

## SCRIPTS TO AUTOMATICALLY DOWNLOAD, ASSIGN A COORDINATE SYSTEM, AND MERGE LiDAR DATA

### **Script 1 (S1\_add\_laz.py): Add the “.laz” extension to the name of the file containing the LiDAR data to be downloaded**

In a TXT file, we collect the names of the LiDAR files that we want to download. We use Script 1 to add the “.laz” extension to the file names (this is necessary so they can be downloaded correctly using Script 2).

### **Script 2 (S2\_download\_LiDARdata\_Step1.py): Download LiDAR data – Step 1**

This script is used to automatically download LiDAR “.laz” files.

The script reads the names of the LiDAR files to be downloaded from a TXT file. It compares the names listed in the TXT file with the files available at the base URL. When the names match, the URL address where the LiDAR “.laz” file is stored is saved in a text output file.

Within the script, the following parameters must be modified: “BASE\_URL”, “NOMBRES\_ARCHIVO”, and “ARCHIVO\_SALIDA”:

- Link to the web page containing the folders with different LiDAR “.laz” files. This is the root URL where all subdirectories are located.

BASE\_URL = [https://datacloud.icgc.cat/datacloud/lidar-territorial/laz\\_unzip/](https://datacloud.icgc.cat/datacloud/lidar-territorial/laz_unzip/) (*important: change if necessary*)



- “.txt” file where we have previously written the names of the files we want to download.

NOMBRES\_ARCHIVO = r"D:/PhD\_NJQ/LiDAR/Datos/archivos\_descargar.txt" (*important: change*)

- Name of the output file that will be generated. Adjust the folder where you want it to be saved.

ARCHIVO\_SALIDA = r"D:/PhD\_NJQ/LiDAR/Datos/Enlaces\_descarga\_archivos.txt" (*important: change*)

### **Script 3 (S3\_download\_LiDARdata\_Step2.py): Download LiDAR data – Step 2**

This script creates a folder to store the downloaded data and downloads the “.laz” files silently, without opening a browser.

Within the script, the following parameters must be modified: “ARCHIVO\_URLS” and “CARPETA\_DESTINO”:

- “.txt” file generated in Step 1 that contains the URLs of the “.laz” files to download.

ARCHIVO\_URLS = r"D:/PhD\_NJQ/LiDAR/Datos/Enlaces\_descarga\_archivos.txt"

- Destination folder created for the downloaded files. THERE IS NO NEED TO CREATE IT IN ADVANCE. We must indicate the path where we want to save the new folder and give it a name.

CARPETA\_DESTINO = r"D:/PhD\_NJQ/LiDAR/Datos/Descargados"

**Script 4 (S4\_assign\_coordinate\_system.py): Verify and assign the coordinate system to LiDAR files**

This script checks whether the file has a coordinate system assigned; if it does not, the one defined in "EPSG\_CODE" is assigned.

It is NECESSARY to have the free software LAStools by Rapidlasso GmbH installed (<https://rapidlasso.de/product-overview/>).

Within the script, the following parameters must be modified: "LASTOOLS\_PATH", "INPUT\_FOLDER", "OUTPUT\_FOLDER", and "EPSG\_CODE".

**Script 5 (S5\_merge\_laz\_files.py): Merge LiDAR ".laz" files**

This script merges LiDAR ".laz" files.

It is NECESSARY to have the free software LAStools by Rapidlasso GmbH installed (<https://rapidlasso.de/product-overview/>).

Within the script, the following parameters must be modified: "carpeta\_laz" and "lasmerge\_path".