GLOBAL LAKE RESPONSES TO CLIMATIC CHANGE

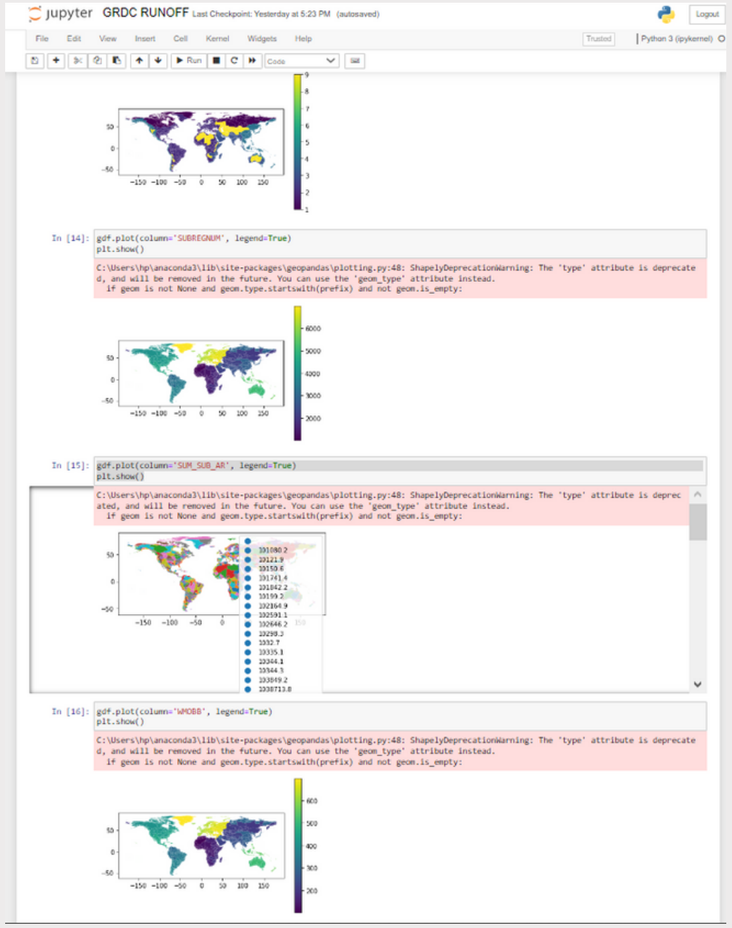
Hydrological budget Equation:

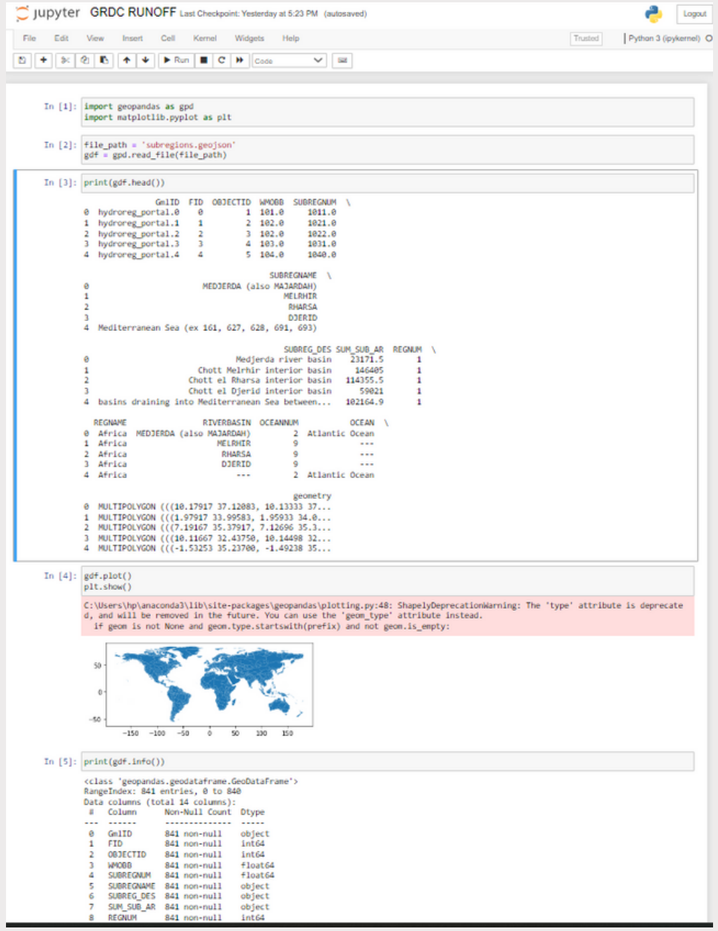
At continental scales, the water entering a river basin is described by precipitation P, the water leaving it is described by evapotranspiration ETa and runoff R, and whatever remains is the water storage change dS/dt.

$$P - ETa - R = dS/dt$$

Run off (GRDC)

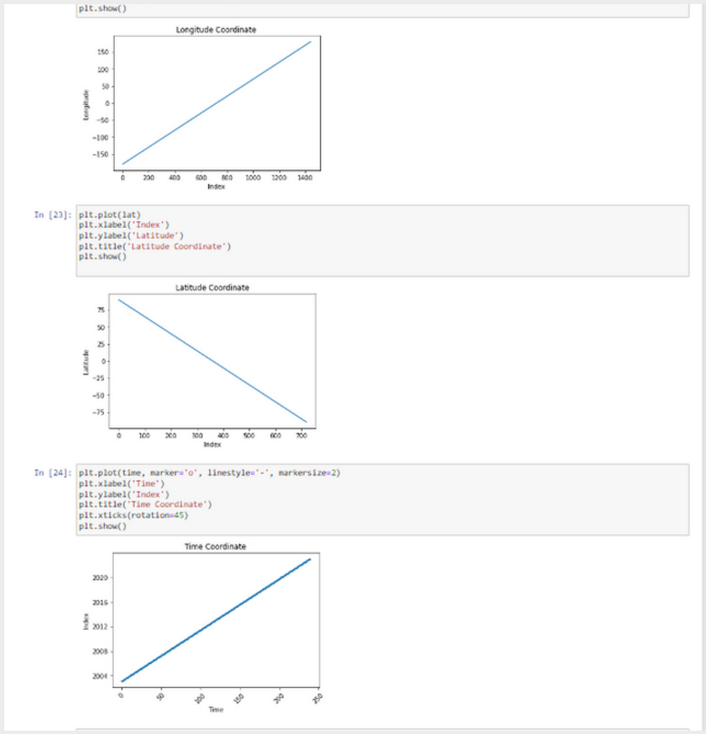
1. Working on a dataset of the region lake victoria.

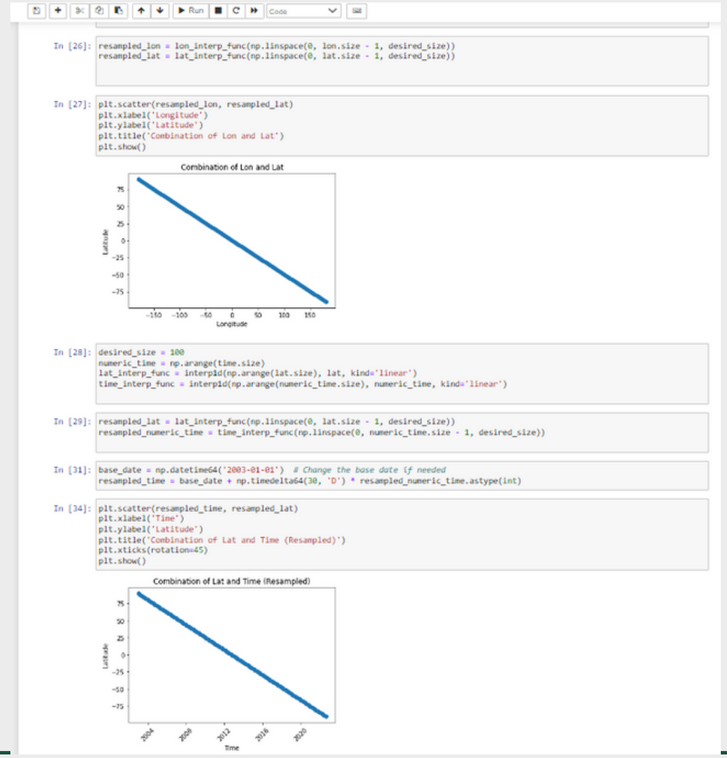


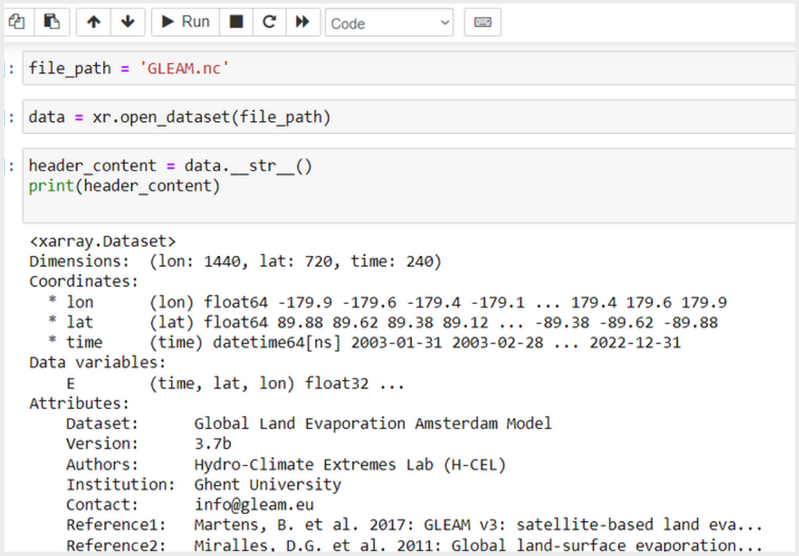


Evaporation(GLEAM)

1. I tried to work on the monthly data of GLEAM 3.7b.
2. Here are some of the graphs I tried to plot.







Precipitation(GPCC)

1. Downloaded NetCDF4 file of 1 degree GPCC globally daily precipitation data.
2. Using Lab sheet 1 of CE670A, I tried to answer the questions.

```
In [4]: header_content = data.__str__()
        print(header_content)

<xarray.Dataset>
Dimensions:    (lon: 360, lat: 180, time: 10227, nv: 2)
Coordinates:
  * lon        (lon) float32 -179.5 -178.5 -177.5 -176.5 ... 177.5 178.5 179.5
  * lat        (lat) float32 89.5 88.5 87.5 86.5 ... -86.5 -87.5 -88.5 -89.5
  * time       (time) datetime64[ns] 1988-01-01T12:00:00 ... 2015-12-31T12:00:00
Dimensions without coordinates: nv
Data variables:
    time_bnds  (time, nv) datetime64[ns] ...
    rain       (time, lat, lon) float32 ...
    rain_std   (time, lat, lon) float32 ...
    numobs     (time, lat, lon) float64 ...
    dsource    (time, lat, lon) float32 ...
Attributes:
    Conventions:               CF-1.6
    Average_Map_Resolution:    60
    title:                     DAPAGLOCO HOAPS_GPCC combined dataset
    Major_Version_Number:      1
    Minor_Version_Number:      0
    institution:               Deutscher Wetterdienst (DWD)
    cdm_data_type:             grid
    history:                   Tue Oct 30 12:12:31 2018: ncrcat DAPAGLOCO.r60...
    NCO:                       4.7.1
    nco_openmp_thread_number:  1

In [5]: variable = data['rain']
        print(variable)
```

Overall Progress

Until now, I learned about the different libraries at which every dataset is analyzed, like xarrays, geopandas.
Trying to solve the Lab sheet which has been shared and working on plotting each dataset from basics.