

rgee installation: Step by step for different Operating Systems

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In this section, you're going to learn to how to install rgee step by step for different Operating Systems. Remember it's necessary to have previously installed R, Rtools, and Rstudio in your desktop.

Information:

- *Rtools is only necessary for Windows OS users. You can download Rtools [here](#).*

1. Installation on a Linux distribution

For a distribution like **Ubuntu** and its derivatives, you must have set up and installed some dependencies of spatial libs in your Operative System. The following bash commands should install key geographic R packages on **Ubuntu 20.10**.

```
# install system dependencies:  
sudo apt install libudunits2-dev libgdal-dev libgeos-dev libproj-dev  
libfontconfig1-dev libjq-dev libprotobuf-dev protobuf-compiler  
  
# binary versions of key R packages:  
sudo apt install r-cran-rgee r-cran-geojsonio
```

For a distribution like **Manajaro, Archilinux or derivatives**, the installation uses the following bash commands

```
# install system dependencies:  
sudo pacman -S gcc-fortan gdal proj geos  
git clone https://aur.acrhlinux.org/udunits.git  
cd udunits  
makepkg -si
```

```
# Starting with R  
R  
# Installation of rgee and geojsonio:  
install.packages("rgee")  
install.packages("geojsonio")
```

rgee set up and registration of credentials

rgee depends on the Python packages **numpy** and **ee** for its installation. There are two methods for this, and we will explain the most recommended way for new users without experience handling the Python virtual environment.

For the installation of rgee dependencies, use the following function (this function can only be used once):

```
rgee::install_ee()
```

```
R 4.1.2 ~/rgee
> rgee::ee_install()
      Python configuration used to create rgee --
python:          /home/ambarja/.local/share/r-miniconda/envs/r-reticulate/bin/python
libpython:        /home/ambarja/.local/share/r-miniconda/envs/r-reticulate/lib/libpython3.8.so
pythonhome:       /home/ambarja/.local/share/r-miniconda/envs/r-reticulate:/home/ambarja/.local/share/r-miniconda/envs/r-reticulate
version:         3.8.12 | packaged by conda-forge | (default, Oct 12 2021, 21:57:06) [GCC 9.4.0]
numpy:           /home/ambarja/.local/share/r-miniconda/envs/r-reticulate/lib/python3.8/site-packages/numpy
numpy_version:   1.22.0

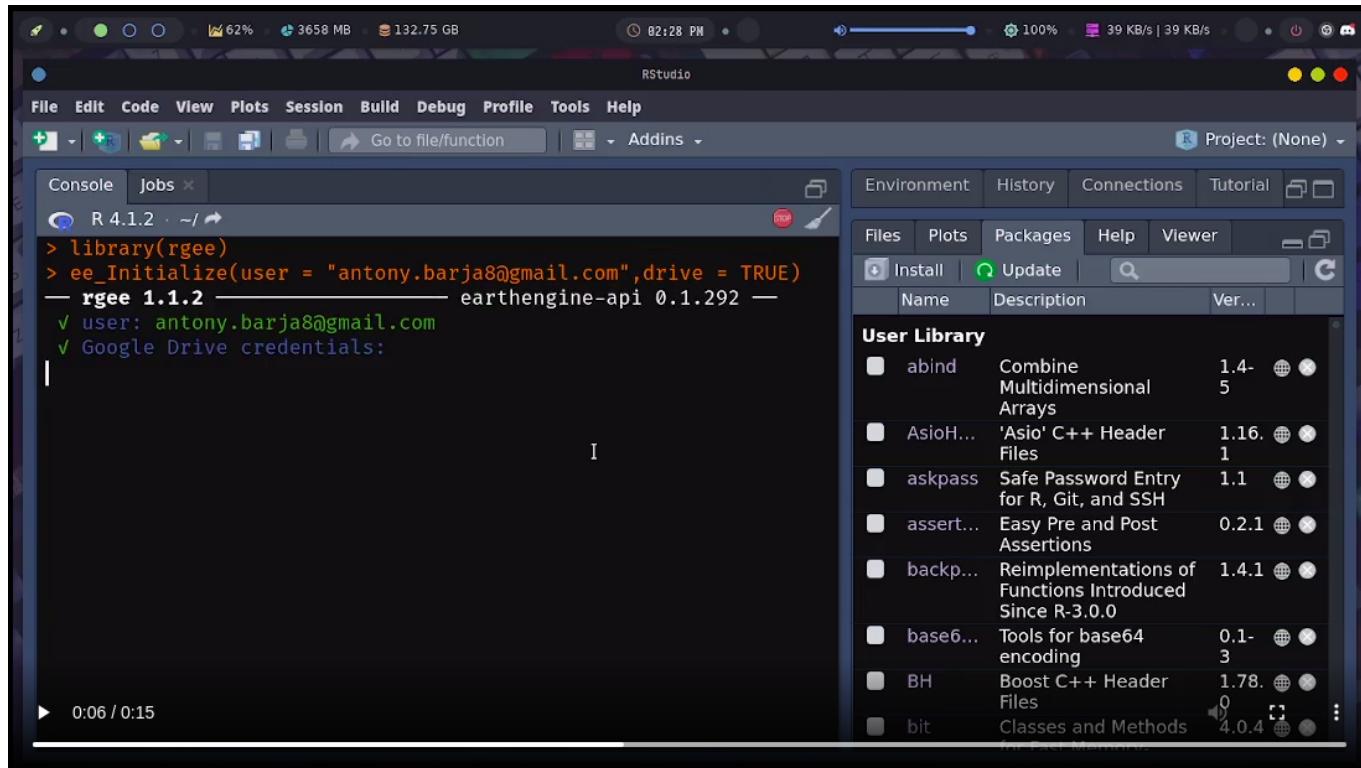
1. Removing the previous Python Environment (rgee), if it exists
...
0:02 / 0:15
```

After the installation of the rgee dependencies, you need to have a registered account on [Google Earth Engine](#).

Observation:

- To register on Google Earth Engine, you only need a gmail account and to answer a few short questions.

Finally, with your verified gmail account, you can authenticate and initialize the Earth Engine R API.



2. Installation on Windows

On windows, the rgee installation is accessible, but you need to have **miniconda** or **anaconda** previously installed. To use the rgee package, you must have **python3** installed. For a perfect installation on Windows, activate the reticulate library in your R session, and then activate rgee.

```
# Installation of rgee and geojsonio:
install.packages("rgee")
install.packages("geojsonio")
```

```
# Activation of packages:
library(rgee)
library(reticulate)
```

The `py_discover_config()` function of the reticulate package will allow you to know which version of python will be used for the installation of **numpy** and **ee** libraries.

```
> py_discover_config()
python:      C:/Users/Windows 10/anaconda3/python.exe
libpython:   C:/Users/Windows 10/anaconda3/python39.dll
pythonhome:  C:/Users/Windows 10/anaconda3
version:     3.9.7 (default, Sep 16 2021, 16:59:28) [MSC v.1916 64 bit
(AMD64)]
Architecture: 64bit
```

```
numpy:          C:/Users/Windows 10/anaconda3/Lib/site-packages/numpy
numpy_version: 1.20.3
```

Information:

- The function `py_config()` we allow list all version of python discovered in our System.

After identifying the python version, the next step is to set the path for the new Python environment for rgee, for this you can use the following function `use_python("PUT-HERE-THE-PYTHON3-VERSION-PATH")`

```
use_python("C:/Users/Windows 10/anaconda3/python.exe")
```

You can verify the selection of python to work with rgee.

```
> py_config()
python:          C:/Users/Windows 10/anaconda3/python.exe
libpython:        C:/Users/Windows 10/anaconda3/python39.dll
pythonhome:      C:/Users/Windows 10/anaconda3
version:         3.9.7 (default, Sep 16 2021, 16:59:28) [MSC v.1916 64 bit
(AMD64)]
Architecture:   64bit
numpy:          C:/Users/Windows 10/anaconda3/Lib/site-packages/numpy
numpy_version: 1.20.3
ee:              [NOT FOUND]
NOTE: Python version was forced by the use_python function
```

Finally, we set up our rgee environment, install the necessary python dependencies, then initialize Google Earth Engine from R and save your credentials.

```
R 4.1.2 · ~/rgee
ca-certificates    conda-forge/win-64::ca-certificates-2021.10.8-h5b4
5459_0
openssl           conda-forge/win-64::openssl-3.0.0-h8ffe710_2
pip                conda-forge/main::pip-20.1.1-py38haa244fe
python              conda-forge/main::python-3.8.5-haa244fe_0
on
python_abi          conda-forge/win-64::python_abi-3.8.5-haa244fe_0
setuptools         conda-forge/win-64::setuptools-60.6.0-py38haa244fe
_
sqlite              conda-forge/win-64::sqlite-3.37.0-h8ffe710_0
wheel               conda-forge/noarch::wheel-0.37.1_pyh5b4
Preparing transaction: ...working... done
Verifying transaction: ...working... done
Executing transaction: ...working... done
rgee::ee_install want to store the environment variables: EARTHENGINE_P
YTHON
and EARTHENGINE_ENV in your .Renviron file to use the Python path:
C:\Users\Windows 10\anaconda3\envs\rgee\python.exe in future sessions.
Would you like to continue? [Y/n]: Y
```

Environment is empty

Files Plots Packages Help Viewer

abind Multidimensional Arrays 1.4- 5
addins... Addins Made of Joao Melo 0.1.0
addins... Discover and Install Useful RStudio Addins 0.4.0
addins... 'RStudio' Addins for Show Outline of a R Markdown/'LaTeX' Project 0.1.6

```
R 4.1.0 · ~/rgee
cryptography-36.0.0 | 1.0 MB | ##### | 100%
protobuf-3.19.3     | 243 KB | ##### | 100%
packaging-21.3       | 36 KB | ##### | 100%
google-resumable-med | 41 KB | ##### | 100%
google-cloud-st...   | 73 KB | ##### | 100%
earthengine-a...     | 199 KB | ##### | 100%
pytz-2021.3         | 242 KB | ##### | 100%
idna-3.3            | 55 KB | ##### | 100%
charset-normalizer-2| 35 KB | ##### | 100%
libcblas-3.9.0      | 5.3 MB | ##### | 100%
uritemplate-3.0.1   | 16 KB | ##### | 100%
future-0.18.2       | 734 KB | ##### | 100%
certifi-2021.10.8   | 145 KB | ##### | 100%
Preparing transaction: ...working... done
Verifying transaction: ...working... done
Executing transaction: ...working... done
```

Well done! rgee was successfully set up in your system.
You need restart R to see changes. After doing that, we recommend run ee_check() to perform a full check of all non-R rgee dependencies.
Do you want restart your R session?

1: yes
2: no

Selection: 1

Environment is empty

Files Plots Packages Help Viewer

abind Multidimensional Arrays 1.4- 5
addins... Addins Made of Joao Melo 0.1.0
addins... Discover and Install Useful RStudio Addins 0.4.0
addins... 'RStudio' Addins for Show Outline of a R Markdown/'LaTeX' Project 0.1.6

Then initialize Google Earth Engine from R and save your credentials.

```
ee_Initialize(user = "GMAIL_ACCOUNT", drive = TRUE)
```

3 Initialize GEE inside R

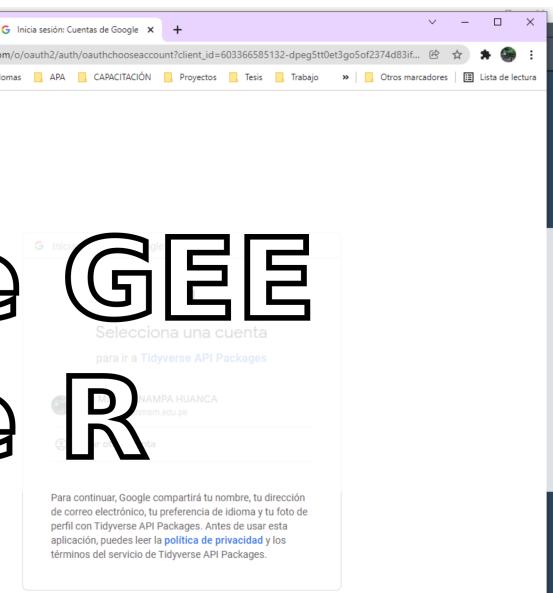
```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
+ - Go to file/function Addins
Console Terminal Jobs
R 4.1.2 ~/ ...
libcblas-3.9.0 | 5.3 MB | ##### | 100%
uritemplate-3.0.1 | 16 KB | ##### | 100%
future-0.18.2 | 734 KB | ##### | 100%
certifi-2021.10.8 | 145 KB | ##### | 100%
Preparing action: working... done
Verifying action: working... done
Executing action: working... done
Well done! rgee was successfully set up in your system.
You need restart R to see changes. After doing that,
run ee_check() to perform a full check of all non-R
Do you want restart your R session?
1: yes
2: no

Selection: 1
Restarting R session ...

> library(rgee)
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 -- earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials:

```



4 Accept Google Drive credentials

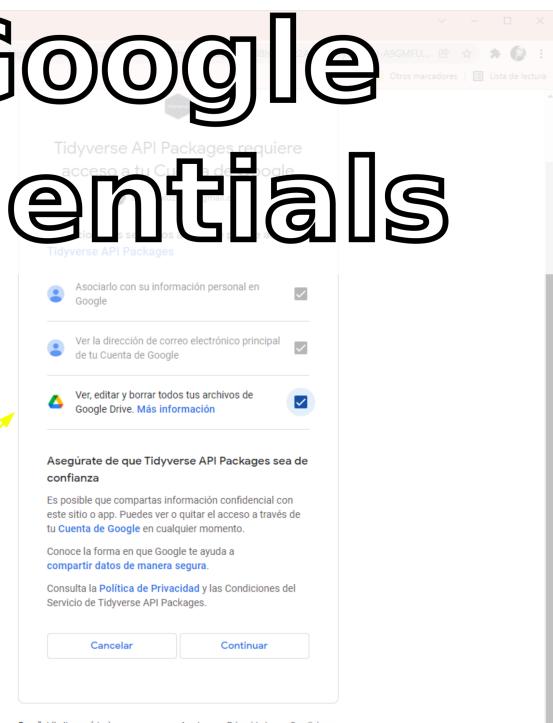
```

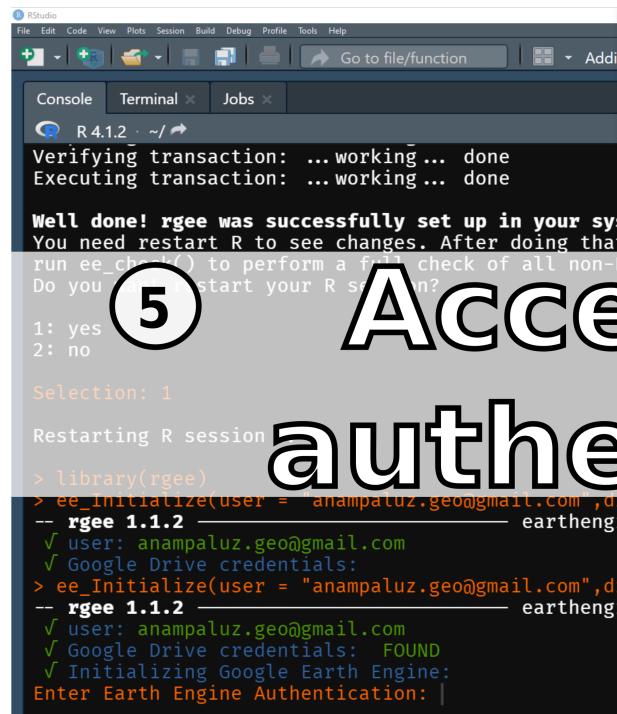
RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
+ - Go to file/function Addins
Console Terminal Jobs
R 4.1.2 ~/ ...
Preparing action: working... done
Verifying action: working... done
Executing action: working... done
Well done! rgee was successfully set up in your system.
You need restart R to see changes. After doing that,
run ee_check() to perform a full check of all non-R
Do you want restart your R session?
1: yes
2: no

Selection: 1
Restarting R session ...

> library(rgee)
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 -- earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials:
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 -- earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials:

```



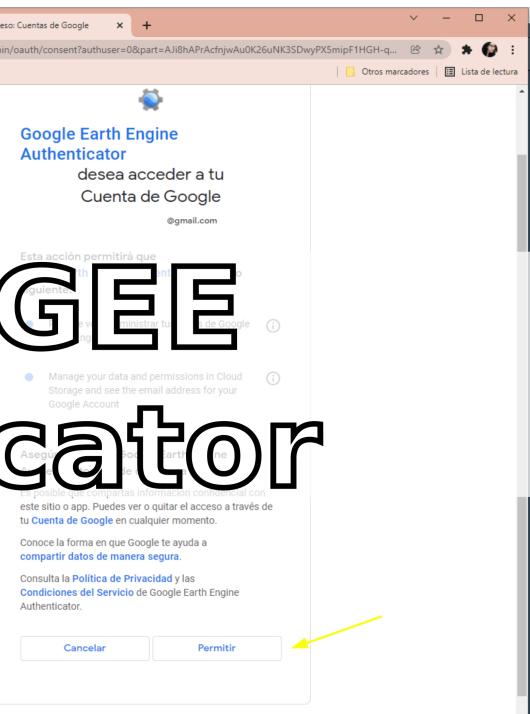
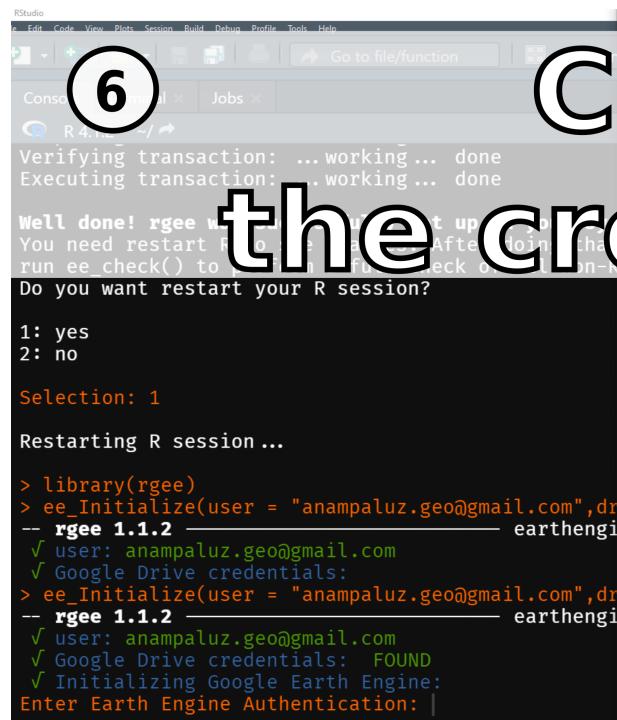


```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
+ Go to file/function | Addin...
Console Terminal Jobs
R 4.1.2 ~/→
Verifying transaction: ...working... done
Executing transaction: ...working... done
Well done! rgee was successfully set up in your system!
You need restart R to see changes. After doing that run ee_check() to perform a full check of all non-R dependencies.
Do you want to start your R session?
1: yes
2: no
Selection: 1
Restarting R session ...
> library(rgee)
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials:
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials: FOUND
✓ Initializing Google Earth Engine:
Enter Earth Engine Authentication: |

```

Accept GEE authenticator

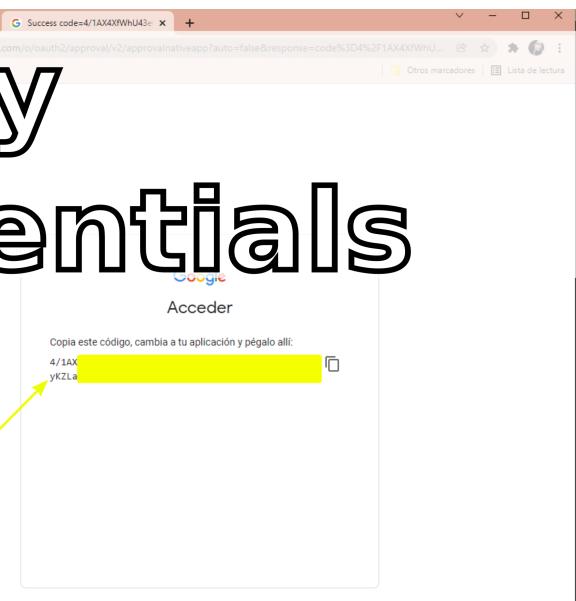



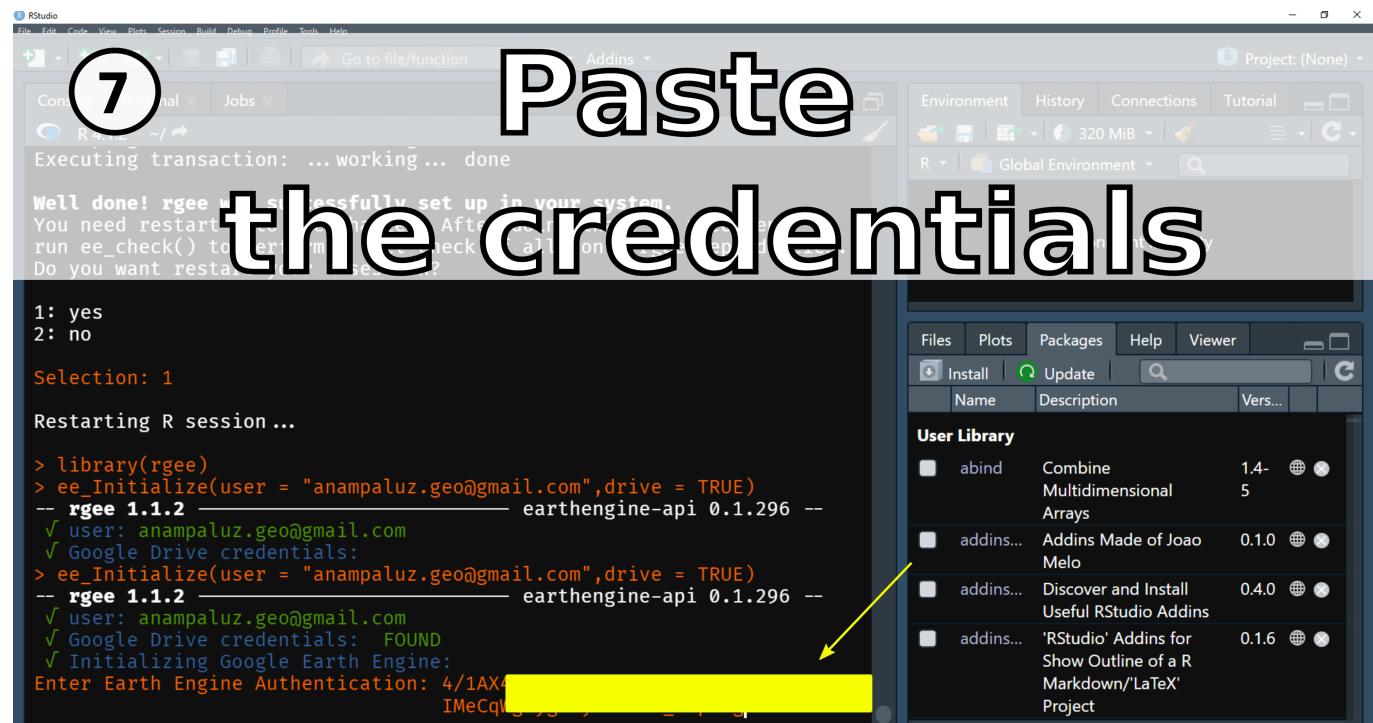
```

RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
+ Go to file/function | Addin...
Console Terminal Jobs
R 4.1.2 ~/→
Verifying transaction: ...working... done
Executing transaction: ...working... done
Well done! rgee was successfully set up in your system!
You need restart R to see changes. After doing that run ee_check() to perform a full check of all non-R dependencies.
Do you want restart your R session?
1: yes
2: no
Selection: 1
Restarting R session ...
> library(rgee)
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials:
> ee_Initialize(user = "anampaluz.geo@gmail.com", dr
-- rgee 1.1.2 earthengine
✓ user: anampaluz.geo@gmail.com
✓ Google Drive credentials: FOUND
✓ Initializing Google Earth Engine:
Enter Earth Engine Authentication: |

```

Copy the credentials



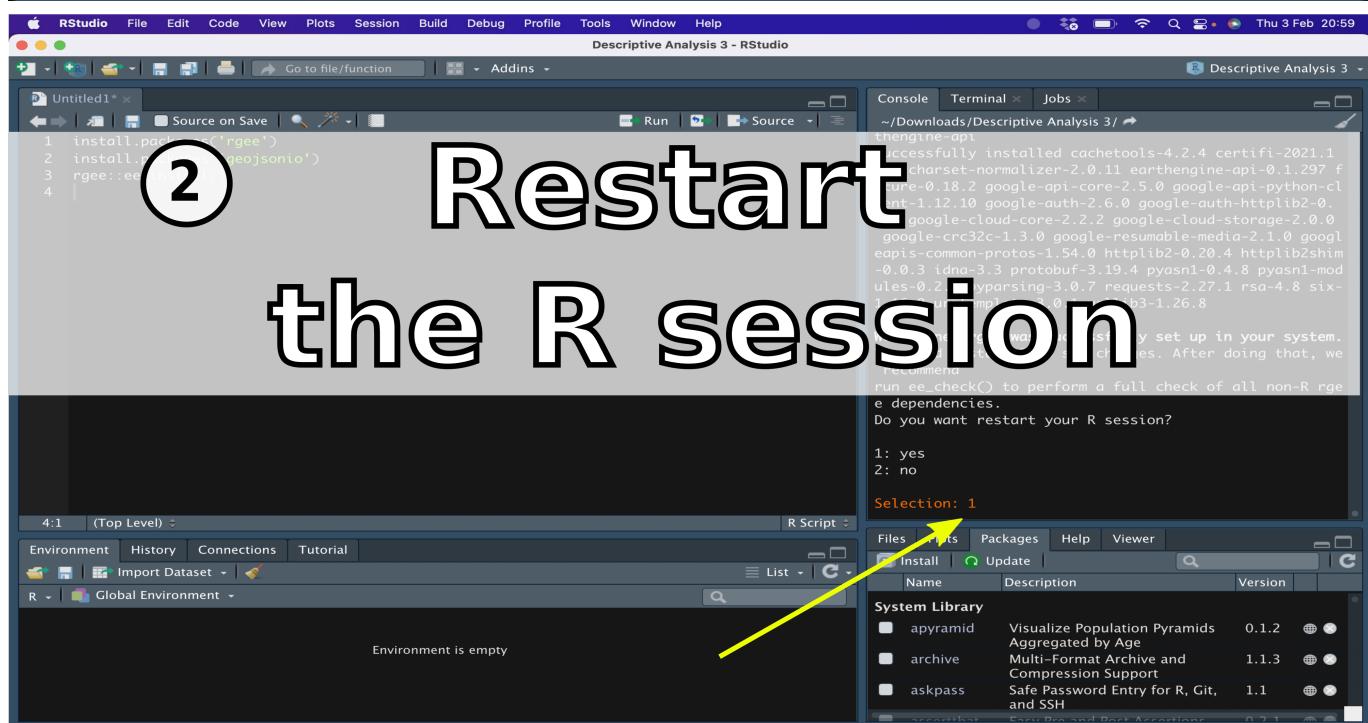
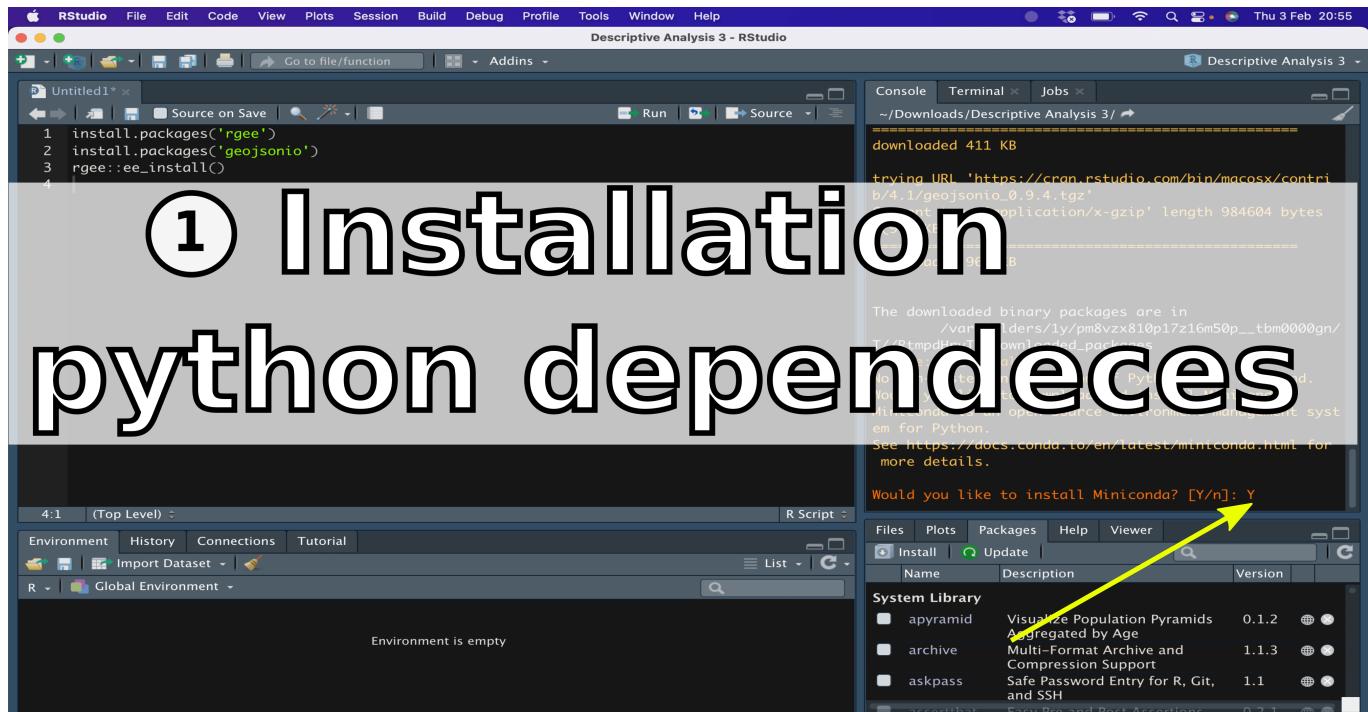


3. Installation on Mac OS

Installation on Mac OS is very similar to a GNU/Linux distribution. In the following code section, you'll find the codes and some screenshots of some key points to consider.

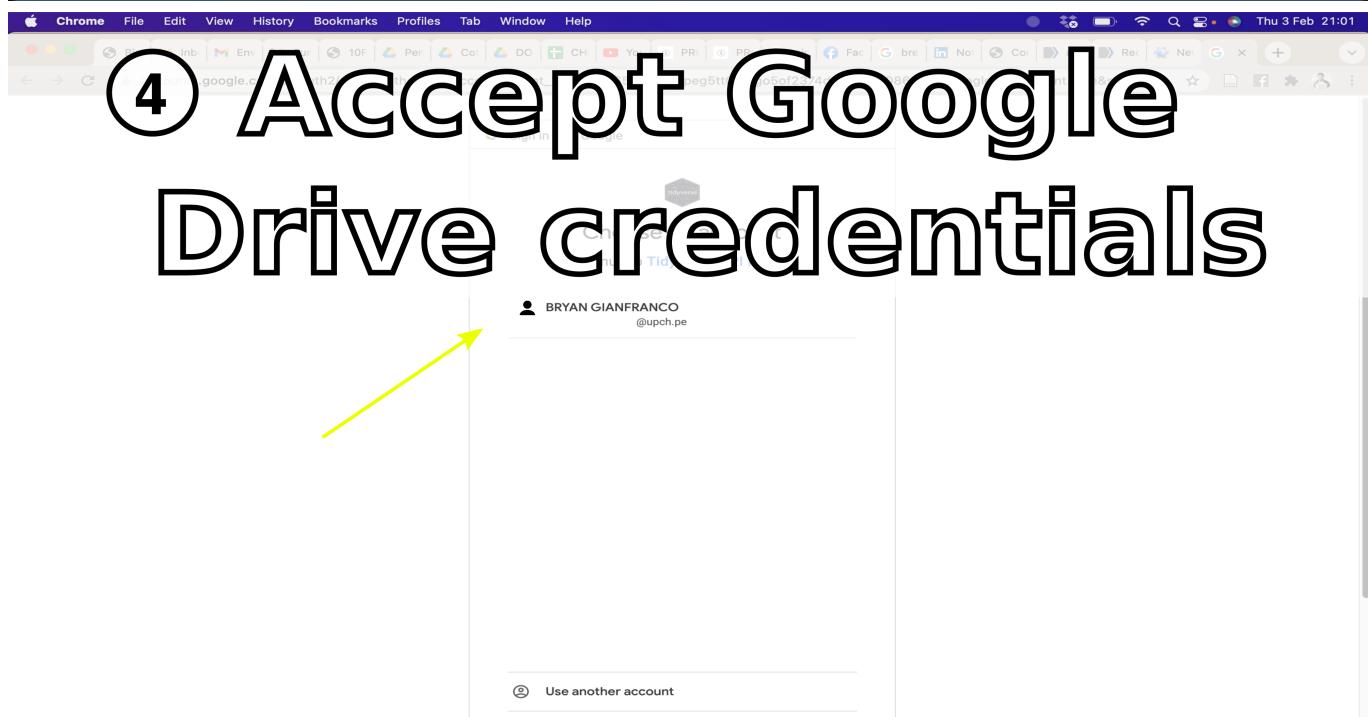
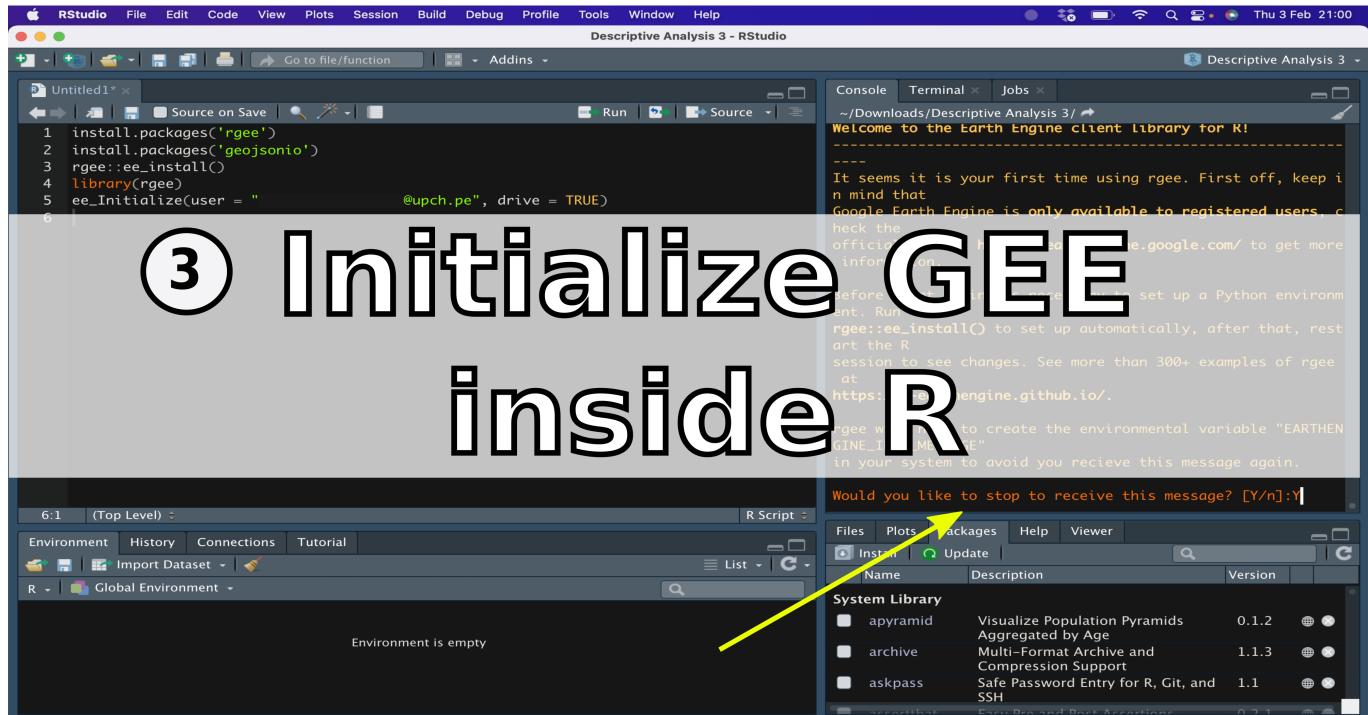
```
# Installation of rgee and geojsonio:
install.packages("sf")
install.packages("geojsonio")
```

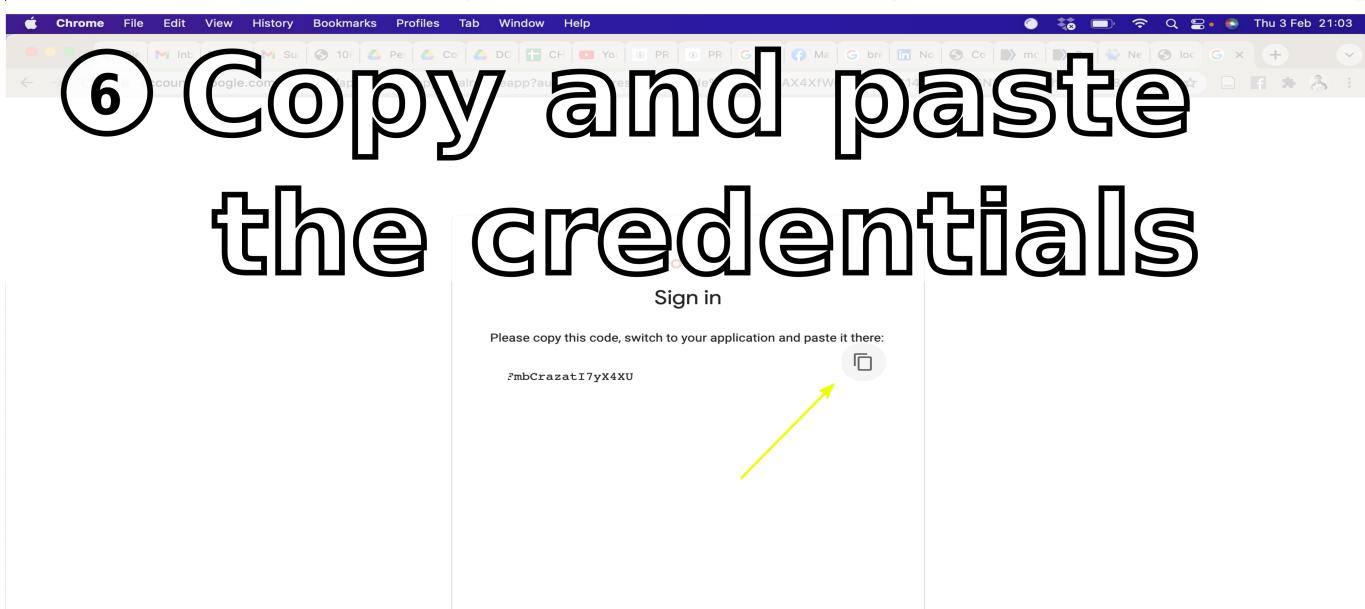
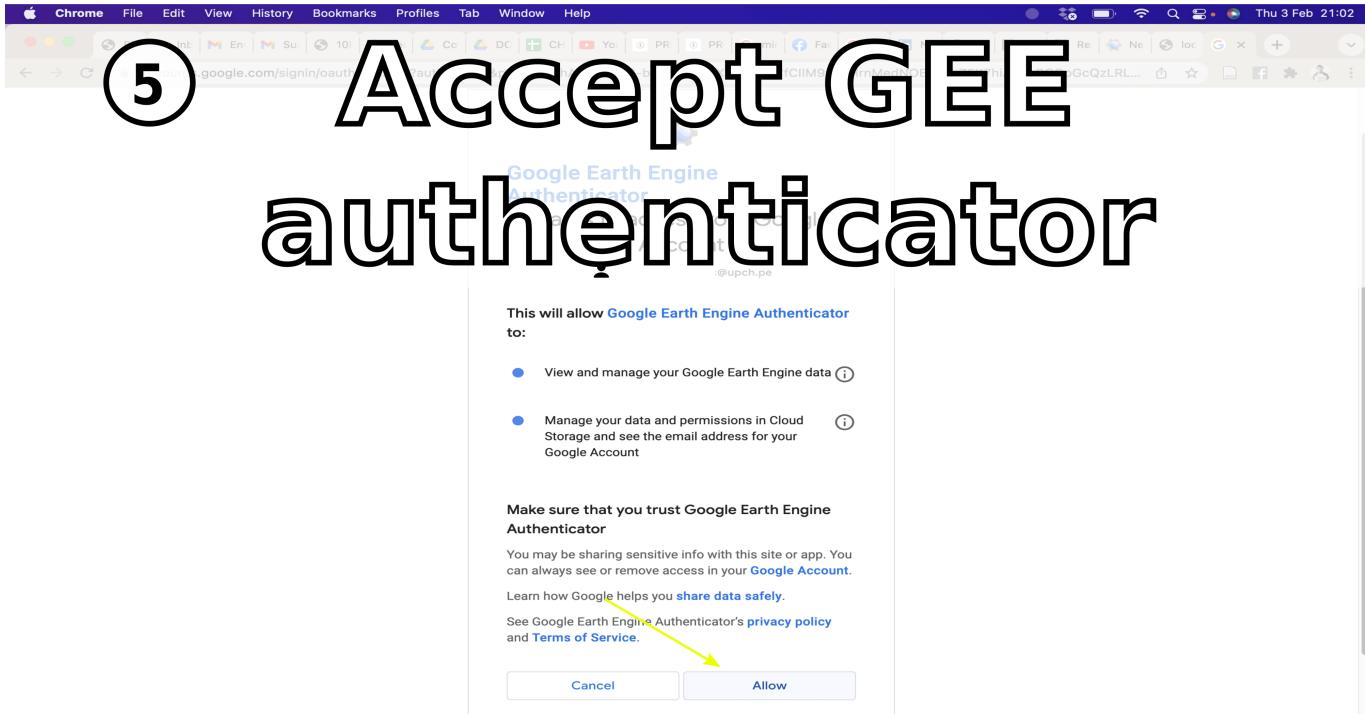
```
# Installation of Python dependence libraries:
rgee::install_ee()
```

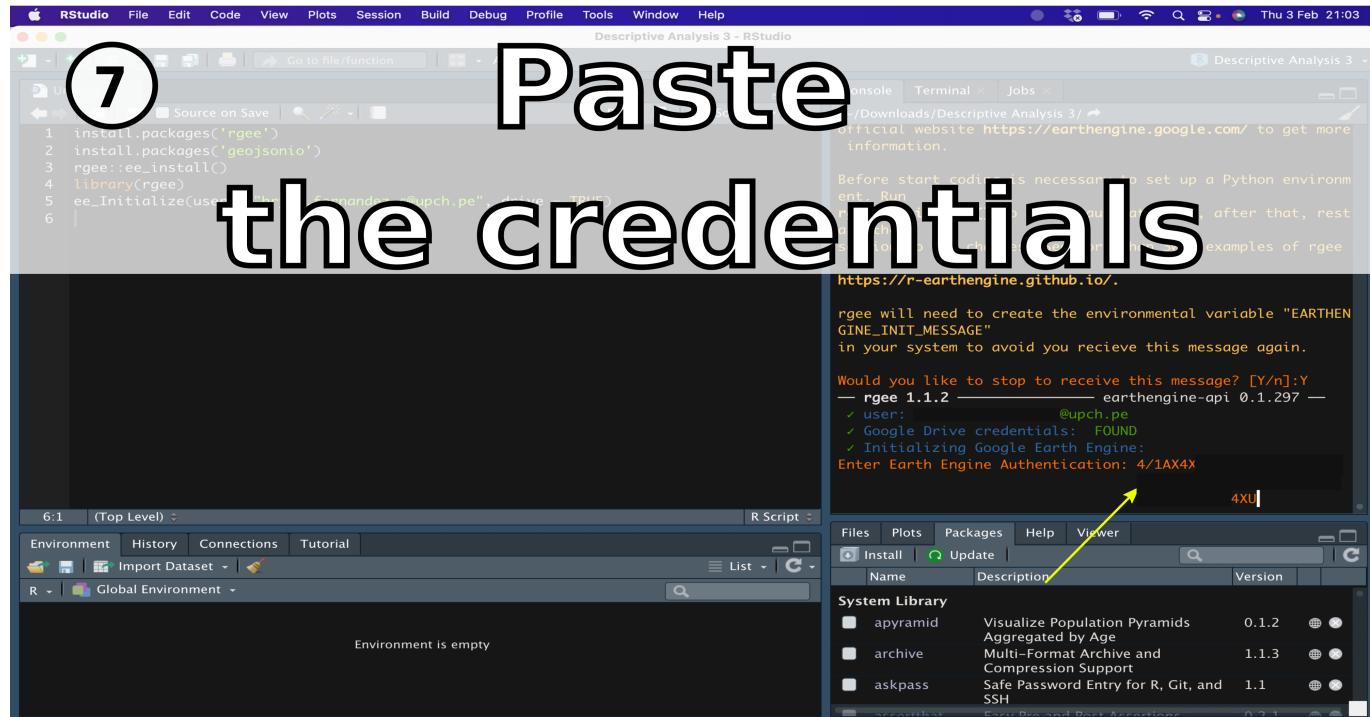


Initialize Google Earth Engine from R and save your credentials.

```
ee_Initialize(user = "GMAIL_ACCOUNT", drive = TRUE)
```







4. Additional packages

- tmap: <https://github.com/r-tmap/tmap>
- mapview: <https://github.com/r-spatial/mapview>
- ggspatial: <https://github.com/paleolimbot/ggspatial>
- viridis: <https://github.com/sjmgarnier/viridis>
- cptcity: <https://github.com/ibarraespинosa/cptcity>
- raster: <https://github.com/rspatial/raster>
- sf: <https://github.com/r-spatial/sf>
- stars: <https://github.com/r-spatial/stars>
- geojsonio: <https://github.com/ropensci/geojsonio>
- tidyverse: <https://github.com/tidyverse/tidyverse>
- patchwork: <https://github.com/thomasp85/patchwork>
- lubridate: <https://github.com/tidyverse/lubridate>