example_rf_of_trajectory

July 28, 2022

1 List of files

List files, which are named with 'Traj' in folder 'data'

[1]:
```
files = !ls -lh Data/*Traj*
```

[2]:
```
list(map(lambda a: a.split()[-1], files))
```

[2]:
```
['Data/HTCM_Trajectory_BRU_SYD_2022-06-24_12_46_23.mat',
 'Data/HTCM_Trajectory_LHR_JFK_2022-07-01_18_17_36.mat']
```

[3]:
```
labels = list(map(lambda a: a.split('ory_')[-1].split('_2022')[0], files))
```

[4]:
```
labels
```

[4]:
```
['BRU_SYD', 'LHR_JFK']
```

2 Load class

[5]:
```
from rf_of_trajectory import rf_of_trajectory
```

3 Calculate radiative forcing and emissions for each trajectory-file

[6]:
```
net_rf = []
net_emis = []

for file in files:
    rf = rf_of_trajectory(file.split()[-1])
    rf.load_trajectory_as_dataframe()
    rf.drop_vertical_levels()

    net_rf.append(rf.total_rf())

    net_emis.append(rf.total_emis())
```

4 Output

total_emis() returns three values with H_2O, H_2 and NO emission above the tropopause in tons in this order

[7]:
```
net_emis
```

[7]:
```
[[1095.47, 3.46, 8.65], [556.47, 4.09, 1.87]]
```

total_rf() returns one value with radiative forcing from water vapour changes due to water vapour emisson and ozone radiative forcing from H_2O, H_2 and NO emission in mWm-2

[8]:
```
net_rf
```

[8]:
```
[0.002277627, 0.0008800362]
```