In [2]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
```

In [4]:

```
data = pd.read_csv("DailyDelhiClimateTrain.csv")
print(data.head())
```

```
         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
```

In [5]:

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

```
          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
```

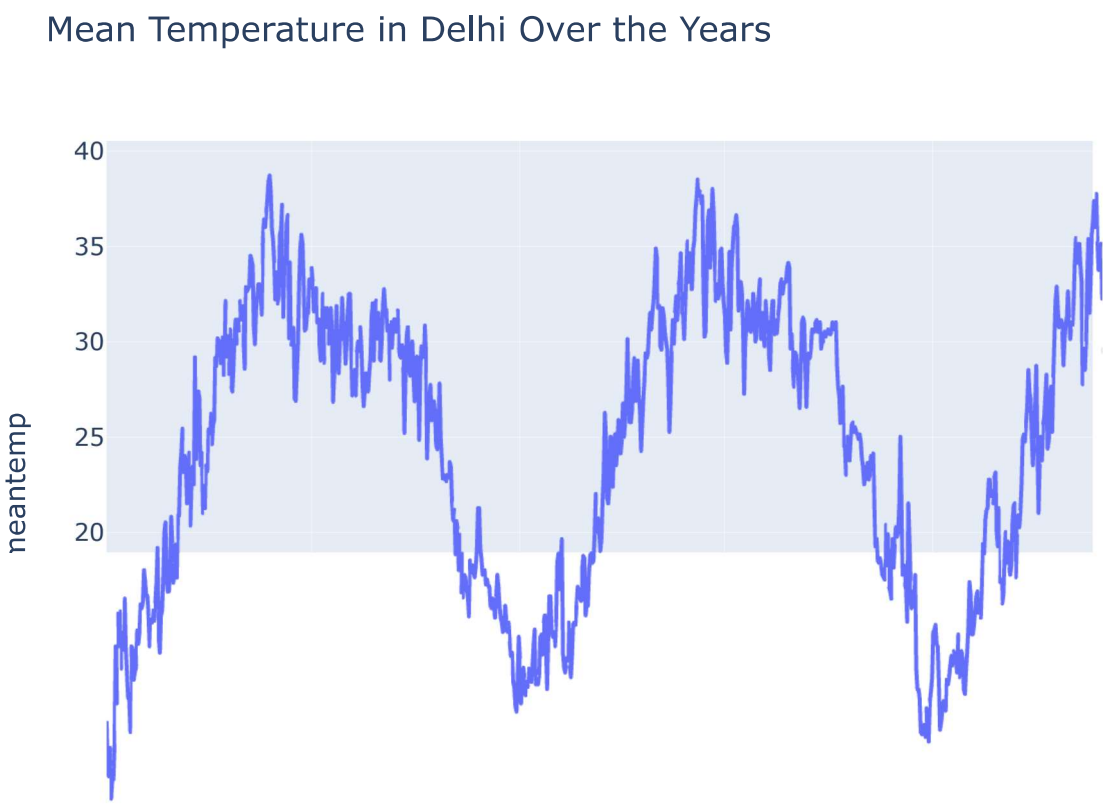
In [6]:

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

```
<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
None
```

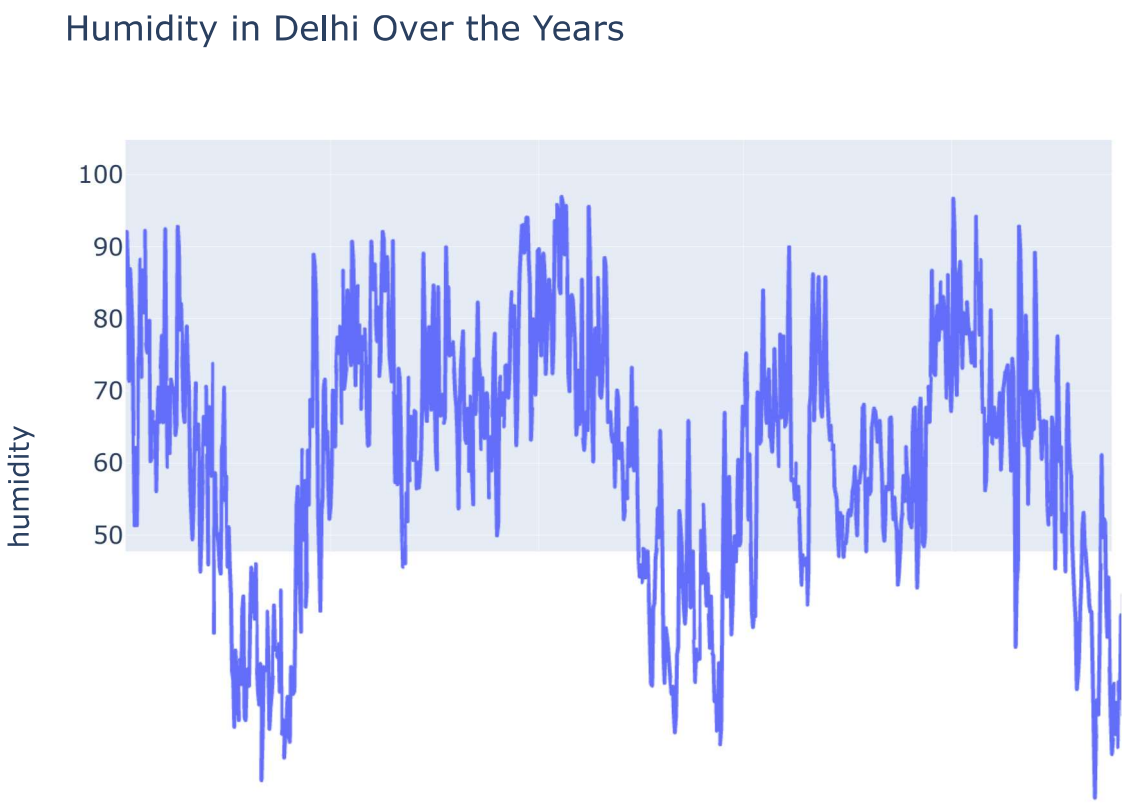
In [7]:

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



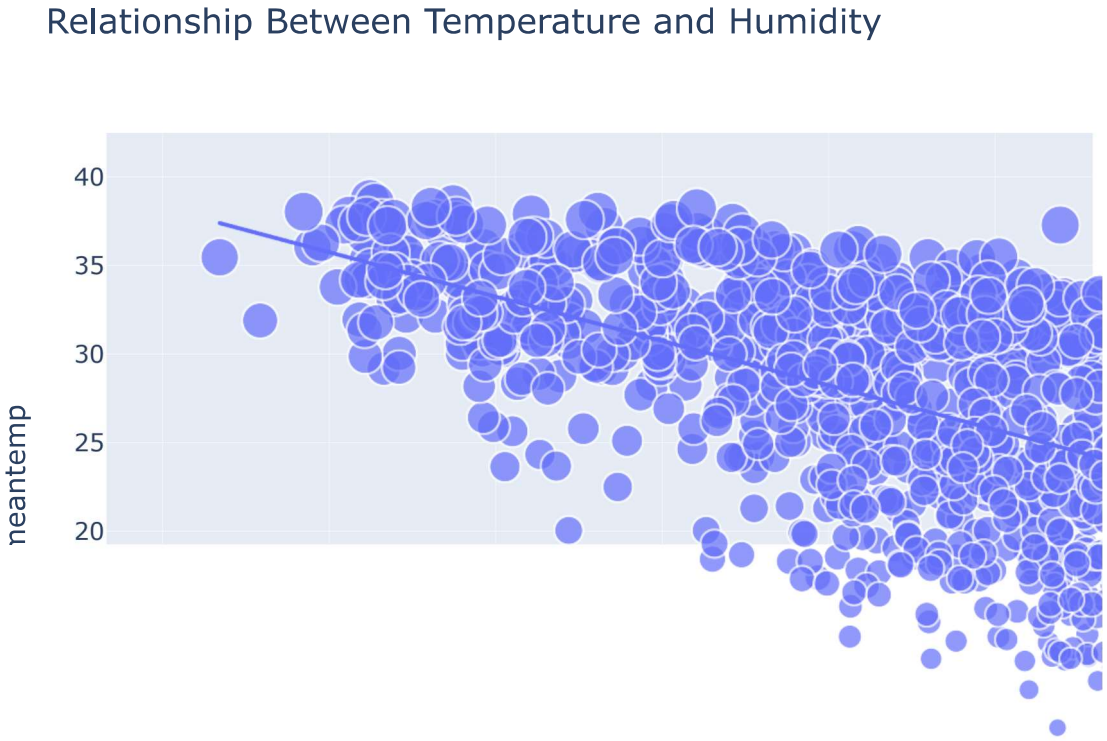
In [8]:

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



In [9]:

```
figure = px.scatter(data_frame = data, x="humidity",
                    y="meantemp", size="meantemp",
                    trendline="ols",
                    title = "Relationship Between Temperature and Humidity")
figure.show()
```



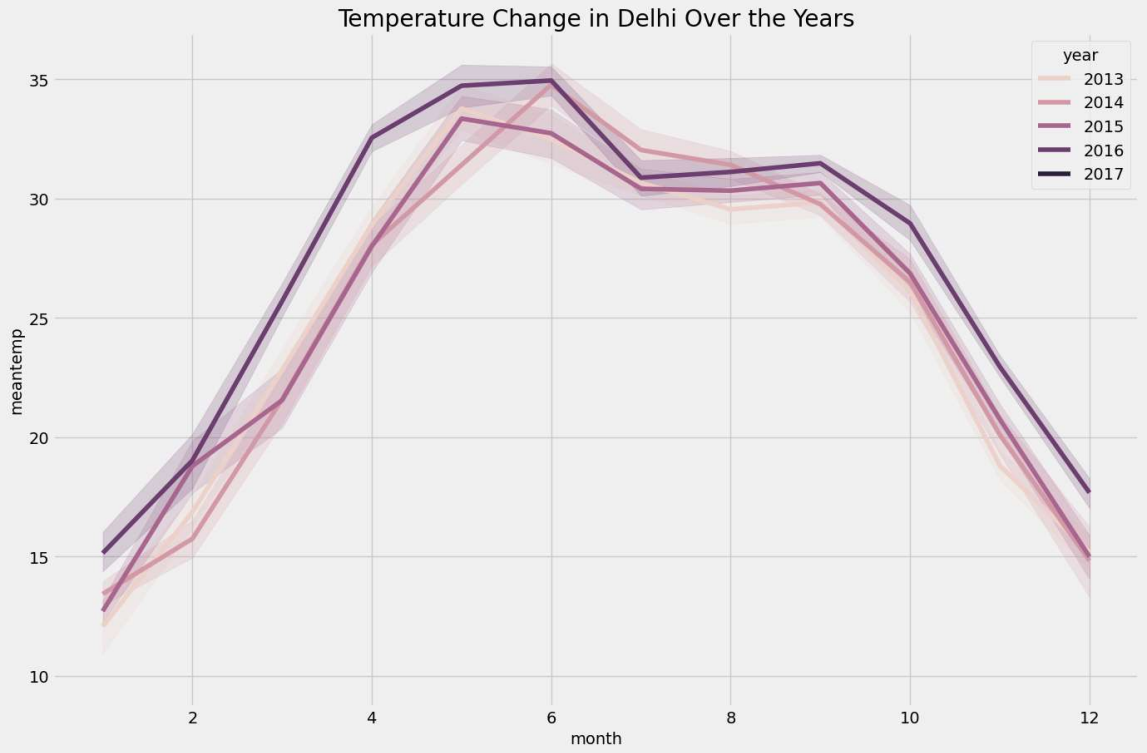
In [10]:

```
data["date"] = pd.to_datetime(data["date"], format = '%Y-%m-%d')
data['year'] = data['date'].dt.year
data["month"] = data["date"].dt.month
print(data.head())
```

```
        date   meantemp   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
```

In [11]:

```
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()
```



In [12]:

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

```
            ds          y    humidity  wind_speed  meanpressure  year  mo
nth
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]
```

In [15]:

```
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)
```

```
00:00:35 - cmdstanpy - INFO - Chain [1] start processing
00:00:35 - cmdstanpy - INFO - Chain [1] done processing
```