# Exercise 2: Using Python for Converting GPM HDF5 Files to Text Files

## Objectives

* Convert a data file written in HDF5 using a python script into:
  + A text file to browse the data
  + A GeoTIFF format for use in QGIS

## Exercise

* Use the document [*Python Installation and Download*](https://arset.gsfc.nasa.gov/sites/default/files/disasters/Dewberry/python-installation.pdf) if you do not have python on your computer
* If you have Python on your computer, please make sure that you have tested the availability of routines required for this exercise (see Part 2 of whatever we end up calling Python-Installation-Instruction.docx)
* Download the Python script [ConvertClip\_HDF5\_to\_TextGeotiffl.py](https://arset.gsfc.nasa.gov/sites/default/files/disasters/Dewberry/ConvertClip_HDF5_to_TextGeotiff.py_.zip) onto your computer
  + This script is designed to extract a desired region (specified by latitudes and longitudes) from a global data file in HDF5 format and save the extracted data into text file and a GeoTIFF raster file
* Copy or move the IMERG half-hourly file you downloaded from PPS in Exercise 1 into the same directory where the Python script is downloaded
  + **Note**: if you need to convert more than one HDF5 file, they should all be moved or copied to this same directory
* Type ‘python ConvertClip\_HDF5\_to\_TextGeotiff.py’ [on your computer console in command line]
* The script will ask you to enter the north and south latitudes, and east and west longitudes of the rectangular region you want to extract from the data file
* Enter:
  + 44.0 for north latitude
  + 32.0 for south latitude
  + -114.0 for east longitude
  + -136.0 for west longitude

**Note**: This is the region over California for which you created a rainfall animation

* The script will create two sub-directories in your working directory named ‘text\_files’ and ‘raster\_files’
* If you have more than one HDF5 file in the directory, all of them will be converted into text and raster format
* After the script has run successfully, check each directory: ‘text\_files’ and ‘raster\_files’
* In the ‘text\_files’ directory there will be four output files:
  + *For example if an HDF5 file with name ‘Filename.HDF5’ is converted the output will be:*
  + Filename\_lat\_clipped.txt
  + Filename\_lon\_clipped.txt
  + Filename\_precip\_clipped.txt
  + Filename\_combined\_clipped.txt
* The ‘\_combined’ file (last one) lists latitude, longitude, and precipitation for each grid point in the subset. This file can be copied into Excel.
* The first three files, ‘\_lat’,’\_lon’ and ‘\_precip’, list each grid information separately and each can be copied in to Excel
* In the ‘raster\_files’ directory there will be one output file:
  + Filename.tif
* This file can be imported into QGIS and will be analyzed in the next exercise
* This script can be used to convert any HDF5 data file
* **Note:** This script is developed for this training exercise to read IMERG precipitation. The script will require minor modification to read different data sets in HDF5 format