

whether prediction

```
import pandas as pd  
  
import numpy as np  
  
import matplotlib.pyplot as plt  
  
import seaborn as sns  
  
import plotly.express as px  
  
data = pd.read_csv("DailyDelhiClimateTrain.csv")  
  
print(data.head())
```

output:

	date	meantemp	humidity	wind_speed	meanpressure
0	2013-01-01	10.000000	84.500000	0.000000	1015.666667
1	2013-01-02	7.400000	92.000000	2.980000	1017.800000
2	2013-01-03	7.166667	87.000000	4.633333	1018.666667
3	2013-01-04	8.666667	71.333333	1.233333	1017.166667
4	2013-01-05	6.000000	86.833333	3.700000	1016.500000

Let's have a look at the descriptive statistics of this data before moving forward:

```
print(data.describe())
```

output:

	meantemp	humidity	wind_speed	meanpressure
count	1462.000000	1462.000000	1462.000000	1462.000000
mean	25.495521	60.771702	6.802209	1011.104548
std	7.348103	16.769652	4.561602	180.231668
min	6.000000	13.428571	0.000000	-3.041667
25%	18.857143	50.375000	3.475000	1001.580357
50%	27.714286	62.625000	6.221667	1008.563492
75%	31.305804	72.218750	9.238235	1014.944901
max	38.714286	100.000000	42.220000	7679.333333

Now let's have a look at the information about all the columns in the dataset:

```
print(data.info())
```

output:

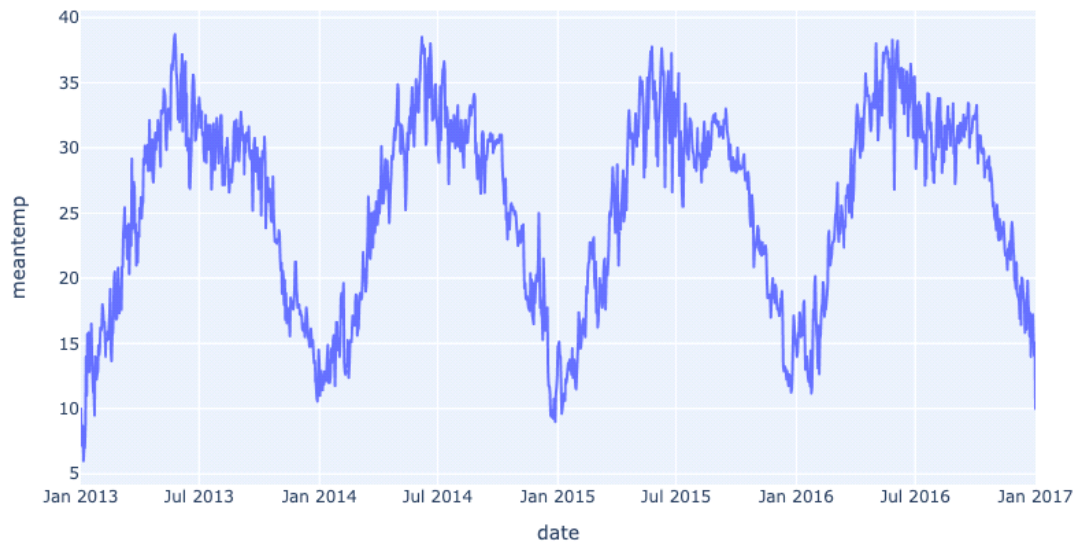
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1462 entries, 0 to 1461
Data columns (total 5 columns):
#   Column          Non-Null Count  Dtype
---  -
0   date            1462 non-null   object
1   meantemp        1462 non-null   float64
2   humidity        1462 non-null   float64
3   wind_speed      1462 non-null   float64
4   meanpressure    1462 non-null   float64
dtypes: float64(4), object(1)
memory usage: 57.2+ KB
```

The date column in this dataset is not having a datetime data type. We will change it when required. Let's have a look at the mean temperature in Delhi over the years:

```
figure = px.line(data, x="date", y="meantemp", title='Mean Temperature in Delhi Over the Years')
```

```
figure.show()
```

output:

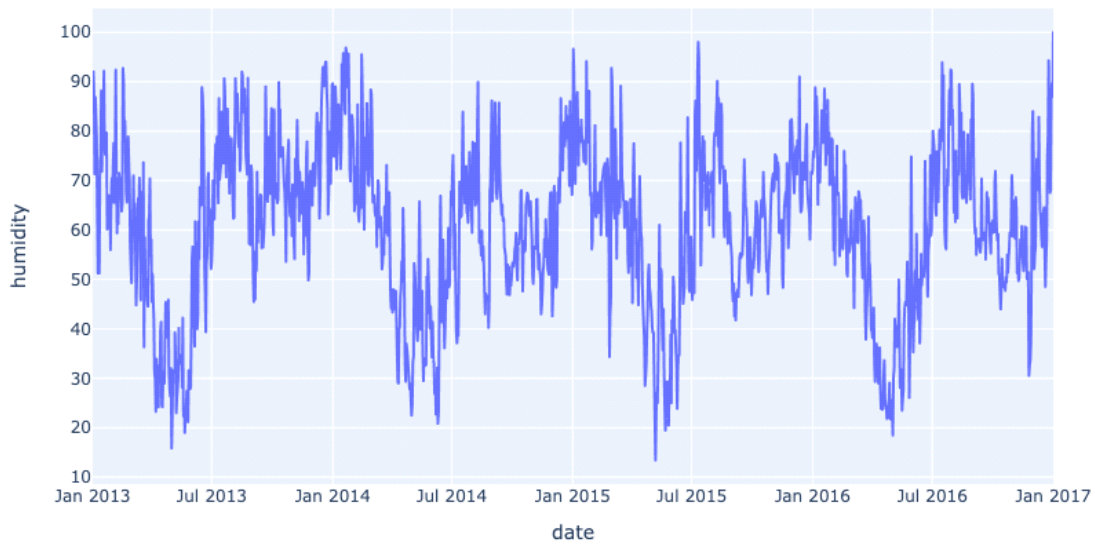


Now let's have a look at the humidity in Delhi over the years:

```
figure = px.line(data, x="date",  
                 y="humidity",  
                 title='Humidity in Delhi Over the Years')  
figure.show()
```

output:

Humidity in Delhi Over the Years



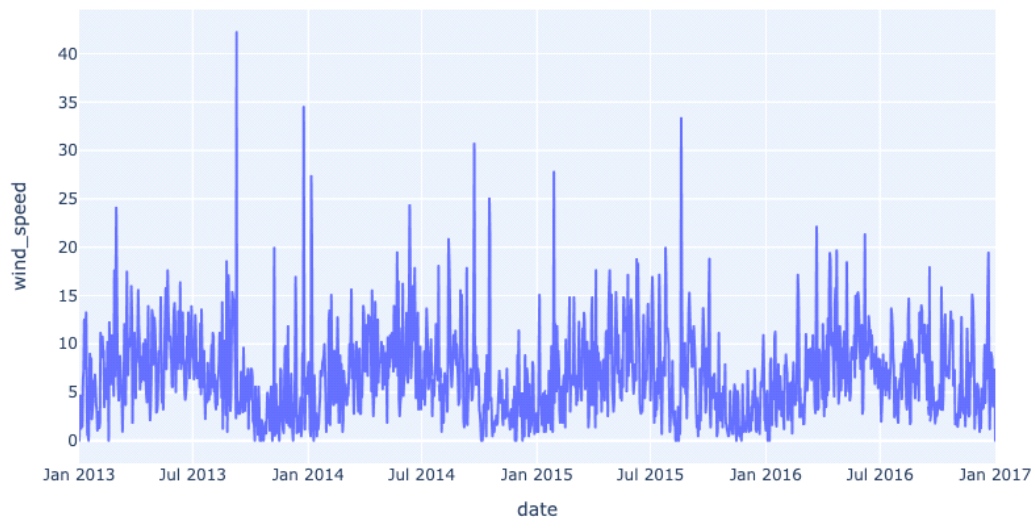
Now let's have a look at the wind speed in Delhi over the years:

```
figure = px.line(data, x="date", y="wind_speed", title='Wind Speed in Delhi Over the Years')
```

```
figure.show()
```

output:'

Wind Speed in Delhi Over the Years



Now let's have a look at the temperature change in Delhi over the years:

```
plt.style.use('fivethirtyeight')
```

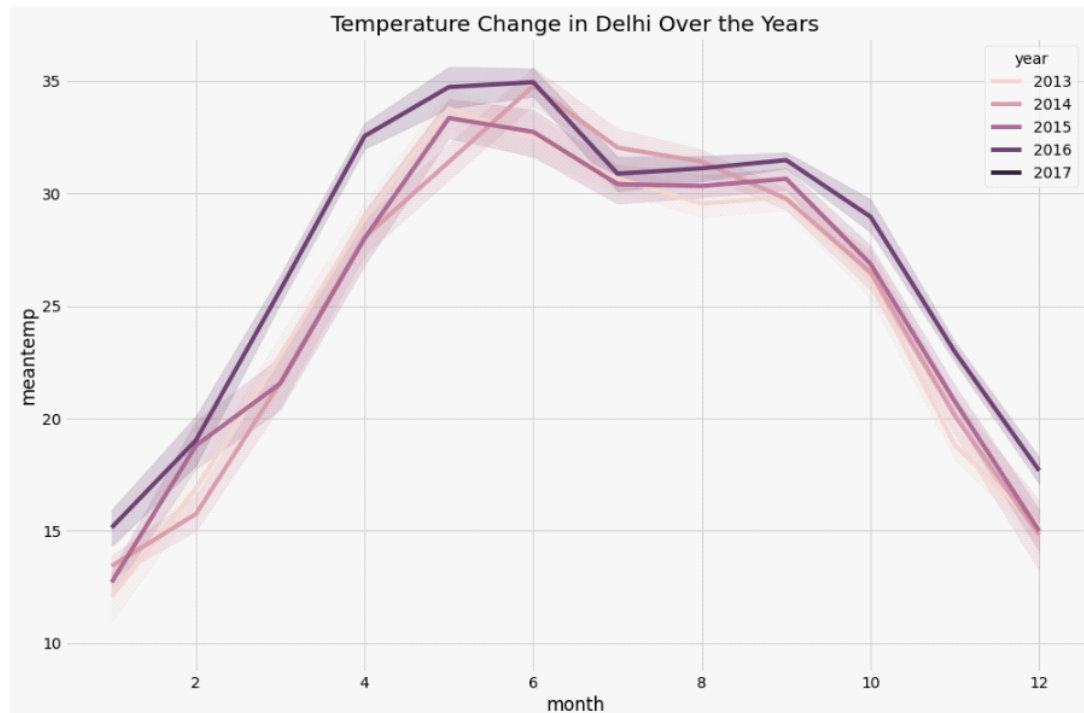
```
plt.figure(figsize=(15, 10))

plt.title("Temperature Change in Delhi Over the Years")

sns.lineplot(data = data, x='month', y='meantemp', hue='year')

plt.show()

output:
```



Forecasting Weather using Python

Now let's move to the task of weather forecasting. I will be using the Facebook prophet model for this task. The Facebook prophet model is one of the best techniques for time series forecasting. If you have never used this model before, you can install it on your system by using the command mentioned below in your command prompt or terminal:

```
pip install prophet

forecast_data = data.rename(columns = {"date": "ds",
                                     "meantemp": "y"})

print(forecast_data)

output:
```

	ds	y	humidity	wind_speed	meanpressure	year	month
0	2013-01-01	10.000000	84.500000	0.000000	1015.666667	2013	1
1	2013-01-02	7.400000	92.000000	2.980000	1017.800000	2013	1
2	2013-01-03	7.166667	87.000000	4.633333	1018.666667	2013	1
3	2013-01-04	8.666667	71.333333	1.233333	1017.166667	2013	1
4	2013-01-05	6.000000	86.833333	3.700000	1016.500000	2013	1
...
1457	2016-12-28	17.217391	68.043478	3.547826	1015.565217	2016	12
1458	2016-12-29	15.238095	87.857143	6.000000	1016.904762	2016	12
1459	2016-12-30	14.095238	89.666667	6.266667	1017.904762	2016	12
1460	2016-12-31	15.052632	87.000000	7.325000	1016.100000	2016	12
1461	2017-01-01	10.000000	100.000000	0.000000	1016.000000	2017	1

[1462 rows x 7 columns]

Now below is how we can use the Facebook prophet model for weather forecasting using Python:

```

from prophet import Prophet

from prophet.plot import plot_plotly, plot_components_plotly

model = Prophet()

model.fit(forecast_data)

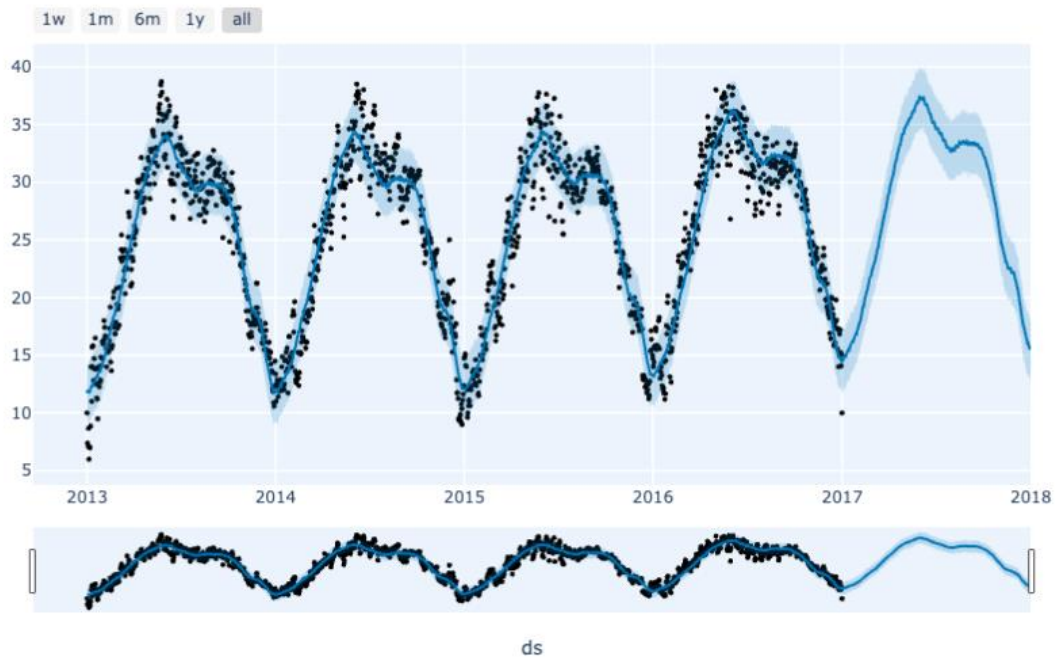
forecasts = model.make_future_dataframe(periods=365)

predictions = model.predict(forecasts)

plot_plotly(model, predictions)

output:

```



Summary

Weather forecasting is the task of forecasting weather conditions for a given location and time. With the use of weather data and algorithms, it is possible to predict weather conditions for the next n number of days. I hope you liked this article on Weather Analysis and Forecasting using Python. Feel free to ask valuable questions in the comments section below.