```
C:\Users\adity\PycharmProjects\pythonProject\.venv\Scripts\python.exe "C:\Users\adity\PycharmProjects\pythonProject\MachineLearningProjects\PROJECT 7.py"
Data Shape:  (1587257, 13)
Sample Data:
    rowID     hpwren_timestamp  ...  rain_duration  relative_humidity
0       0  2011-09-10 00:00:49  ...            NaN               60.5
1       1  2011-09-10 00:01:49  ...            0.0               39.9
2       2  2011-09-10 00:02:49  ...            0.0               43.0
3       3  2011-09-10 00:03:49  ...            0.0               49.5
4       4  2011-09-10 00:04:49  ...            0.0               58.8

[5 rows x 13 columns]
Sample Data Shape:  (158726, 13)
How many rows did we drop ?  46
Columns in Sample Data:  Index(['rowID', 'hpwren_timestamp', 'air_pressure', 'air_temp',
       'avg_wind_direction', 'avg_wind_speed', 'max_wind_direction',
       'max_wind_speed', 'min_wind_direction', 'min_wind_speed',
       'relative_humidity'],
```

```
       dtype='object')
model
 KMeans(n_clusters=12)
centers:  [[ 0.13012253  0.84313233  1.
  41229548 -0.63854904  1.67629068 -0.
  5893817
   -0.71460557]
 [ 0.72409712  0.44784468  0.2875642  -
  0.53262207  0.47472775 -0.53882449
   -0.77124535]
 [-0.16476256  0.86427646 -1.3109664  -
  0.58969949 -1.16669322 -0.60497779
   -0.64073394]
 [-1.17638747 -0.87897544  0.44601109
  1.9717986   0.53809728  1.93323357
    0.91769053]
 [ 1.36605627 -0.08076805 -1.2070477  -
  0.05397016 -1.07567949 -0.03393724
   -0.97726286]
 [ 0.26583999 -0.99403141  0.66314369 -
  0.54617738  0.85440445 -0.52845383
    1.15376341]
 [-0.69809486  0.53797389  0.17585244 -
  0.58597581  0.345527   -0.59938222
   -0.11155211]
 [ 0.23406885  0.32036132  1.88795276 -
  0.65187638 -1.55167305 -0.57671307
   -0.28354803]
 [ 1.19073599 -0.25431893 -1.15487904
  2.1200348  -1.05325551  2.23679951
   -1.13467515]
```

```
39  [ 0.06153037 -0.78871816 -1.19709858 -
   0.57030559 -1.04312988 -0.58479304
40    0.87847265]
41  [-0.21309037  0.6298005   0.40843217
   0.73534895  0.51656106  0.67337228
42   -0.14888916]
43  [-0.84332833 -1.1983849   0.37512689
   0.34112453  0.47369574  0.32908408
44    1.36461744]]
45 pd_centers:      air_pressure  air_temp
     ...  relative_humidity  prediction
46 0        0.130123  0.843132
     ...           -0.714606           0
47 1        0.724097  0.447845
     ...           -0.771245           1
48 2       -0.164763  0.864276
     ...           -0.640734           2
49 3       -1.176387 -0.878975
     ...            0.917691           3
50 4        1.366056 -0.080768
     ...           -0.977263           4
51 5        0.265840 -0.994031
     ...            1.153763           5
52 6       -0.698095  0.537974
     ...           -0.111552           6
53 7        0.234069  0.320361
     ...           -0.283548           7
54 8        1.190736 -0.254319
     ...           -1.134675           8
55 9        0.061530 -0.788718
     ...            0.878473           9
```

```
56 10     -0.213090  0.629800
     ...          -0.148889          10
57 11     -0.843328 -1.198385
     ...           1.364617          11
58
59 [12 rows x 8 columns]
60
61 Process finished with exit code 0
62
```