hw2p2

September 18, 2018

1 Meteo 515 – Assignment 2 – Parametric Distributions

Part 2 – Examining Marshall–Palmer fits to a rain drop size distribution (DSD)
The data are from a 2-D video disdrometer in the western Pacific on 02-Jan-15

```
In [1]: from __future__ import division, print_function
        #import datetime as dt

        import matplotlib.pyplot as plt
        from netCDF4 import Dataset, num2date
        import numpy as np
        #import pandas as pd
        from scipy.optimize import curve_fit
        #import scipy.stats as ss
        #import statsmodels.api as sm
```

```
In [2]: plt.style.use('seaborn-darkgrid')
        %matplotlib notebook
```

1.1 Load the data

using netcdf4-python from Unidata

```
In [3]: fname = './data/twpvdisC3.b1.20150102.000000.cdf'
        d = Dataset(fname)

        base_time = d['base_time']  # seconds since 1970-1-1 0:00:00 0:00
        time_offset = d['time_offset']  # same as time...
        time = d['time']  # seconds since base time
        assert( np.all(time[:] == time_offset[:]) )
        t_dt = num2date(time[:], time.units)  # create datetimes

        drop_diameter = d['drop_diameter']
        num_density = d['num_density']

        intercept_param = d['intercept_parameter']
        slope_param = d['slope_parameter']
```