

## Installation of Anaconda package for python

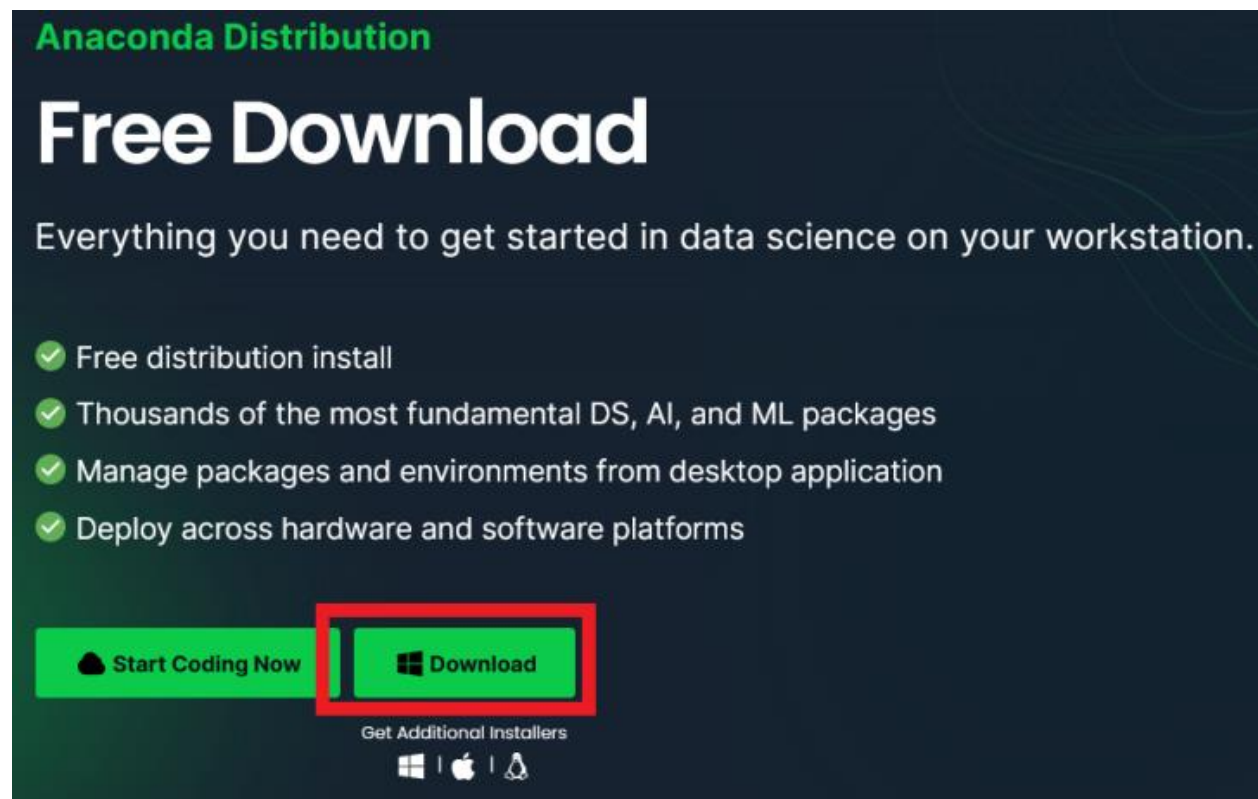
### Python - Anaconda package

OnStove is written in python, an open source programming language used widely in many applications. Python is a requirement for the OnStove tool to work.

Programming in python usually relies on the usage of pre-defined functions that can be found in the so called modules. In order to work with OnStove, certain modules need to be installed. The easiest way to do so is by installing Anaconda, a package that contains various useful modules. Anaconda includes all the modules required to run OnStove.

To download Anaconda, go to <https://www.anaconda.com/download/> and download version 3.7.

1. Please make sure that you download the version that is compatible with your operating



**Anaconda Distribution**

# Free Download

Everything you need to get started in data science on your workstation.

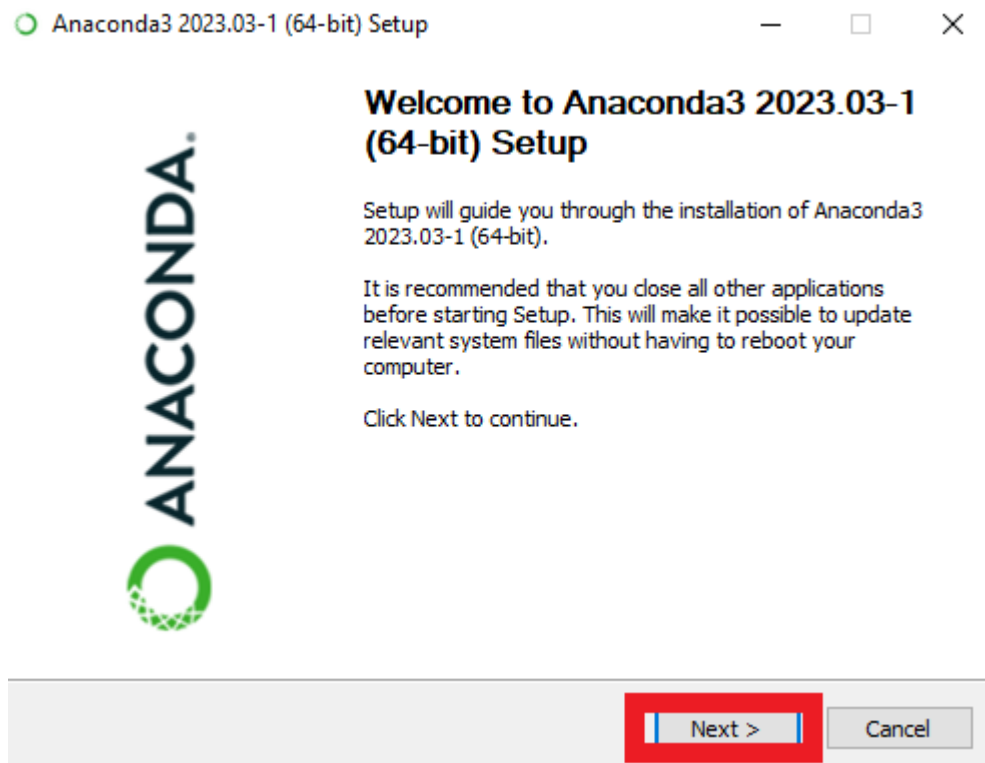
- ✓ Free distribution install
- ✓ Thousands of the most fundamental DS, AI, and ML packages
- ✓ Manage packages and environments from desktop application
- ✓ Deploy across hardware and software platforms

[Start Coding Now](#) [Download](#)

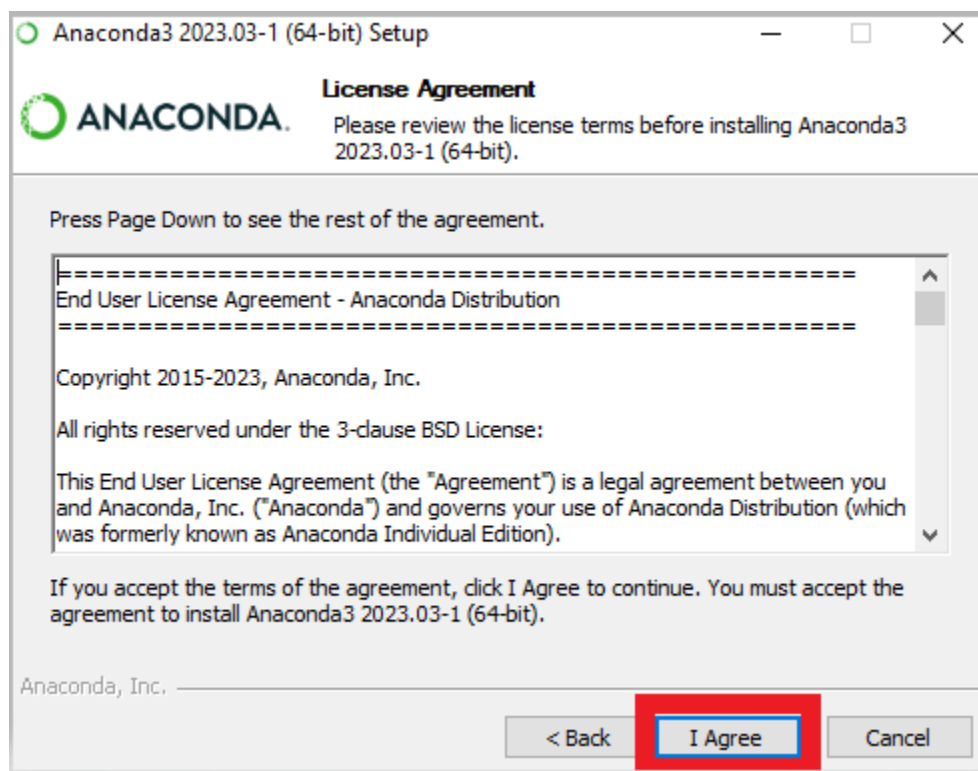
Get Additional Installers

Windows | Apple | Linux

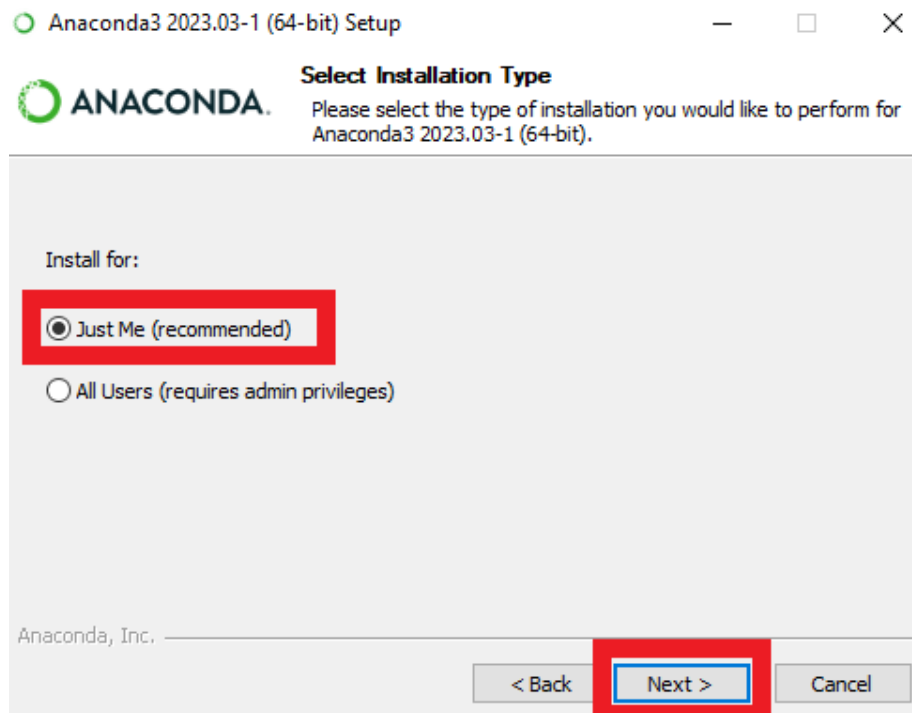
2. Once downloaded, open the installation file and click “Next” to start.



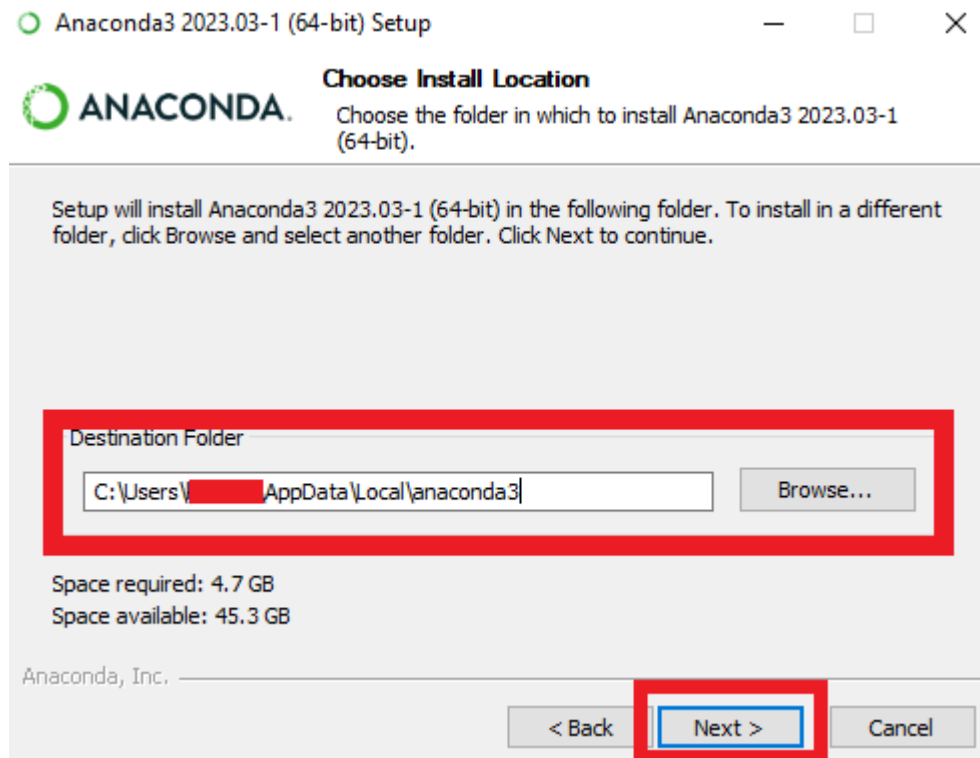
3. First you have to agree to the License Agreement.



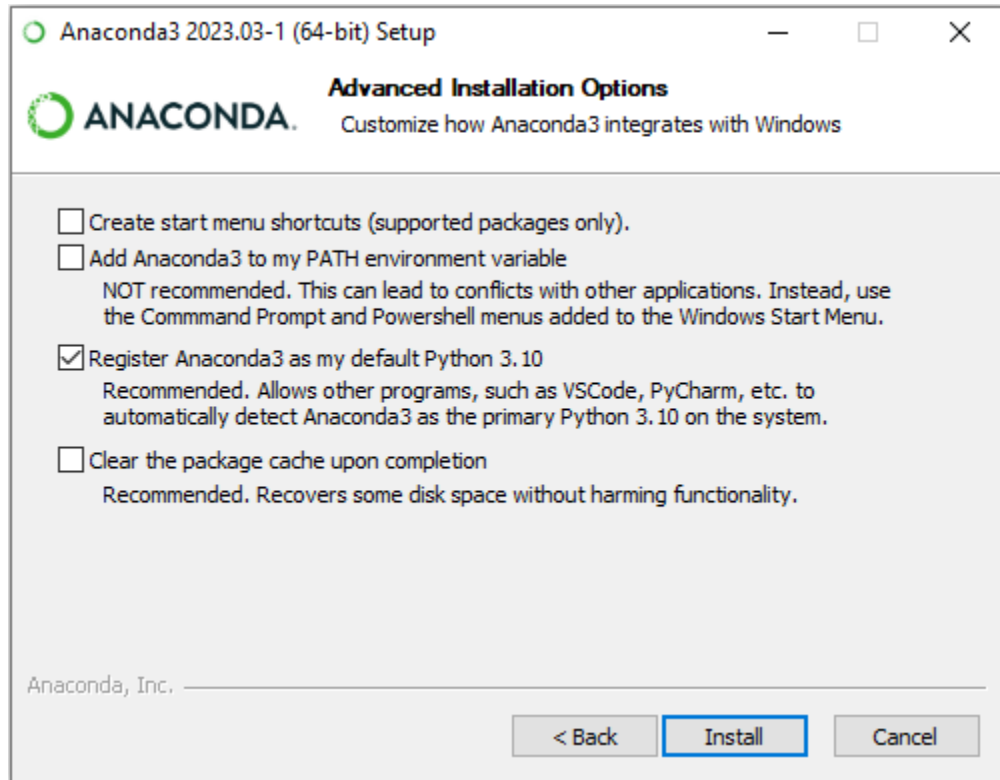
- Next, select to install Anaconda for “Just Me” and click “Next”.



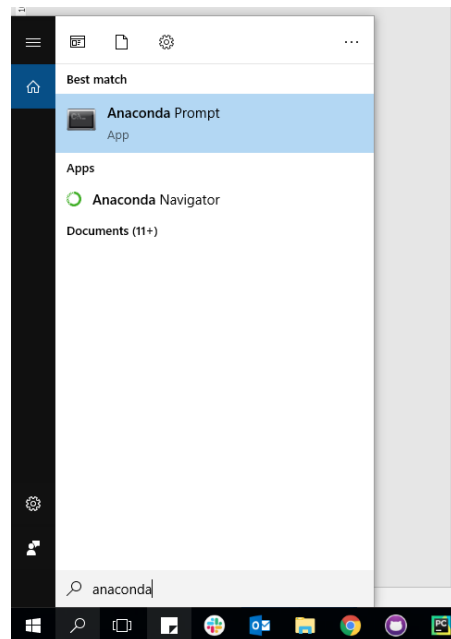
- Select the location where to install Anaconda on your computer and click “Next”.



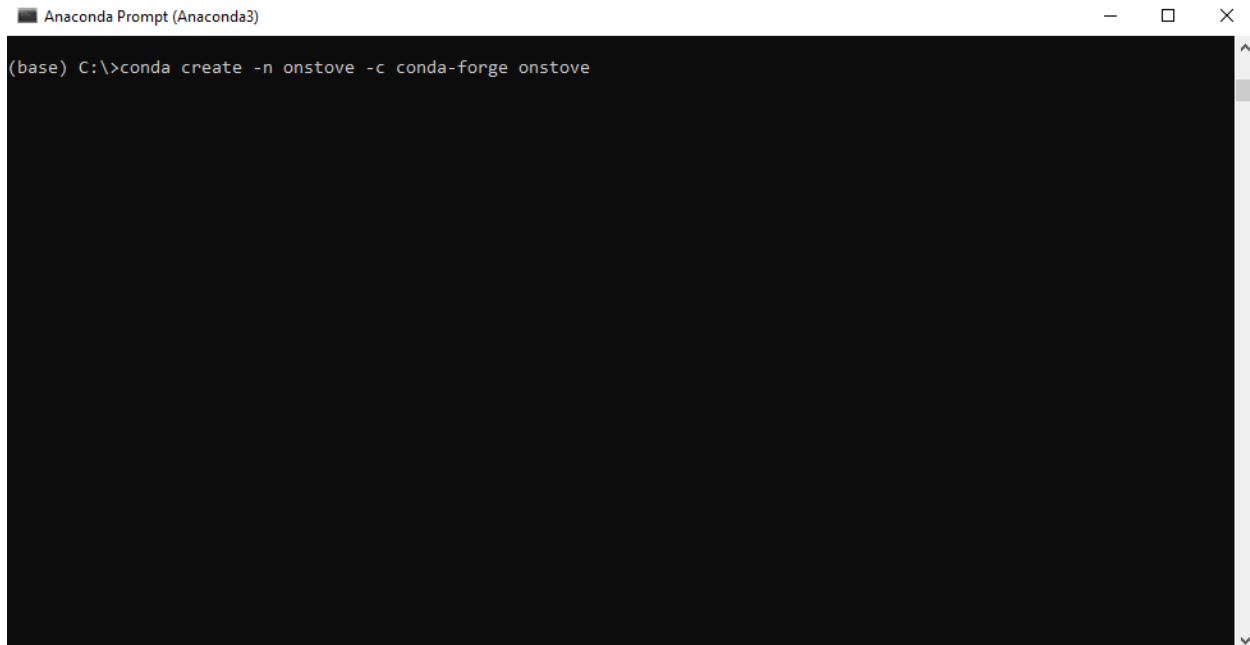
6. Select “Register Anaconda3 as my default Python 3.10”, the rest you can leave unchecked and click “Install”.



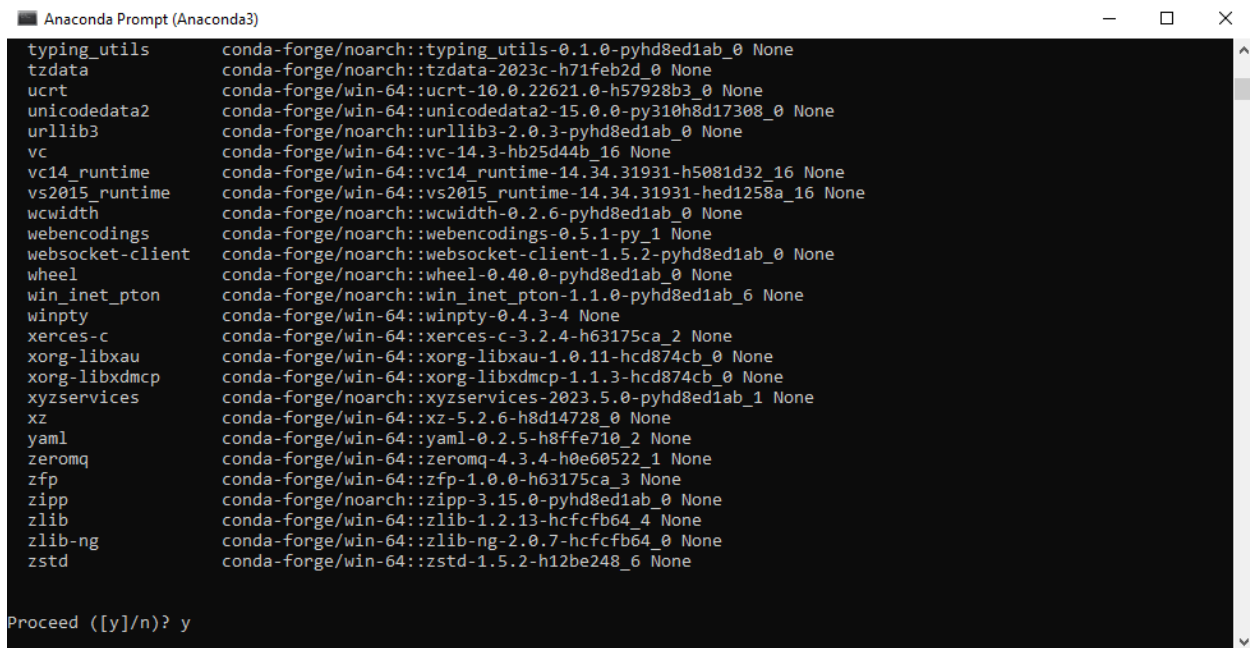
7. After the installation you can use the Anaconda command line (search for “Anaconda Prompt”) to open the anaconda prompt.



- In order for OnStove to work correctly on your computer you will have to install it. Do this by simply typing **conda create -n onstove -c conda-forge onstove** in the anaconda prompt, then press Enter. This will install OnStove (this may take some time). At a certain point anaconda will list the packages that are needed for installation and ask you to confirm, press **y** to confirm.



```
Anaconda Prompt (Anaconda3)
(base) C:\>conda create -n onstove -c conda-forge onstove
```



```
Anaconda Prompt (Anaconda3)
typing_utils      conda-forge/noarch::typing_utils-0.1.0-pyhd8ed1ab_0 None
tzdata           conda-forge/noarch::tzdata-2023c-h71feb2d_0 None
ucrt             conda-forge/win-64::ucrt-10.0.22621.0-h57928b3_0 None
unicodedata2     conda-forge/win-64::unicodedata2-15.0.0-py310h8d17308_0 None
urllib3          conda-forge/noarch::urllib3-2.0.3-pyhd8ed1ab_0 None
vc               conda-forge/win-64::vc-14.3-hb25d44b_16 None
vc14_runtime     conda-forge/win-64::vc14_runtime-14.34.31931-h5081d32_16 None
vs2015_runtime   conda-forge/win-64::vs2015_runtime-14.34.31931-hed1258a_16 None
wcwidth         conda-forge/noarch::wcwidth-0.2.6-pyhd8ed1ab_0 None
webencodings     conda-forge/noarch::webencodings-0.5.1-py_1 None
websocket-client conda-forge/noarch::websocket-client-1.5.2-pyhd8ed1ab_0 None
wheel           conda-forge/noarch::wheel-0.40.0-pyhd8ed1ab_0 None
win_inet_pton    conda-forge/noarch::win_inet_pton-1.1.0-pyhd8ed1ab_6 None
winpty          conda-forge/win-64::winpty-0.4.3-4 None
xerces-c        conda-forge/win-64::xerces-c-3.2.4-h63175ca_2 None
xorg-libxau     conda-forge/win-64::xorg-libxau-1.0.11-hcd874cb_0 None
xorg-libxdmcp   conda-forge/win-64::xorg-libxdmcp-1.1.3-hcd874cb_0 None
xyzservices     conda-forge/noarch::xyzservices-2023.5.0-pyhd8ed1ab_1 None
xz              conda-forge/win-64::xz-5.2.6-h8d14728_0 None
yaml            conda-forge/win-64::yaml-0.2.5-h8ffe710_2 None
zeromq          conda-forge/win-64::zeromq-4.3.4-h0e60522_1 None
zfp             conda-forge/win-64::zfp-1.0.0-h63175ca_3 None
zipp            conda-forge/noarch::zipp-3.15.0-pyhd8ed1ab_0 None
zlib            conda-forge/win-64::zlib-1.2.13-hcfcfb64_4 None
zlib-ng         conda-forge/win-64::zlib-ng-2.0.7-hcfcfb64_0 None
zstd            conda-forge/win-64::zstd-1.5.2-h12be248_6 None

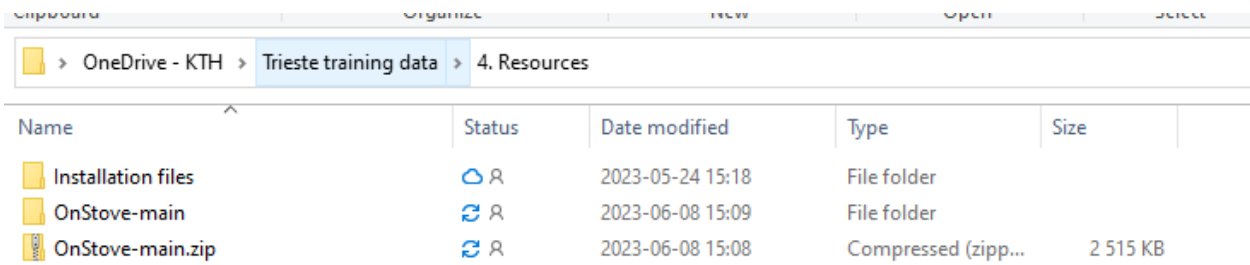
Proceed ([y]/n)? y
```

- Once the installation is finished you type **conda activate onstove** . Note that the **(base)** in the beginning of the line of the prompt changes to **(onstove)**. This means that OnStove is active and you now have access to the tool.

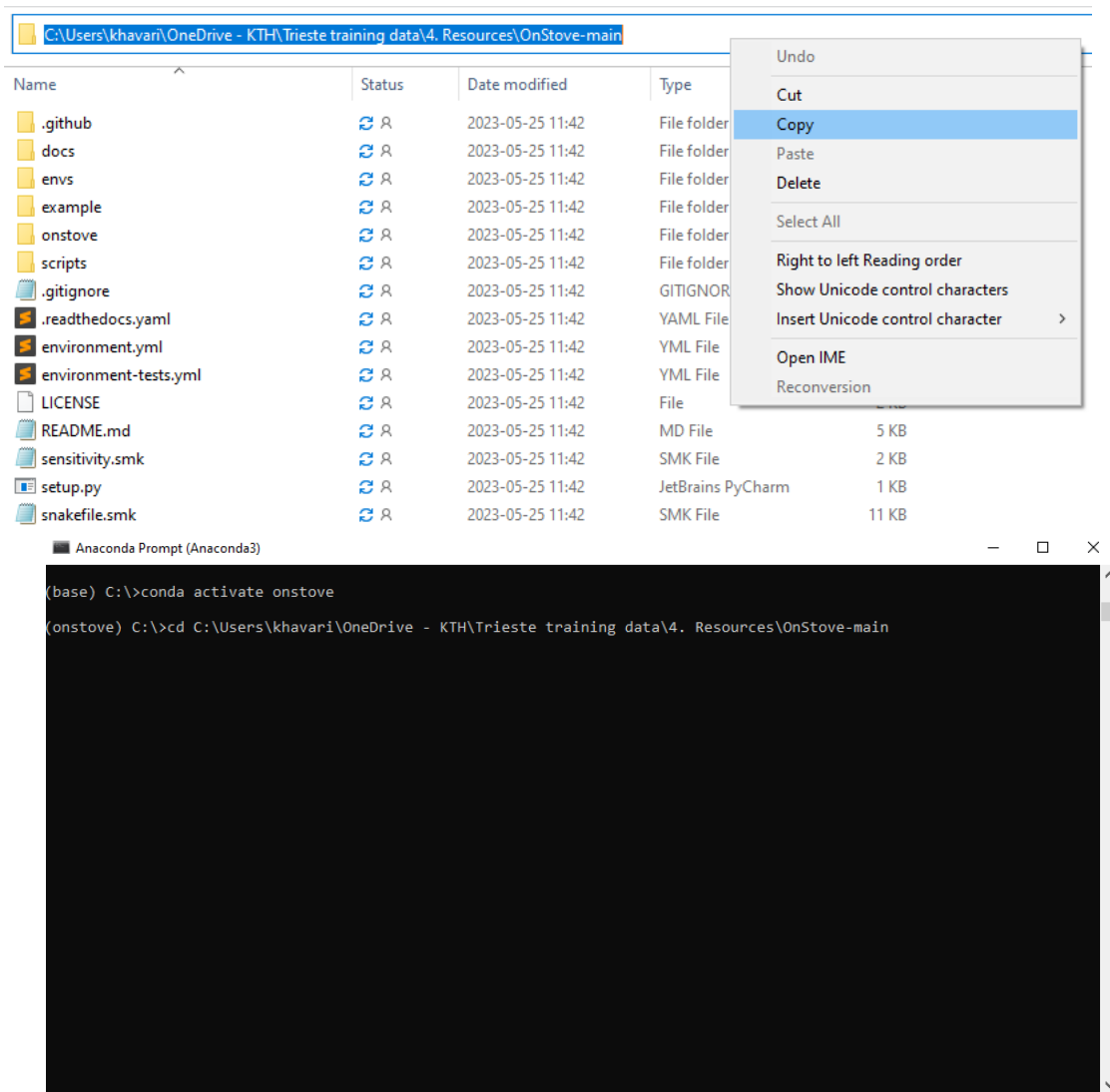
```
Anaconda Prompt (Anaconda3)
(base) C:\>conda activate onstove
```

```
Anaconda Prompt (Anaconda3)
(base) C:\>conda activate onstove
onstove) C:\>
```

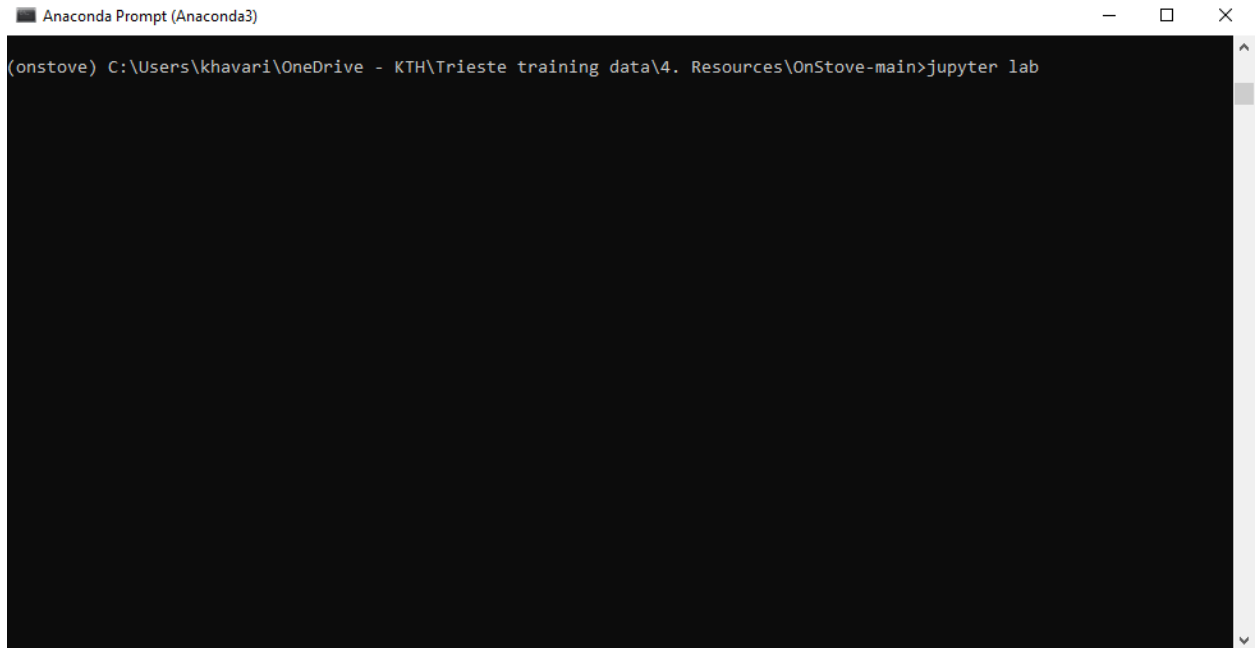
10. The last step needed to run OnStove is a functioning code. For this we will utilize the Jupyter Notebook version of the code available on the official OnStove github repository. Click on the following link to do so: <https://github.com/Open-Source-Spatial-Clean-Cooking-Tool/OnStove/archive/refs/heads/main.zip>. This will download a zipped folder, once the download is finished unzip the folder somewhere on your computer.



11. Open the unzipped folder called **OnStove-main**. Copy the path and paste it in the anaconda prompt with “**cd**” in front of it (**cd PATH**, see images). Lastly press **enter**.

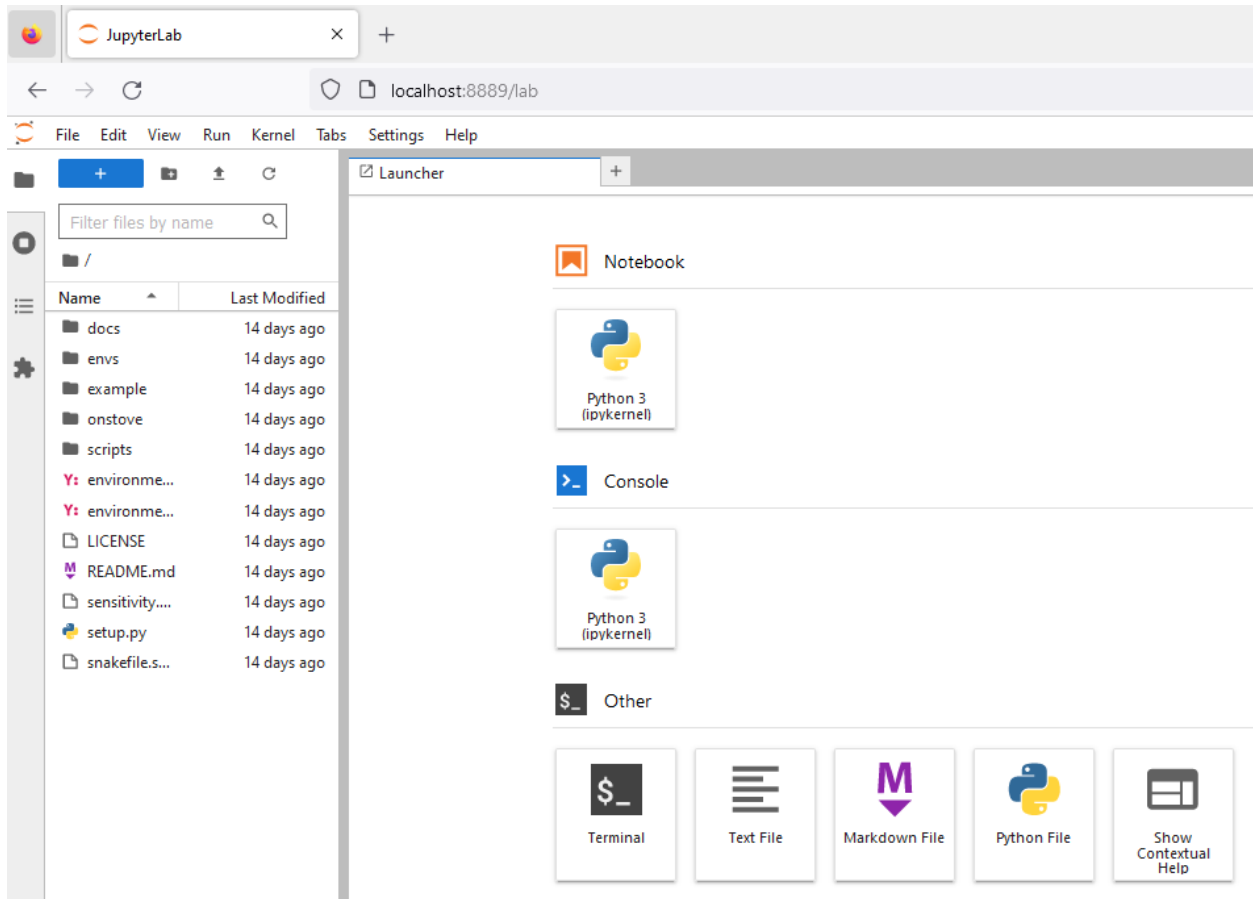


12. Next type “**jupyter lab**” in anaconda.

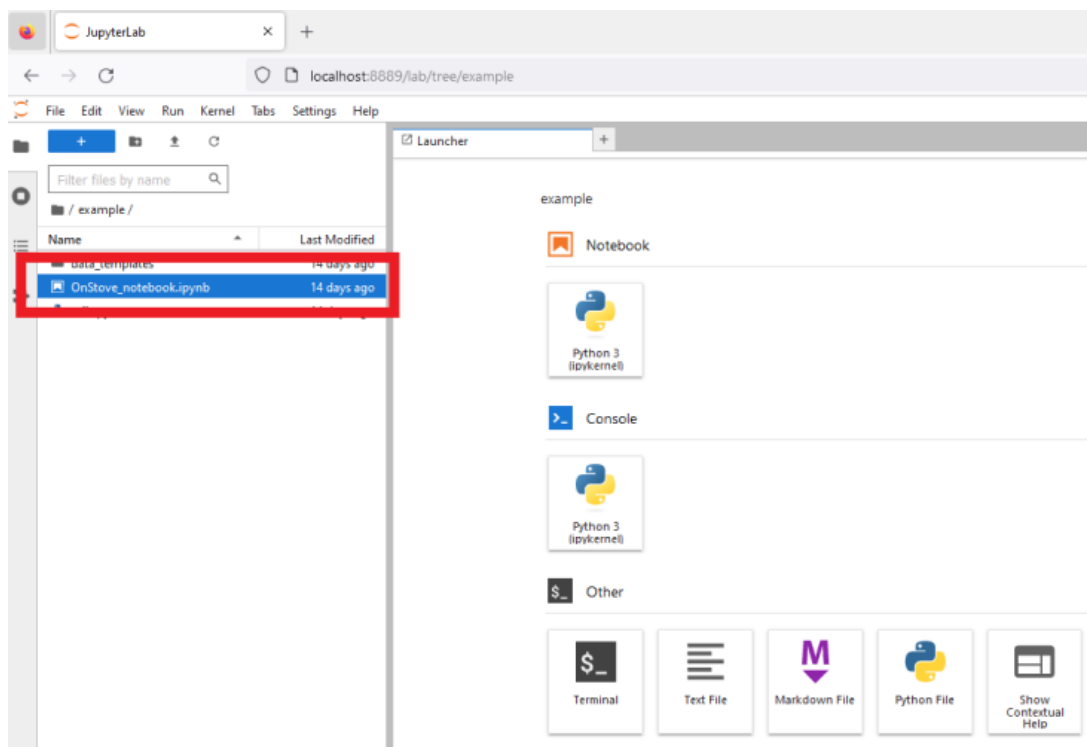
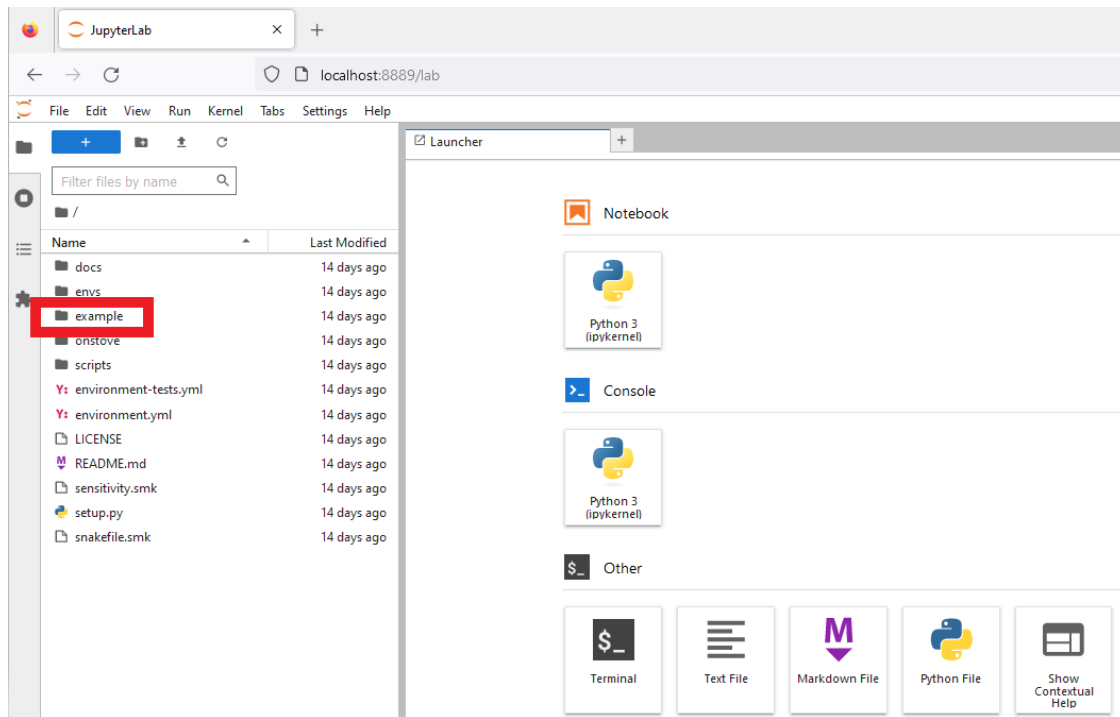
A screenshot of an Anaconda Prompt terminal window. The title bar at the top reads "Anaconda Prompt (Anaconda3)". The terminal content shows the command prompt "(onstove) C:\Users\khavari\OneDrive - KTH\Trieste training data\4. Resources\OnStove-main>jupyter lab" followed by a blank space, indicating the command has been entered but not yet executed. The terminal background is black, and the text is white. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

13. This will open up an instance of jupyter lab on your computer. Note that while it opens up in your web-browser the jupyter lab instance is ran completely offline and does not require an internet connection.





14. If you click on the folder called example (highlighted in the image below) you can start and run OnStove (the .ipynb-file).



15. A jupyter notebook is a version of the code where you can run different parts of it separately from others (you run one cell at time). To run a cell you click on the play button at the top of the screen. While the code is being ran the circle is filled in and there is an asteriks (\*) in the cells that are either running or are in queue. We will look at how to run the Jupyter notebook in the subsequent exercises.

OnStove notebook

This is the OnStove notebook. The purpose of the notebook is to give users the ability to run through the analysis with example data and it can therefore act as a complement to the [scientific publication](#) and [read-the-docs documentation](#).

The notebook is divided into 4 major parts:

1. **Data processing** - In this part of the analysis different geospatial datasets are read and processed (reprojecting, clipping, masking, aligning, resampling, etc.). The datasets from this step are saved on the users computer. For future runs on the same area of interest this step can consequently be skipped unless datasets are switched.
2. **Calibration** - In this part, the area of interest is calibrated. Raster cells are classified as either urban or rural, the electrification rate in different cells is determined and the rates of different cooking fuels across settlements are calibrated. The calibrated data is saved in a `.pkl-file`. Unless data related to these steps are changed from one run to another, this step only needs to be ran once.
3. **Model run** - The net-benefit for different stoves is determined in different parts of the study area. Once all stoves have a net-benefit calculated the stoves will be compared and the stove with the highest net-benefit in each settlement is selected. Summaries of the results documenting the benefits and costs of each stove type across the entire study area are produced. The results are saved as a `.pkl-file`.
4. **Visualization** - Visualizing and saving different maps related to the results.

Each part of the notebook is divided into several different cells and each cell is described more in depth.

**Always run the imports first and do not edit these cells**

```
[*]: import os, time
import geopandas as gpd

from onstove import OnStove, DataProcessor, RasterLayer, VectorLayer
from utils import download_data
```

Defining the output directory

**Note:** If you close the notebook and wish to continue running the code at a later time you can do so by repeating step 7, 9 11, 12, 13, 14 and 15 again in order.

**This document was updated on 01.11.2024**