# PX4 & ArduPilot BOOTLOADER "ISSUE"

IMPORTANT!

You are not required to follow this steps if you purchased your X2.1 after July 23, 2018. After this date all units come out with the latest Bootloader. Why? Because Mission Planner has been updated and now the original X2.1 bootloader works in Mission Planner like the rest of the Autopilots, so there is no need to change the bootloader to either match QGC or MP. =)

If you are not sure you have the correct bootloader on your board and you want verify it then please follow these simple steps:

1. Download and install the latest version of [QGroundControl](#), plug your X2.1 via USB to your computer and run QGC.

2. Click the "Gear" icon and select the "Firmware" submenu. Follow the instructions. The system will require you to unplug and plug your X2.1, then you should see something like the following window:
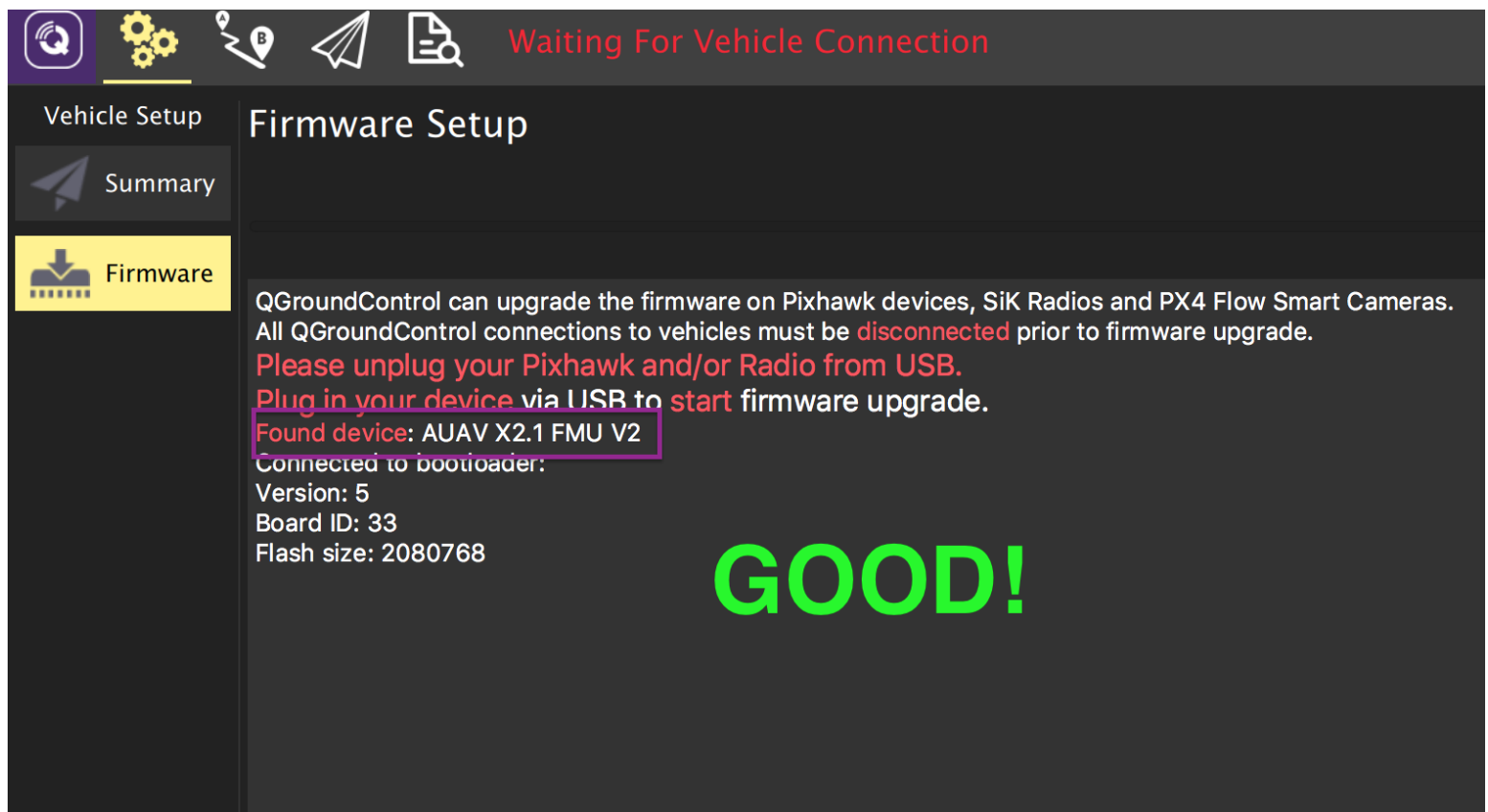

If your QGC says "Found Device: AUAV X2.1 FMU V2" then you are good to go (please refer to the picture above), you don't need to update anything. Maybe you already did it when you wanted to load PX4 stack before. In case you have issues using Mission Planner please read below, you might require to remove and reinstall Mission Planner to fix the problem.

In case you get "Found Device: PX4 FMU V2" then you have the old/wrong bootloader, just must continue to step #3 (refer to the picture below).
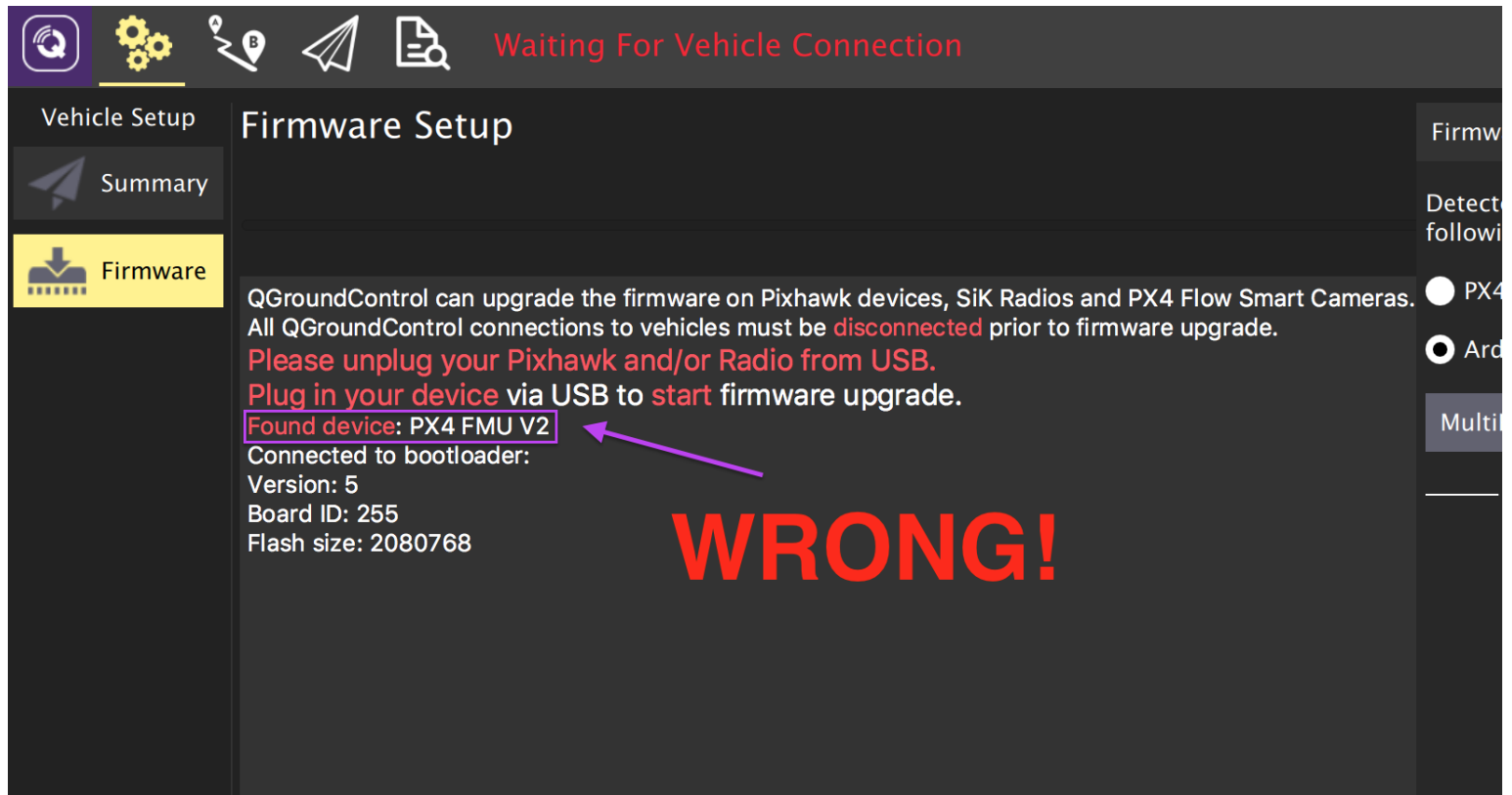

3. You must update your bootloader so the system is recognized as "AUAV X2.1 FMU V2" and not as "PX4 FMU V2". The easiest way to do this is by adding a couple of files to your SD Card to update the bootloader, but first, you must make sure you have PX4 software installed, otherwise the little piece of software needed to update the BL will not work and, is not available on ArduPilot software stack.
In the same window as step #2, you will see a dialog in right as the picture below. Select PX4 Flight Stack ... and click OK:
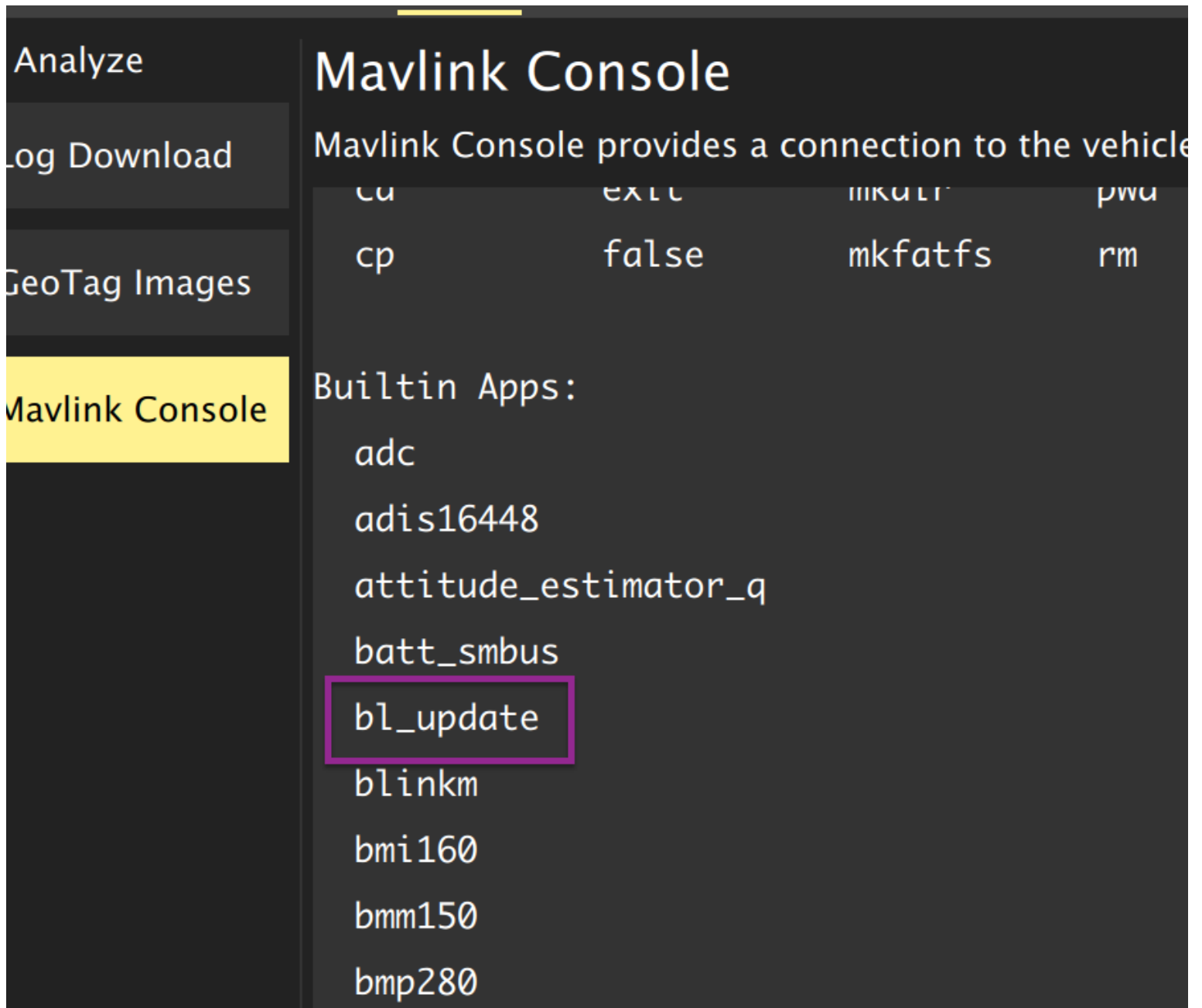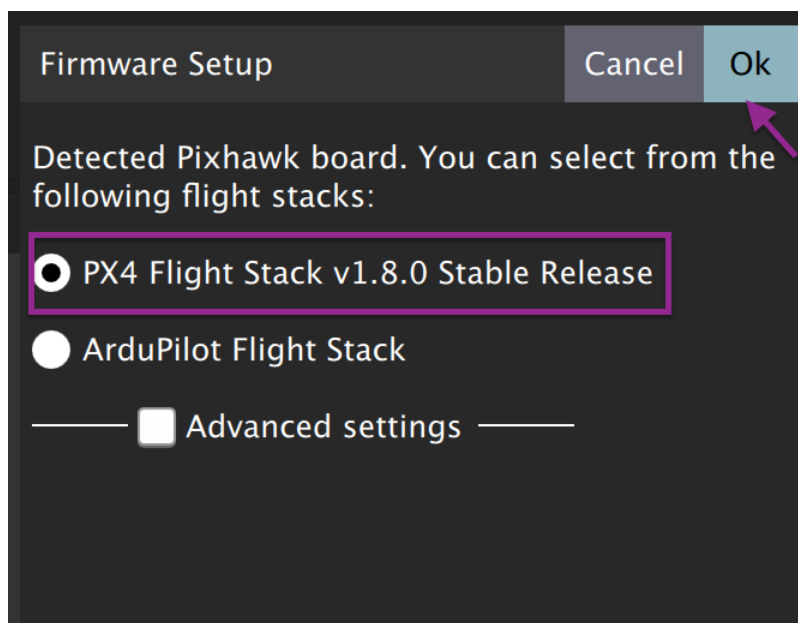

This will load PX4 stack and install the bootloader updater. After the installation is done, reboot and follow step #4.

4. Now you will have to access the NuttX terminal and verify you have the bootloader updater installed. Follow the steps of the picture below:
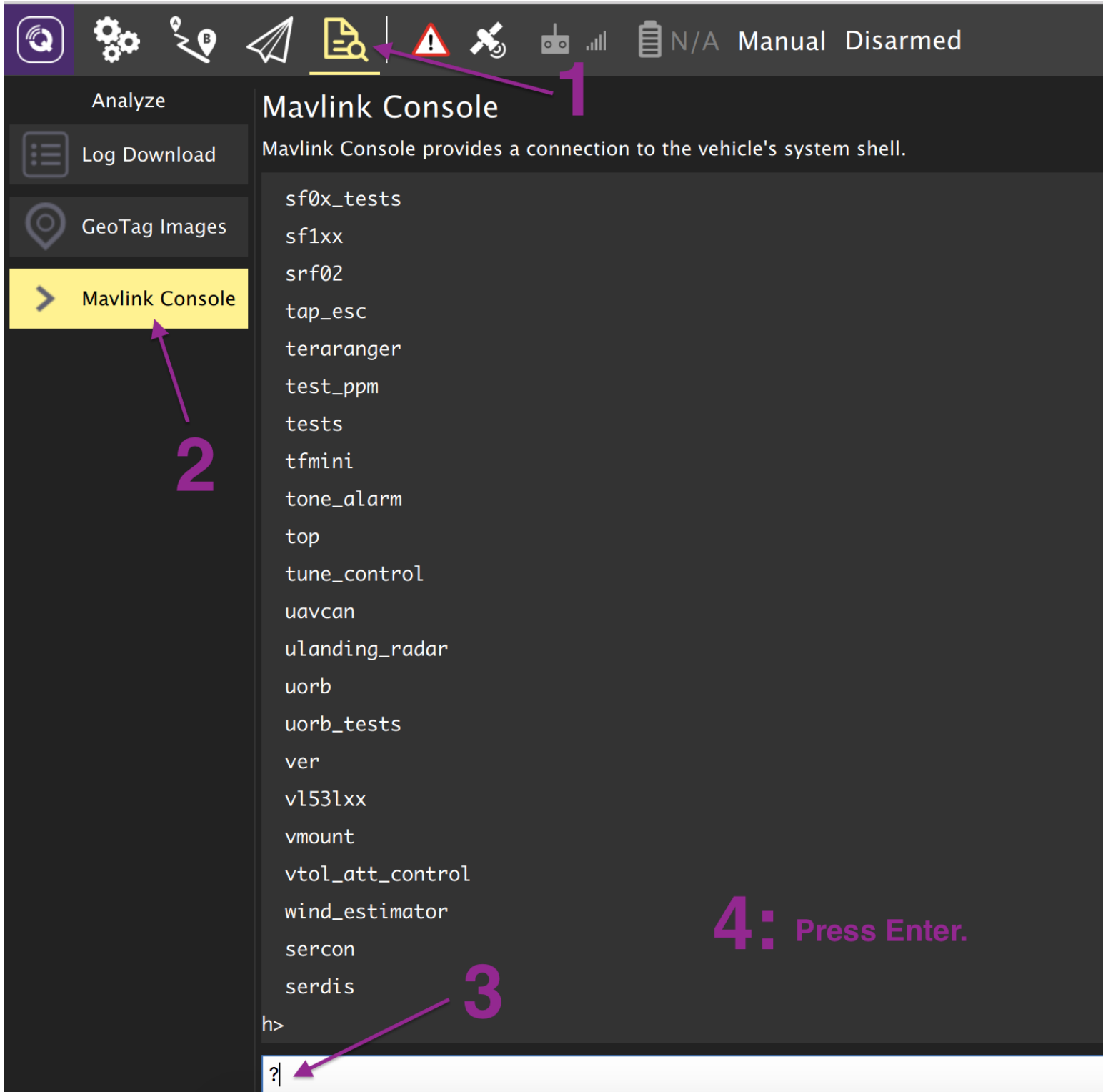
5. Then scroll up and make sure you have "bl_update" in the list:

Analyze

Log Download

GeoTag Images

Mavlink Console

Mavlink Console

Mavlink Console provides a connection to the vehicle

```
cd                    exit               mkdir              pwd
cp                    false              mkfatfs            rm


Builtin Apps:
  adc
  adis16448
  attitude_estimator_q
  batt_smbus
  bl_update
  blinkm
  bmi160
  bmm150
  bmp280
```

If bl_update is there just go to step #7. If you can't see the bl_update file, then you must be using this tutorial for another board that has the STMF4 V2 with limited memory or maybe has been removed in the latest versions. Because I know this might happen in the future, I decided to upload an old PX4 stack copy, to use it you must follow step #6.

6. Download the PX4 Stack used for this tutorial from here: px4fmu-v3_default.px4

Now follow the normal QGC uploading process and choose "Custom firmware file" and select the file "px4fmu-v3_default.px4" you just downloaded (Refer to the picture below):
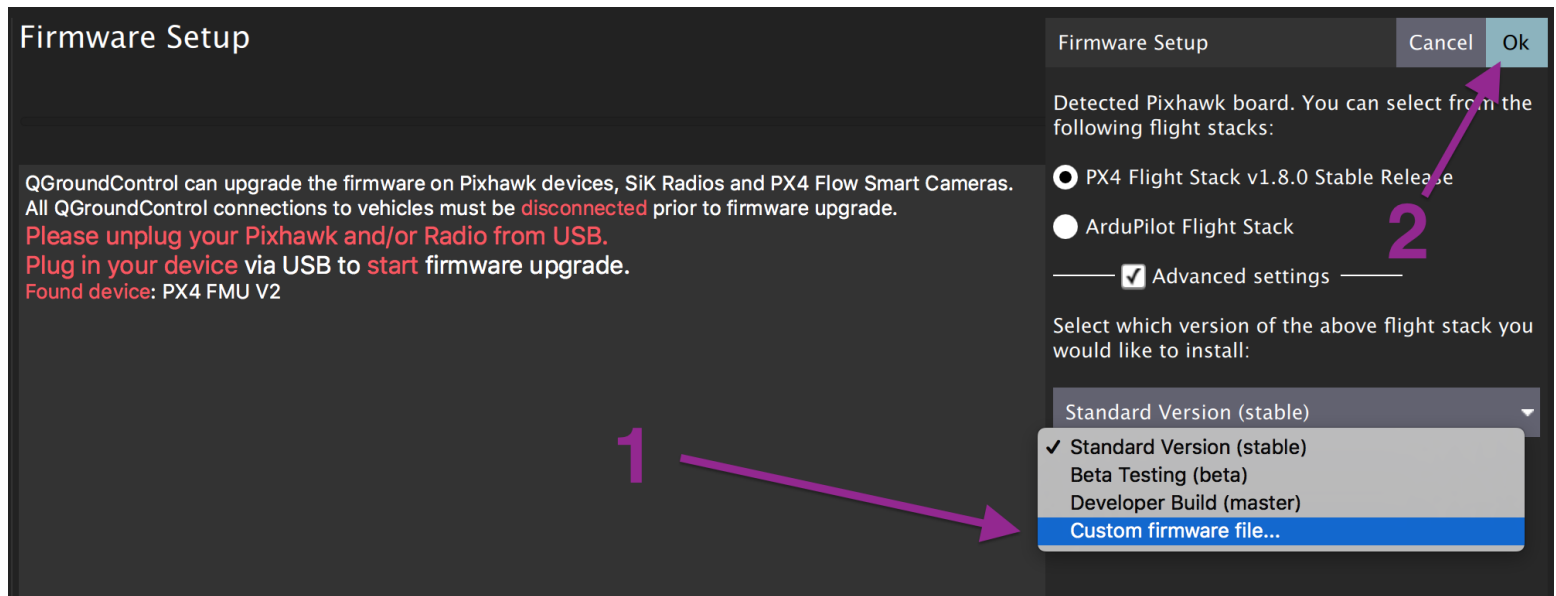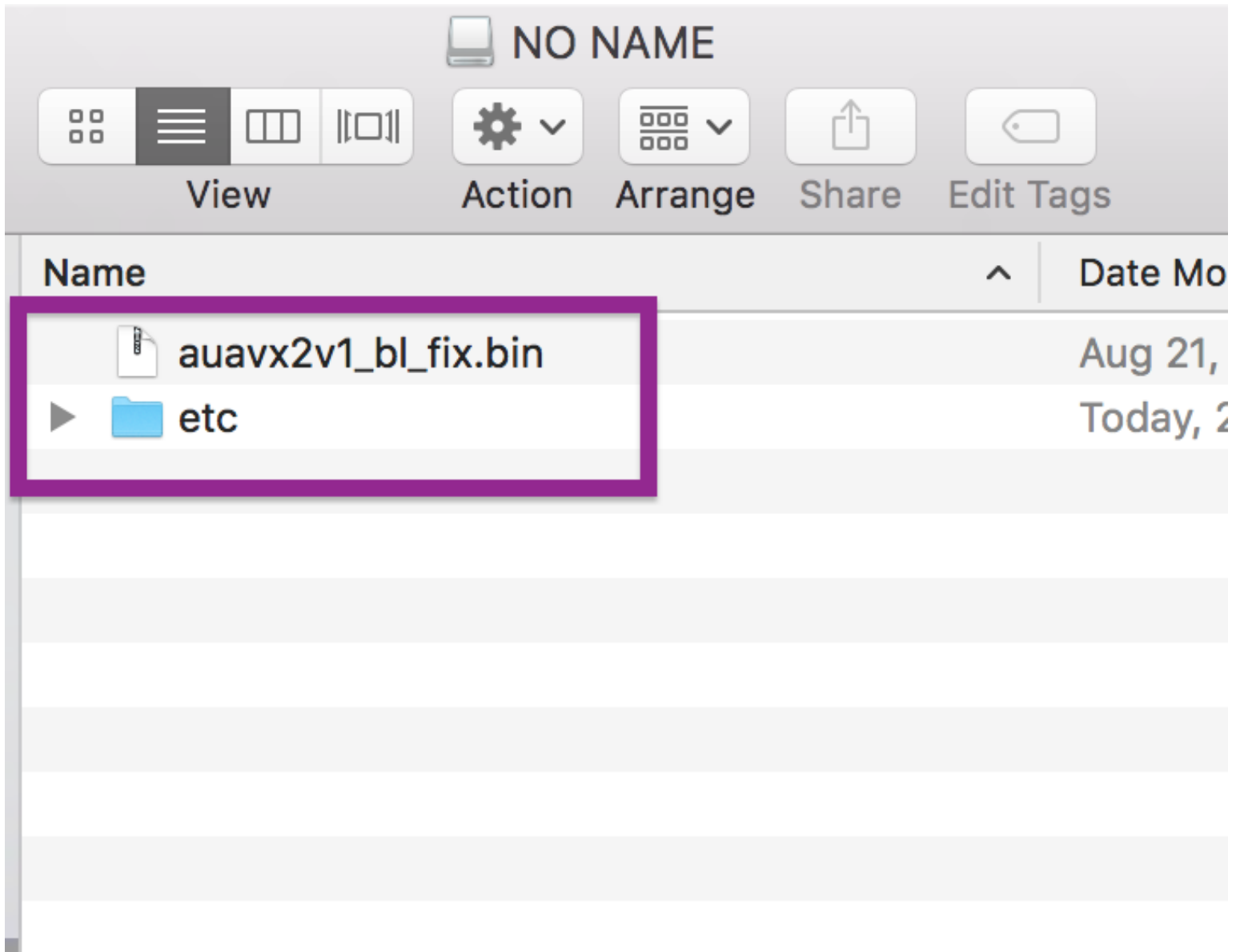

Go back to step #5 to verify "bl update" is now there.

7. Grab any SD card compatible with X2.1 (or use the one included). Insert the SD Card in your PC and delete all the files (Not needed but it simplifies the process":
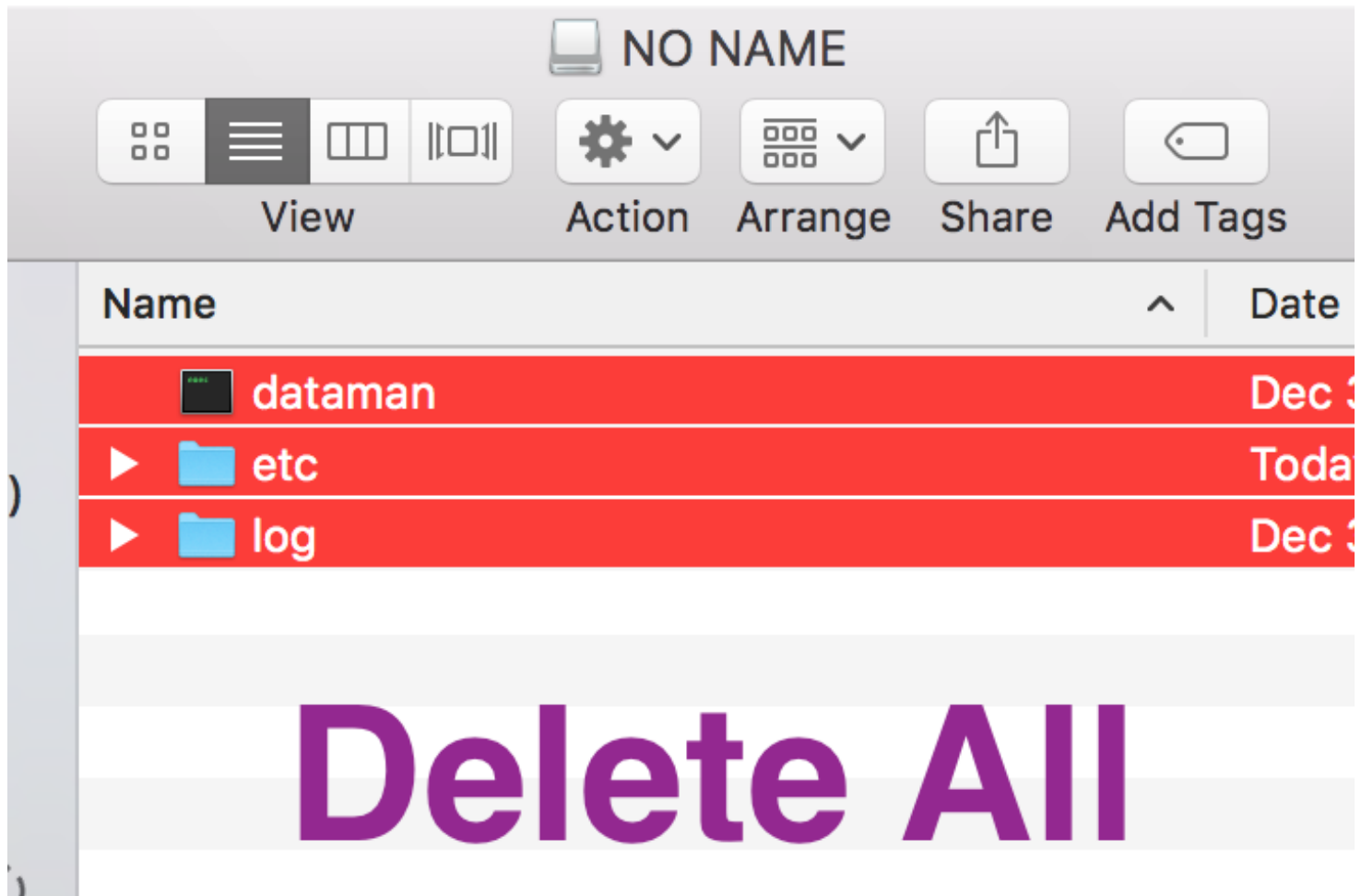
8. Download and unzip the file BL_Update_X21.zip and copy the files to the root of the SD Card as follows:

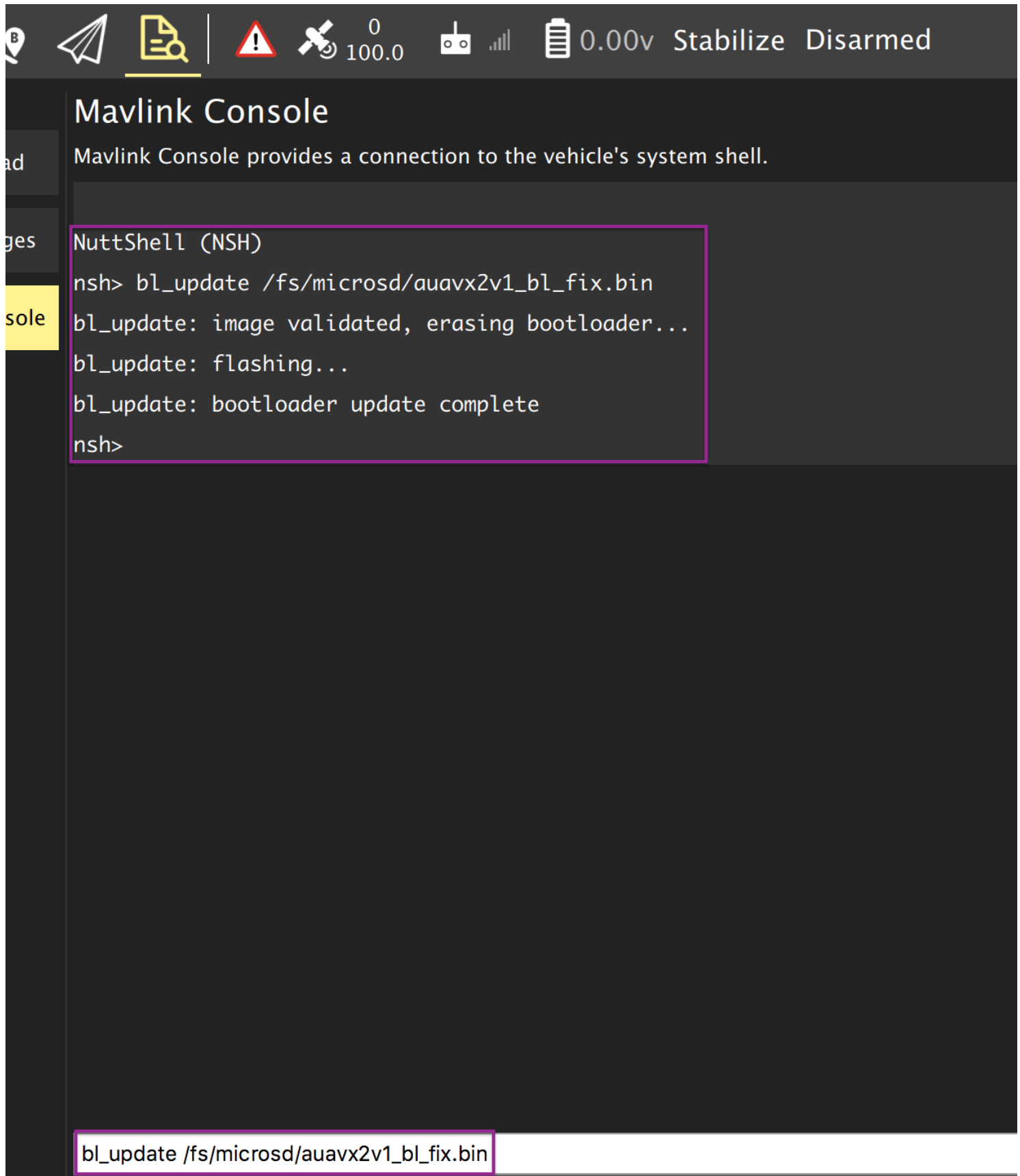**NOTE!**

Make sure the file "auavx2v1_bl_fix.bin" and the folder "etc" are not inside any other folder, the files must be in the root of the SD Card.

9. Unplug your X2.1 from any power source and insert the SD CARD which the freshly added files (Make sure to the remove the SD card from your computer safely. Don't be a savage!). Plug back the X2.1 to any power source and wait. After 30 seconds the bootloader should've been updated successfully. Don't worry about the files you just added to the SD CARD, they were automatically deleted.

10. Go to Step #2 and Verify is now recognized as "AUAV X2.1 FMU V2". If yes, then you are done and your board should work as is with PX4 and Mission Planner.

BL Update For Advanced Users

If you are an advanced user you can do this faster and verify if the update actually happens. Just add the file "auavx2v1_bl_fix.bin" into the root of the SD Card, enter to the NuttX terminal via QGC and run the command "bl_update /fs/microsd/auavx2v1_bl_fix.bin", if the procedure is successful, you should see something like this:


```
NuttShell (NSH)
nsh> bl_update /fs/microsd/auavx2v1_bl_fix.bin
bl_update: image validated, erasing bootloader...
bl_update: flashing...
bl_update: bootloader update complete
nsh>
```

`bl_update /fs/microsd/auavx2v1_bl_fix.bin`