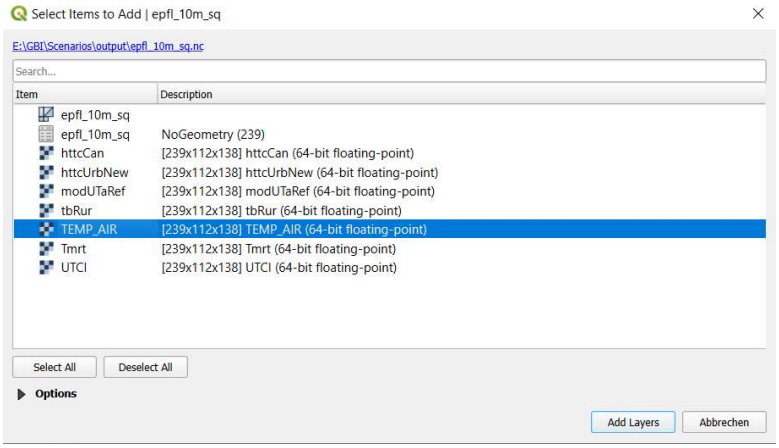
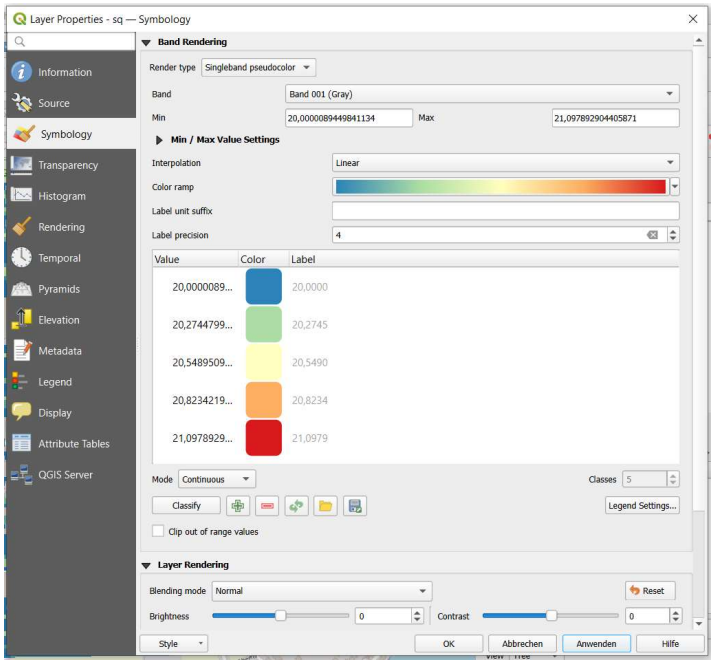
TARGET ouput data processing

In the ouput data folder of your TARGET folder structure, a file of the type filename.nc should appear after successful modelling. This is the netCDF file format. If you drag the file into QGIS, a pop-up window opens that allows you to choose and add the variables that interest you, for example the air temperature. It might be, that the layer does not appear where it should be (over the epfl campus).



Another occurring problem could be, that your data is weirdly mirrored. I did follow the instruction on this website to correctly georeferenced my data and to invert the mirroring. On the second page in this pdf, I show how to proceed for this step. The georeferencing might also be helpful when your data doesn't appear correctly in space in QGIS.

In QGIS, you can explore the data by double-clicking on the layer and play with the symbology. If you choose "Singleband" instead of "Multiband" as Render type, you can display the air temperature of single time steps, as each band does represent one of your simulation time steps, with Band 001 being the first.



To analyse your data in more detail, check out the R script I uploaded on Moodle. For the script, you need your ouput in GeoTIFF format. In QGIS, you can directly export your netCDF file as a GeoTIFF.

-> You can follow the R script analysis even when your output data does not appear at the correct place on the map yet. The only issue could be that the wrong coordinates are displayed on your plots.

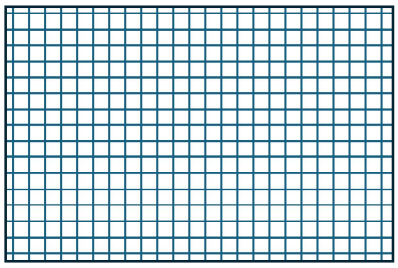
-> Empty cells in your output data can be due to 100% building cells, as the air temperature is only modelled in the canyons (between buildings).

Georeferencing your data if mirrored

Check if your data is mirrored by comparing the air temperature variable with a few grid cells. Cells with high shares of vegetation should be cooler than those with lots of asphalt. The ouput of my data was mirrored in the following way:

How it should be:

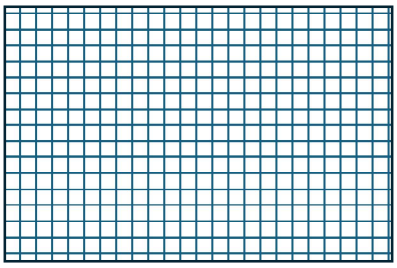
x1,y1 x2,y1



x1,y2 x2,y2

how my data was:

x1,y2 x2,y2



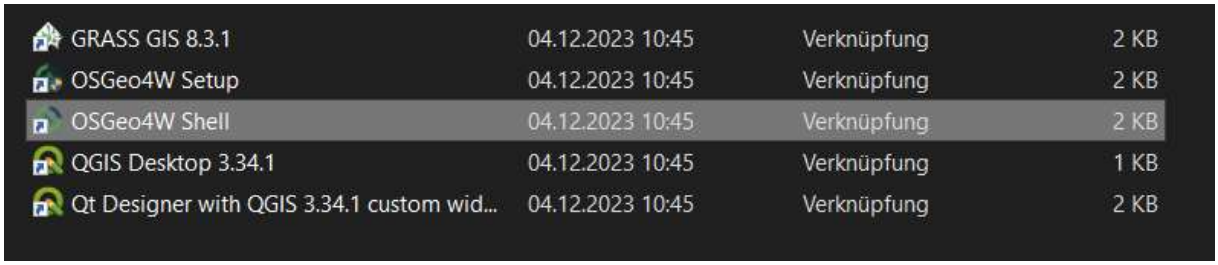
x1,y1 x2,y1

With the latitude coordinates x1 and x2, and the longitude coordinates y1 and y2 of the corners of the grid.

On the website (same as above), two ways on how to georeferenced your data are explained. One approach uses python while the other one is performed within the console (OSGeo4W Shell). Here, I show on how to solve the problem using the OSGeo4W Shell.

This step does not only allow you to correct the mirroring, but also creates a GeoTIFF file to use for the R Script I provided and allows you to set the CRS (coordinate reference system) you desire.

On my notebook (Windows), the OSGeo4W Shell was automatically installed with the installation of QGIS.



The command for georeferencing we will be using belongs to the gdal library, so you should check if you have it already installed or not. Check for your gdal on your computer by opening the OSGeo4W Shell and type `gdalinfo --version`

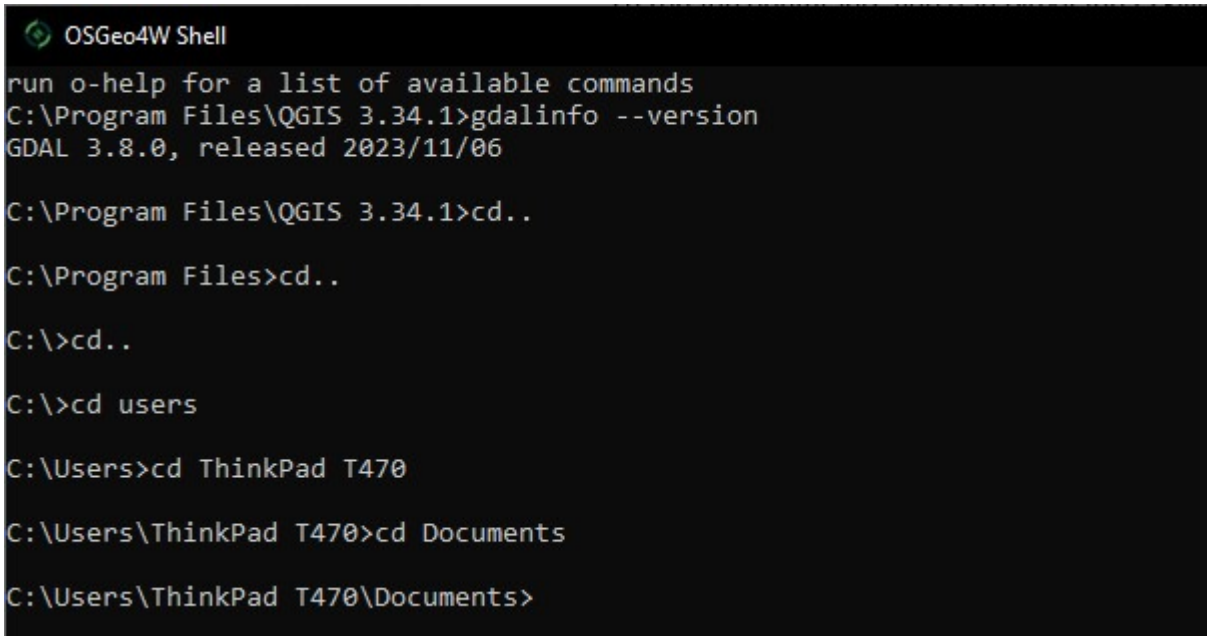
If you have it installed, it will show you the gdal version you have installed, similar to this:

Now to georeference the raw target output data, you can use the gdal_translate command, which you need to adapt corresponding to your data. This command also fixes the mirroring.

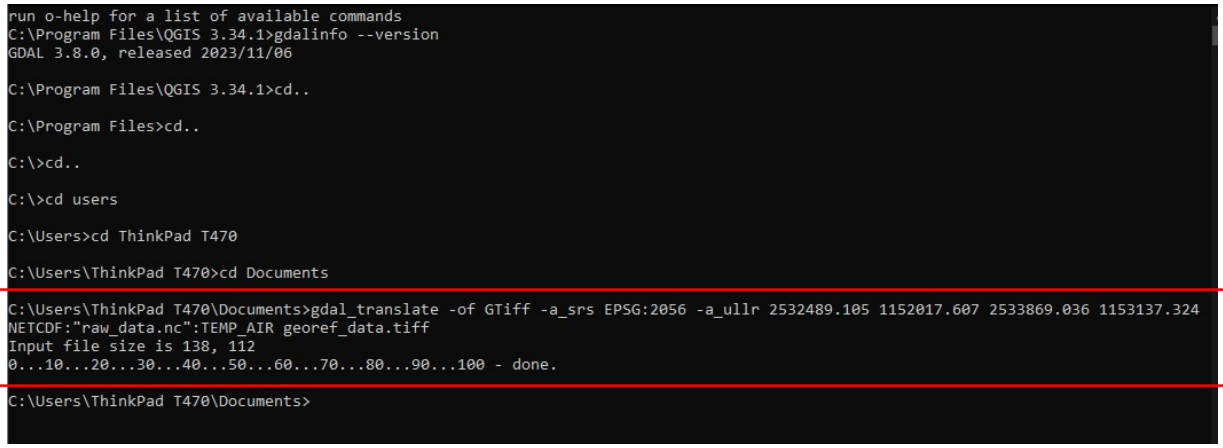
gdal_translate -of GTiff -a_srs CRS -a_ullr x1 y2 x2 y1 NETCDF:"raw_data.nc":TEMP_AIR georef_data.tiff

Format of your output: we want to create a GeoTIFF file
The desired coordinate reference system, for example ESPG 2056 or ESPG 4326. If you use ESPG 2056, you have the same metric CRS as the landcover input data which might be helpful for comparison.
The coordinates of you grid in the desired CRS! Check the longitudinal and latitudinal extent of your grid in QGIS using the desired CRS.
Name of your Target output data
Variable that you want to have in your output file. Here I did put the air temperature, as this was my variable of interest.
Name of your output file in GeoTIFF format

To run the command, you can direct the OSWGeoShell to the folder with your output files. I had a copy of them in my Documents folder, this is how I changed the directory:



Once, you have the correct directory to your files, you can run the georeferencing command:



When this did run successfully, the georeferenced .tiff file should appear in the same folder.