Student Research Update

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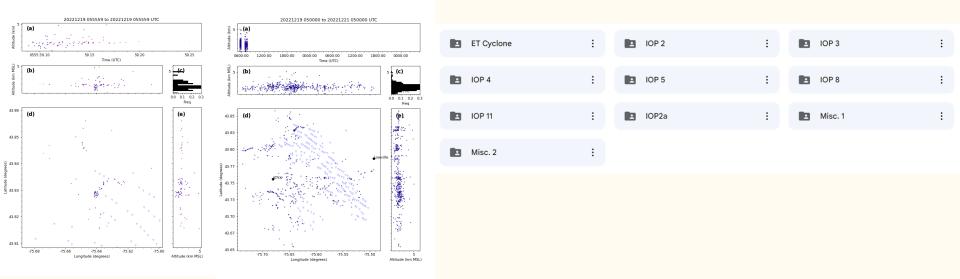
LEE_FLASHCOUNTS

- Combined Vanna Chmielewski's LEE_flashcounts_6 (station min of 6) and LEE_flashcounts (station min of 5) into one document
- Color key at the top

Identifier	Time Searched	Agree	Slightly Agree	Disagree	
		Station Min 5	Station Min 6	Station Min 7	
Time	FlashCount-SM 5	FlashCount-SM 6	Manual LMA	NLDN	IOP/SM
2022-11-30 23:00:00	0	0			
2022-12-01 0:00:00	0	0			
2022-12-01 1:00:00	0	0	0		
2022-12-01 2:00:00	1	0	1		
2022-12-01 3:00:00	12	9	15		
2022-12-01 4:00:00	6	3	5		
2022-12-01 5:00:00	8	7	9		
2022-12-01 6:00:00	10	8	8		
2022-12-01 7:00:00	5	4	5		
2022-12-01 8:00:00	1	0	0		
2022-12-01 9:00:00	0	0	0		
2022-12-01 10:00:00	0	0			

LMA PLOTS FOR EACH LIGHTNING STRIKE

- Lightning flashes based on times in the IOP Lightning Data document
- General overview of IOP (right) and individual flashes (left)



Other Obstacles

obsticles = "https://aeronav.faa.gov/Obst_Data/DOF_230319.zip"
urllib.request.urlretrieve(obsticles, "DOF_230319.zip")

1) Retrieve the data file

```
data = zipfile.ZipFile('DOF_230319.zip')
infos = data.infolist()
```

```
for info in infos:
    if '36-NY' in info.filename:
        print(info.filename)
        info.filename = 'NewYork_Obsticles.Dat'
        data.extract(info)
```

2) Unzip and find the correct file for New York

NYObs.to_csv(r'/Users/BenLa/lmaworkshop/LEE-2023/NewYork_Obsticles.csv')

#There are going to be a lot of errors and this will talke a long time to run #recomended to only use if you are looking at all objects and not just turbines od = pd.read_csv('NewYork_obsticles.csv')

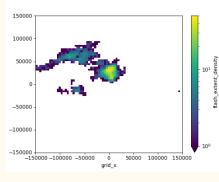
```
0 = 0
                     3) Format the columns, remove
p = 0
m = 0
n = 0
                     unneeded data, set the latitude
while o < od.shape[0]:</pre>
                     and longitude from minute-
   row = od.loc[o, "ylat"]
   x = row.split()
   for r in range(len(x)):
                     second format to decimal
      x[r] = float(x[r])
   x[1] = x[1]/60
   x[2] = x[2]/3600
   m = x[0] + x[1] + x[2]
   od.at[o, "ylat"] = m
   od.to csv(r'/Users/BenLa/lmaworkshop/LEE-2023/NewYork Obsticles.csv')
   o += 1
                      The original code processes
while p < od.shape[0]:</pre>
   row2 = od.loc[p, "xlong"]
                      latitude and longitude in
   x = row2.split()
   for r in range(len(x)):
      x[r] = float(x[r])
                      decimal format
   x[1] = x[1]/60
  x[2] = x[2]/3600
   n = 0 - x[0] - x[1] - x[2]
   od.at[p, "xlong"] = n
   od.to csv(r'/Users/BenLa/Imaworkshop/LEE-2023/NewYork Obsticles.csv')
   p += 1
NYObs = od
```

obs_colour = (0.0,1.0,0.2,0.3)
art = self.lma_plot.ax_plan.scatter(NYObs.xlong, NYObs.ylat, color = obs_colour, marker = '1', zorder=-10)
new_artists.append(art)

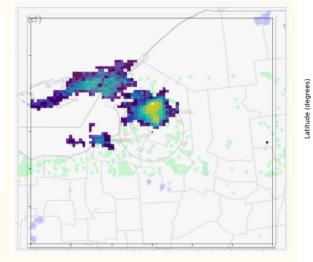
4) Add the obstacles to the plot

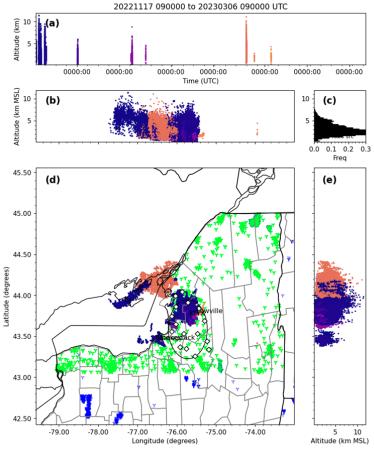
Other Obstacles Plot/Grid Map

- Dark Green for where turbines file and obstacles file agrees
 Light Blue for where turbines file marks a turbine that isn't in the obstacles file
- Light Green for other obstacles (Towers, Smokestacks, ect.)



Original grid plot





Overlayed on top of map

Non-tower correlated flashes

- Began looking for flashes that were >700m away from a tower
- Closest was
 0.71km from a tower with an initial point at an altitude of
 1.95km

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