1.7 Ghz PC).

Click on "OK" if you want to triangulate and watch the status bar again. It shows a prompt "Triangulating point X / T" where X is the current point count and T the total points number, and finally it displays a prompt "Adding triangle X / T", where X is the current triangle count and T the total triangles number.

Here is a screenshot of the final result of the "example.dat" file import:

Note that construction points are still selected, it provides the opportunity to delete them if you don't need them anymore, keeping only triangles.

