

# How to Install Anaconda

## What is Anaconda?

It is a distribution of both Python and R to make programming languages for scientific computing more accessible.

## Steps to Install (Windows)

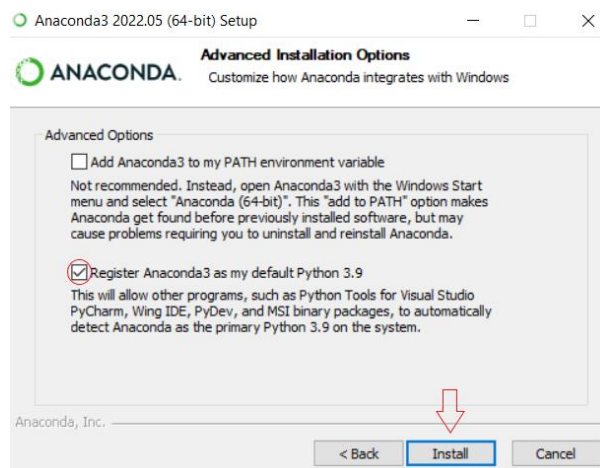
1. Go to the [Anaconda website](https://www.anaconda.com/) and click download. Note, If you are using MacOS or Linux you may need to click on the corresponding symbols circled red in the figure below and then click on the correct download link (typically called 64-Bit Graphical Installer).

Individual Edition is now  
**ANACONDA DISTRIBUTION**

The world's most popular open-source Python distribution platform



2. Once finished downloading open the setup file and click next on the first screen that pops up.
3. Next, agree to the license agreement and on the next window click the "Just Me" option.
4. Next, decide on an installation location and click next.
5. The next window that pops up is an important part of the installation process. It is recommended to only check the boxes shown in the figure below and click install. If the other box is chosen, you will have to use Anaconda Navigator or the Anaconda Command Prompt when you wish to use Anaconda and will not be able to have other tools use it.

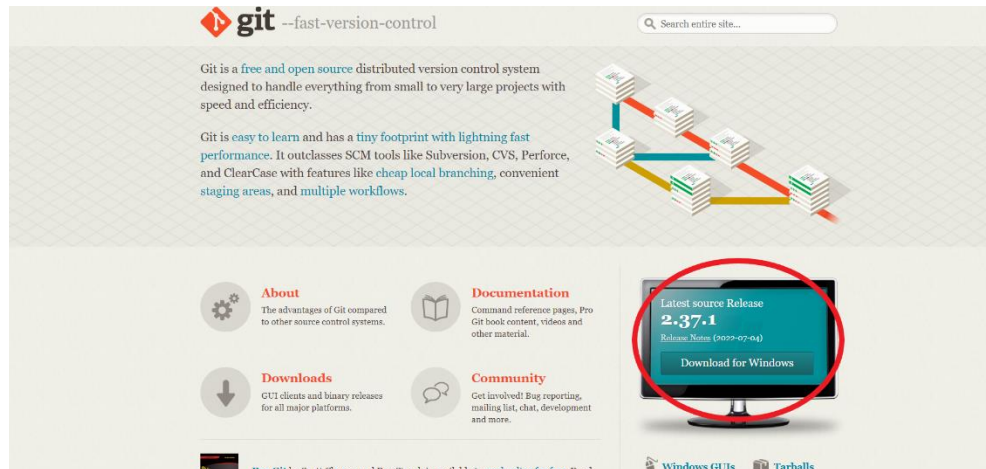


6. Finish installation.

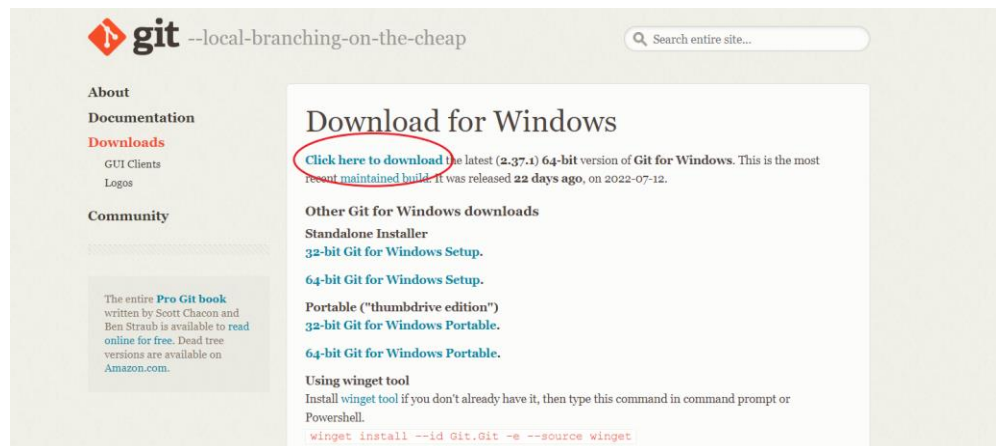
## How to Install Git on Windows

Note: If you are using a Mac or Linux device, git most likely will be already installed on your machine.

1. Go to the [Git website](https://git-scm.com).
2. Click the download link to download Git, it should automatically start.



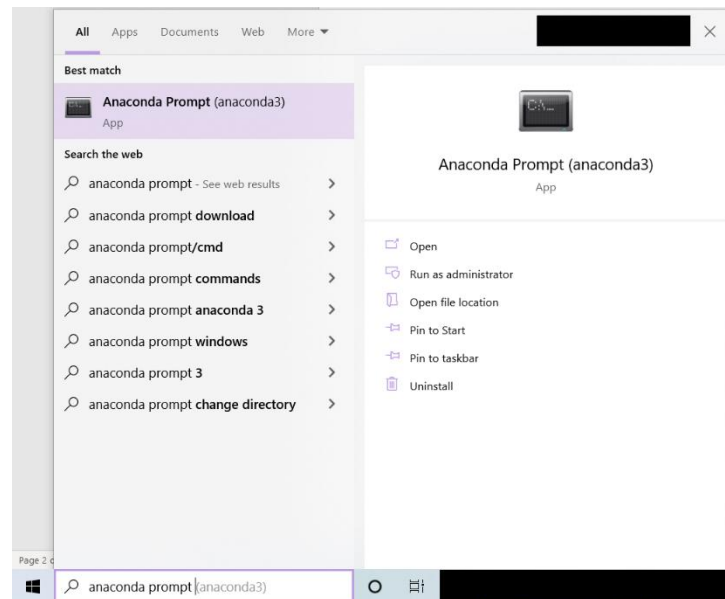
3. Click on the link shown below to download.



4. Once downloaded, start the setup. In the **Select Components** window, leave all default options (already checked off) and check any other additional components you want.
5. Next, in the **Choosing the SSH executable** window select the "Use bundled OpenSSH" option.
6. In the next window, you may choose the experimental options if wanted, but it is not recommended.
7. Finally, install.
8. Now you should be able to run git commands on the windows command line or windows PowerShell.

## How to Clone and Install Latest Version of VARS Python Package Using Anaconda Command Prompt

1. Find Anaconda Command Prompt using windows search or equivalent in your devices operating system



2. Type “git clone https://github.com/vars-tool/vars-tool.git” into the command prompt, this clones the GitHub repository onto your local device.

```
Anaconda Prompt (anaconda3)

(base) C:\Users\Corde> git clone https://github.com/vars-tool/vars-tool.git
Cloning into 'vars-tool'...
remote: Enumerating objects: 3437, done.
remote: Counting objects: 100% (949/949), done.
remote: Compressing objects: 100% (346/346), done.
remote: Total 3437 (delta 573), reused 847 (delta 499), pack-reused 2488
Receiving objects: 100% (3437/3437), 27.73 MiB | 12.78 MiB/s
Receiving objects: 100% (3437/3437), 29.41 MiB | 13.09 MiB/s, done.
Resolving deltas: 100% (2093/2093), done.
```

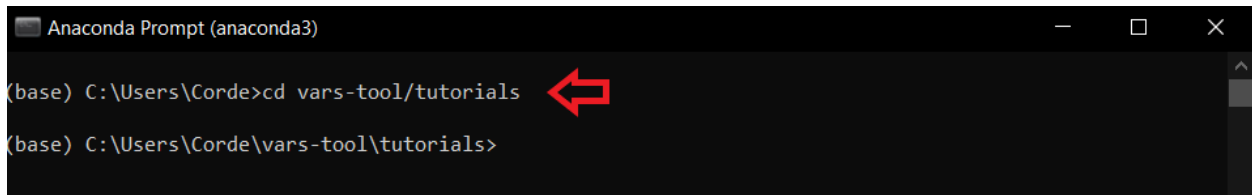
3. Now to install the package enter the directory using “cd vars-tool” and install it by typing “pip install .” as shown below:

```
Anaconda Prompt (anaconda3) - pip install .

(base) C:\Users\Corde>cd vars-tool
(base) C:\Users\Corde\vars-tool>pip install .
Processing c:\users\corde\vars-tool
Installing build dependencies ... done
Getting requirements to build wheel ... done
Preparing wheel metadata ... done
Requirement already satisfied: scipy in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (1.6.2)
Requirement already satisfied: tqdm in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (4.59.0)
Requirement already satisfied: numpy in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (1.20.1)
Requirement already satisfied: mapplly in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (0.1.7)
Requirement already satisfied: matplotlib in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (3.3.4)
Requirement already satisfied: pandas in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (1.2.4)
Requirement already satisfied: joblib in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (1.0.1)
Requirement already satisfied: psutil in c:\users\corde\anaconda3\lib\site-packages (from varstool==2.3.1) (5.8.0)
Requirement already satisfied: pathos>=0.2.0 in c:\users\corde\anaconda3\lib\site-packages (from mapplly->varstool==2.3.1) (0.2.8)
```

## How to Start Jupyter Notebook Application Using Anaconda Command Prompt and Run VARS Tutorials

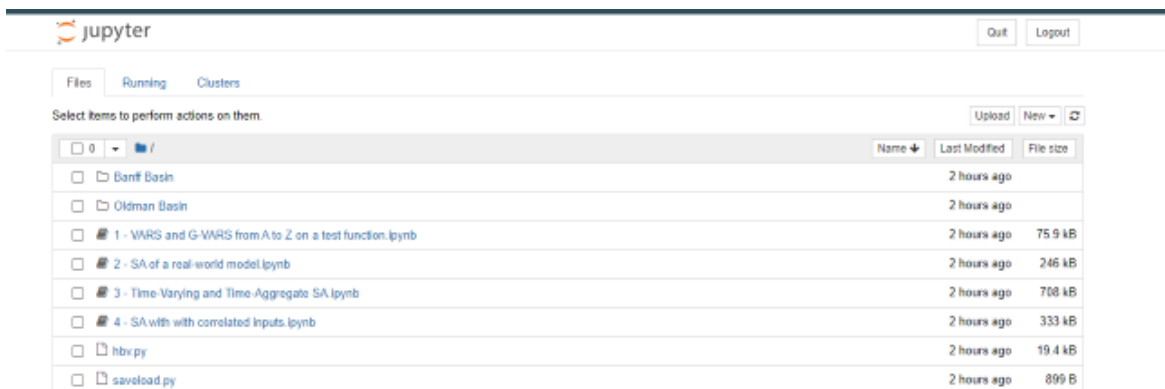
1. Find Anaconda Command Prompt using windows search or equivalent in your devices operating system
2. Assuming you have cloned the repository as described previously to install VARS, go into the tutorials directory of the downloaded varstool directory (this can be done using “cd” command)



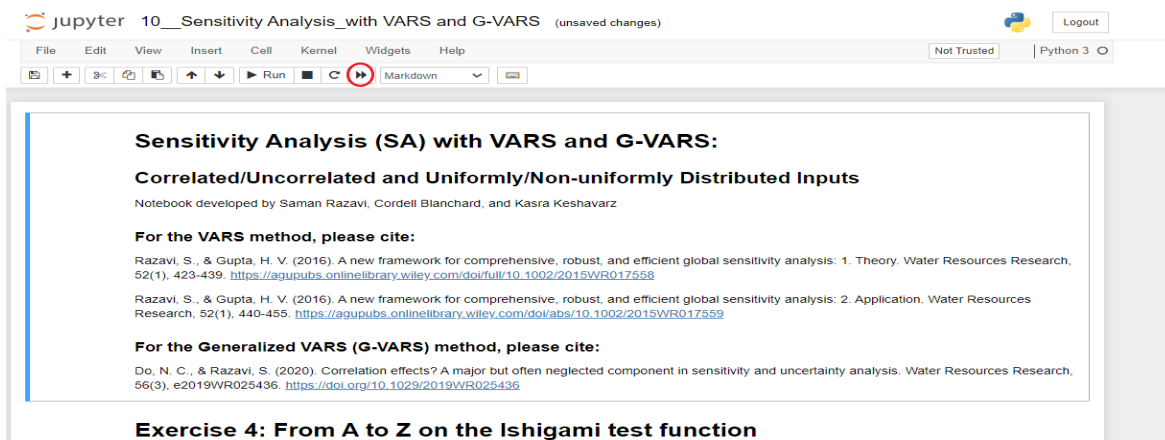
```
Anaconda Prompt (anaconda3)

(base) C:\Users\Corde>cd vars-tool/tutorials
(base) C:\Users\Corde\vars-tool\tutorials>
```

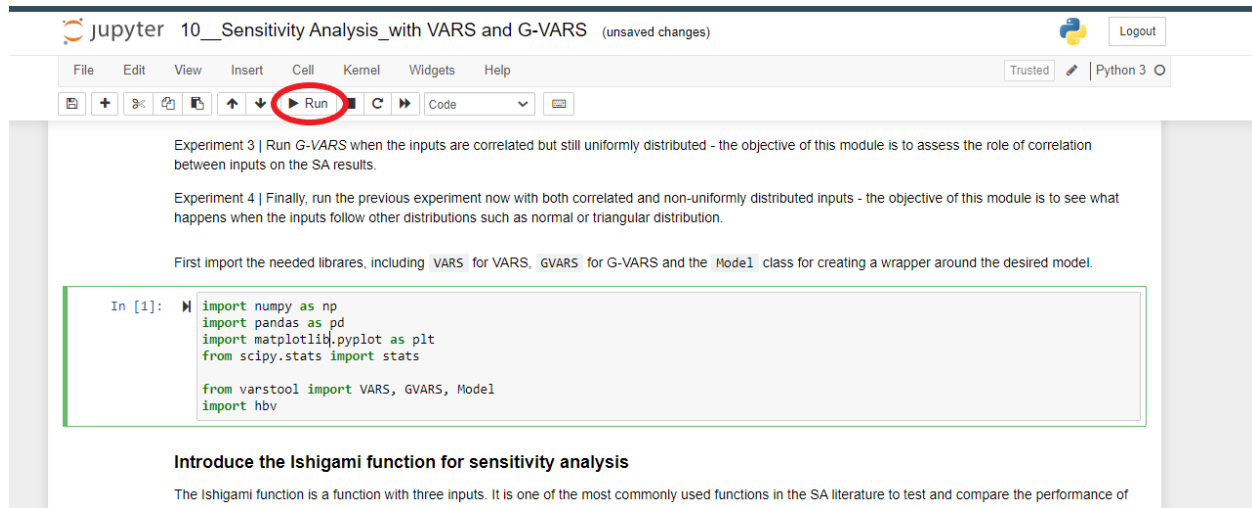
3. Now type and enter “jupyter notebook” to open the notebook application on the “tutorials” directory. A webpage similar to the one below should open; click on any tutorial you desire to run [here tutorial 1 was chosen].



4. To run the whole notebook, click the fast-forward button located on the second row of the top bar. If a confirmation window pops up, just confirm it, and let the notebook run.



5. If you want to run a specific code block, you can click on the cell, and it will be highlighted as shown below and press shift + enter or the “run” button at the top.



The screenshot shows a Jupyter Notebook titled "10\_\_Sensitivity Analysis\_with VARS and G-VARS (unsaved changes)". The toolbar at the top includes buttons for File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. The "Run" button, represented by a right-pointing triangle, is circled in red. Below the toolbar, the notebook content includes two experiments and a code cell.

Experiment 3 | Run G-VARS when the inputs are correlated but still uniformly distributed - the objective of this module is to assess the role of correlation between inputs on the SA results.

Experiment 4 | Finally, run the previous experiment now with both correlated and non-uniformly distributed inputs - the objective of this module is to see what happens when the inputs follow other distributions such as normal or triangular distribution.

First import the needed librares, including `VARs` for VARS, `GVARs` for G-VARS and the `Model` class for creating a wrapper around the desired model.

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from scipy.stats import stats

from varstool import VARs, GVARs, Model
import hbv
```

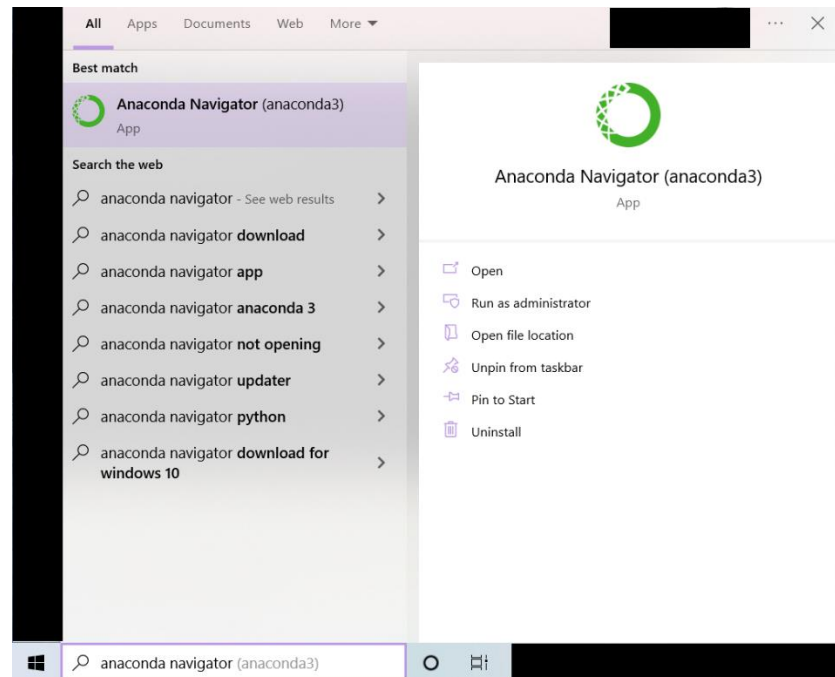
**Introduce the Ishigami function for sensitivity analysis**

The Ishigami function is a function with three inputs. It is one of the most commonly used functions in the SA literature to test and compare the performance of

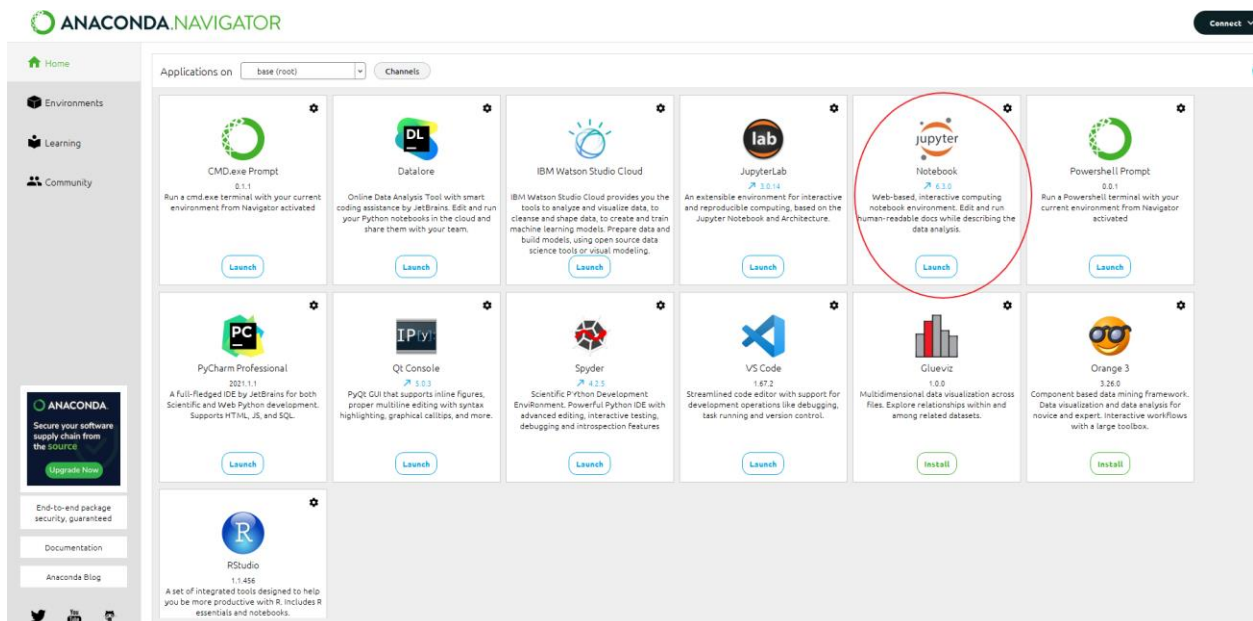
6. The tutorials can be changed as you play around with them.

## How to Start Jupyter Notebook Application Using Anaconda Navigator

1. Find Anaconda Navigator using windows search or equivalent in your devices operating system.



2. Once the main menu pops up you should see the “Notebook” application, click launch.



3. This will bring you to a webpage that shows you all the files from your computer, locate the notebook you would like open and click it.