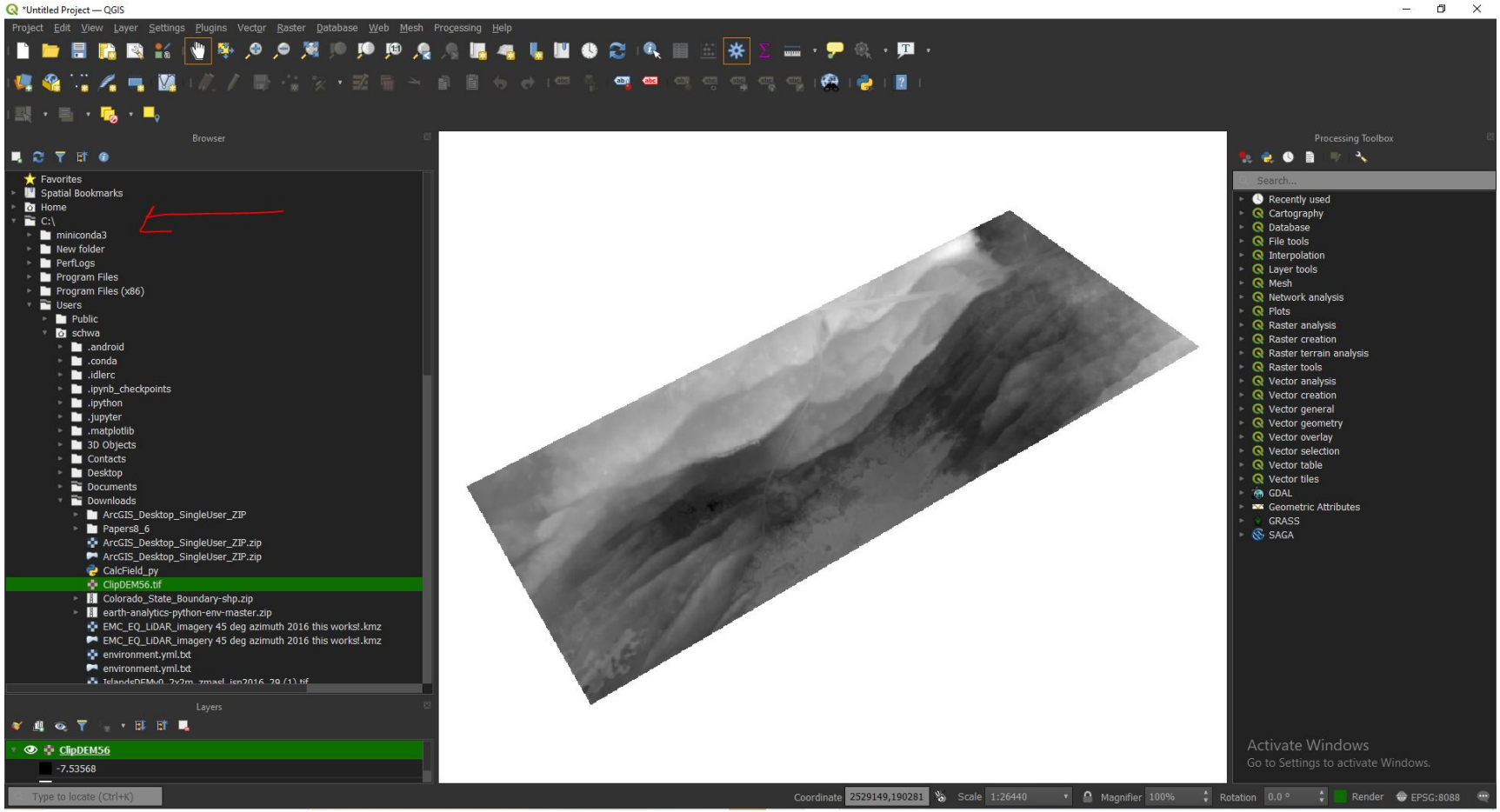
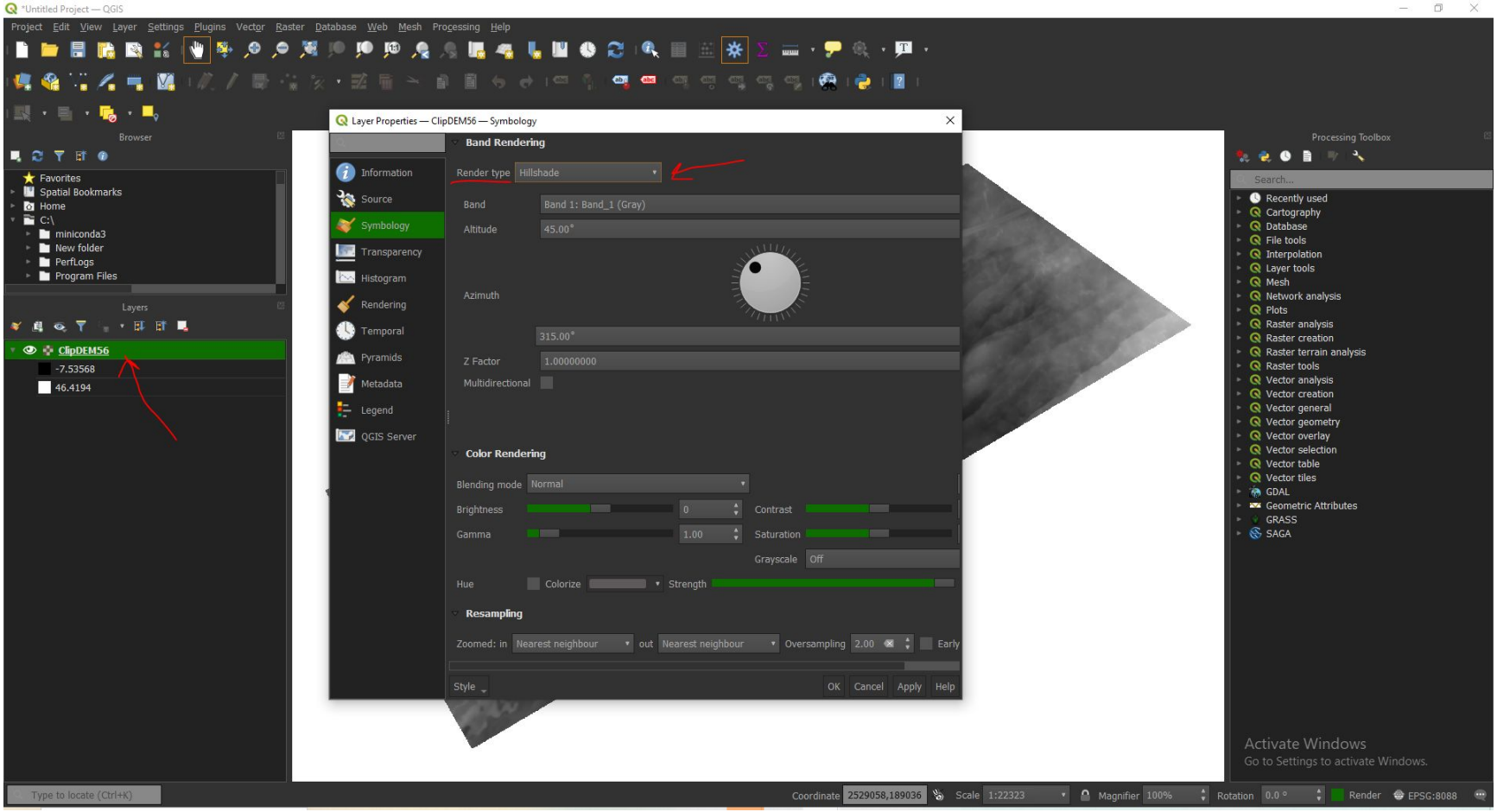
D:L tool tutorial

spring 2021

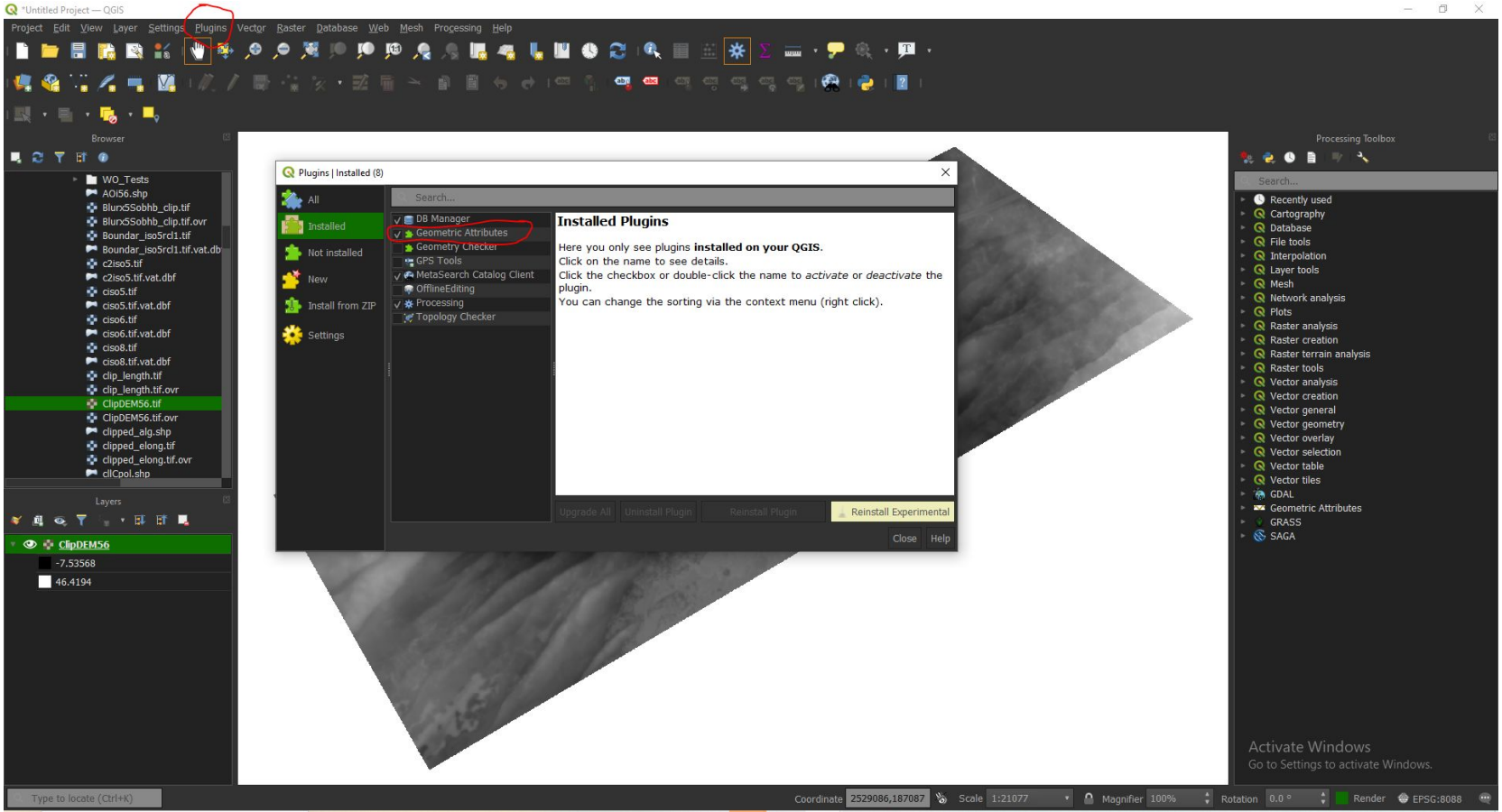
Navigate to DEM in downloads folder and add to map



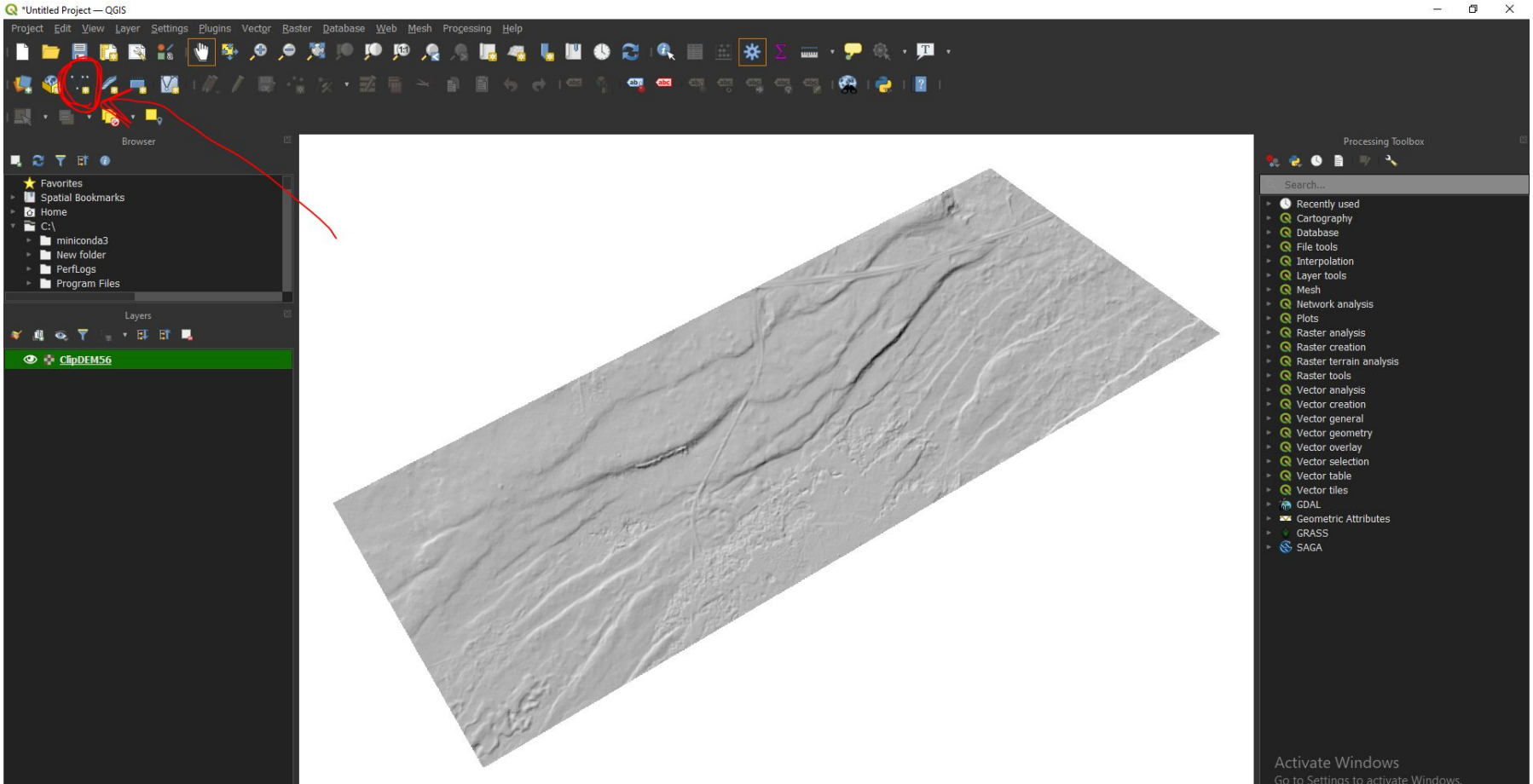
Right click on DEM, select *Properties*, go to *Symbology*, select *Render Type* and choose *Hillshade*



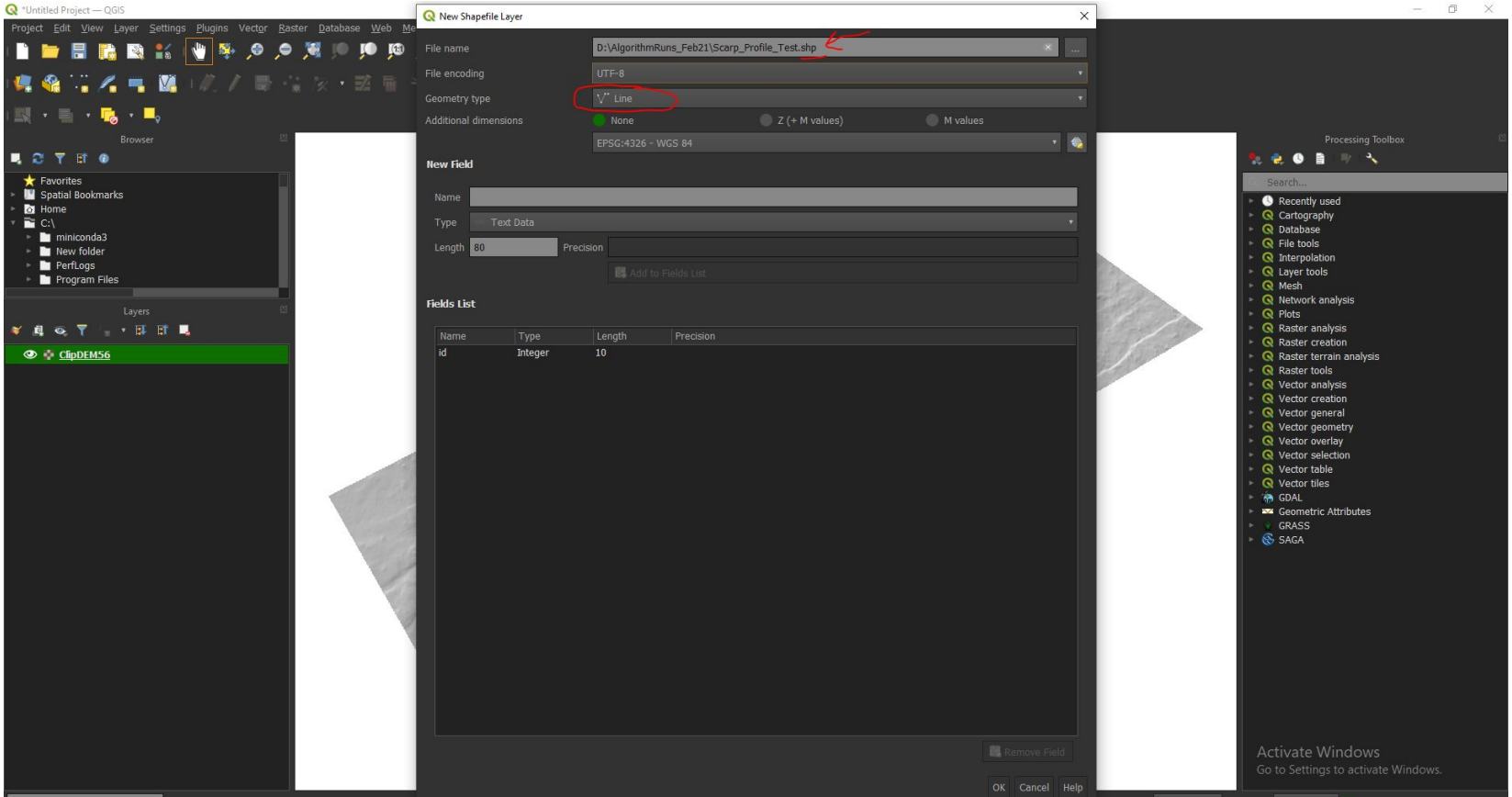
Go to plugins and make sure the Geometric Attributes Plugin is installed



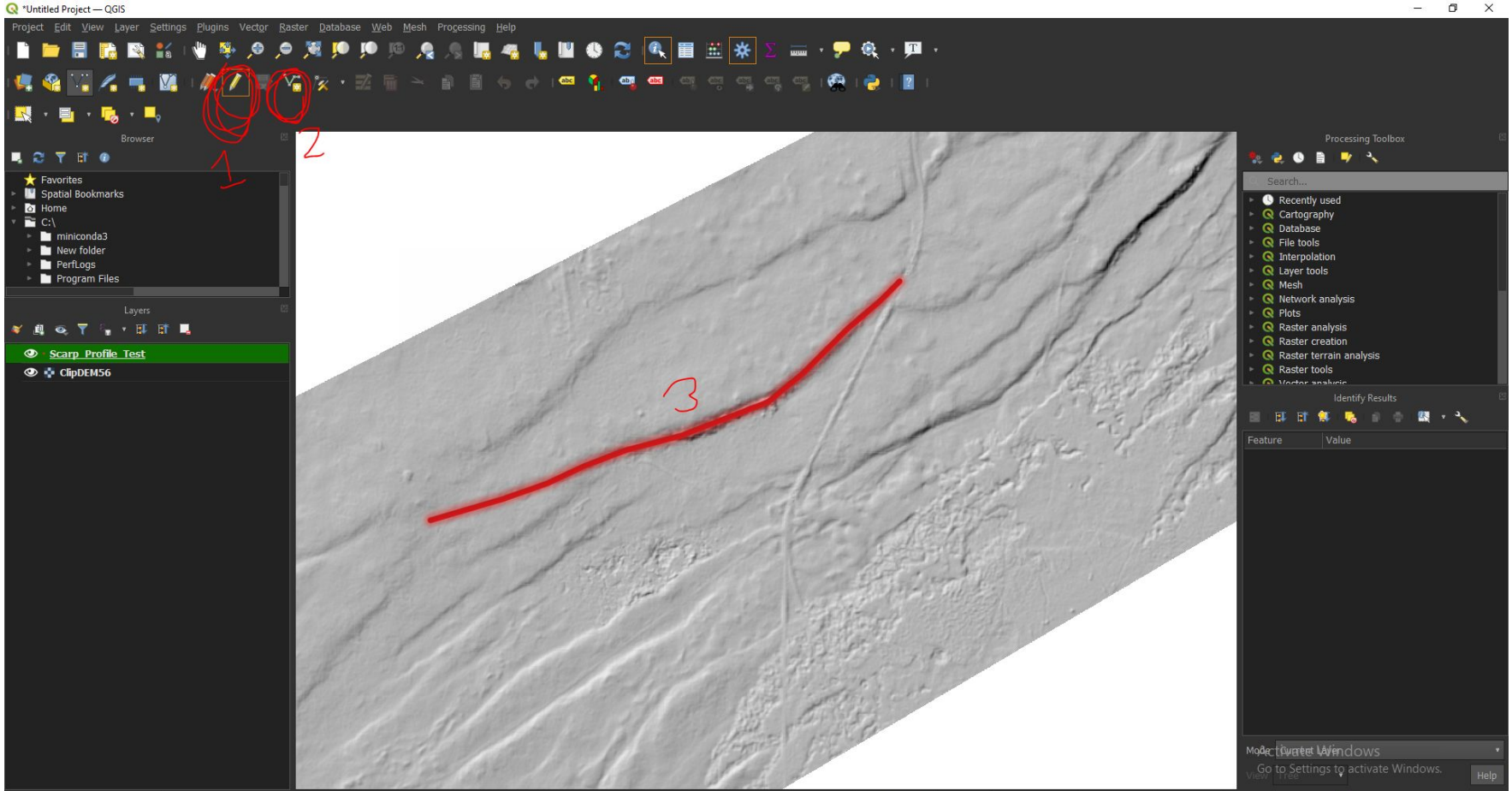
Select New shape file tool



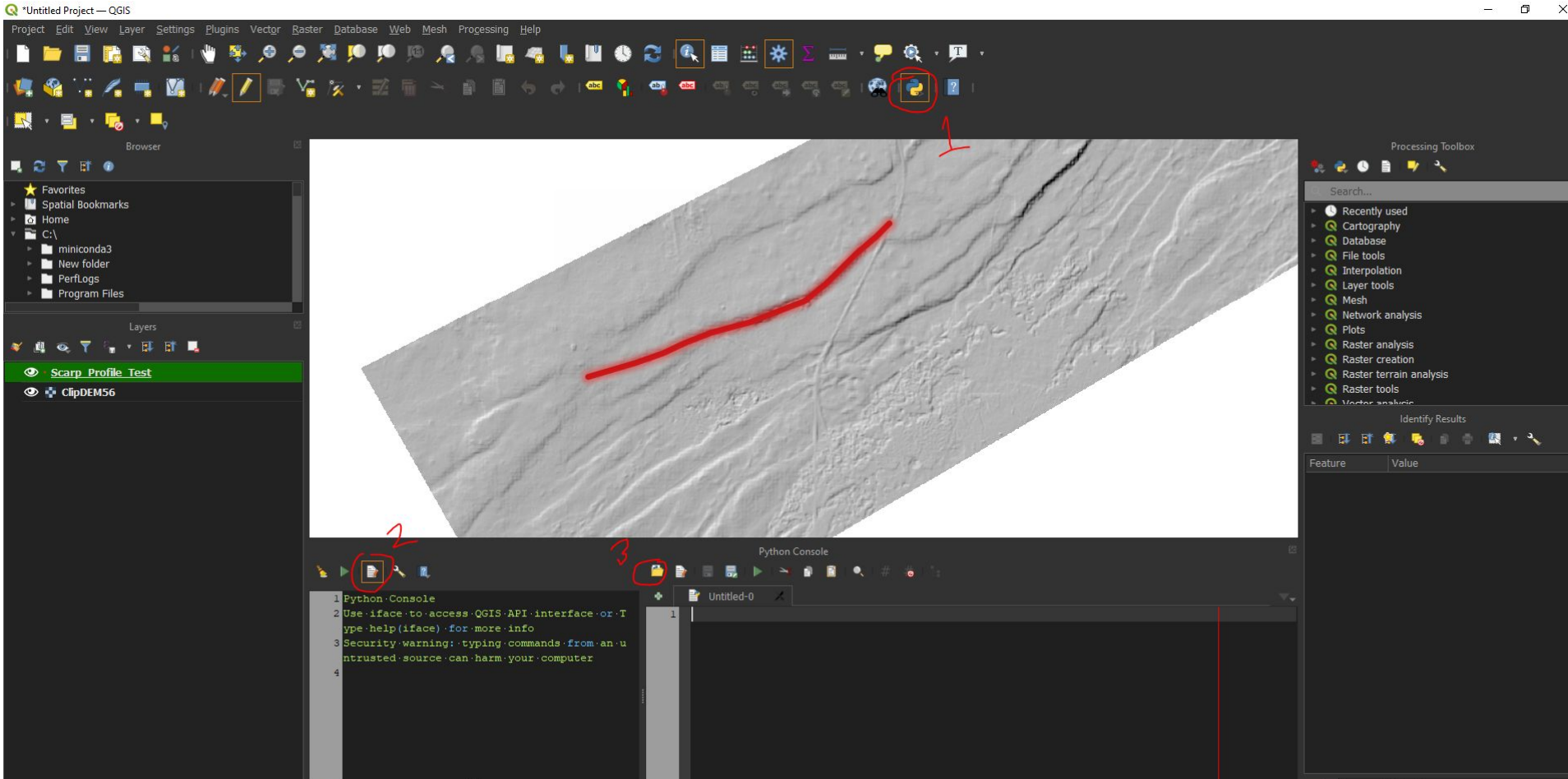
Navigate to desired folder and name shapefile; make sure its an ESRI shapefile format and select ‘Line’ then click ok



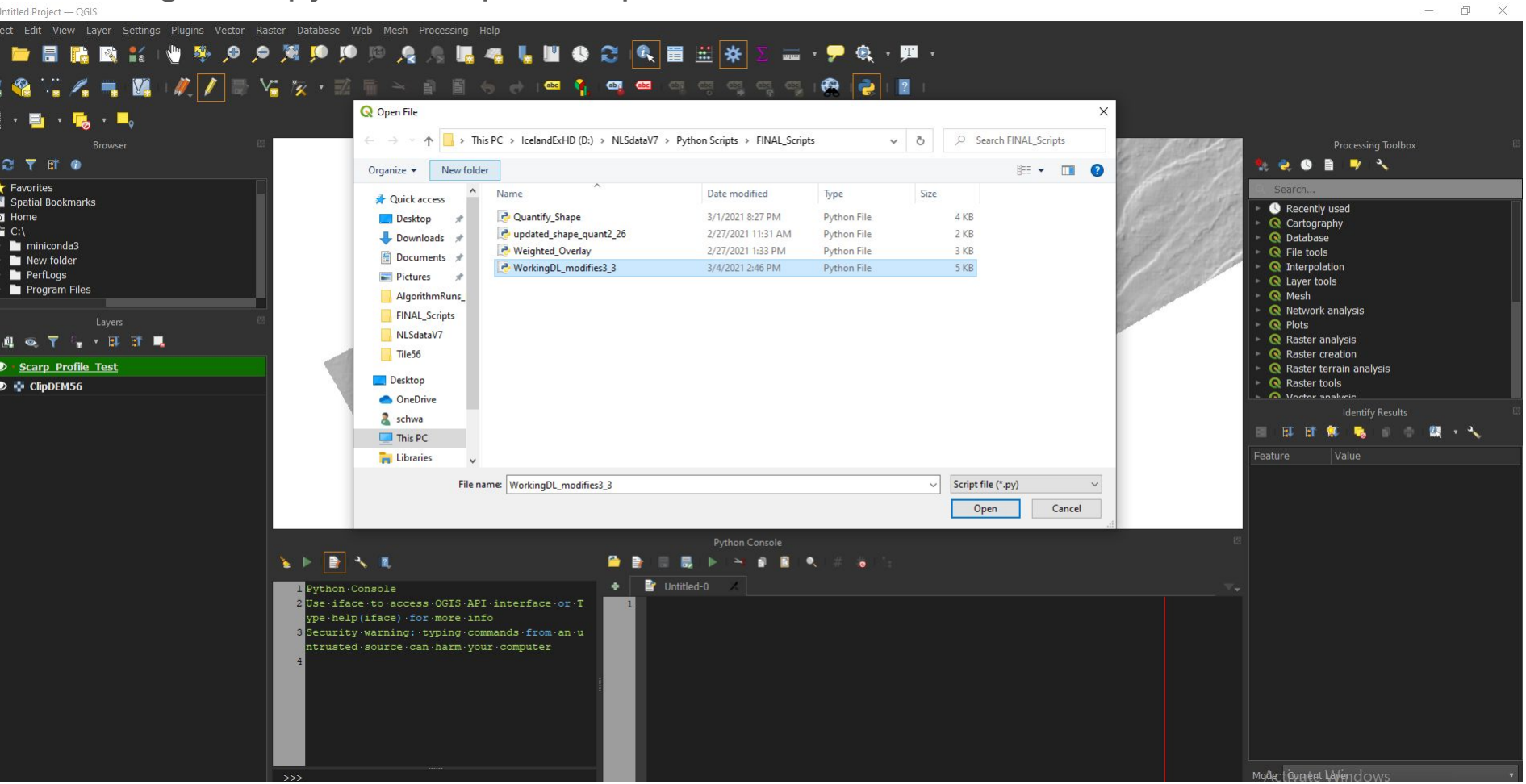
Select Toggle Editing, then Add Line Feature; Draw profile, Save edits (in between Toggle and Add Tools), Disable editing by clicking Toggle Editing tool again



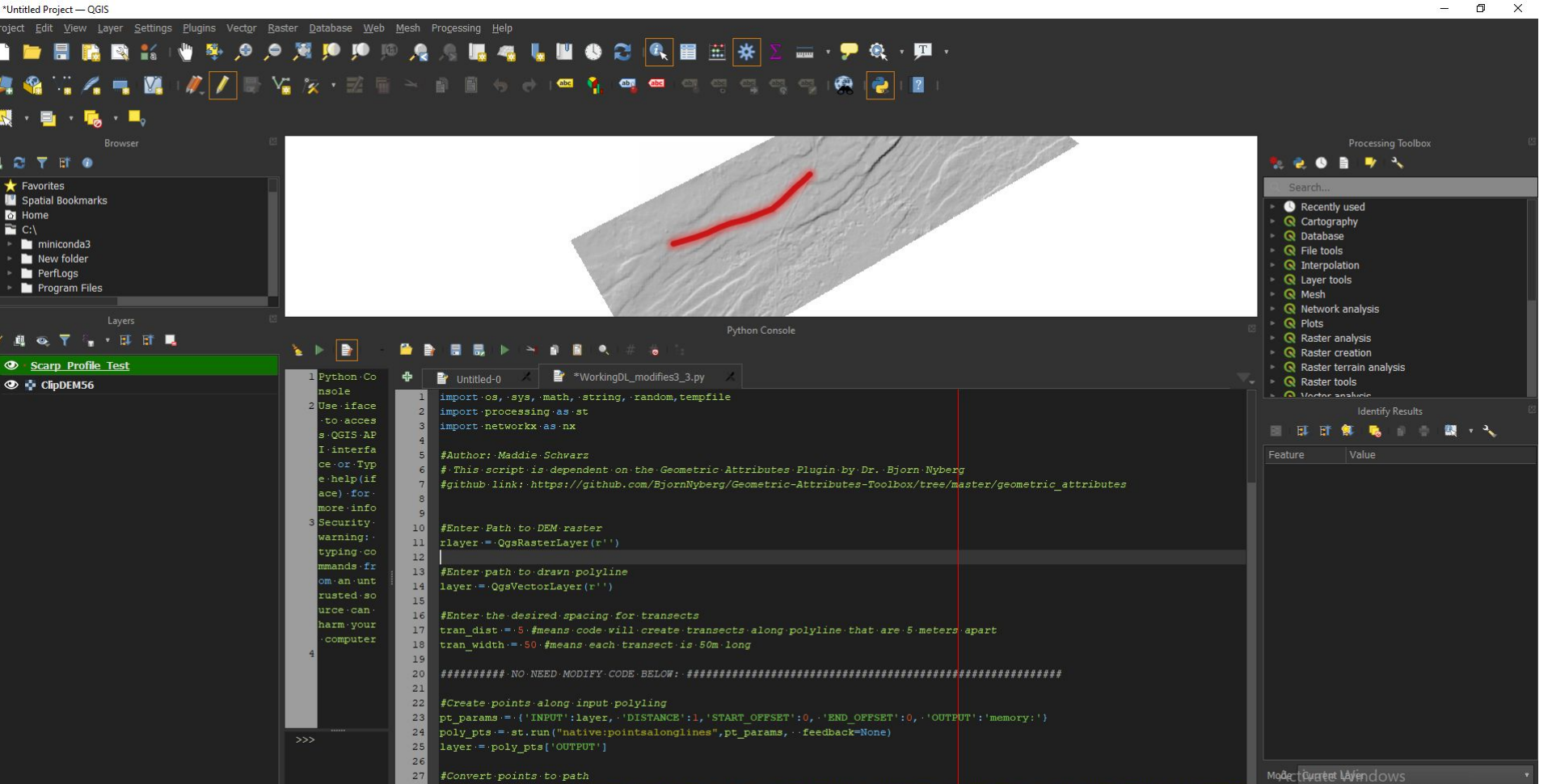
Click on the Python Console and Select the Python Editor; select Open Script



Navigate to python Script and open



The script will look like this:

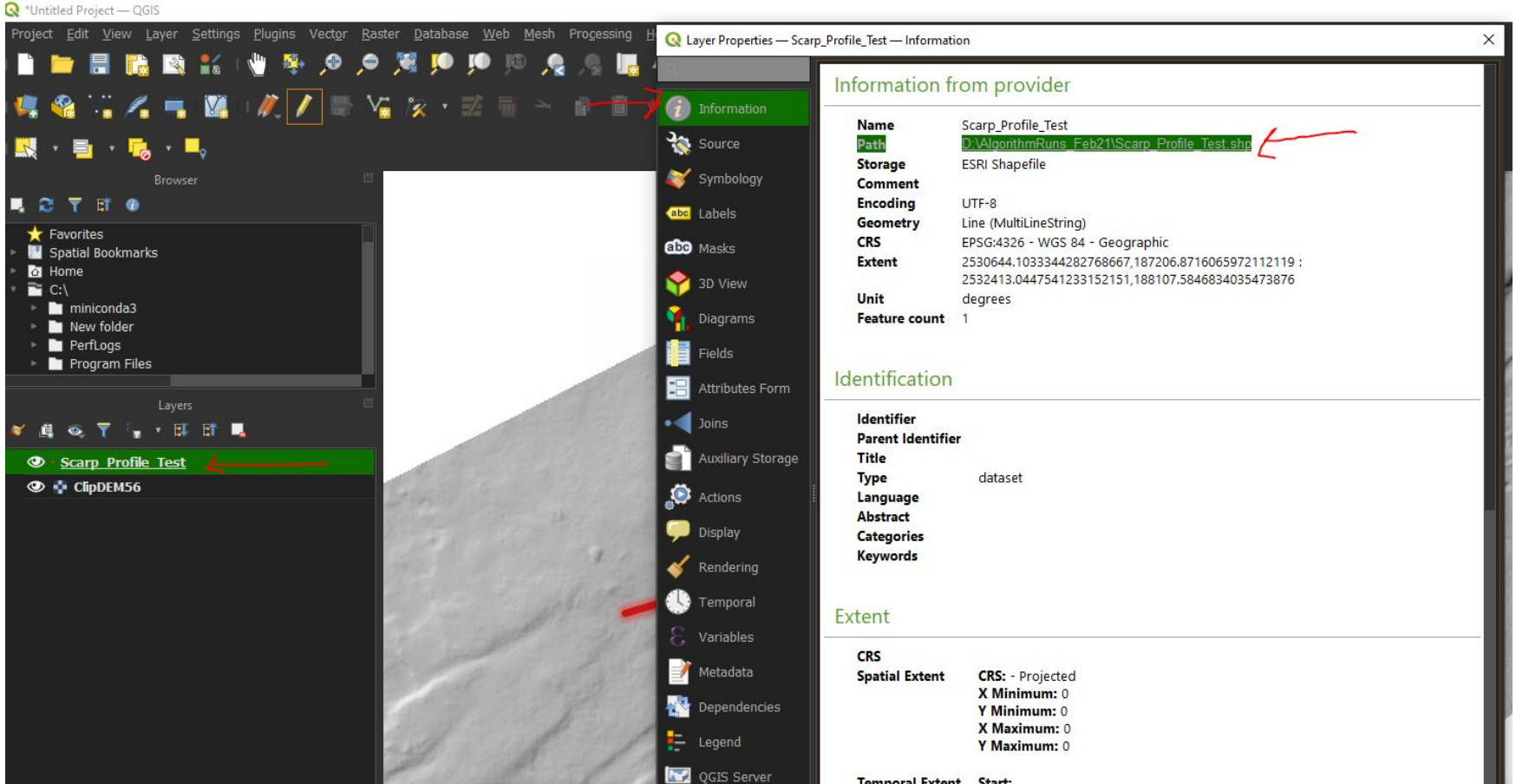


Should only need to modify these three lines by entering the paths to your DEM raster, the Drawn Profile polyline, and specifying how wide the transects should be and how spaced apart they are

Untitled-0 | *WorkingDL_modifies3_3.py

```
import os, sys, math, string, random,tempfile
import processing as st
import networkx as nx

#Author: Maddie Schwarz
# This script is dependent on the Geometric Attributes Plugin by Dr. Bjorn Nyberg
#github link: https://github.com/BjornNyberg/Geometric-Attributes-Toolbox/tree/master/geometric_attributes


#Enter Path to DEM raster
rlayer = QgsRasterLayer(r'')

#Enter path to drawn polyline
layer = QgsVectorLayer(r'')

#Enter the desired spacing for transects
tran_dist = 5 #means code will create transects along polyline that are 5 meters apart
tran_width = 50 #means each transect is 50m long

########## NO NEED MODIFY CODE BELOW: ############################################################

#Create points along input polyling
pt_params = {'INPUT':layer, 'DISTANCE':1,'START_OFFSET':0, 'END_OFFSET':0, 'OUTPUT':'memory:'}
poly_pts = st.run("native:pointsalonglines",pt_params,  feedback=None)
```

To quickly get your layer paths, right click on the layers, go to the *Source* tab and copy paste the paths in the script

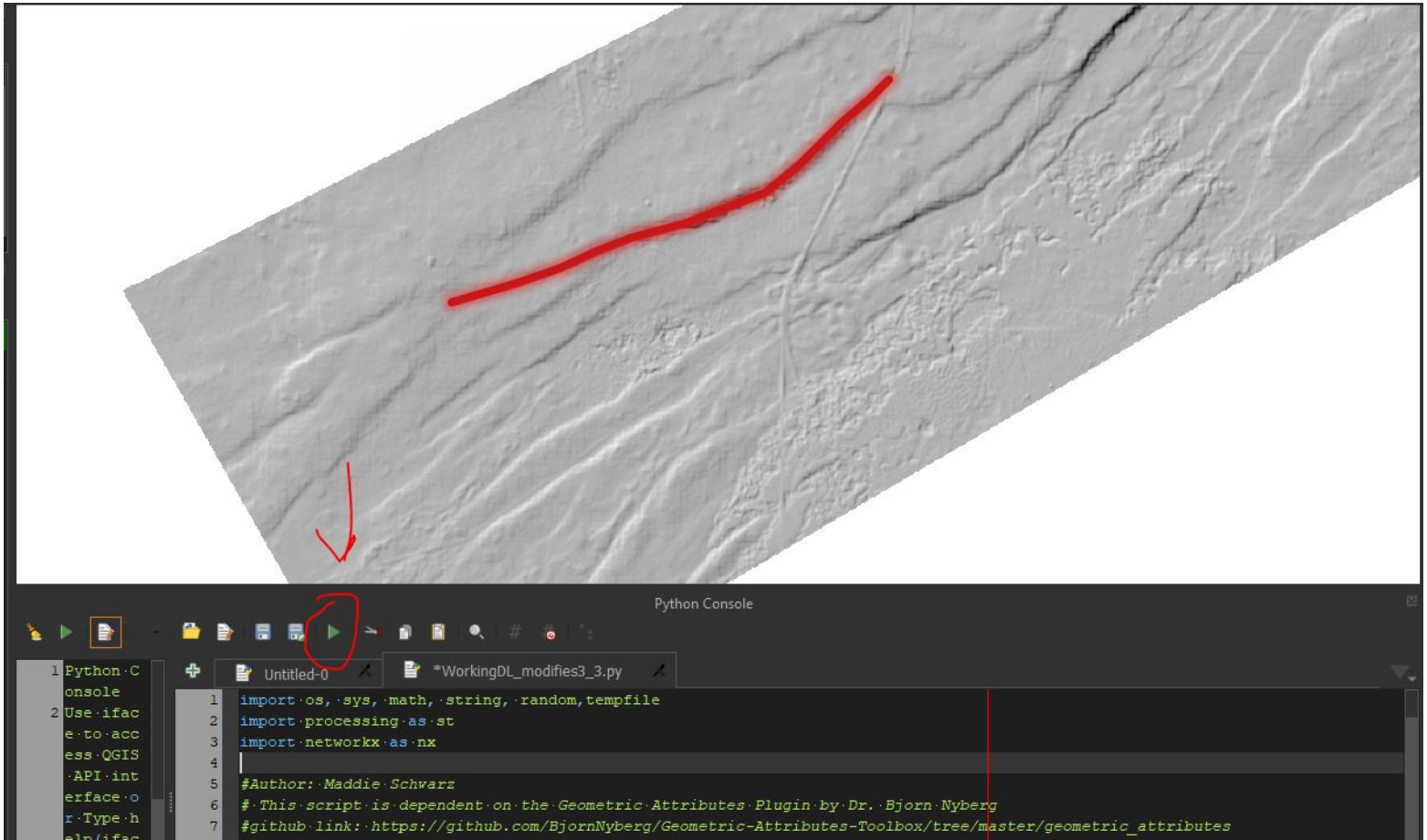


Pasted paths should look something like this:

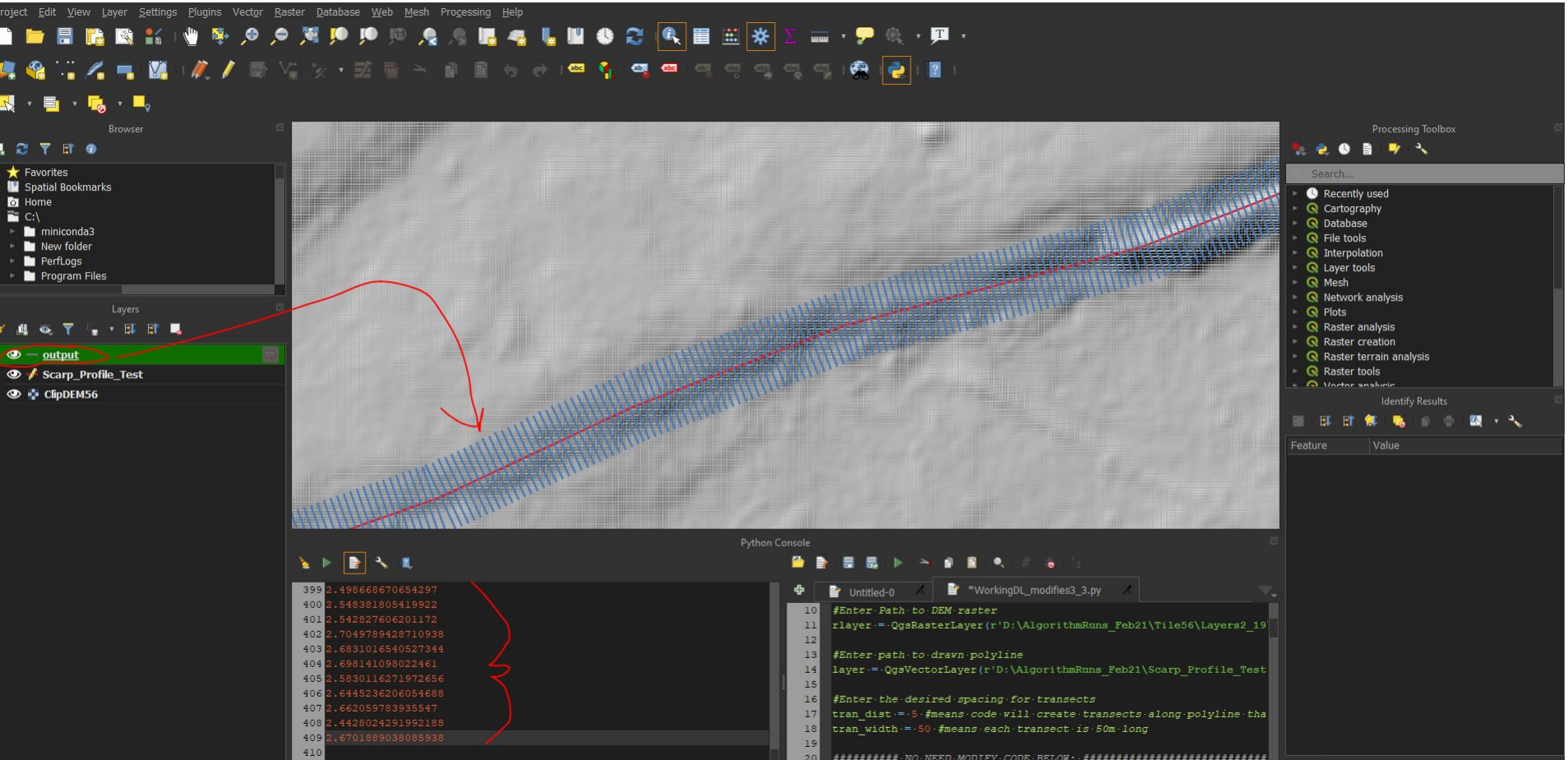
Untitled-0 | *WorkingDL_modifies3_3.py

```
import os, sys, math, string, random,tempfile
import processing as st
import networkx as nx

#Author: Maddie Schwarz
# This script is dependent on the Geometric Attributes Plugin by Dr. Bjorn Nyberg
#github link: https://github.com/BjornNyberg/Geometric-Attributes-Toolbox/tree/master/geometric_attributes


#Enter Path to DEM raster
rlayer = QgsRasterLayer(r'D:\AlgorithmRuns_Feb21\Tile56\Layers2_19\ClipDEM56.tif')

#Enter path to drawn polyline
layer = QgsVectorLayer(r'D:\AlgorithmRuns_Feb21\Scarp_Profile_Test.shp')

#Enter the desired spacing for transects
tran_dist = 5 #means code will create transects along polyline that are 5 meters apart
tran_width = 50 #means each transect is 50m long

```

Now press the Green arrow to run the code



Code should run and print displacement values in the terminal; also will add a shapefile of the transects to the map



Highlight the printed displacement values and copy paste into an excel column

```
e·info
Security·warning:·typing·commands·from·an·untrusted·source·can·harm·your·computer
>>>·exec(open('C:/Users/schwa/AppData/Local/Temp/tmp9no9l_8x.py'.encode('utf-8')).read())
number·of·raster·bands:·1
1.4835376739501953
1.3854751586914062
1.5073833465576172
1.822946548461914
2.1170291900634766
2.4755306243896484
2.943115234375
3.3672733306884766
3.7693939208984375
3.979928970336914
4.373601913452148
4.827421188354492
5.124547958374023
5.152912139892578
5.503395080566406
5.988986968994141
6.509218215942383
7.243162155151367
7.670291900634766
>>>
```

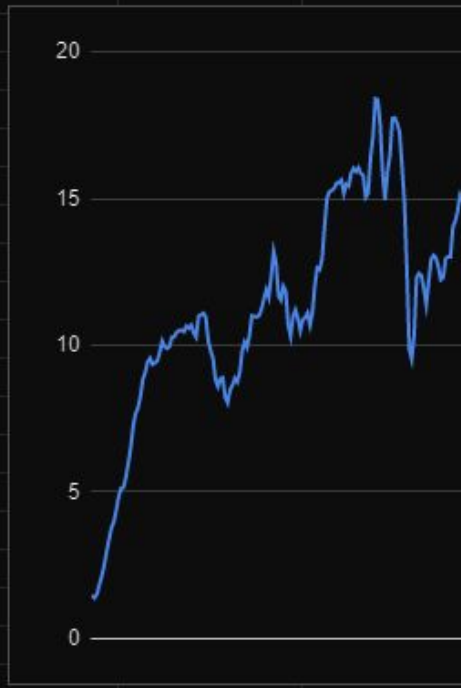
Untitled spreadsheet

File Edit View Insert Format Data Tools Add-on

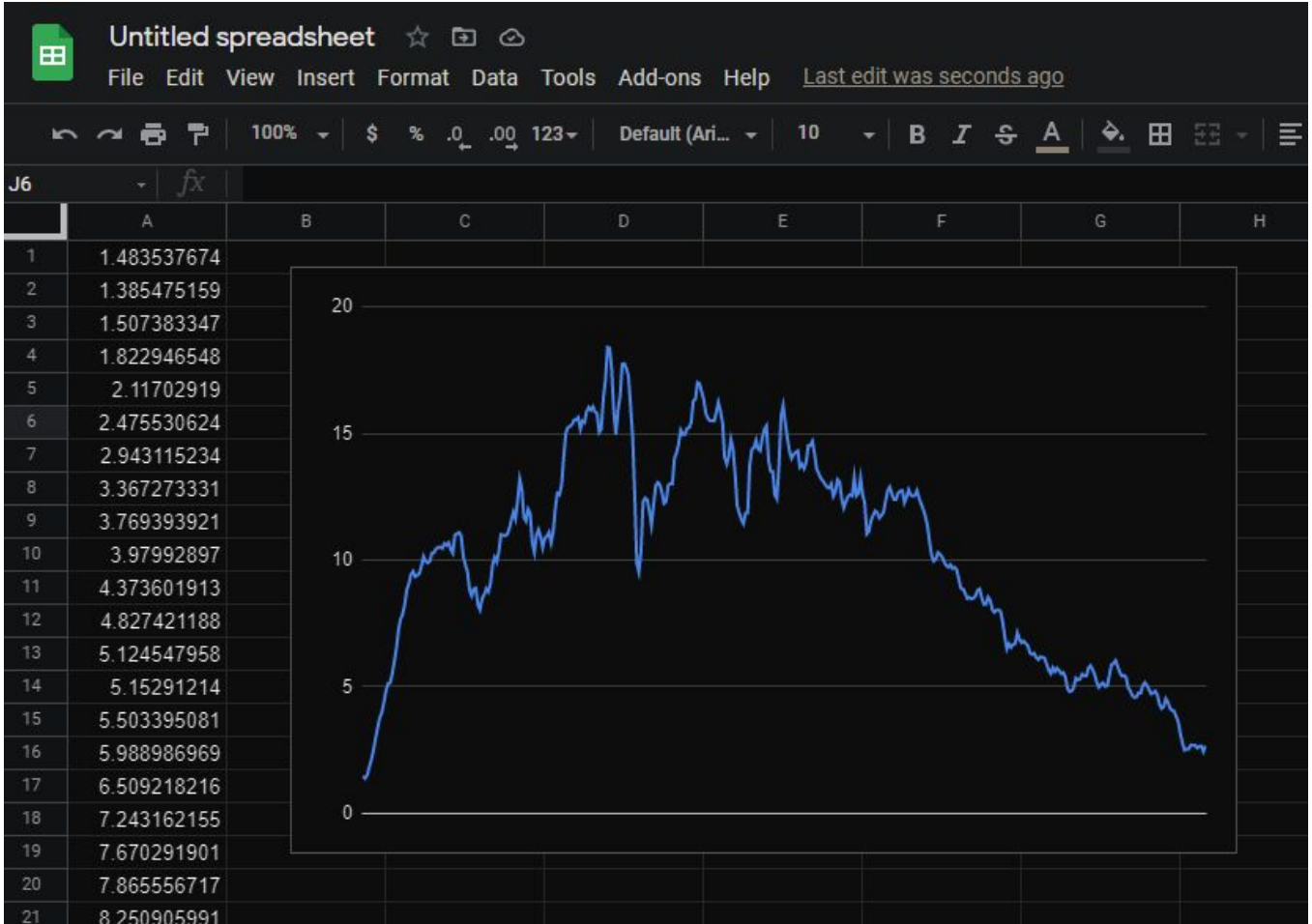
100% $ % .0 .00 123 Default

J6

	A
1	1.483537674
2	1.385475159
3	1.507383347
4	1.822946548
5	2.11702919
6	2.475530624
7	2.943115234
8	3.367273331
9	3.769393921
10	3.97992897
11	4.373601913
12	4.827421188
13	5.124547958
14	5.15291214
15	5.503395081
16	5.988986969
17	6.509218216
18	7.243162155
19	7.670291901



Highlight column and insert chart and you get a profile



To get scarp length on x axis, create column that increases per the transect distance specified

Length (m)	Throw (m)
0	1.63545227
=B2+10	1.4908905
20	1.62434006
30	2.24407578
40	2.73412514
50	4.7118206
60	5.68340683
70	5.05438995
80	6.65823555
90	6.64239121
100	7.20480537
110	7.51750374
120	10.0867062
130	11.2479134
140	11.1054268
150	11.3726044
160	12.2217464


```
#Enter the desired spacing for transects
tran_dist = 5 #means code will create transects along polyline
tran_width = 50 #means each transect is 50m long

########## NO NEED MODIFY CODE BELOW: ##########################
```

Important note:

The profile will sample in the direction that you drew the along strike polyline

In this example, the profile reads left to right