**Homework 1**

**Due by 12:00PM on September 7**

We will explore some hydrologic signatures for the Little Econlockhatchee Watershed.

1) Climate (50 points): Download the precipitation data from a weather station within or near Oviedo, where the available data is more than 10 years: http://webapub.sjrwmd.com/agws10/hdsnew/map.html
   a) (10 points) Compute the long-term average annual precipitation by mm/year.
   b) (10 points) Compute the annual precipitation (mm/year) for each year, plot the annual precipitation time series, and report the coefficient of variation (CV) of annual precipitation.
   c) (15 points) Compute the mean monthly precipitation (mm/month) and plot them in a figure (i.e., showing the seasonality of precipitation).
   d) (15 points) Compute the probability of dry weather (i.e., number of days with zero precipitation/total number of days). Plot the CDF (cumulative distribution function) for non-zero daily precipitation.

2) Streamflow (50 points): Download the daily runoff data for Little Econlockhatchee River from the USGS website: https://waterdata.usgs.gov/fl/nwis/rt. The USGS gage station is located at State HWY434 near Oviedo, and the gage number is 02233475. The available runoff data starts from October 1, 1996 to present. Pay attention to the unit of runoff data.
   a) (10 points) Compute the long-term average annual runoff by mm/year. For converting the downloaded daily runoff data (cfs) to mm/day, You need the drainage area of the gage station, and it can be found by clicking "Summary of all available data for this site" in the website for downloading the runoff data.
   b) (10 points) Compute the annual runoff (mm/year) for each year, plot the annual runoff time series, and report the coefficient of variation (CV) of annual runoff.
   c) (15 points) Compute the mean monthly runoff (mm/month) and plot them in a figure (i.e., showing the seasonality of runoff).
   d) (15 points) Plot the flow duration curve for this gage station.