DAND-Exploring-Weather-Trends

Data Analyst Nanodegree Project 1

Get data using SQL

・Get data of all city

```
SELECT
 *
FROM
 city_data;
```

・Get data of the closest city where I live

```
SELECT
 *
FROM
 city_data
WHERE
 city = 'Hiroshima'
```

・Get data of global

```
SELECT
 *
FROM
 global_data;
```

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

In [2]:
```
sys.version
```

Out[2]:
```
'3.5.3 |Continuum Analytics, Inc.| (default, Mar  6 2017, 12:15:08) \n[GCC 4.2.1 Compatible Apple LLVM 6.0 (clang-600.0.57)]'
```

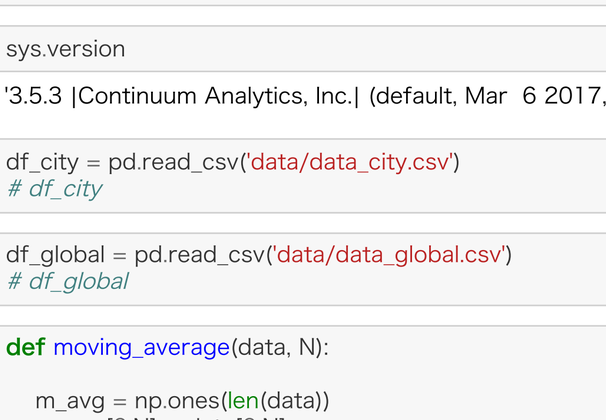
In [3]:
```
df_city = pd.read_csv('data/data_city.csv')
# df_city
```

In [4]:
```
df_global = pd.read_csv('data/data_global.csv')
# df_global
```

In [5]:
```
def moving_average(data, N):

    m_avg = np.ones(len(data))
    m_avg[0:N] = data[0:N]

    for i in range(N, len(data)):
        m_avg[i] = np.mean(data[i-N+1:i])  # calculate average in past N years

    return m_avg
```

In [6]:
```
N = 10
# calculate moving average
city_moving_avg = moving_average(df_city.avg_temp, N)# calculate average in past N years
global_moving_avg = moving_average(df_global.avg_temp, N)# calculate average in past N years

plt.plot(df_city.year, df_city.avg_temp,label='city')
plt.plot(df_city.year, city_moving_avg, label='city ( moving average in ' + str(N) + ' years )') # show moving average
plt.plot(df_global.year, df_global.avg_temp,label='global')
plt.plot(df_global.year, global_moving_avg, label='global( moving average in ' + str(N) + ' years )') # show moving average
plt.xlabel('Year[-]')
plt.ylabel('Temperature[℃]')
plt.xlim([1800, 2020])
plt.legend()
```

Out[6]:
```
<matplotlib.legend.Legend at 0x115744e48>
```



1. Is your city hotter or cooler on average compared to the global average? Has the difference been consistent over time?

A. Temperatures in my city is hotter than that of global average and the difference has been consistent over time.

2. How do the changes in your city's temperatures over time compare to the changes in the global average?

A. The changes in my city's temperatures and global one are same.

3. What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?

A. The world is getting hotter and the trend has been consistent over last few hundred years.

4. Is there any diffrences in temperature's variation between your city and global average?

A. The temperatures in my area has more variance than global average.