Descriptive Analytics of Weather History Dataset

1. Import Libraries

In [2]:
```
import pandas as pd
```

In [3]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn import preprocessing
import warnings
warnings.filterwarnings('ignore')
```

2. Load the Dataset

In [4]:
```
df1 = pd.read_csv('weatherHistory.csv')
```

In [6]:
```
df1.head(5)
```

Out[6]:

	Formatted Date	Summary	Precip Type	Temperature (C)	Apparent Temperature (C)	Humidity	Wind Speed (km/h)	Wind Bearing (degrees)	Visibility (km)	Loud Cover
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
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
2	2006-04-01 02:00:00.000 +0200	Mostly Cloudy	rain	9.377778	9.377778	0.89	3.9284	204.0	14.9569	0.0
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
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

3. Exploratory Data Anaysis

In [11]:
```
df2 = df1
```

Changing the Datetime string to `datetime` object and setting it as index

`raw_data['Mycol'] = pd.to_datetime(raw_data['Mycol'], format='%d%b%Y:%H:%M:%S.%f')`

Date: `2006-04-01 00:00:00.000 +0200`

In [13]:
```
df2['Formatted Date'] = pd.to_datetime(df2['Formatted Date'], utc=True)
df2['Formatted Date'] = df2['Formatted Date'].apply(lambda x: x.replace(tzinfo=None))
df2['Formatted Date'] =  pd.to_datetime(df2['Formatted Date'], format='%d-%m-%Y %H:%M')
df2 = df2.set_index('Formatted Date')
```

Basic statistics

Count, Mean, Standard Deviation, Minimum Value, 25th Percentile, 50th Percentile (Median), 75th Percentile, Maximum Value.

Converting Pressure to bars for data stake

In [34]:
```
df2['Pressure (millibars)'] = df2['Pressure (millibars)'] / 1000

df2.rename(columns = {'Pressure (millibars)':'Pressure (bars)'}, inplace = True)
```

Univariate analysis

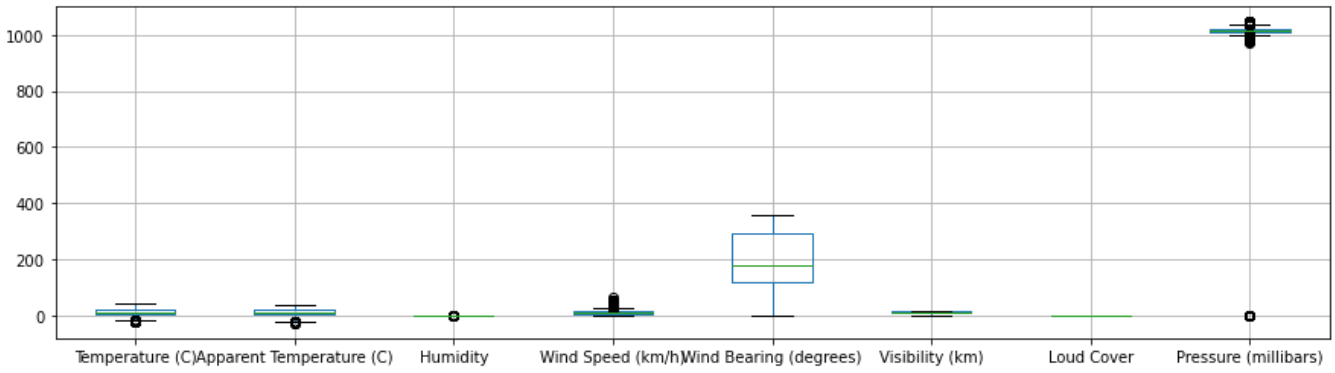
In [38]:
```
df2.describe()
```

Out[38]:

	Temperature (C)	Apparent Temperature (C)	Humidity	Wind Speed (km/h)	Wind Bearing (degrees)	Visibility (km)	Loud Cover	Press (b
count	96453.000000	96453.000000	96453.000000	96453.000000	96453.000000	96453.000000	96453.0	96453.000
mean	11.932678	10.855029	0.734899	10.810640	187.509232	10.347325	0.0	1.003
std	9.551546	10.696847	0.195473	6.913571	107.383428	4.192123	0.0	0.116
min	-21.822222	-27.716667	0.000000	0.000000	0.000000	0.000000	0.0	0.000
25%	4.688889	2.311111	0.600000	5.828200	116.000000	8.339800	0.0	1.011
50%	12.000000	12.000000	0.780000	9.965900	180.000000	10.046400	0.0	1.016
75%	18.838889	18.838889	0.890000	14.135800	290.000000	14.812000	0.0	1.021
max	39.905556	39.344444	1.000000	63.852600	359.000000	16.100000	0.0	1.046

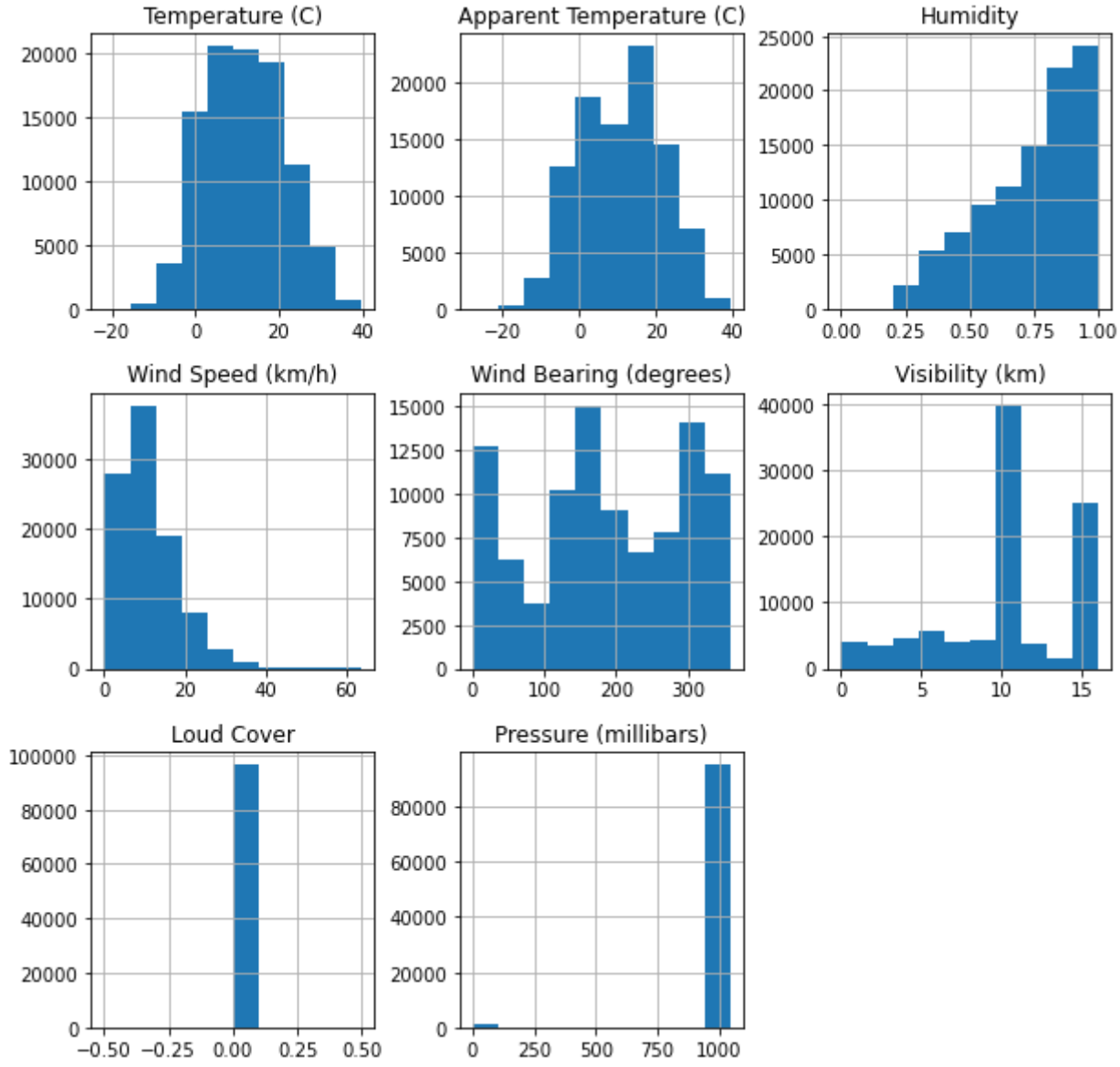
In [20]:
```
df2.boxplot(figsize=(15, 4))
```

Out[20]:
```
<AxesSubplot:>
```



In [22]:
```
df2.hist(figsize=(10, 10))
```

Out[22]:
```
array([[<AxesSubplot:title={'center':'Temperature (C)'}>,
        <AxesSubplot:title={'center':'Apparent Temperature (C)'}>,
        <AxesSubplot:title={'center':'Humidity'}>],
       [<AxesSubplot:title={'center':'Wind Speed (km/h)'}>,
        <AxesSubplot:title={'center':'Wind Bearing (degrees)'}>,
        <AxesSubplot:title={'center':'Visibility (km)'}>],
       [<AxesSubplot:title={'center':'Loud Cover'}>,
        <AxesSubplot:title={'center':'Pressure (millibars)'}>,
        <AxesSubplot:>]], dtype=object)
```



Standard Deviation

In [69]:
```
df2.std()
```

Out[69]:
```
Temperature (C)              9.551546
Apparent Temperature (C)    10.696847
Humidity                     0.195473
Wind Speed (km/h)            6.913571
Wind Bearing (degrees)     107.383428
Visibility (km)              4.192123
Loud Cover                   0.000000
Pressure (bars)              0.116970
dtype: float64
```

Mode

In [70]:
```
df2.mode()
```

Out[70]:

	Summary	Precip Type	Temperature (C)	Apparent Temperature (C)	Humidity	Wind Speed (km/h)	Wind Bearing (degrees)	Visibility (km)	Loud Cover	Pressure (bars)	Su
0	Partly Cloudy	rain	7.222222	12.777778	0.93	3.22	0.0	9.982	0.0	0.0	thro

Kurtosis

In [71]:
```
df2.kurtosis()
```

Out[71]:
```
Temperature (C)             -0.566791
Apparent Temperature (C)    -0.706844
Humidity                    -0.462170
Wind Speed (km/h)            1.769284
Wind Bearing (degrees)      -1.131534
Visibility (km)             -0.260339
Loud Cover                   0.000000
Pressure (bars)             69.268758
dtype: float64
```

Skewness

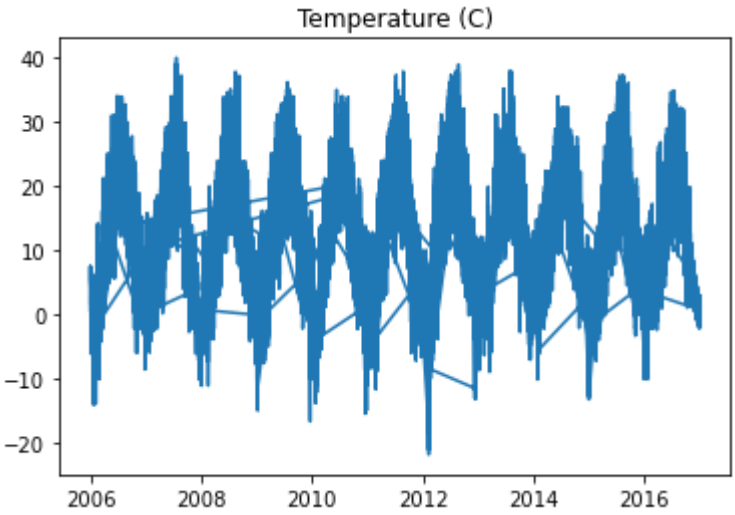
In [72]:
```
df2.skew()
```

Out[72]:
```
Temperature (C)              0.094127
Apparent Temperature (C)    -0.057302
Humidity                    -0.715880
Wind Speed (km/h)            1.113493
Wind Bearing (degrees)      -0.154643
Visibility (km)             -0.498712
Loud Cover                   0.000000
Pressure (bars)             -8.422506
dtype: float64
```

Plotting Line Plot

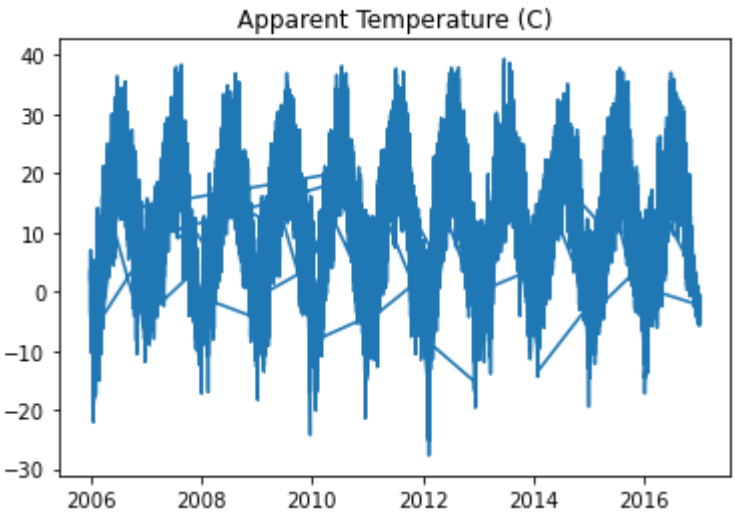
In [27]:
```
plt.plot(df2.index, df2['Temperature (C)'])
plt.title("Temperature (C)")
```

Out[27]:
```
Text(0.5, 1.0, 'Temperature (C)')
```



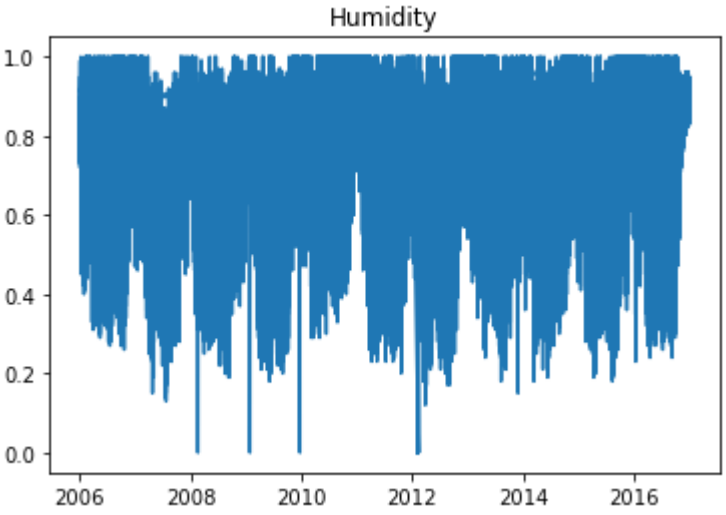
In [28]:
```
plt.plot(df2.index, df2['Apparent Temperature (C)'])
plt.title("Apparent Temperature (C)")
```

Out[28]:
```
Text(0.5, 1.0, 'Apparent Temperature (C)')
```



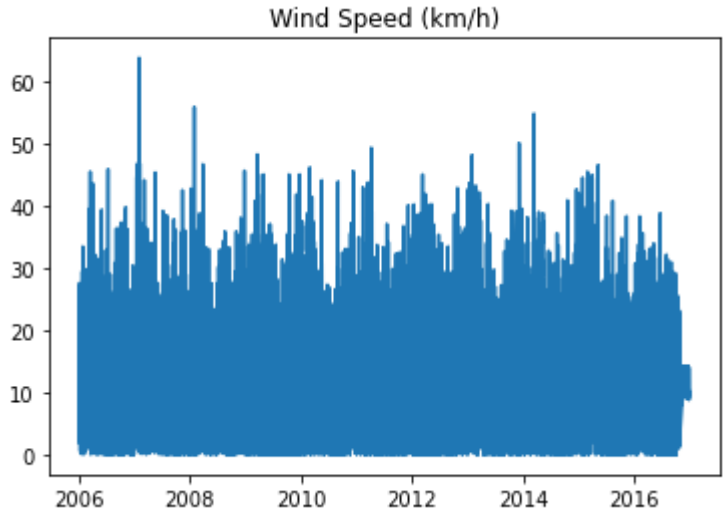
In [29]:
```
plt.plot(df2.index, df2['Humidity'])
plt.title("Humidity")
```

Out[29]:
```
Text(0.5, 1.0, 'Humidity')
```



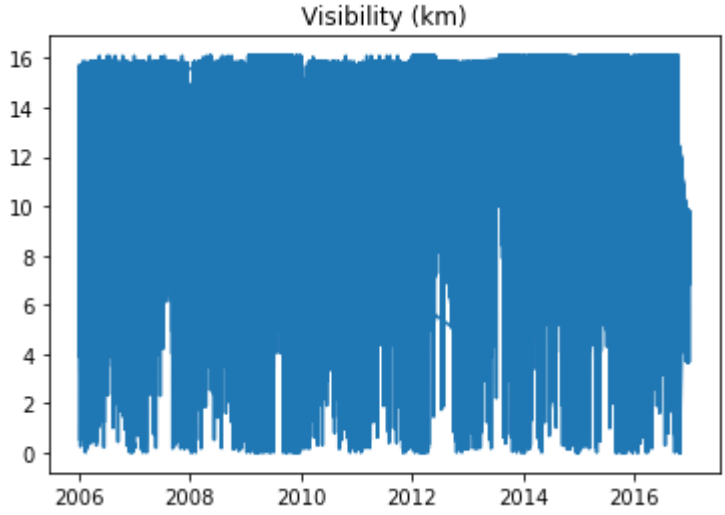
In [30]:
```
plt.plot(df2.index, df2['Wind Speed (km/h)'])
plt.title("Wind Speed (km/h)")
```

Out[30]:
```
Text(0.5, 1.0, 'Wind Speed (km/h)')
```



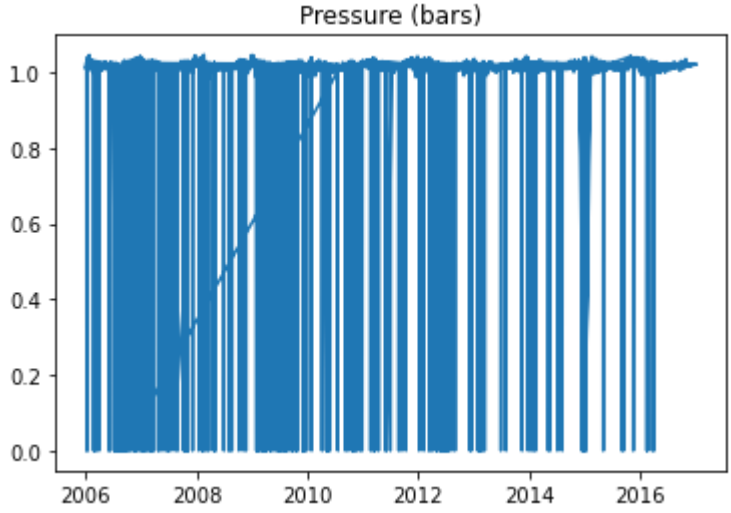
In [31]:
```
plt.plot(df2.index, df2['Visibility (km)'])
plt.title("Visibility (km)")
```

Out[31]:
```
Text(0.5, 1.0, 'Visibility (km)')
```



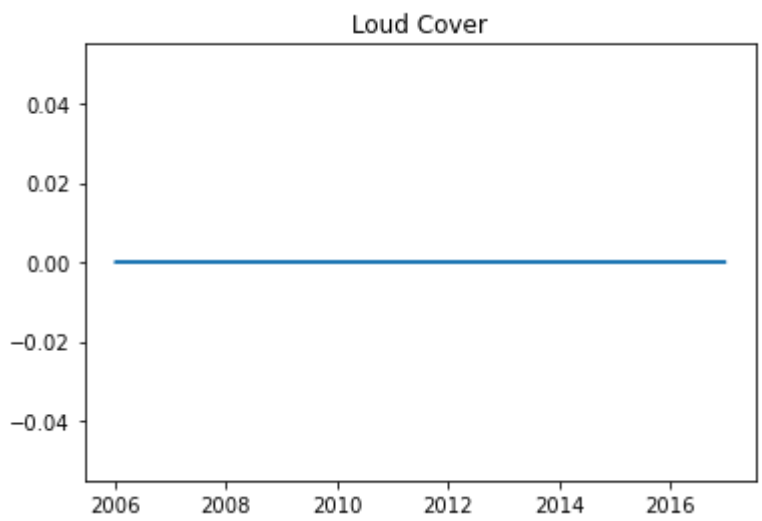
In [35]:
```
plt.plot(df2.index, df2['Pressure (bars)'])
plt.title("Pressure (bars)")
```

Out[35]:
```
Text(0.5, 1.0, 'Pressure (bars)')
```



In [36]:
```
plt.plot(df2.index, df2['Loud Cover'])
plt.title("Loud Cover")
```

Out[36]:
```
Text(0.5, 1.0, 'Loud Cover')
```



In [37]:
```
plt.plot(df2.index, df2['Wind Bearing (degrees)'])
plt.title("Wind Bearing (degrees)")
```

Out[37]:
```
Text(0.5, 1.0, 'Wind Bearing (degrees)')
```