

```
In [2]: import numpy as np # Linear algebra
import pandas as pd # data processing
import matplotlib.pyplot as plt
```

```
In [28]: df = pd.read_csv('weatherHistory.csv')
df.head()
```

	Formatted Date	Summary	Precip Type	Temperature (C)	Apparent Temperature (C)	Humidity	Wind Speed (km/h)	Wind Bearing (degrees)	Visibility (km)	Loud Cover	Pressure (millibars)	Daily Summary
0	2006-04-01 00:00:00.000+0200	Partly Cloudy	rain	9.472222	7.388889	0.89	14.1197	251.0	15.8263	0.0	1015.13	Partly cloudy throughout the day.
1	2006-04-01 01:00:00.000+0200	Partly Cloudy	rain	9.355556	7.227778	0.86	14.2646	259.0	15.8263	0.0	1015.63	Partly cloudy throughout the day.
2	2006-04-01 02:00:00.000+0200	Mostly Cloudy	rain	9.377778	9.377778	0.89	9.9284	204.0	14.9569	0.0	1015.94	Partly cloudy throughout the day.
3	2006-04-01 03:00:00.000+0200	Partly Cloudy	rain	8.288889	5.944444	0.83	14.1036	269.0	15.8263	0.0	1016.41	Partly cloudy throughout the day.
4	2006-04-01 04:00:00.000+0200	Mostly Cloudy	rain	8.755556	6.977778	0.83	11.0446	259.0	15.8263	0.0	1016.51	Partly cloudy throughout the day.

```
In [29]: df.describe()
```

	Temperature (C)	Apparent Temperature (C)	Humidity	Wind Speed (km/h)	Wind Bearing (degrees)	Visibility (km)	Loud Cover	Pressure (millibars)
count	96453.000000	96453.000000	96453.000000	96453.000000	96453.000000	96453.000000	96453.0	96453.000000
mean	11.932678	10.855029	0.734899	10.810640	187.509232	10.347325	0.0	1003.239596
std	9.551546	10.698847	0.195473	6.913571	107.383428	4.192123	0.0	116.969906
min	-21.822222	-27.716667	0.000000	0.000000	0.000000	0.000000	0.0	0.000000
25%	4.689889	2.311111	0.600000	5.828200	116.000000	8.339800	0.0	1011.900000
50%	12.000000	12.000000	0.780000	9.965900	180.000000	10.046400	0.0	1016.450000
75%	18.838889	18.838889	0.890000	14.159600	290.000000	14.812000	0.0	1021.090000
max	39.905556	39.344444	1.000000	63.852600	359.000000	16.100000	0.0	1046.380000

```
In [30]: df = df.drop(['Daily Summary', 'Wind Bearing (degrees)',
'Summary', 'precip Type', 'Temperature (C)',
'Loud Cover', 'Wind Speed (km/h)',
'Visibility (km)', 'Pressure (millibars)'], axis = 1)
df.head()
```

	Formatted Date	Apparent Temperature (C)	Humidity
0	2006-04-01 00:00:00.000+0200	7.388889	0.89
1	2006-04-01 01:00:00.000+0200	7.227778	0.86
2	2006-04-01 02:00:00.000+0200	9.377778	0.89
3	2006-04-01 03:00:00.000+0200	5.944444	0.83
4	2006-04-01 04:00:00.000+0200	6.977778	0.83

```
In [31]: df.isnull().sum()
```

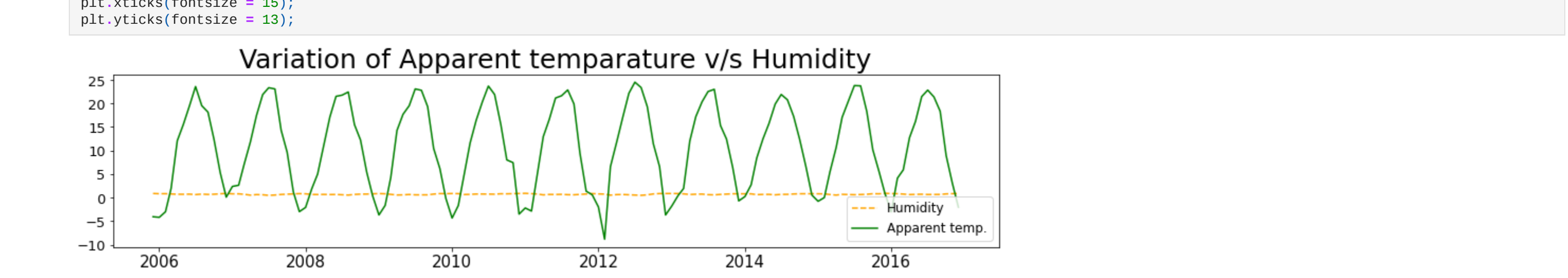
```
Out[31]: Formatted Date      0
Apparent Temperature (C)  0
Humidity                 0
dtype: int64
```

```
In [32]: df['Formatted Date'] = pd.to_datetime(df['Formatted Date'],utc=True)
df = df.set_index('Formatted Date')
df = df[['Apparent Temperature (C)', 'Humidity']].resample('MS').mean()
data
```

	Apparent Temperature (C)	Humidity
Formatted Date		
2005-12-01 00:00:00+00:00	-4.050000	0.890000
2006-01-01 00:00:00+00:00	-4.173708	0.834610
2006-02-01 00:00:00+00:00	-2.99016	0.843467
2006-03-01 00:00:00+00:00	1.969780	0.778737
2006-04-01 00:00:00+00:00	12.098827	0.728625
...
2016-08-01 00:00:00+00:00	21.383094	0.674046
2016-09-01 00:00:00+00:00	18.355853	0.688833
2016-10-01 00:00:00+00:00	8.823847	0.799506
2016-11-01 00:00:00+00:00	3.048627	0.848472
2016-12-01 00:00:00+00:00	-2.017272	0.887981

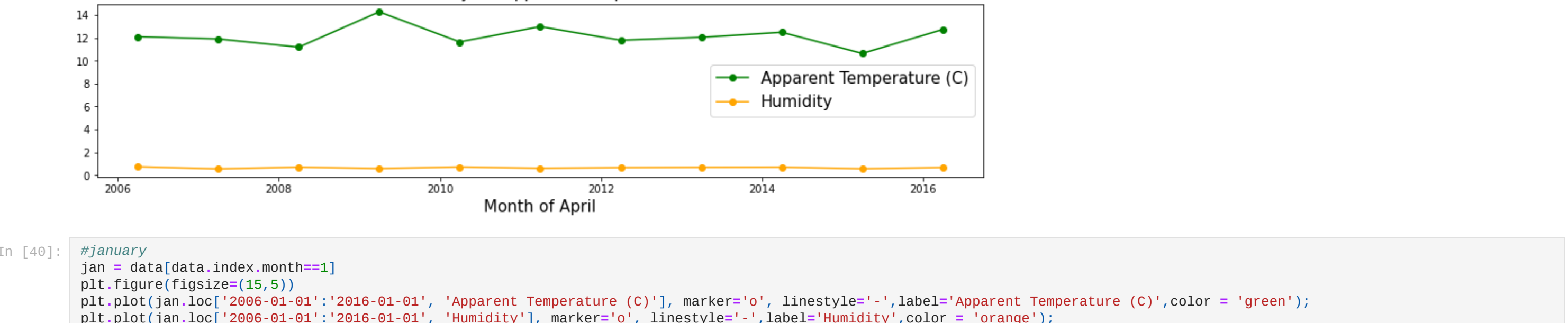
133 rows x 2 columns

```
In [35]: #Plotting the graph for the Dataset:plotting the data set for the past ten years for all months.
plt.figure(figsize=(15,3));
plt.plot(data['Humidity'], label = 'Humidity', color = 'orange',linestyle='dashed');
plt.plot(data['Apparent Temperature (C)'], label = 'Apparent temp.',color = 'green');
plt.title('Variation of Apparent temperature v/s Humidity', fontsize= 25);
plt.legend(loc = 0, fontsize = 12);
plt.xticks(fontsize = 15);
plt.yticks(fontsize = 15);
```



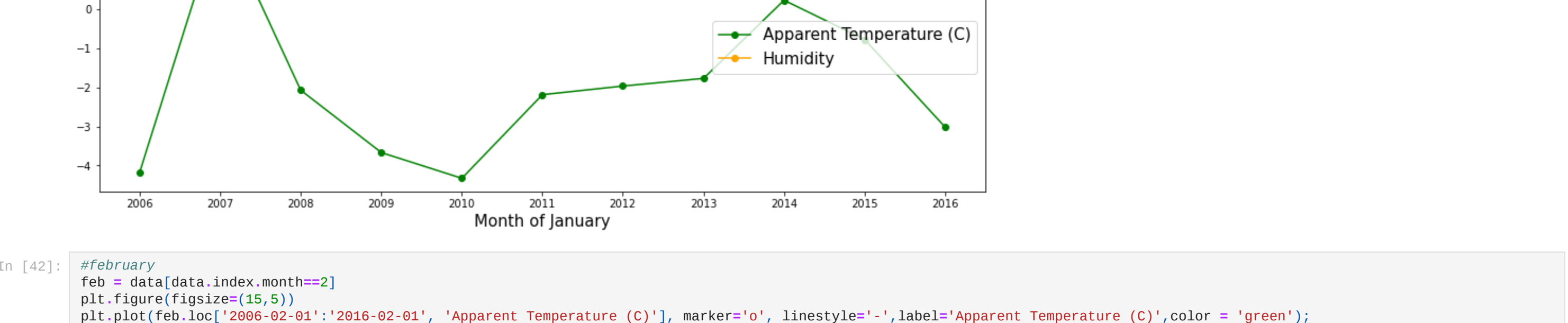
```
In [38]: #april
april = data[data.index.month==4]
plt.figure(figsize=(15,3));
plt.plot(april.loc['2006-04-01':'2016-04-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(april.loc['2006-04-01':'2016-04-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of April', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[38]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



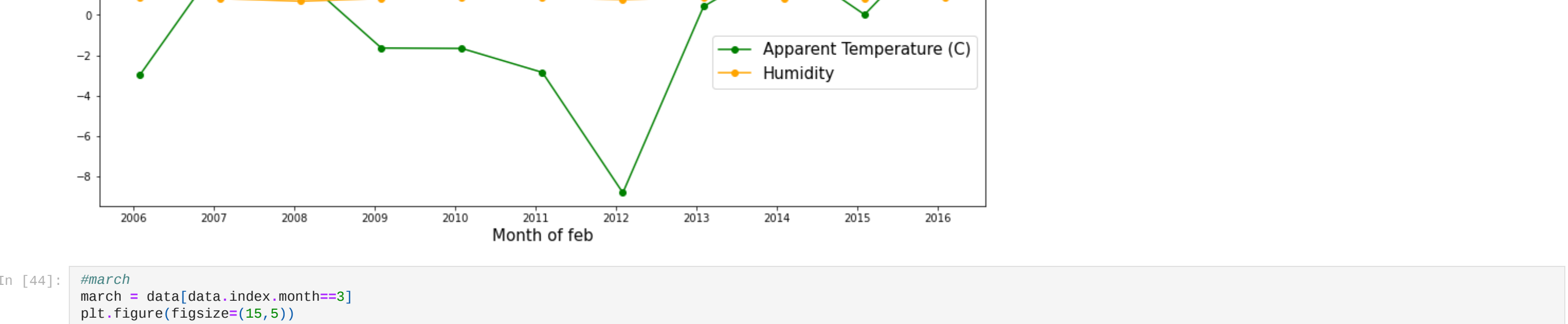
```
In [40]: #january
jan = data[data.index.month==1]
plt.figure(figsize=(15,5));
plt.plot(jan.loc['2006-01-01':'2016-01-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(jan.loc['2006-01-01':'2016-01-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of January', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[40]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



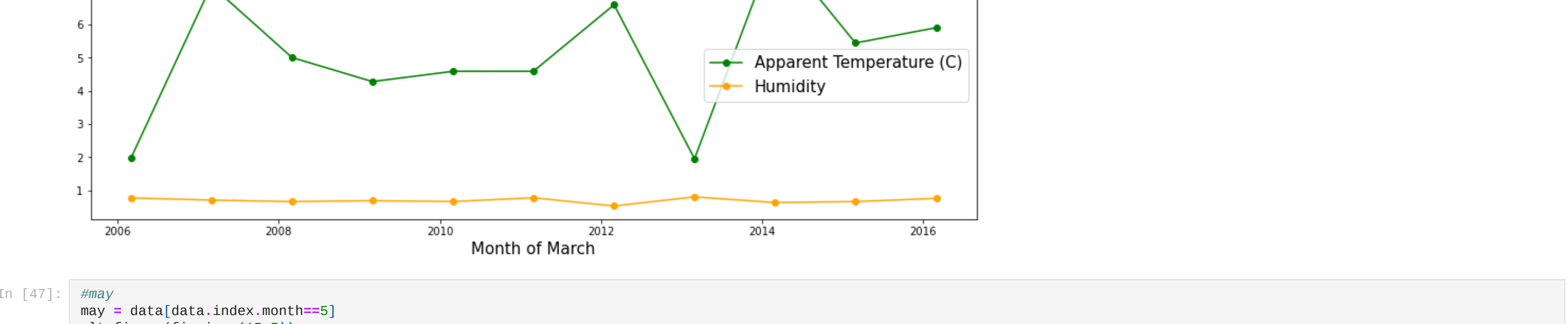
```
In [42]: #february
feb = data[data.index.month==2]
plt.figure(figsize=(15,5));
plt.plot(feb.loc['2006-02-01':'2016-02-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(feb.loc['2006-02-01':'2016-02-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of feb', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[42]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



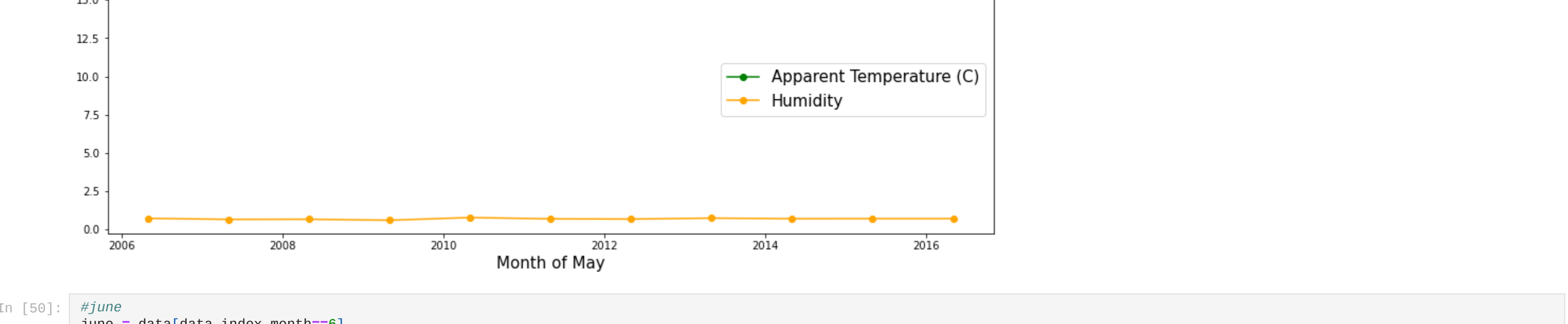
```
In [44]: #march
march = data[data.index.month==3]
plt.figure(figsize=(15,5));
plt.plot(march.loc['2006-03-01':'2016-03-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(march.loc['2006-03-01':'2016-03-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of March', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[44]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



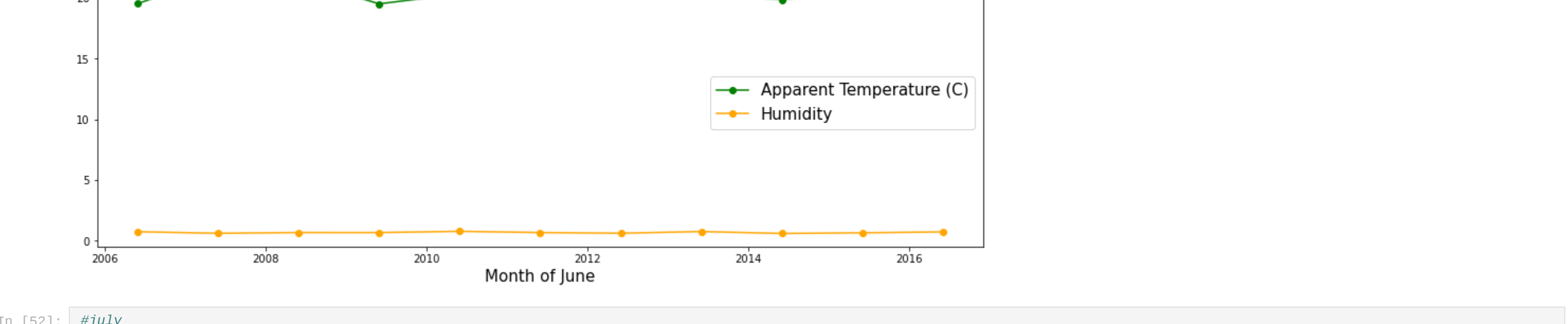
```
In [47]: #may
may = data[data.index.month==5]
plt.figure(figsize=(15,5));
plt.plot(may.loc['2006-05-01':'2016-05-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(may.loc['2006-05-01':'2016-05-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of May', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[47]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



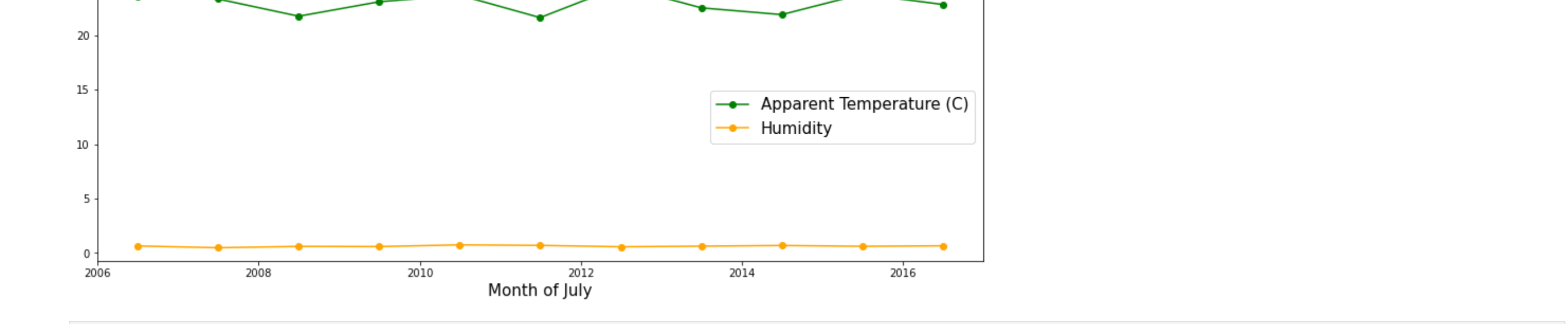
```
In [50]: #june
june = data[data.index.month==6]
plt.figure(figsize=(15,5));
plt.plot(june.loc['2006-06-01':'2016-06-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(june.loc['2006-06-01':'2016-06-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of June', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[50]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



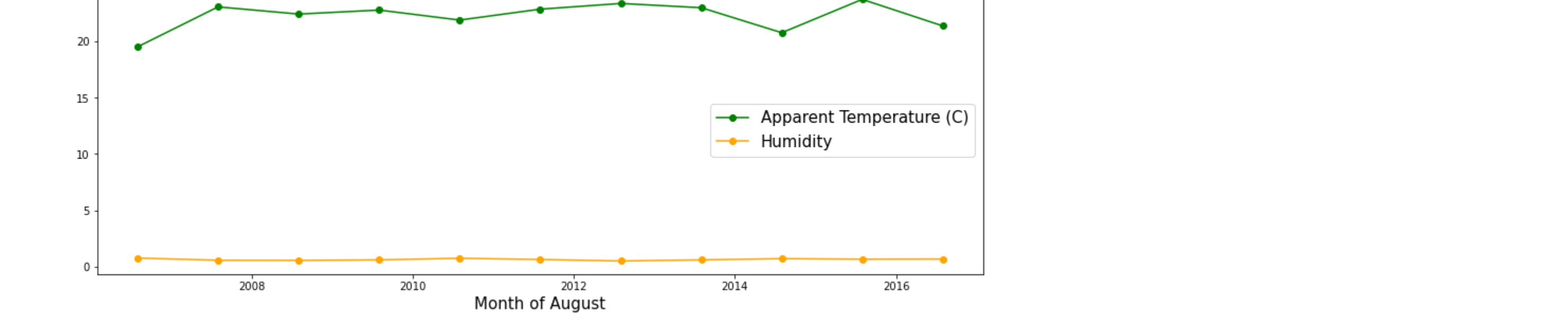
```
In [52]: #july
july = data[data.index.month==7]
plt.figure(figsize=(15,5));
plt.plot(july.loc['2006-07-01':'2016-07-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(july.loc['2006-07-01':'2016-07-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of July', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[52]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



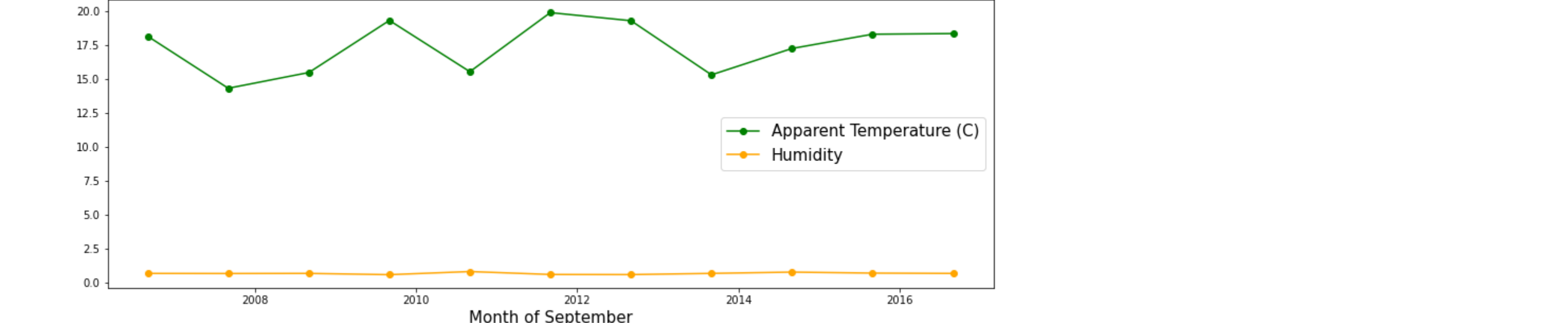
```
In [54]: #august
aug = data[data.index.month==8]
plt.figure(figsize=(15,5));
plt.plot(aug.loc['2006-08-01':'2016-08-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(aug.loc['2006-08-01':'2016-08-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of August', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[54]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



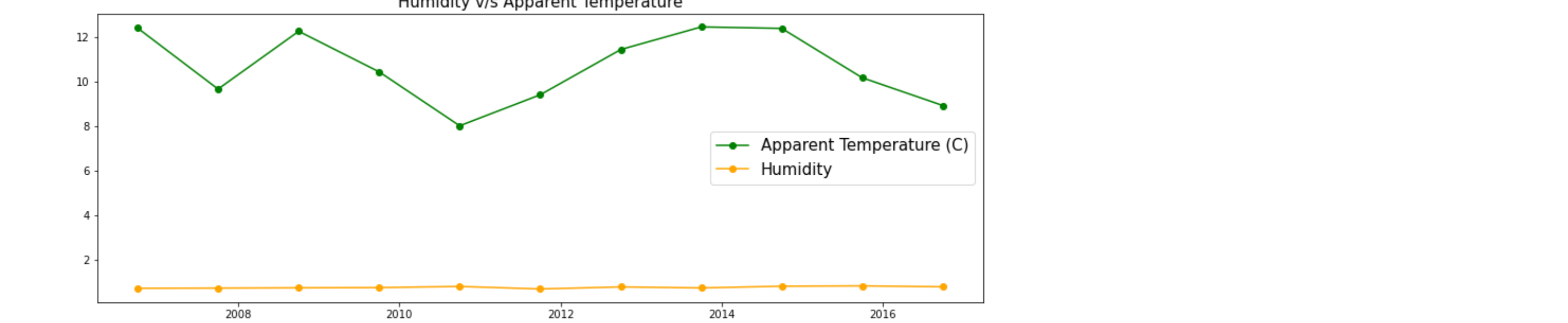
```
In [56]: #september
sept = data[data.index.month==9]
plt.figure(figsize=(15,5));
plt.plot(sept.loc['2006-09-01':'2016-09-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(sept.loc['2006-09-01':'2016-09-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of September', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[56]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



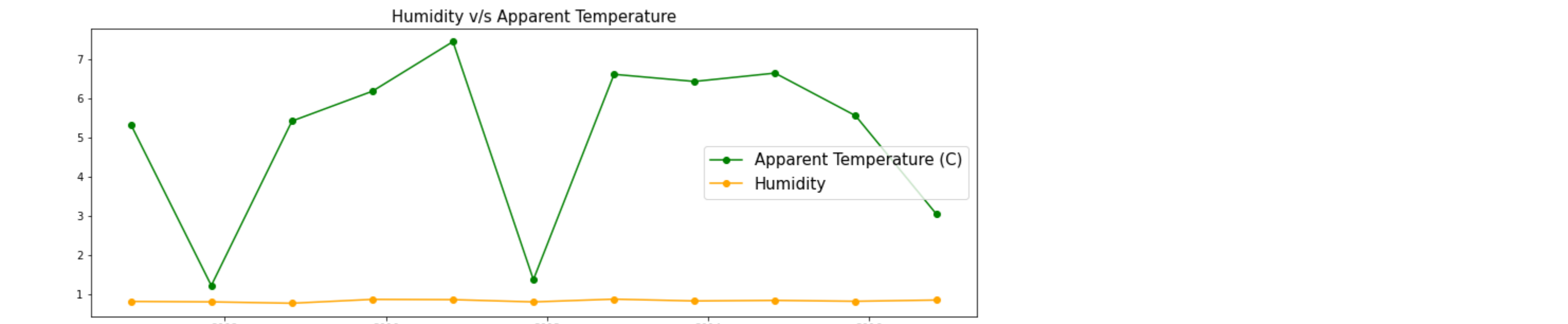
```
In [58]: #october
octo = data[data.index.month==10]
plt.figure(figsize=(15,5));
plt.plot(octo.loc['2006-10-01':'2016-10-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(octo.loc['2006-10-01':'2016-10-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of October', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[58]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



```
In [60]: #november
nov= data[data.index.month==11]
plt.figure(figsize=(15,5));
plt.plot(nov.loc['2006-11-01':'2016-11-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(nov.loc['2006-11-01':'2016-11-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of November', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[60]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```



```
In [61]: #december
dec = data[data.index.month==12]
plt.figure(figsize=(15,5));
plt.plot(dec.loc['2006-12-01':'2016-12-01', 'Apparent Temperature (C)'], marker='o', linestyle='-',label='Apparent Temperature (C)',color = 'green');
plt.plot(dec.loc['2006-12-01':'2016-12-01', 'Humidity'], marker='o', linestyle='-',label='Humidity',color = 'orange');
plt.legend(loc = 'center right',fontsize = 15);
plt.xlabel('Month of December', fontsize = 15);
plt.title('Humidity v/s Apparent Temperature',fontsize = 15)
```

```
Out[61]: Text(0.5, 1.0, 'Humidity v/s Apparent Temperature')
```

