Install “climate-indices” library for Python.

* You will need to install Linux, then Python 3.7 and create an environment to install the “climate-indices” library. Instructions details are here: <https://climate-indices.readthedocs.io/en/latest/>

Edit input data:

SPI

* When using Daymet precipitation data (version 3):
  + Daily:
    - Daymet has all years = 365 days. We need to add a day to create 366-days for leap years.
    - Leap years in Daymet excluded Dec 31st, so we added a Dec 31st based on the average between Dec 30th and Jan 1st
    - We also edit the format of the dimensions to meet the criteria “lat, lon, time” from climate-indices, as well as the units to be labeled as “mm”. The script cited below does all those edits needed and create a file including all daily data from 1980 to 2019.
      * See Python Script “daymetleap365\_to\_366\_newyearlyfile\_v2.py”\*
      * See folder Daymet\_Precip>Edited\_precip\_data for daily precip input file
  + Monthly:
    - Use the created Daymet daily netcdf file containing all years (from “daymetleap365\_to\_366\_newyearlyfile\_v2.py”) and created a monthly total precipitation with the same dimensions and units.
      * See Python Script “daymet\_monthlysums\_newyearlyfile.py”\*
      * See folder Daymet\_Precip>Edited\_precip\_data for monthly total precip input file

SPEI

* Use the monthly precipitation data described above for SPI.
* Use the calculated monthly ET using Penman-Monteith method and Daymet data (version 3):
  + From Daymet: rad, tmax, tmin, vap (see folder “PenmanMonteith\_ETo\_SourceData\_Maps” in our Dropbox)
  + See Python Script “ETo\_FAO\_PenmanMonteith\_monthlytotals\_all\_years\_PM.py”\*
    - Still need to fix the error we are getting when trying to estimate monthly ET and save it in a single netcdf.

\* all scripts are available in our folder “Drought Indices\_Source > Python-scripts”