TUTORIAL : Control your DWARF II with Stellarium

What you need ?

Stellarium for PC : https://stellarium.org

Or

Stellarium + on mobile (Tested only on Android)

The plugin : DwarfII_Stellarium_PluginAPIV2.zip

Python3

Stellarium PC

Install Stellarium and Configure the Telescope Control Plugin :

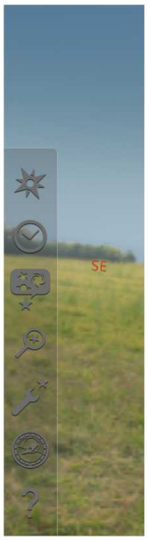
The web site is: https://stellarium.org

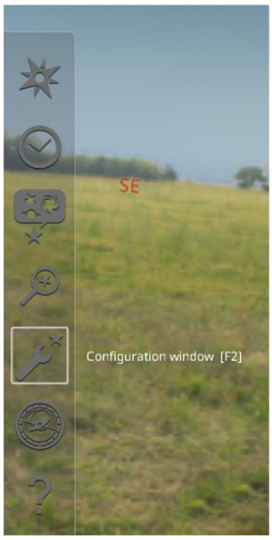
Download the archive for your system (Linux, Windows)

And Install the program, it’s straightforward

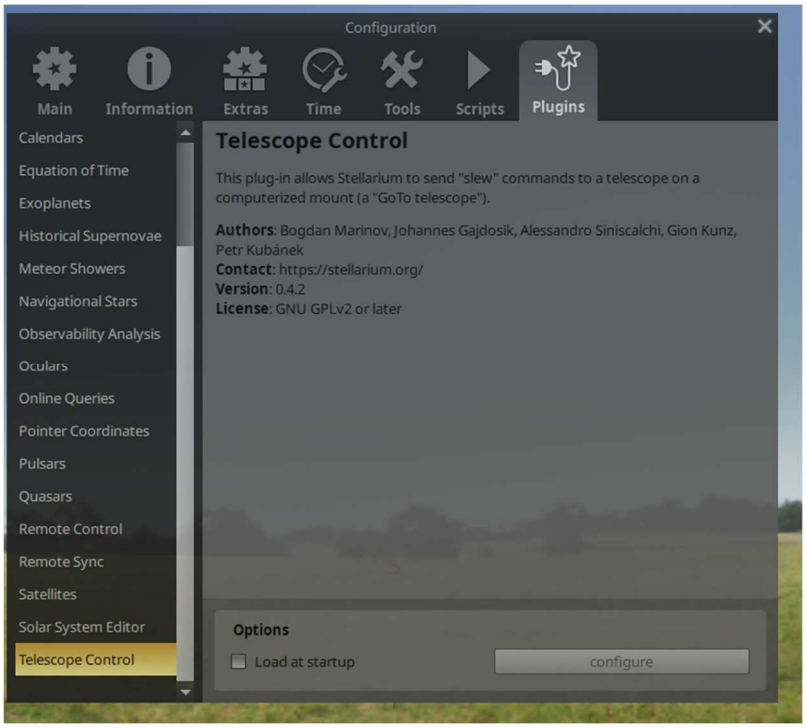
Run it

Point your mouse on the down left corner to the control bar, and select the fifth icon or F2.

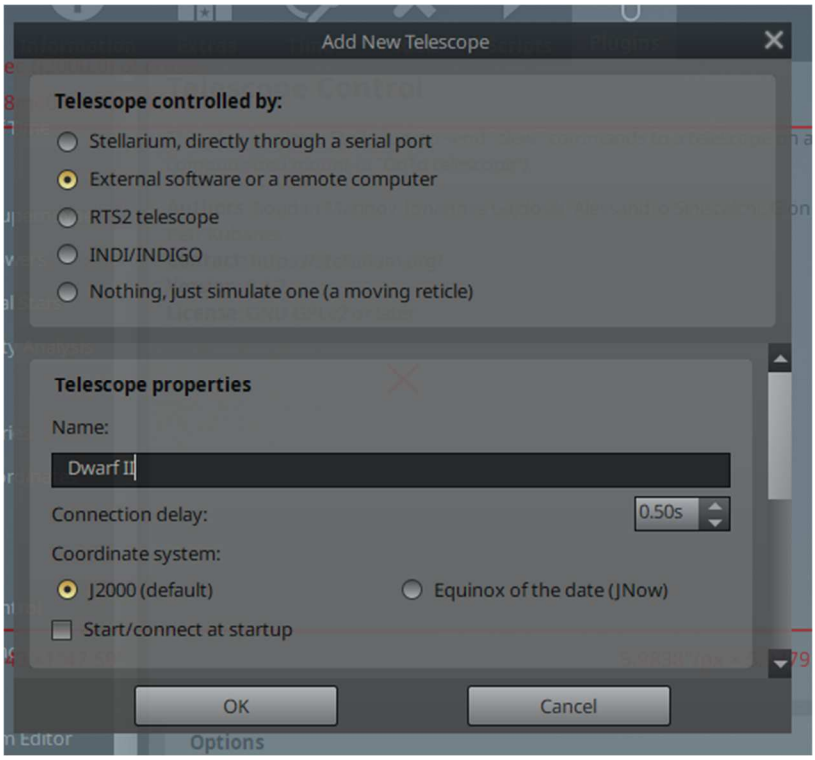


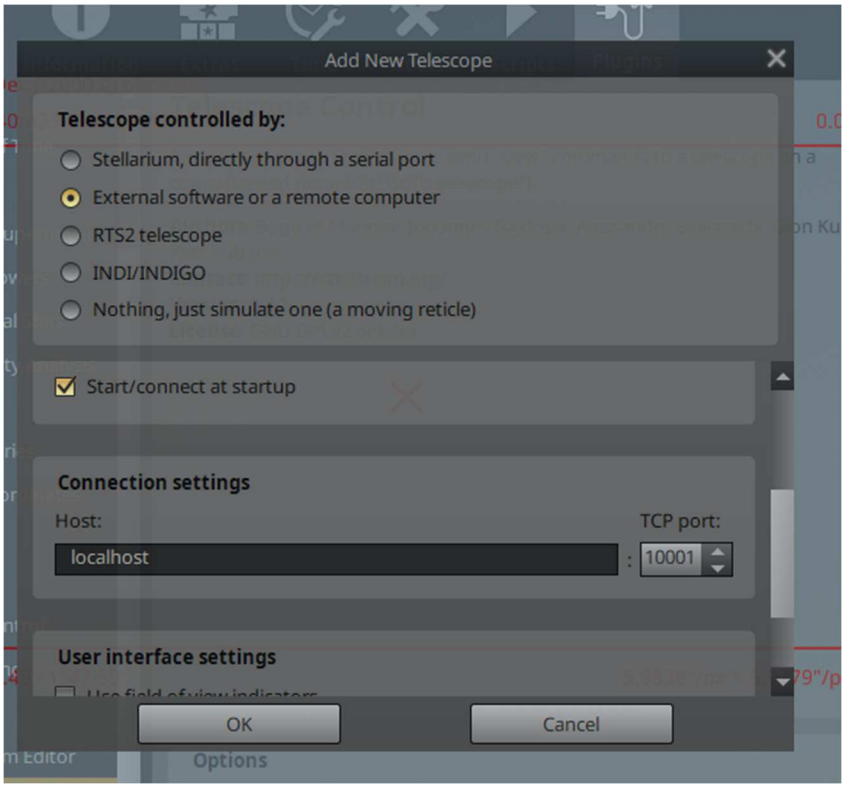


This will open the configuration panel, go to Plugins, then select Telescope Control (last one of the list)
Check "load on startup" and restart Stellarium.



Go back to Telescope Control (F2) and hit the configuration button.
Add new Telescope and set it like this :



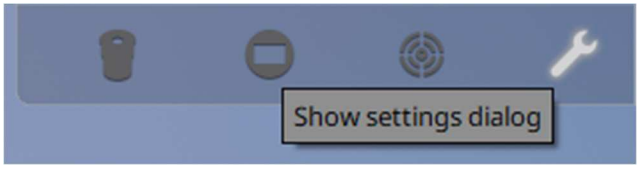


Then you cand add the Telescope view on the screen

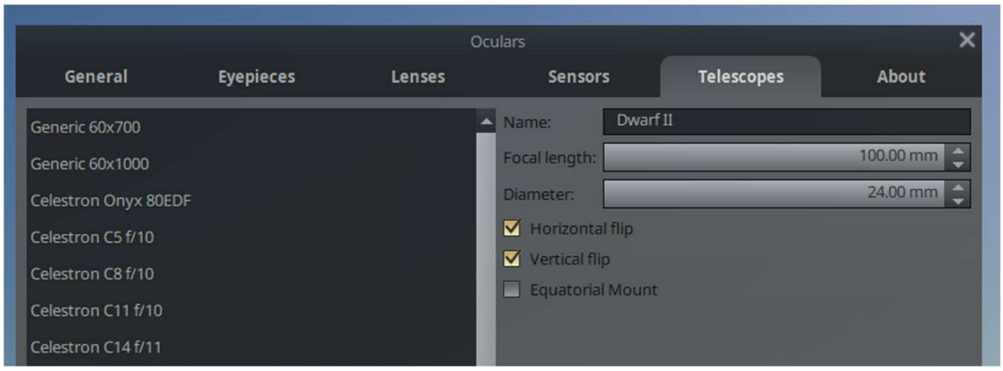
Like the excellent tutorial for **Stellarium** mobile app.

https://help.dwarflab.com/en-US/configuring-stellarium-fov-simulator-for-dwarf-ii-268655

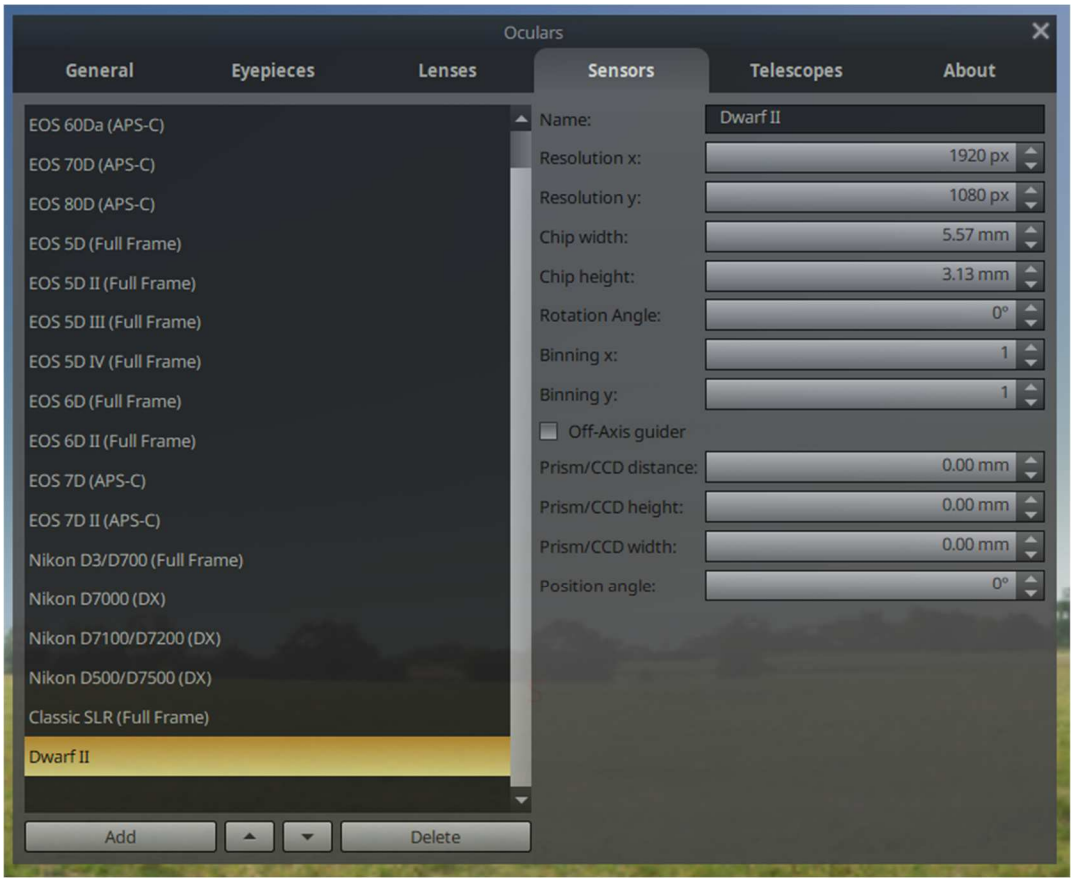
Open the setting dialog, with moving the mouth on the up right side



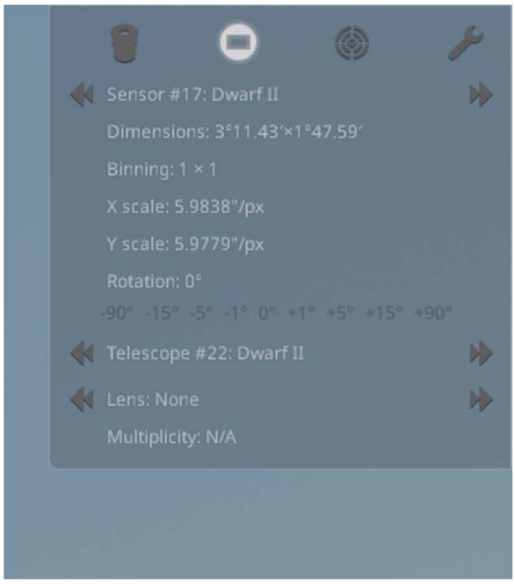
Fist Add a Telescope with the values 100 mm and 24 mm like here :



And Sensors Size :



Then Set it Active with the second icon of up right side like this :



You see on the screen the field of view in a red rectangle.

And That’s all for Stellarium PC, but you can also download catalog stars to see more stars in the extras menu.

Stellarium + Mobile App

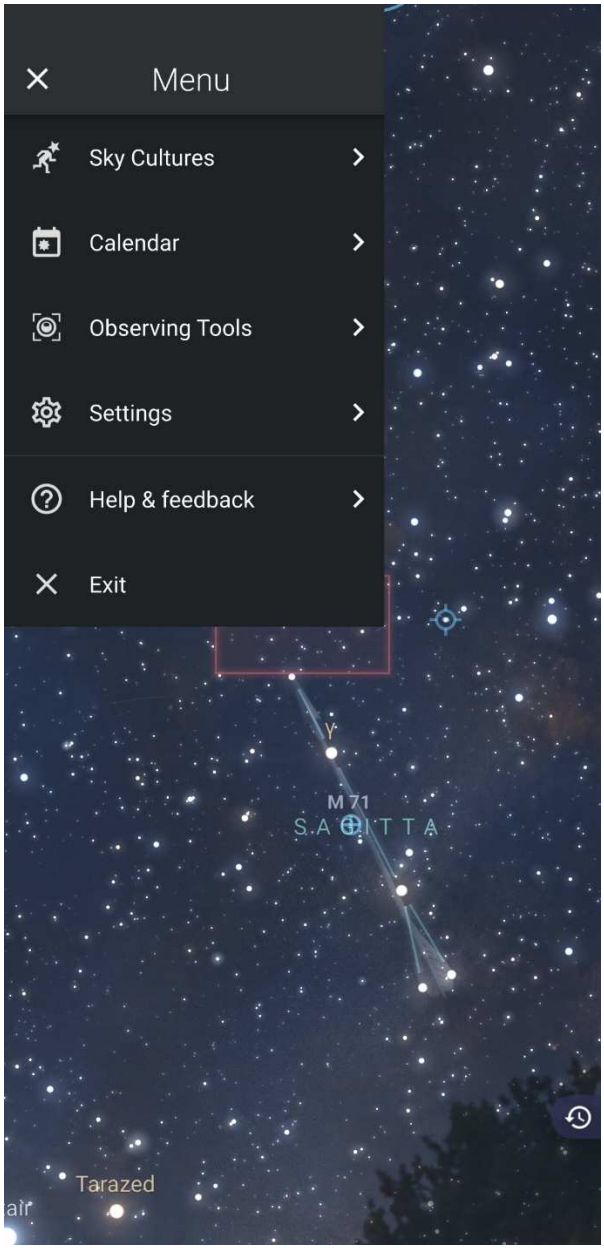
Install Stellarium on your phone, but you need the pay version Stellarium +

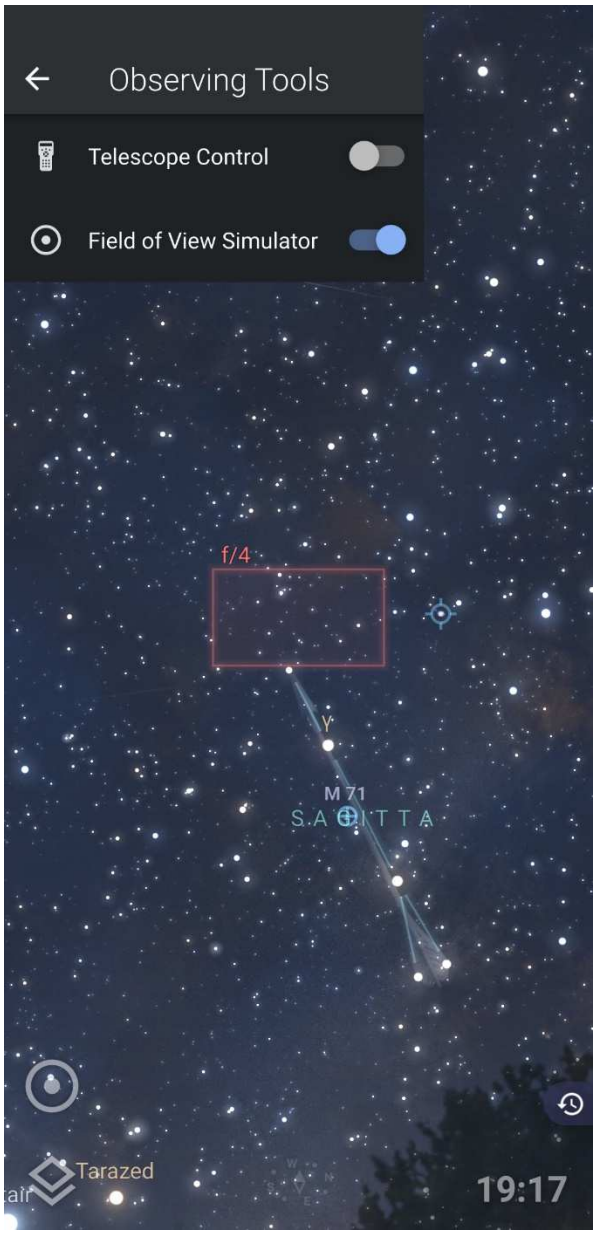
You can configuring Stellarium FoV Simulator for DWARF II with this excellent tutorial :

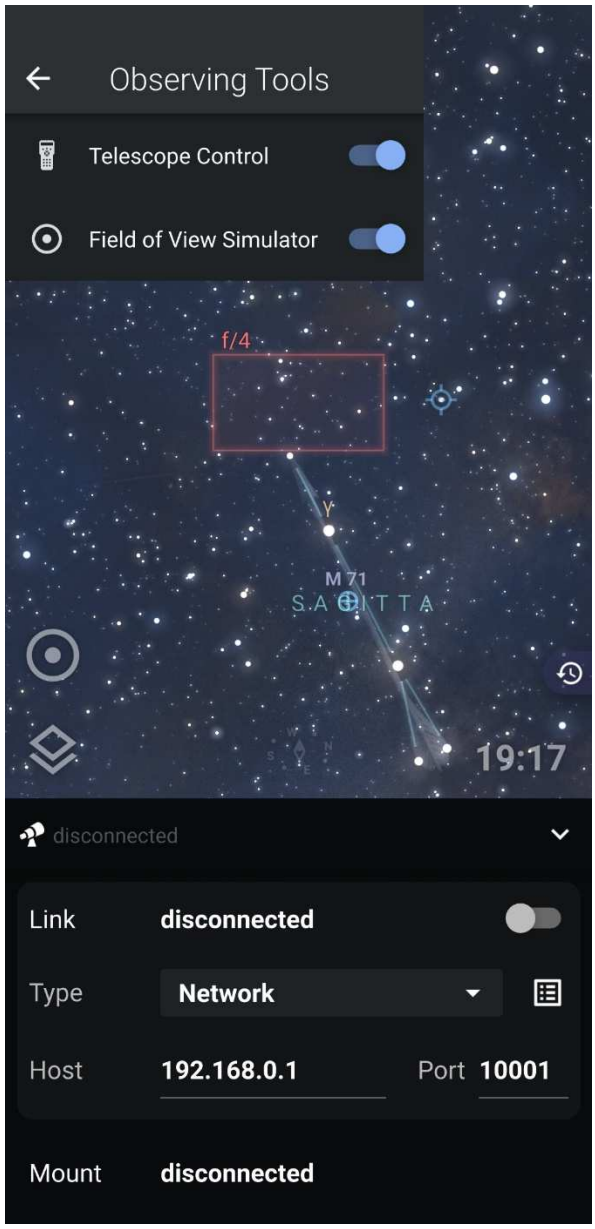
[Configuring Stellarium FoV Simulator for DWARF II (dwarflab.com)]

Than tyou will use the Telescope Control, it's also in the Observating Tool section

and Configure the Telescope Control Plugin :



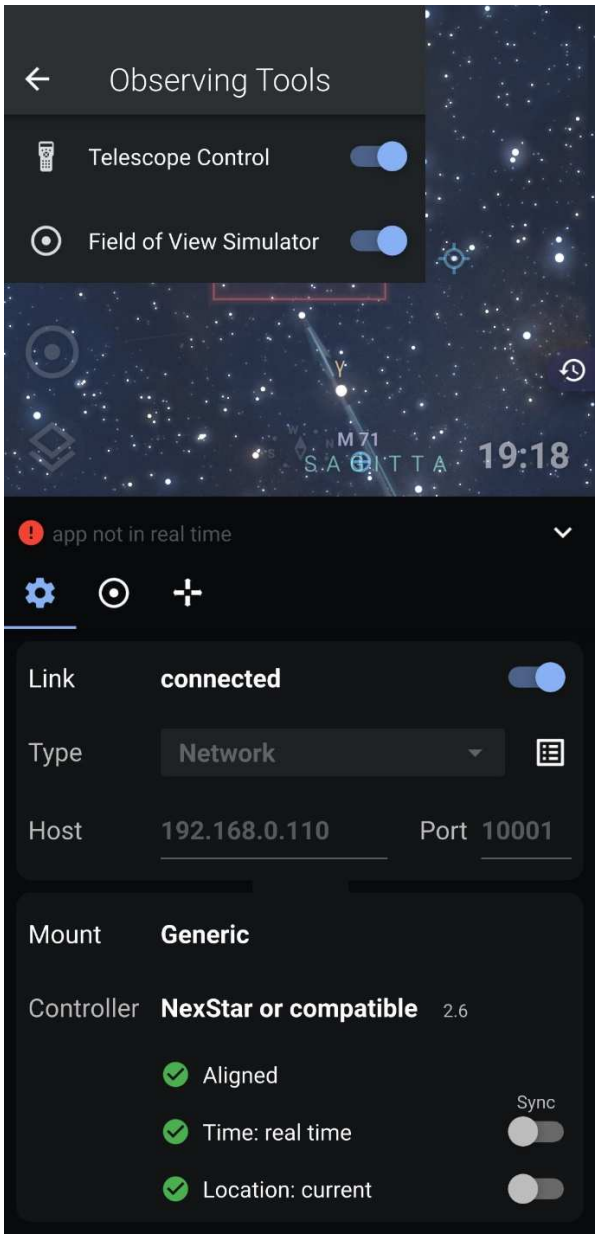


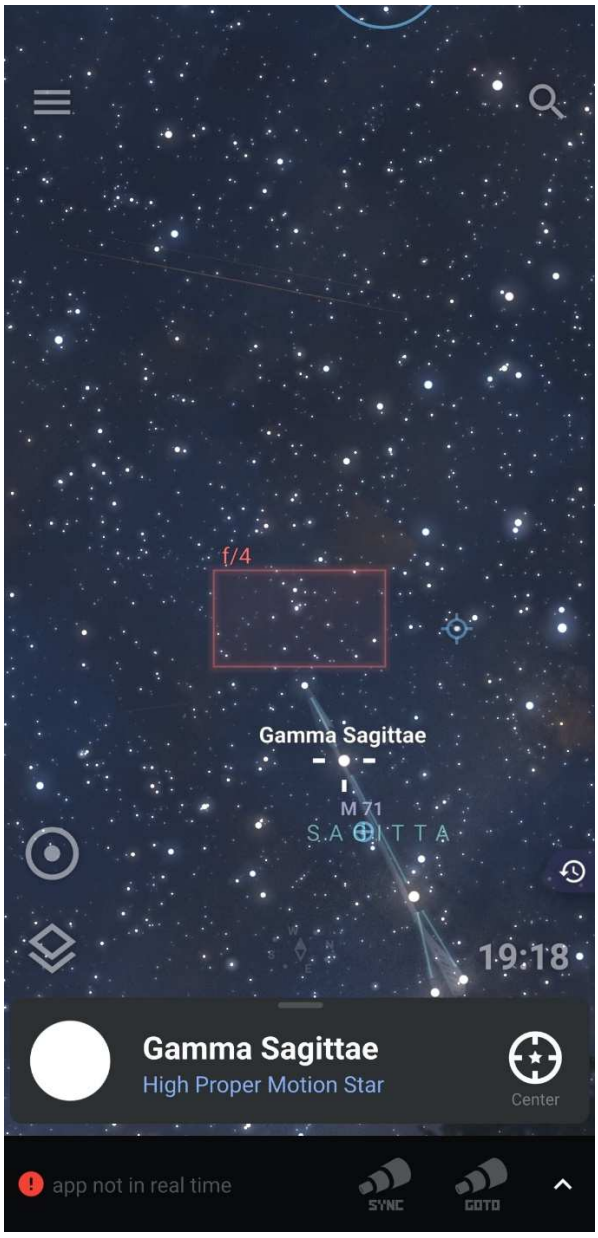


Enable the Telescope Control

Choose Network for Type, Port is 10001

Then You need to change the Host Ip , it’s the Ip of your PC where you will launch the plugin.





When your program is running, the Link will be connected, you will see the Goto button on the screen. Select an object on the screen, click on Goto, the Goto button will flash in red, the dwarf II will receive the command, and make a goto to the selected target.

Remark :

Due to the new API, only one device can send data to the dwarf II, so before using the stellarium app, you need to exit from the dwarflab app, close it and terminate it from task manager.

Then open the Stellarium App and make a goto, then close the Stellarium app and open the dwarflab App to change your settings and do the imaging session.

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Install Python on Windows

Go to the Microsoft Store and search Python 3.11

Install it, that's all for the moment

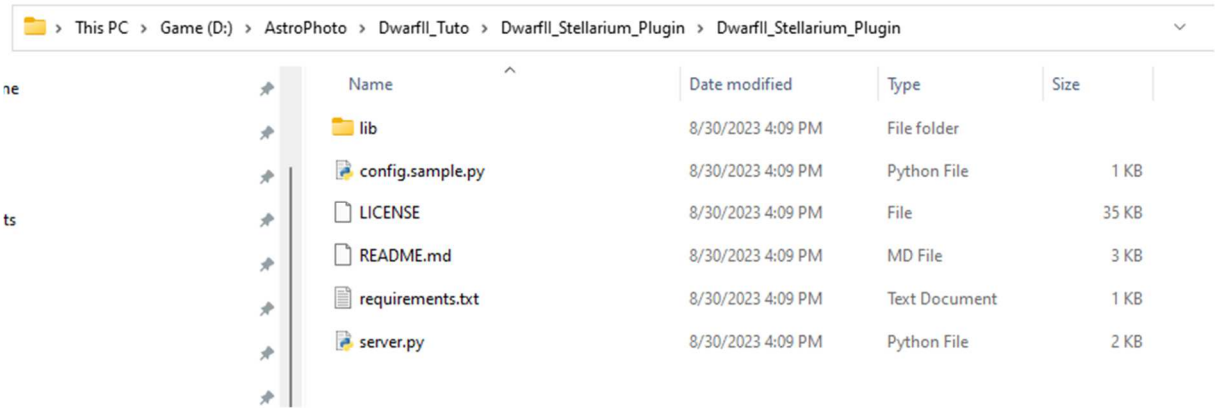
If you have errors when running it :

```
You may need to install pip with python get-pip.py
```

Installation of the plugin archive and how to configure it

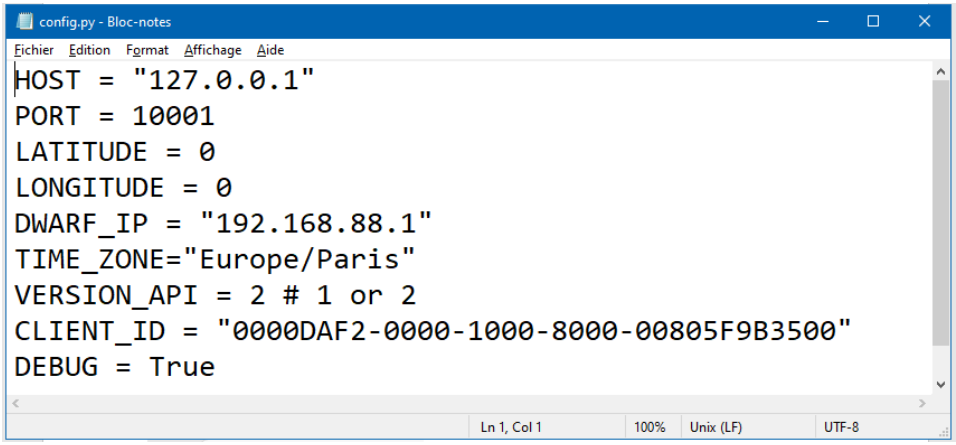
Download the zip file and copy in you working directory.

Extract all, this will create a sub directory, select this directory on the explorer and open it.



Copy the config.sample.py and rename it config.py

Open it with notepad



Don’t change the HOST, if you have set localhost on Stellarium, or set as the same value.

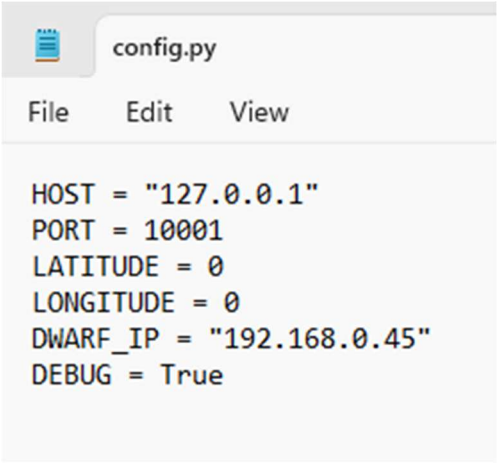
You need to find the IP address of your Dwarf II.

If you connect directly to it (no STA Mode), don’t change anything.

Otherwise, you need to find the IP address of the dwarf II on your local network, see your router or there is some program to do it like Fing.

Then write it in the line for DWARF_IP, mine is 192.168.0.45, I am in STA MODE.

So here is my configuration file

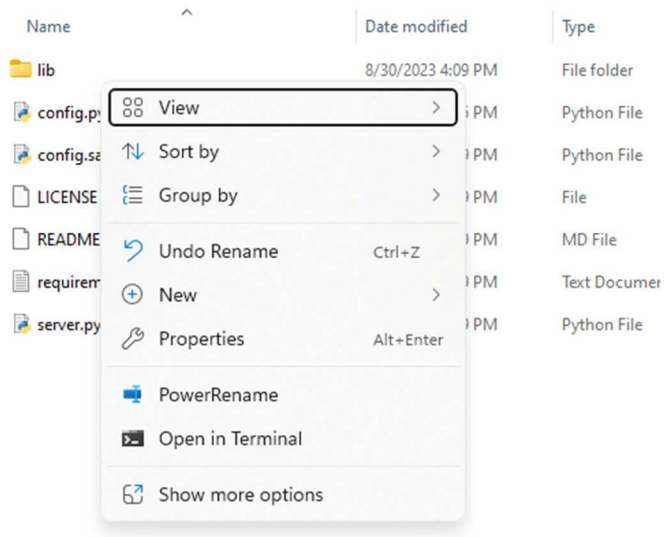


You need also to add your longitude and latitude in decimal number, check with google map (right click on a place to get it).

If you use Stellarium + Mobile, it’s better to set DEBUG = False, to see only the logs message for Goto operation.

Then you are OK to start up the plugin with the command line.

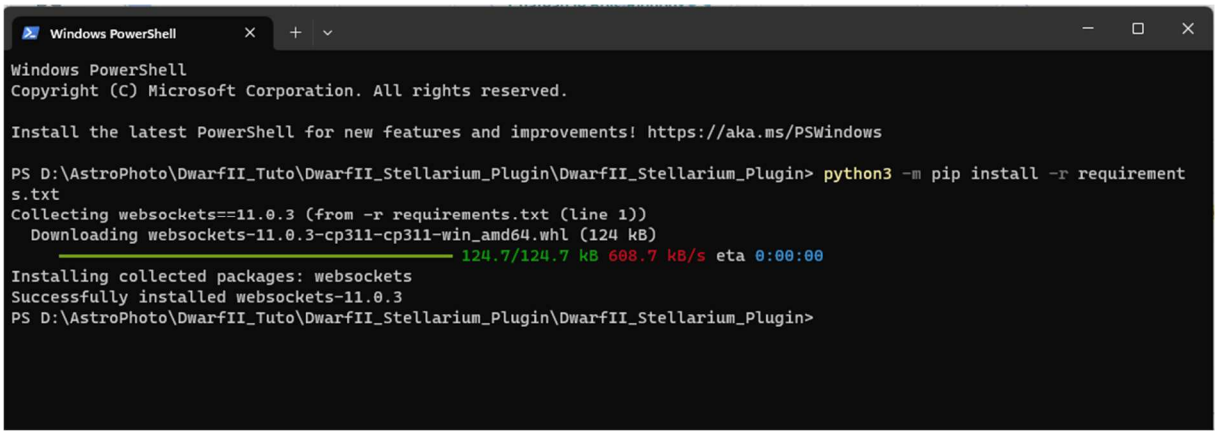
Save and Close the config file, Shift and Ctrl + Click on the explorer to bring the menu with Open a Terminal (windows 11)



This will open the terminal.

First thing to do is installing the library (just need once) by this command:

python3 -m pip install -r requirements.txt



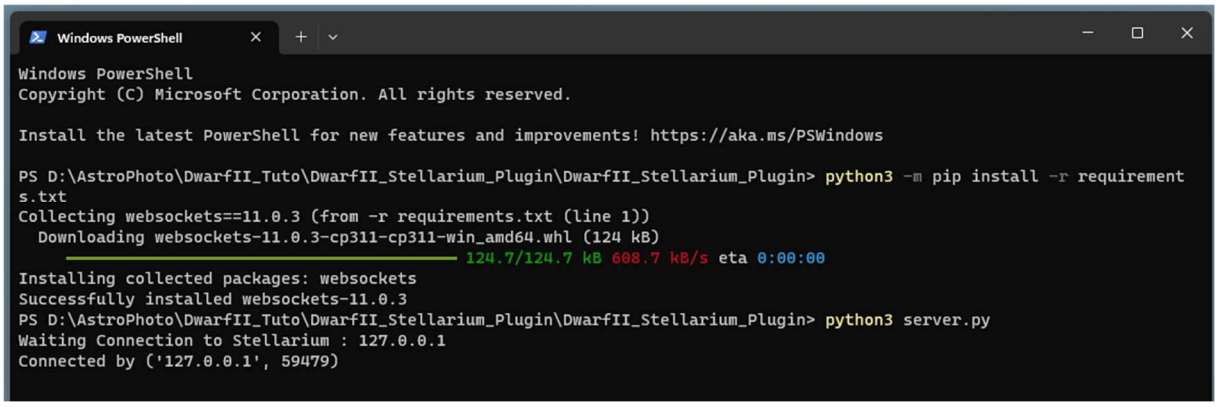
On Windows, you certainly have to run the following command if you have errors :

python3 -m pip install tzdata

Then we are go to launch the program, if all is well configured and Stellarium is running, we will see a connection!

So launch the program by this command:

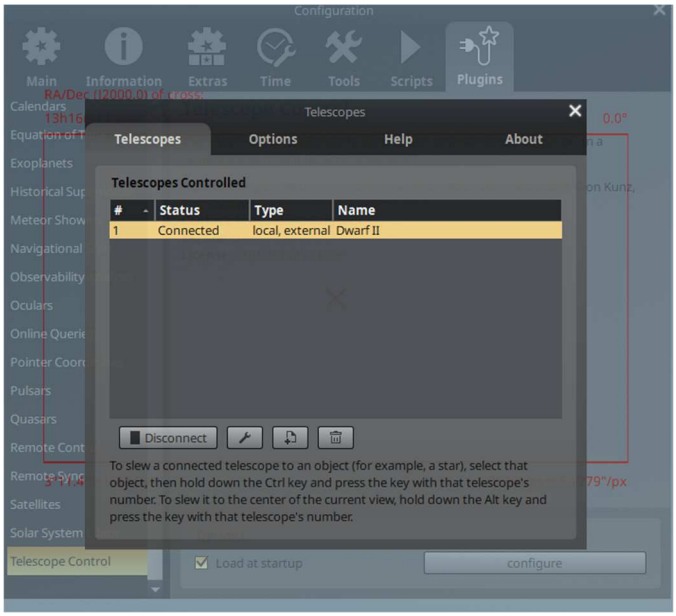
python3 server.py



On the plugin, you see it’s connected.

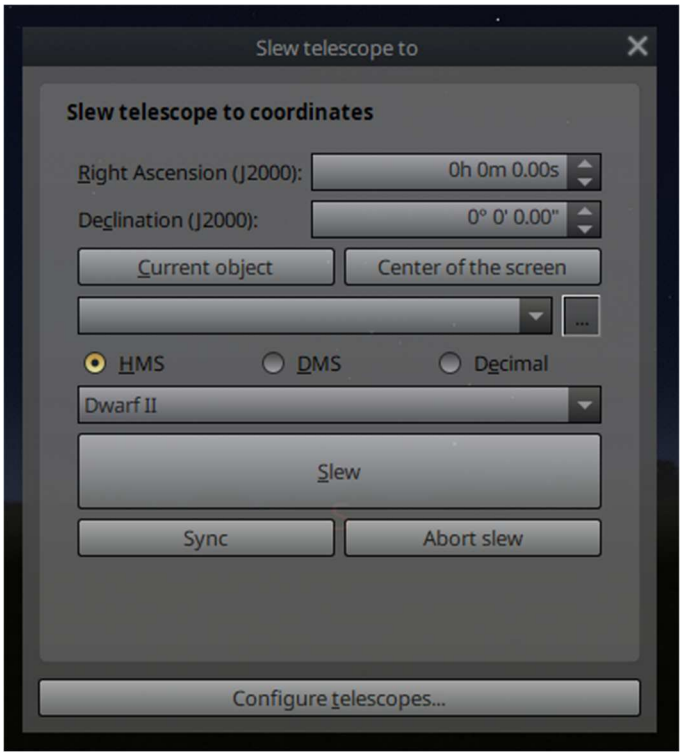
On Stellarium PC you can also see the plugin with the tab bar on the bottom

This will open the Telescope Control:



You can send a goto command from Stellarium (without the dwarf II) to verify the command is well interpreted.

Go to Stellarium and select a star, then on the bottom; click on the icon to view the command Center window, click on Current object and Slew.



Remark : You can send directly the goto command by Alt + 1, just after select the target.

Here is the command received by the plugin, my dwarf is not started so it's not connected.

```
PS D:\AstroPhoto\DwarfII_Tuto\DwarfII_Stellarium_Plugin\DwarfII_Stellarium_Plugin> python3 server.py
Waiting Connection to Stellarium : 127.0.0.1
Connected by ('127.0.0.1', 59479)
data from Stellarium >>
(20, -307580401, 394276, 3626456650, -357972726)
ra: 20h 15m 51.86s, dec: -30° 0' 17.74"
ra: 20.26440566666667, dec: -30.00492722222222
Could not connect to websocket
Dwarf API:
Dwarf II not connected
Connected by ('127.0.0.1', 61203)
```

Now we will connect the Dwarf II.

Start it and open your Dwarf App on your phone to control it.

Go to Astro Mode and Do the Calibration.

Then you can send a command to the dwarf with Stellarium.

And after sending the command you will see the program is receiving a message from the dwarf (Data to API) : the dwarf is connected.

```
Connected by ('127.0.0.1', 62028)
data from Stellarium >>
(20, 391566227, 394277, 3671797469, -356846337)
ra: 20h 31m 3.96s, dec: -29° 54' 37.85"
ra: 20.517767222222222, dec: -29.910514444444444
data to API >>
{
  "interface": 11203,
  "camId": 0,
  "lon": [redacted]
  "lat": [redacted]
  "date": "2023-08-30 14:53:32",
  "path": "DWARF_GOTO_20230830165332",
  "ra": 20.517767222222222,
  "dec": -29.910514444444444
}
Target below horizon
Connected by ('127.0.0.1', 63335)
```

In my example, I choose the wrong target, it’s below the horizon the dwarf II doesn’t move !

So change the target : VEGA

```
Connected by ('127.0.0.1', 63335)
data from Stellarium >>
(20, 735827473, 394277, 3331542219, 462837670)
ra: 18h 36m 59.19s, dec: +38° 47' 40.58"
ra: 18.616442861111114, dec: 38.79460527777778
data to API >>
{
  "interface": 11203,
  "camId": 0,
  "lon": [redacted]
  "lat": [redacted]
  "date": "2023-08-30 14:59:16",
  "path": "DWARF_GOTO_20230830165916",
  "ra": 18.616442861111114,
  "dec": 38.79460527777778
}
Dwarf API:
{'motorId': 1, 'interface': 10111, 'direction': 2, 'position': 0, 'code': 24}
Connected by ('127.0.0.1', 64484)
```

Then it’s OK and the goes to the target, centered in the screen of the mobile APP !

We ‘re done.

Remark, if the connection between Stellarium and the server closes, the server ask if you want to stop, answer Y to continue, otherwise it will stop.

Good Stargazing.