Archaeo-Astro Insight

User Manual

Installation and Use Guide

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Installation Steps

1. Install **QGIS** (Script tested for version 3.18) https://qgis.org/en/site/forusers/download.html
   a. There are two options to installing QGIS: **standalone** or through the **OSGeo4W** package
   b. Pick **Standalone** if you only wish to install QGIS

   c. Pick the **OSGeo4W** if you want to install a whole package of GIS applications (check their website for more info https://www.osgeo.org/projects/osgeo4w/)

2. Install **R** (any version) https://cran.r-project.org/bin/windows/base/

3. Extract the files from **Archaeo-Astro Insight.rar**, right-click on the file and click **Extract to Archaeo-Astro Insight/**
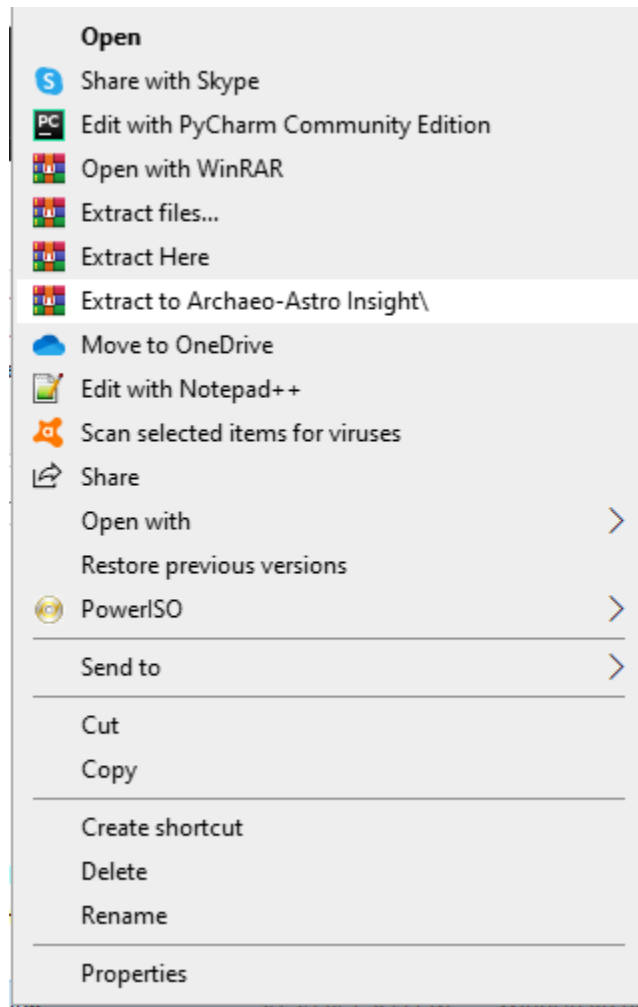
Open

Share with Skype

Edit with PyCharm Community Edition

Open with WinRAR

Extract files...

Extract Here

Extract to Archaeo-Astro Insight\

Move to OneDrive

Edit with Notepad++

Scan selected items for viruses

Share

Open with   >

Restore previous versions

PowerISO   >

Send to   >

Cut

Copy

Create shortcut

Delete

Rename

Properties

4. Open **QGIS** and open the script
   a. Open the **QGIS Python Console**

   b. Click the **Show Editor** button


```
1 Python Console
2 Use iface to access QGIS API interface or Type help(iface) for more info
3 Security warning: typing commands from an untrusted source can harm your computer
4
```
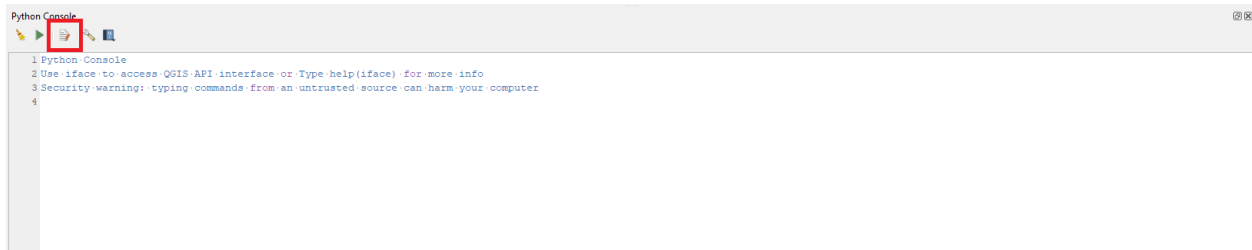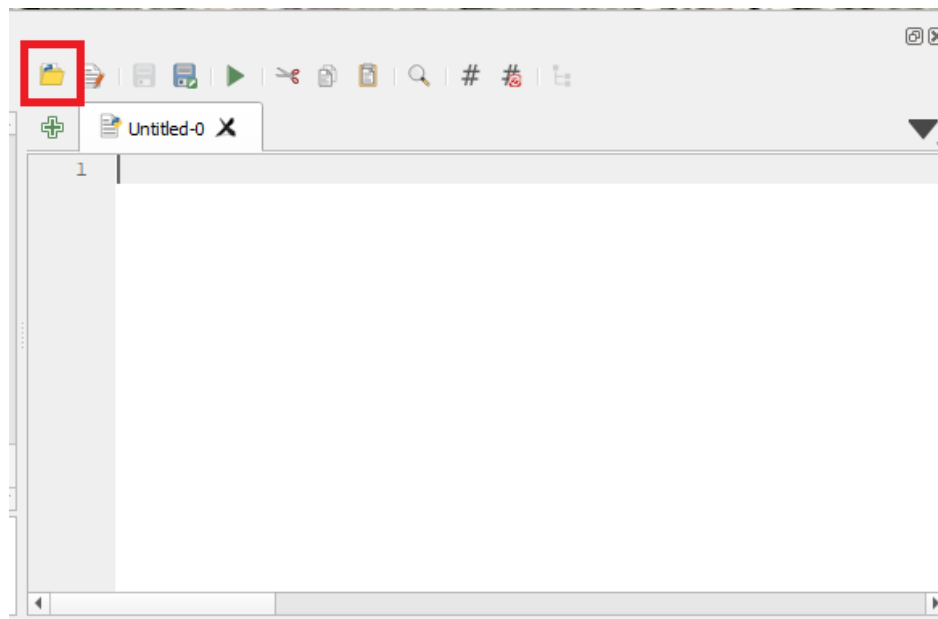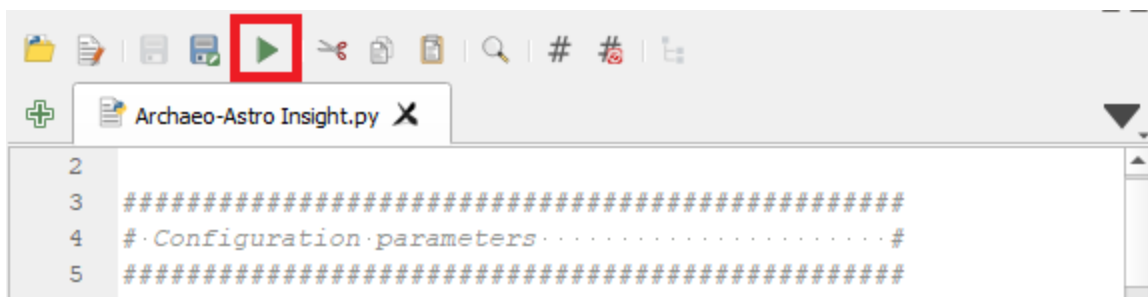
   c. Click the **Open Script...** button

   d. Go to the folder where you saved the script and select **get_path.py**

5. Now press the **Run Script** button


```
2
3 ################################################
4 # Configuration parameters ..................#
5 ################################################
```

6. Repeat step 5 but for **Archaeo-Astro Insight.py**

7. Now we must do an inital configuration. On the toolbar, you will see 3 buttons. Press the **Set Params** button. A window will pop up. Following is an explanation of all the parameters:

a. **Results Path** – this is the default location where you save the data output (can be any existing folder you want)

b. **Rscript Path** – this is the path to Rscript, it comes with the R installation. Examples of paths depending on your Operating System (the R version differs based on your installation):

    i. **For Windows:** C:/Program Files/R/R-4.0.5/bin/x64/

    ii. **For MacOS:** /Library/Frameworks/R.framework/Versions/4.1/Resources/ or /usr/local/bin/

    iii. **For Linux:** usr/local/bin/ or /usr/bin/

c. **Script Sleep** – this value is used to determine the amount of time the script must wait before it can access the generated data. If the value is too small, it might fail. Check **Possible Errors** section for more details.

d. **Download Map** – this specifies if you want to download a Google Maps satellite image to your project. By default this is checked, if you don't want a new layer when you run the script, uncheck it and delete the downloaded layer

e. **Line Width –** this specifies how thick you want the line you draw on the map to be (more on this on the user guide)

f. **Map Type –** the type of satelite image to download

g. **This setup is only necessary on the first use, you can use the script without this step on future occassion and only use it if you wish to change something.**

User Guide

There are two functionalities to this script: going to specific coordinates on the map and computing declination.

When you run the script, these three buttons should appear on your toolbar:

If you click **Go to Coords** a window will open where you can enter the coordinates for a point on the map. The order of the coordinates is **latitude,longitude**, without any spaces. Coordinates are also taken with 4 decimal points.
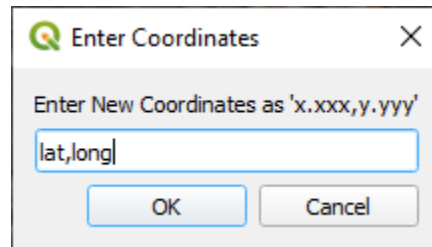

Example: Coordinates for Stonehnge

1. The simplest way to obtain coordinates is from Google Maps (https://www.google.com/maps)
2. Enter the name of the location, in our case Stonehenge and then click on a point on the map close to the desired location
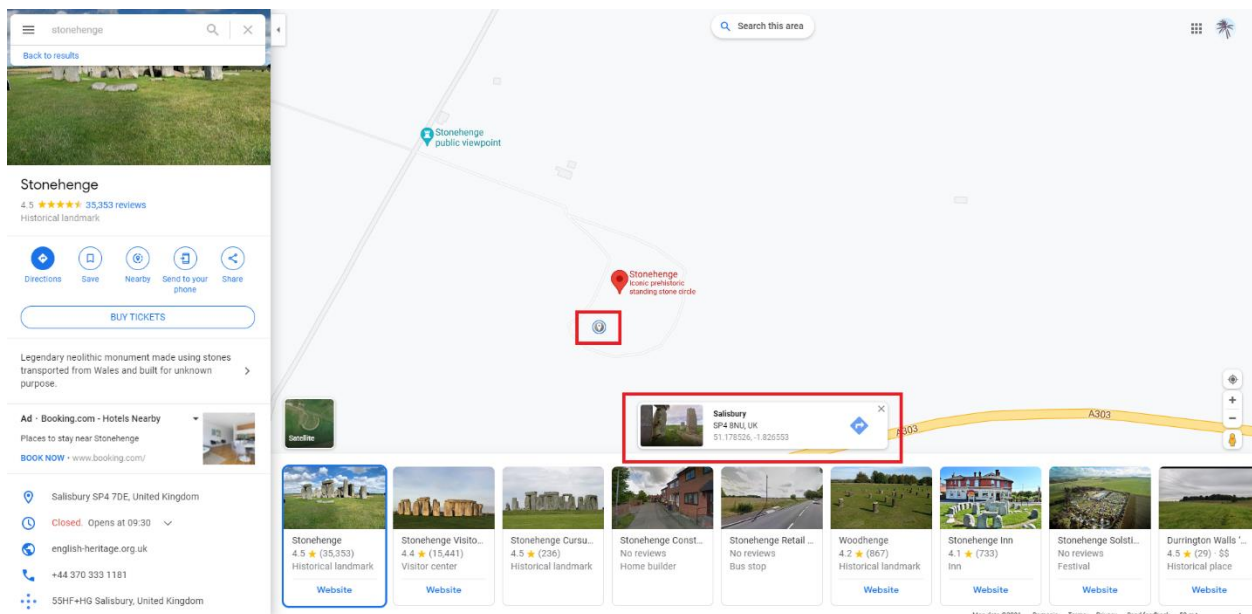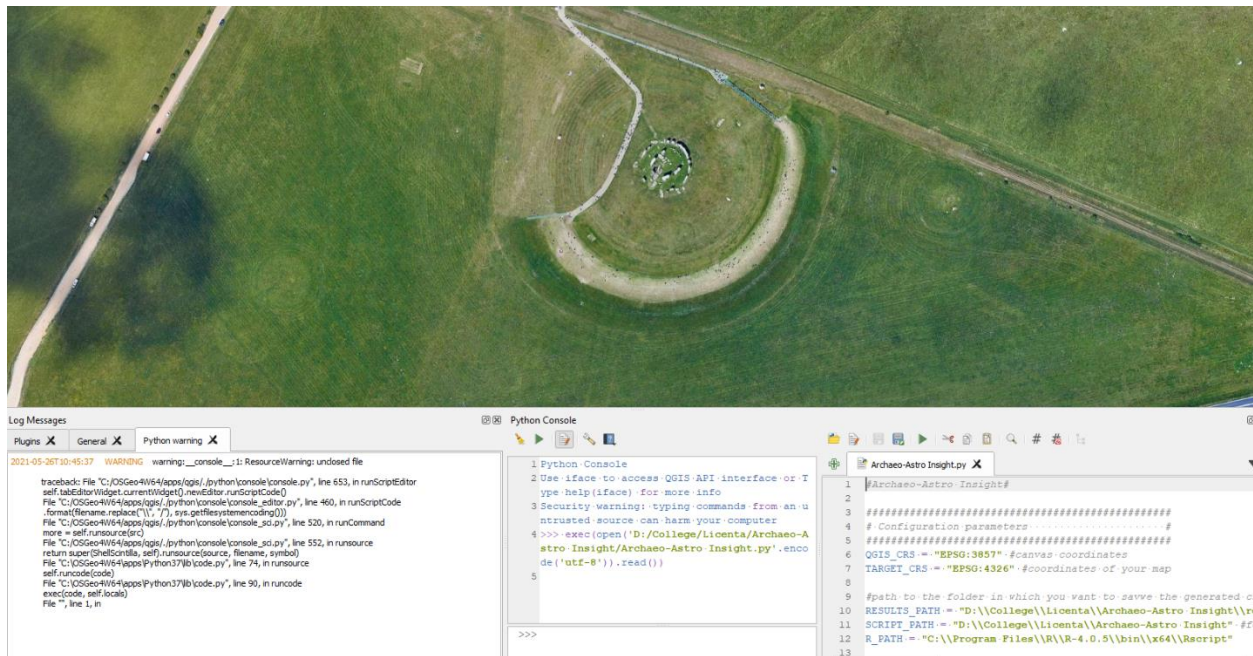
3. Click the coordinates in the rectangle at the bottom of the screen (see previous picture) and then copy the coordinates from the left side of the screen (decimal ones, not the ones in degrees, minutes, seconds)
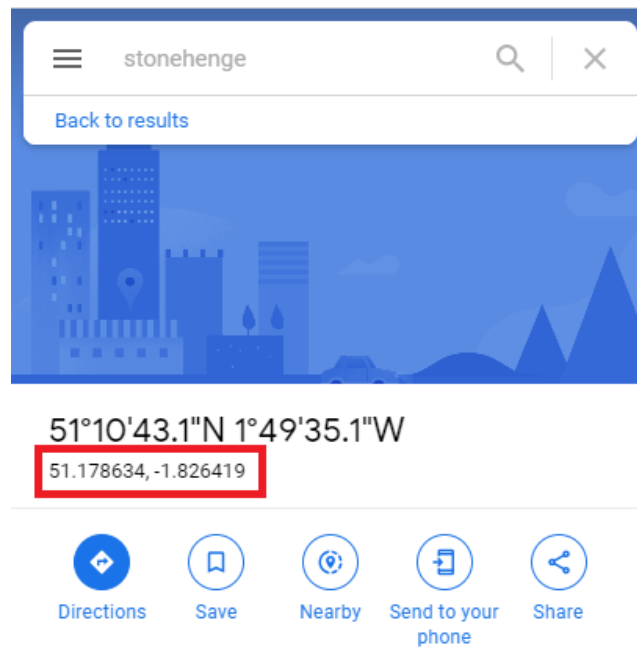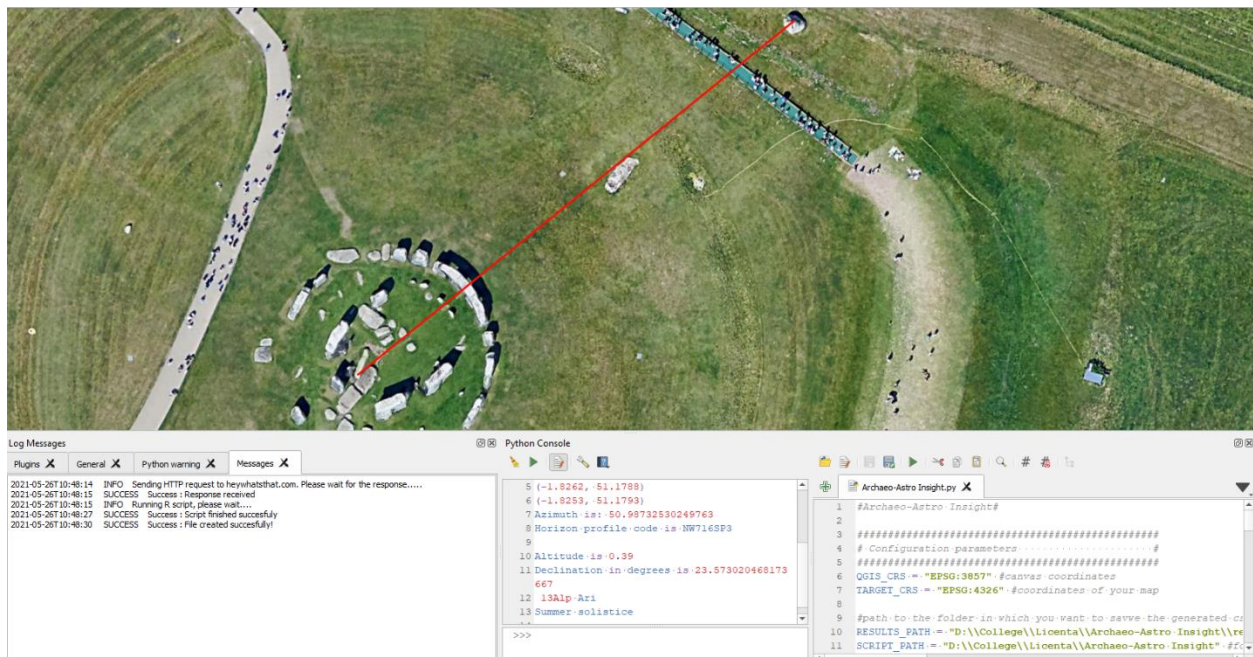

4. Copy these coordinates and paste them into the Enter Coordinates window in QGIS
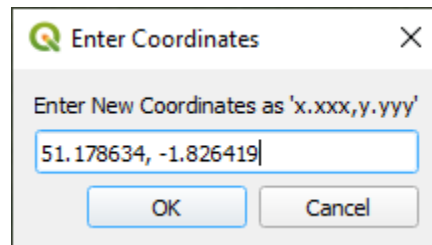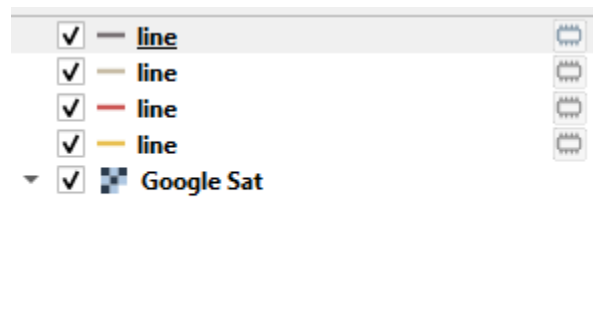
5. You're at Stonehenge now!

If you click **Start Tool**, the current tool will change to the one implemented by the script which will allow you to compute the declination of a line. Simply click on two points on the map and wait for the values to be computed.

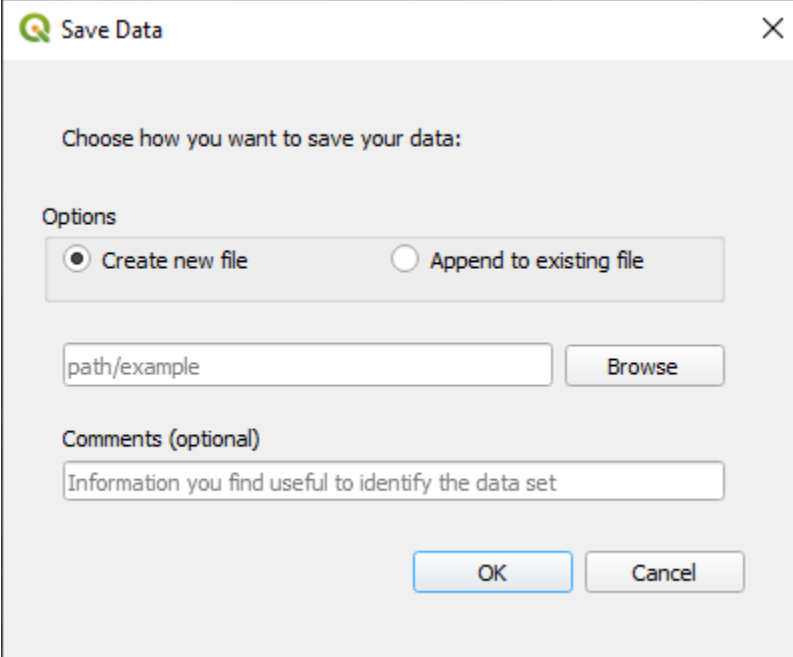Lines drawn on the map are saved as separate layers:

If you hover over a line for a few seconds, you can see the coordinates of the points. You can also delete any line without affecting the other lines.
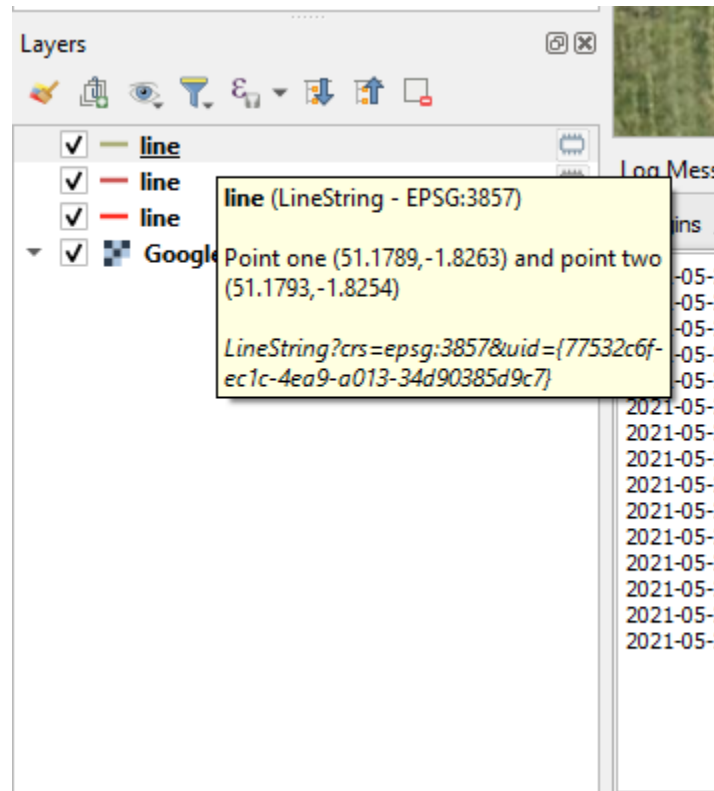
If you want to change the line width, change the value of the **Line Width** parameter from the **Set Params** button.
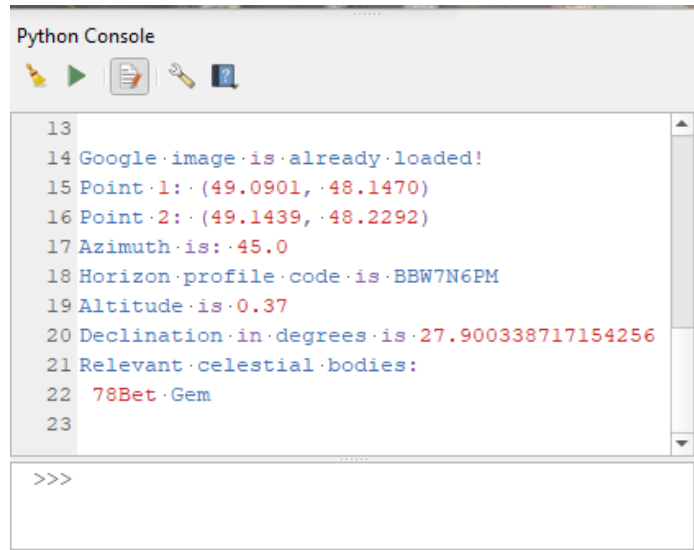
At the end, you will be given the option to save the results as a .csv file. The results are also visible in the console as they are generated.

Description of functionalities:

a. **Create new file** – if this is checked, you will select the path where you wish to save your data and a **new .csv** file will be created continuining it. The default saving path is the one set **in Set Params** (see installation)

b. **Append to existing file** – if this is checked, you will select an already existing .csv file and add the newest data at the end of that file. **You can only select .csv files!**

c. **Comments** – you can add comments specific to the data you wish to save. You can leave this blank, as it is optional.

If you click cancel, the data will be discarded and you will have to draw the line again or copy the data from the console yourself.

Python Console

```
13
14 Google·image·is·already·loaded!
15 Point·1:··(49.0901,·48.1470)
16 Point·2:··(49.1439,·48.2292)
17 Azimuth·is:·45.0
18 Horizon·profile·code·is·BBW7N6PM
19 Altitude·is·0.37
20 Declination·in·degrees·is·27.900338717154256
21 Relevant·celestial·bodies:
22  78Bet·Gem
23
```

>>>

Possible Errors

When generating the altitude of the point, the script gets the information from HeyWhatsThat.com automatically. Unfortunately, sometimes the data is not ready in time and the script cannot compute the value. This will cause the script to fail. In this case, you can try and increase the **Script Sleep** value from **Set Params** and **RE-RUN the script** (as described in the installation steps). This will give more time for the data to be generated.