

daily_RFI_report_v2

October 17, 2018

```
In [1]: import numpy as np
import datetime
import matplotlib.pyplot as plt
import os
import json

OUT_DAY = 'arr_day.npy' #the output files containing integrated power and n
OUT_NIGHT = 'arr_night.npy'
#DATA_PATH = #
SUNSET_TIMETABLE = np.genfromtxt('/lustre/aoc/projects/hera/ajosaiti/SDR_RE
STR_DAY = os.environ['which_day']
DEBUG = False

def file_flush():
    if DEBUG: print('flushing temporary and output files...')
    open(OUT_DAY, 'w').close()
    open(OUT_NIGHT, 'w').close()
    if DEBUG: print('done.')

def delta_hours_minutes(td):
    return td.seconds//3600, (td.seconds//60)%60

def recursive_key_search(dat, key): #https://stackoverflow.com/questions/98
#sum_dbm_recursive_key_search(dat, key): #https://stackoverflow.com/question
    if key in dat:
        yield dat[key]
    for k in dat:
        if isinstance(dat[k], list):
            for i in dat[k]:
                for j in recursive_key_search(i):
                    yield j

def time_in_rids_fmt(datetime_time): # convert datetime.datetime.now() time
    str_iso = datetime_time.isoformat(' ')
    str_time_rids = str( str_iso[0:4] + str_iso[5:7] + str_iso[8:10] +
    return str_time_rids
```

```

def sum_array_of_dbm(arr):
    val_sum = 10.*np.log10(np.sum(np.power(10,np.array(arr)/10.)))
    return val_sum

def day_night_initial_calculation(arr_day,arr_night):
    ## connect to librarian
    #cl = LibrarianClient(connection_name)

    ## search for unprocessed sessions
    #files = cl.search_files(search)['results']

    #if not len(sessions):
    #    return # Nothing to do.

    #plot_script = os.path.join(plots_dir, 'run_notebook.sh')

    ## check these sessid aren't in the processed_sessid.txt file
    plots_dir = os.path.dirname(os.environ['DATA_PATH'])
    processed_fileid = np.loadtxt(os.path.join(plots_dir, 'processed_fileid.txt'))

    # filter out sessions already processed
    unprocessed_files = []
    for file in os.listdir(os.environ['staging_dir']):
        name=str(file) #file["name"]
        print('name: '+str(name))
        fileid = int(name[int(name.find('.')+1):name.find('-')])
        if fileid not in processed_fileid:
            unprocessed_files.append(file)

    #cwd = os.getcwd()
    for filename in unprocessed_files: #os.listdir(cwd):
        if DEBUG: print('considering filename: '+str(filename))
        if filename.endswith('.ridz') and (STR_DAY in filename): # NOTE: If you want to process all files, remove this condition
            fname_uzip = str(filename.replace('.ridz','.rids'))
            os.system(str('zipr.py ' +str(filename)))
            dat = json.loads(open(str(fname_uzip)).read())
            for dset in np.array(dat['feature_sets'].keys()):
                t_spectra = datetime.datetime.strptime(str(dset[5:20]), '%Y-%m-%d %H:%M:%S')
                int_pwr = sum_array_of_dbm(dat['feature_sets'][str(dset)])
                if DEBUG:
                    print('int_pwr: '+str(int_pwr))
                    print('t_spectra: '+str(t_spectra))
                    print('sunrise: '+str(sunrise)+', sunset: '+str(sunset))
                if bool( (t_spectra >=sunrise) and (t_spectra<=sunset) ): a
            else: arr_night.append(np.array([t_spectra,int_pwr]))

```

```

        dat.clear()
        os.system(str('zipr.py ' +str(fname_uzip))) # re-zip the file
    if DEBUG:
        print('arr_day: '+str(arr_day))
        print('arr_night: '+str(arr_night))

    return arr_day, arr_night

#For the day in question, figure out when sunset and sunrise were.
col_date,col_key = np.where(SUNSET_TIMETABLE == STR_DAY[4:]) #find mddd, bu
sunrise = datetime.datetime.strptime( str(str(STR_DAY[:4])+str(STR_DAY[4:]))
sunset = datetime.datetime.strptime( str(str(STR_DAY[:4])+str(STR_DAY[4:]))
delta_hour, delta_minute = delta_hours_minutes((sunset-sunrise))
#Arrays containing data from each sweep measurement, sorted by whether the
arr_day=[] # [datetime.datetime object], [float(integrated power)]
arr_night=[]

file_flush() # Make sure output files aren't reused with old data in them.
arr_day, arr_night = day_night_initial_calculation(arr_day,arr_night)

#Turn the array of arrays into a 2D array
arr_day=np.array(arr_day)
arr_night = np.array(arr_night)

np.save(OUT_DAY,arr_day)
np.save(OUT_NIGHT,arr_night)

if DEBUG:
    print('arr_day: '+str(arr_day))
    print('arr_day[0,0]: '+str(arr_day[0,0]))
    print('arr_day[:,0]: '+str(arr_day[:,0]))

arr_full_day = np.concatenate((np.array(arr_day), np.array(arr_night)),axis=1)

plt.figure(1, figsize=(20,10))
plt.subplot(211)
plt.plot(arr_day[:,0], arr_day[:,1], 'bo')
plt.plot(arr_night[:,0], arr_night[:,1], 'go')
plt.subplot(211).set_title(str('Daytime ('+str(delta_hour)+' Hours, '+str(delta_minute)+' Minutes)'))
plt.subplot(212)
plt.plot(arr_full_day[:,0], arr_full_day[:,1], 'ro')
plt.subplot(212).set_title(str('Full 24 Hours, Average Integrated Power: '+str(average_power)))

plt.show()

```

name: 2458706

/users/ajosaiti/anaconda/lib/python2.7/site-packages/ipykernel/__main__.py:59: User

IndexErrorTraceback (most recent call last)

```
<ipython-input-1-27dec243bd12> in <module>()
    122 plt.figure(1, figsize=(20,10))
    123 plt.subplot(211)
--> 124 plt.plot(arr_day[:,0], arr_day[:,1], 'bo')
    125 plt.plot(arr_night[:,0], arr_night[:,1], 'go')
    126 plt.subplot(211).set_title(str('Daytime ('+str(delta_hour)+' Hours, '+s
```

IndexError: too many indices for array