



**Food and Agriculture
Organization of the
United Nations**



The HUB as a cloud based service

Riccardo Soldan

March 2023

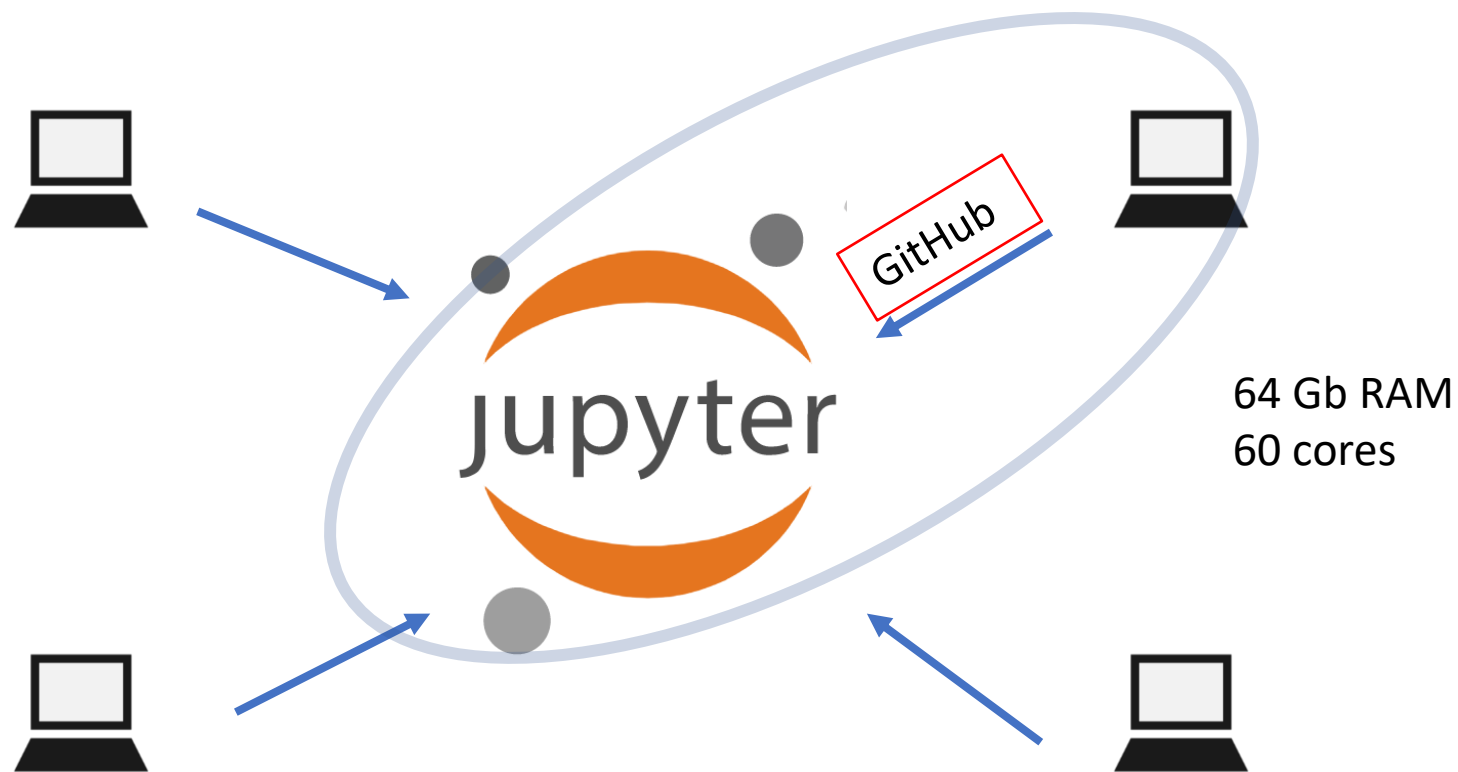


1. Introduction to the HUB
2. What can be done and what cannot be done

All the necessary information and material used in this training is available in our [GitHub repository](#)

The HUB

The HUB is a cloud based environment, powered by University of Cantabria, that allow registered users to access a JupyterLab. Here, users can work with R or python, install libraries, perform computational work





**Food and Agriculture
Organization of the
United Nations**



How to use the HUB

Riccardo Soldan
March 2023



1. Login
2. Customize your environment (notebooks, folders, etc)
3. Open a notebook
4. Installing packages
5. Code of conduct




- [Log-in to the HUB](#) (You need to login to GitHub first). It is as simple as clicking the link
- You will be able to access the HUB if you were registered among allowed users
- If you are not, fear not. This workshop is useful regardless, so stay focus

Sign in with GitHub



Customize your environment

- Once you log in, you would see the page below. You are now using a virtual machine



Logout

Control Panel

Files

Running

Clusters

Select items to perform actions on them.

☐ 0

▼

 /

Name ▼

Last Modified

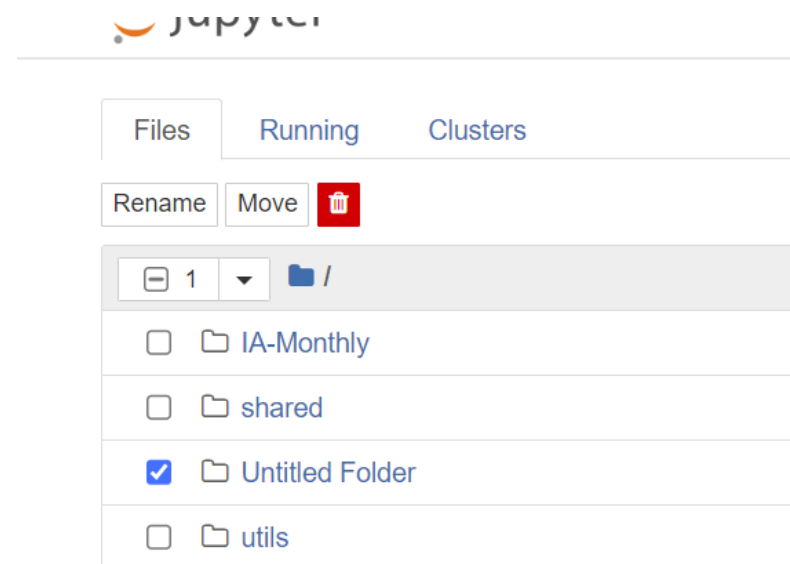
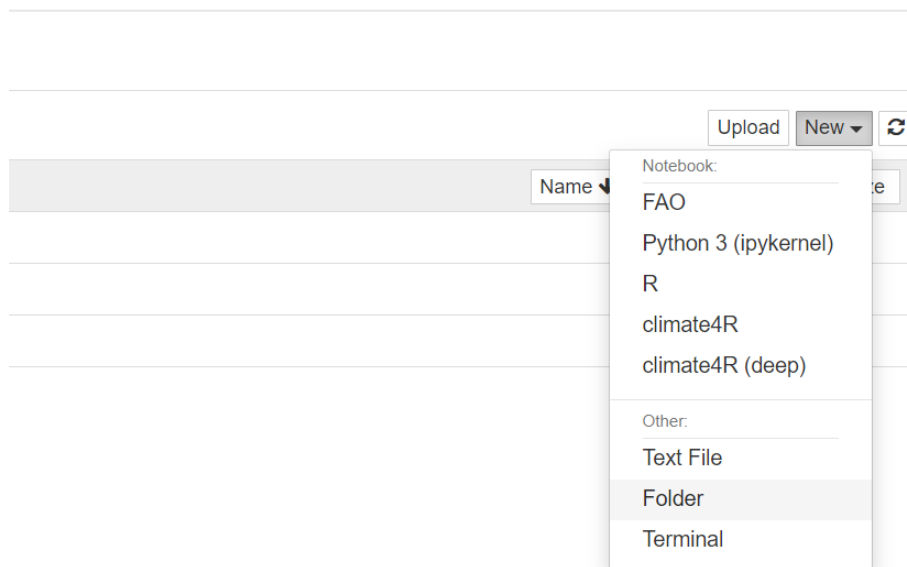
File size

<input type="checkbox"/>  IA-Monthly	2 days ago	
<input type="checkbox"/>  shared	a year ago	
<input type="checkbox"/>  utils	3 days ago	



Customize your environment

- You can now customize your environment (e.g create a folder with your name)





Customize your environment

- You can also upload some data (e.g an excel file) (**space is limited, do not upload Gbs of data**)

FilesRunningClusters

RenameMove

1

/

IA-Monthly

2 days ago

shared

a year ago

Untitled Folder

a minute ago

utils

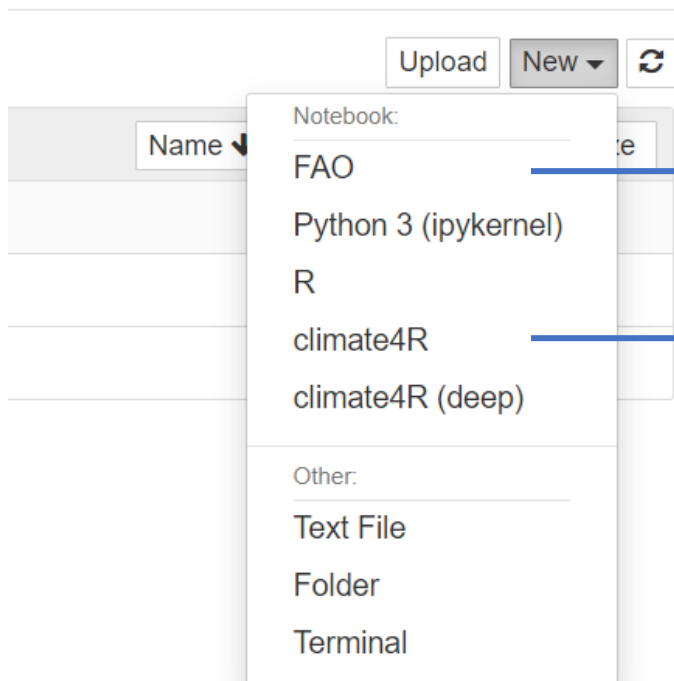
3 days ago

UploadNew



Understanding environments

- You can choose the environment that you want to use. Environments are conda environments that contains R installation and a pre-set of installed packages. Read why it is useful to work with conda environments [here](#)



Create a FAO notebook to use CAVA Analytics and use most of the packages you would need

Create a climate4R notebook if you want to use with climate4R. FAO environment also contains climate4R



Opening a FAO notebook

Upload

New ▾

↺

Name ▾

FAO

Python 3 (ipykernel)

R

climate4R

climate4R (deep)

Other:

Text File

Folder

Terminal

Create a new FAO notebook

hub.ipcc.ifca.es/user/rso9192/notebooks/Untitled.ipynb?kernel_name=fao

jupyter

Untitled

Last Checkpoint: a few seconds ago (unsaved changes)

Logout

Control Panel

File

Edit

View

Insert

Cell

Kernel

Widgets

Help


Trusted



FAO













In []:



- Now you can work as you would normally do in Rstudio

jupyter Untitled Last Checkpoint: 4 minutes ago (unsaved changes)  Logout Control Panel

File Edit View Insert Cell Kernel Widgets Help Trusted  | FAO 

        Run    Code 

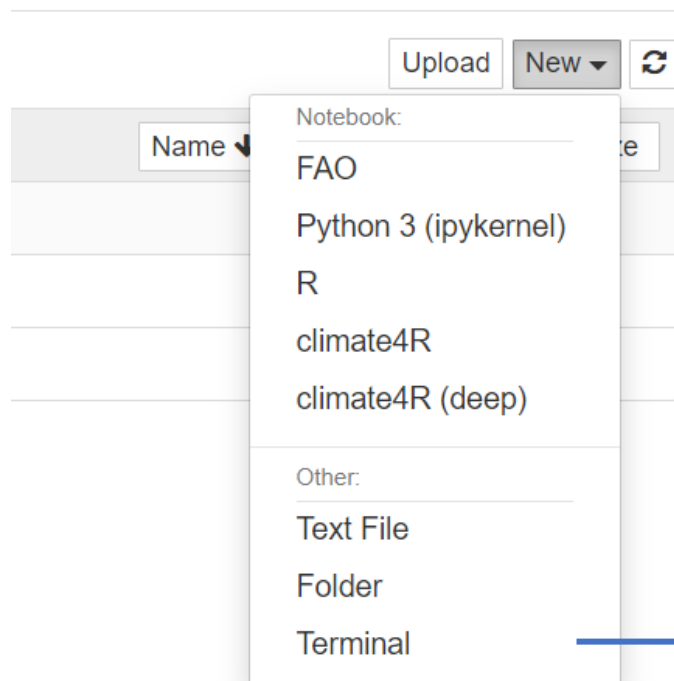
```
In [2]: library(tidyverse)

Warning message in system("timedatectl", intern = TRUE):
"running command 'timedatectl' had status 1"
Warning message:
"Failed to locate timezone database"
— Attaching core tidyverse packages — tidyverse 2.0.0 —
✓ dplyr      1.1.0      ✓ readr      2.1.4
✓ forcats   1.0.0      ✓ stringr    1.5.0
✓ lubridate 1.9.2      ✓ tibble     3.1.8
✓ purrr     1.0.1      ✓ tidyr      1.3.0
— Conflicts — tidyverse_conflicts() —
✗ dplyr::filter() masks stats::filter()
✗ dplyr::lag()     masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```



Installing packages

- Let's imagine you need a library that it is not installed in FAO or climate4R environments. To install a new package, you need to open a **terminal**



To install a new package open a terminal



- You will now see this

```
jovyan@630fd26c9279:~$
```

- Run **conda init bash**, close the terminal and open it again
- Check the available envs with `conda info --envs`

```
(base) jovyan@630fd26c9279:~$ conda info --envs
# conda environments:
#
base                * /opt/conda
climate4r           /opt/conda/envs/climate4r
climate4tf          /opt/conda/envs/climate4tf
fao                 /opt/conda/envs/fao
```

```
(base) jovyan@630fd26c9279:~$
```



- Now activate the environment in which you want to install a package, for example **conda activate fao**

```
(base) jovyan@630fd26c9279:~$ conda activate fao
(fao) jovyan@630fd26c9279:~$
```

- Open R

```
(base) jovyan@630fd26c9279:~$ conda activate fao
(fao) jovyan@630fd26c9279:~$ R

R version 4.2.2 (2022-10-31) -- "Innocent and Trusting"
Copyright (C) 2022 The R Foundation for Statistical Computing
Platform: x86_64-conda-linux-gnu (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
```

- Install the required package with `install.packages("ggplot2")`



- In the tab **running**, you will see what is currently running. **Remember to click on shutdown when done with your work. If you don't, you will be occupying memory**

[Logout](#)[Control Panel](#)[Files](#)[Running](#)[Clusters](#)

Currently running Jupyter processes



Terminals ▾

There are no terminals running.

Notebooks ▾

Untitled.ipynb

FAO

Shutdown

seconds ago



Code of conduct

- Be mindful on the usage of computational resources as these are shared among several users
- Do not upload excessive amount of data (several Gbs) from your local computer
- Always close your notebooks when done with your analyses

Thank you!

Contact details:
riccardo.soldan@fao.org