**Readme**

**For any question: Zuber Farooqui, Ph.D., Zuber.farooqui [at] arb.ca.gov**

**Updates: 6/2/2020**

The script creates wind rose (WR) and pollution rose (PR) plots using pollutant, wind speed, and wind direction data. It is a Python based script using and its libraries. Both Python, a programing language, and its libraries are open source and publicly available to download, install, and use under appropriate licenses.

This script is tailored, standalone to fulfill the need of the specific work. The script uses concepts, semantics, and logics from the listed references. The author wants to give credit to *PseudNetCDF* for its *windrose* program. The script uses its concept and modified appropriately to fulfill the objectives.

It is advised to verify the plots developed using this script with existing data and plots.

**Updates: 9/8/2020**

1. Both PR and WR scripts are updated to exclude calm winds. Calm winds defined as wind speed equals to zero. Calm winds are not considered to develop the WR and PR plots. Previously, calm winds were considered.
2. Pollutant concentrations associated with calm winds are again not considered to develop PR plots. Previously it was otherwise.
3. Typographical errors and bugs are eliminated.
4. Name of the entire package is changed to pyWRPRPlots\_09082020: Python based Wind rose and Pollution rose Plotting suit.
5. New sample data are included in the suit with examples, jobs script, and plots.
6. Input data (below for demonstration only) format .csv files must include (**shown in bold**):

name,**date,ws,wd,pm25**

San Pablo,4/8/2016 0:00,3.2,215.5,9

San Pablo,4/8/2016 1:00,2.1,213.89999,11

San Pablo,4/8/2016 2:00,1.6,198.7,13

Or

name,**date,ws,wd,o3**

San Pablo,4/8/2016 0:00,3.2,215.5,40

San Pablo,4/8/2016 1:00,2.1,213.89999,11

San Pablo,4/8/2016 2:00,1.6,198.7,130

**Contents:**

1. Python script: This script generates pollution rose plots ‘pollrose\_mpl\_09082020.py’.  
    This script generates wind rose plots ‘windrose\_mpl\_09082020.py’
2. Job script:   
   a. ‘pollrose\_mpl\_09082020.job’, this file runs the Python code ‘pollrose\_mpl\_09082020.py’ with user inputs.

b. ‘windrose\_mpl\_09082020.job’, this file runs the Python code ‘windrose\_mpl\_09082020.py’ with user inputs.

1. Sample data files for PR and WR (only for demonstration purpose):   
   a. January\_Data.csv

b. April\_Data.csv

1. Sample plots: a. PRose\_Jan\_1-15-2016\_1-16-2016.png

b. PRose\_Apr\_1-15-2016\_1-16-2016.png

c. WRose\_Jan\_1-15-2016\_1-16-2016.png

d. WRose\_Apr\_1-15-2016\_1-16-2016.png

**References**

(Last Accessed: 5/11/2020)

1. Matplotlib: https://matplotlib.org/gallery/pie\_and\_polar\_charts/polar\_bar.html?highlight=polar%20charts
2. PseudoNeCDF: https://pypi.org/project/PseudoNetCDF/
3. Windrose: https://windrose.readthedocs.io/en/latest/index.html
4. Pandas: https://pandas.pydata.org/
5. Numpy: https://numpy.org/
6. argparse: https://docs.python.org/3/library/argparse.html