In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

%matplotlib notebook

import seaborn as sns
```

In [2]:
```
plt.style.use("seaborn-colorblind")
```

In [3]:
```
data = pd.read_csv("C:/Users/VARUN/Desktop/AirPollution/Dataset/cpcb_dly_aq_maharashtra-2014.csv")
```

In [4]:
```
data.head()
```

Out[4]:

	Stn Code	Sampling Date	State	City/Town/Village/Area	Location of Monitoring Station	Agency	Type of Location	SO2	NO2	RSPM/PM10	PM 2.5
0	702	01-03-14	Maharashtra	Akola	College Of Engineering and Technology, Akola	Maharashtra State Pollution Control Board	Residential, Rural and other Areas	8.0	10.0	158.0	NaN
1	702	01-04-14	Maharashtra	Akola	College Of Engineering and Technology, Akola	Maharashtra State Pollution Control Board	Residential, Rural and other Areas	8.0	9.0	160.0	NaN
2	702	01-10-14	Maharashtra	Akola	College Of Engineering and Technology, Akola	Maharashtra State Pollution Control Board	Residential, Rural and other Areas	8.0	9.0	158.0	NaN
3	702	01-11-14	Maharashtra	Akola	College Of Engineering and Technology, Akola	Maharashtra State Pollution Control Board	Residential, Rural and other Areas	8.0	10.0	162.0	NaN
4	702	17-01-14	Maharashtra	Akola	College Of Engineering and Technology, Akola	Maharashtra State Pollution Control Board	Residential, Rural and other Areas	9.0	9.0	161.0	NaN

In [5]:
```
dates = ['-'.join(i.split('-')[1:]) for i in data['Sampling Date']]
```

In [6]:
```
data['Sampling Date'] = dates
```

In [7]:
```
for i in range(len(data['City/Town/Village/Area'])):
    if data['City/Town/Village/Area'][i] != 'Mumbai':
        data.drop(i, inplace = True)
```

In [8]:
```
data.head()
```

Out[8]:

	Stn Code	Sampling Date	State	City/Town/Village/Area	Location of Monitoring Station	Agency	Type of Location	SO2	NO2	RSPM/PM10	PM 2.5
2550	169	03-14	Maharashtra	Mumbai	Bank of India, Kalbadevi Branch, Kalbadevi, Mu...	National Environmental Engineering Research In...	Residential, Rural and other Areas	2.0	20.0	179.0	NaN
2551	169	06-14	Maharashtra	Mumbai	Bank of India, Kalbadevi Branch, Kalbadevi, Mu...	National Environmental Engineering Research In...	Residential, Rural and other Areas	2.0	20.0	186.0	NaN
2552	169	09-14	Maharashtra	Mumbai	Bank of India, Kalbadevi Branch, Kalbadevi, Mu...	National Environmental Engineering Research In...	Residential, Rural and other Areas	6.0	14.0	171.0	NaN
2553	169	01-14	Maharashtra	Mumbai	Bank of India, Kalbadevi Branch, Kalbadevi, Mu...	National Environmental Engineering Research In...	Residential, Rural and other Areas	2.0	9.0	130.0	NaN
2554	169	01-14	Maharashtra	Mumbai	Bank of India, Kalbadevi Branch, Kalbadevi, Mu...	National Environmental Engineering Research In...	Residential, Rural and other Areas	5.0	20.0	155.0	NaN

In [9]:
```
data = data.groupby("Sampling Date").mean()
data
```

Out[9]:

Sampling Date	Stn Code	SO2	NO2	RSPM/PM10	PM 2.5
01-14	234.818182	4.409091	21.636364	136.818182	NaN
02-14	237.904762	4.809524	23.428571	107.238095	NaN
03-14	244.250000	4.791667	27.416667	110.625000	NaN
04-14	229.333333	3.944444	21.388889	91.555556	NaN
05-14	214.450000	3.850000	26.600000	74.300000	NaN
06-14	229.333333	4.541667	13.125000	76.333333	NaN
07-14	221.833333	2.375000	11.958333	50.916667	NaN
08-14	246.476190	3.333333	11.952381	75.619048	NaN
09-14	224.086957	3.478261	15.565217	115.695652	NaN
10-14	241.333333	4.133333	23.142857	110.400000	NaN
11-14	266.153846	4.538462	24.461538	89.692308	NaN
12-14	274.166667	4.333333	22.416667	120.750000	NaN

In [10]:
```
data = data.groupby("Sampling Date").mean().drop("PM 2.5", axis=1)
```

In [11]:
```
data
```

Out[11]:

Sampling Date	Stn Code	SO2	NO2	RSPM/PM10
01-14	234.818182	4.409091	21.636364	136.818182
02-14	237.904762	4.809524	23.428571	107.238095

03-14	244.250000	4.791667	27.416667	110.625000
04-14	229.333333	3.944444	21.388889	91.555556
05-14	214.450000	3.850000	26.600000	74.300000
06-14	229.333333	4.541667	13.125000	76.333333
07-14	221.833333	2.375000	11.958333	50.916667
08-14	246.476190	3.333333	11.952381	75.619048
09-14	224.086957	3.478261	15.565217	115.695652
10-14	241.333333	4.133333	23.142857	110.400000
11-14	266.153846	4.538462	24.461538	89.692308
12-14	274.166667	4.333333	22.416667	120.750000

In [12]:
```
plt.figure(figsize=(9, 7))
plt.subplot(211)
plt.cla()
plotter = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun','Jul', 'Aug', 'Sep',
           'Oct', 'Nov', 'Dec']
x = np.arange(0,len(data["NO2"]),1)
ax = plt.gca()
ax.plot(x, data["NO2"])
ax.spines['top'].set_visible(False)
ax.spines['right'].set_visible(False)
ax.set_xticks(x)
plt.xticks(rotation=45)
plt.subplots_adjust(bottom=0.2)
plt.legend([2014],loc=2)
plt.title("$\mathregular{NO_2}$ (Nitrogen Dioxide) levels in Mumbai")
ax.set_xticklabels(plotter)

plt.subplot(212)
plt.cla()
plotter = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun','Jul', 'Aug', 'Sep',
           'Oct', 'Nov', 'Dec']
x = np.arange(0,len(data["SO2"]),1)
ax = plt.gca()
ax.plot(x, data["SO2"])
ax.spines['top'].set_visible(False)
ax.spines['right'].set_visible(False)
ax.set_xticks(x)
plt.xticks(rotation=45)
plt.title("$\mathregular{SO_2}$ (Sulphur Dioxide) levels in Mumbai")
ax.set_xticklabels(plotter)

plt.tight_layout()
#plt.show()
```

Figure 1

In [ ]: