PINE DATA PROCESSING

CAUTION : every program under MY PASSPORT/Klima/programs has a setup section that has to be completed before running it. Don't modify the names of the files, they contain data in a specific order and programs won't be able to read it properly after that. Also, PINE doesn't read files that have long path (≥90 characters).

IMPORTANT

- when an input or output directory is specified in the setup of a program, there is usually a subfolder for every catchment, created by the program. Example: you specify input_folder <- 'Input_BiasCorrect' in the setup of BiasCorrectPrecip.R ; the actual input is actually Input_BiasCorrect/Catchmentname.
- When Restarting or Terminating R, even if the variables are still there, the imported libraries are not !

NB1 : usually, the output of a script is the input of another one. Python scripts link the other scripts.
NB2 : if you prefer not to work on the hard disk, just copy Klima on your computer. You'll need 600GB with RR and TM, but only 10GB without these folders (after executing climate_models_RCP_sfVersion.R).
NB3 : if your R programs struggle opening files, try to open RStudio as administrator.

1 Compute the Observed values with PINEHBV : follow the instructions of PINE_tutorial.pdf.

estimated duration : 1 day

2 Download the catchment shapefiles and put them under Input_RCP/Catchmentname (you have to create this repository)

estimated duration : 1 hour

3 climate_models_RCP_sfVersion.R
one time per scenario (rcp45 and rcp85). you can list the climate models in the list 'models' in order to gather all the data all at once.

estimated duration : 1 week

4 climate_models_RCP_to_BiasCorrect.py. automatically makes the input files for BiasCorrectPrecip.R and BiasCorrectTemperature.R using the output files of climate_models_RCP_sfVersion.R

estimated duration : 1 hour

5 BiasCorrectPrecip.R & BiasCorrectTemperature.R
compute the bias corrected and delta changed data sets for temperature and precipitation, and also the daily evapotranspiration values by month (useful for the PINE parameter files).

estimated duration : 2 days

6 corrected_txt_pine_input.py
uses the output of BiasCorrect R functions to make .txt data files for PINE simulations.

estimated duration : 1 hour

7 pine_files_creation.py
helps you creating the PINE setups for every climate model, scenario and period.

estimated duration : 2 hours

8 PINEHBV.exe
run a simulation (hydrological periods) for every setup created by pine_files_creation.py (not for historical values, that is useless). the results will be stored in the PINE output files under PINE/PineProj/Catchmentname/output_txt_corr and PINE/PineProj/Catchmentname/output_txt_delta

estimated duration : 1 day

9 preplot.R
prepare the text input files for Plotting.R and AnnualMinFlows.R using the PINE output files.

estimated duration : 3 hours

10 Plotting.R
final plot of the average year for the baseline period, future period (all climate models and their average). There is one plot for every scenario+period data set.
AnnualMinFlows.R
plot of the seven-day-average minimum flow for every year.

estimated duration : 1 day