Exploring_Weather_Trends

July 1, 2020

1 Exploring Weather Trends

In this project, we are going to analyze local (Chicago, US) and global temperature data and compare the temperature trends where you live (Chicago, US) to overall global temperature trends.

[43]:
```
#importing Libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

1.1 Fetching Data from SQL

Code for fetching global data: Select * From global_data

Code for fetching chicago data: Select * From city_data where city = 'chicago' AND country = 'United States'

[67]:
```
#loading datasets
df_city = pd.read_csv("Chicago_temp_data.csv")
df_global = pd.read_csv("global_data.csv")
```

[68]:
```
# Creating moving averages for avg temperature
for i in range(0,df_city.shape[0]-7):
    df_city.loc[df_city.index[i+6],"7_year_mov_avg"] = np.round(((df_city.
 ↪iloc[i,3]+ df_city.iloc[i+1,3] +df_city.iloc[i+2,3]+df_city.iloc[i+3,3]+␣
 ↪df_city.iloc[i+4,3] +df_city.iloc[i+5,3]+ df_city.iloc[i+6,3] )/7),1)

for i in range(0,df_global.shape[0]-7):
    df_global.loc[df_global.index[i+6],"7_year_mov_avg"] = np.round(((df_global.
 ↪iloc[i,1]+ df_global.iloc[i+1,1] +df_global.iloc[i+2,1]+df_global.
 ↪iloc[i+3,1]+ df_global.iloc[i+4,1] +df_global.iloc[i+5,1]+ df_global.
 ↪iloc[i+6,1] )/7),1)
```

[69]:
```
# Test
df_global.head(15)
```

[69]:

	year	avg_temp	7_year_mov_avg
0	1750	8.72	NaN
1	1751	7.98	NaN
2	1752	5.78	NaN
3	1753	8.39	NaN
4	1754	8.47	NaN
5	1755	8.36	NaN
6	1756	8.85	8.1
7	1757	9.02	8.1
8	1758	6.74	7.9
9	1759	7.99	8.3
10	1760	7.19	8.1
11	1761	8.77	8.1
12	1762	8.61	8.2
13	1763	7.50	8.0
14	1764	8.40	7.9

[70]:
```
# Test
df_city.head(15)
```

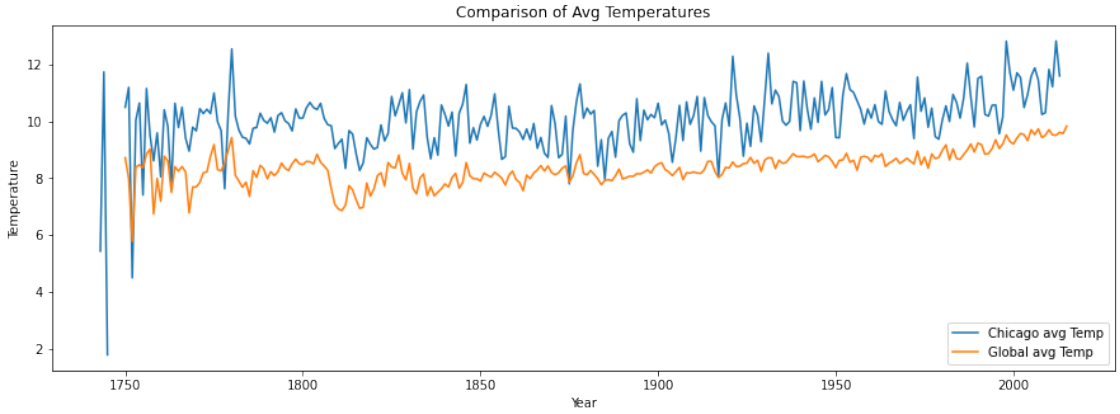
[70]:

	year	city	country	avg_temp	7_year_mov_avg
0	1743	Chicago	United States	5.44	NaN
1	1744	Chicago	United States	11.73	NaN
2	1745	Chicago	United States	1.80	NaN
3	1746	Chicago	United States	NaN	NaN
4	1747	Chicago	United States	NaN	NaN
5	1748	Chicago	United States	NaN	NaN
6	1749	Chicago	United States	NaN	NaN
7	1750	Chicago	United States	10.49	NaN
8	1751	Chicago	United States	11.19	NaN
9	1752	Chicago	United States	4.50	NaN
10	1753	Chicago	United States	10.04	NaN
11	1754	Chicago	United States	10.64	NaN
12	1755	Chicago	United States	7.41	NaN
13	1756	Chicago	United States	11.15	9.3
14	1757	Chicago	United States	9.50	9.2

2 Analysing Data

[85]:
```
plt.figure(figsize=(15,5))
plt.plot(df_city["year"],df_city["avg_temp"],label='Chicago avg Temp')
plt.plot(df_global["year"],df_global["avg_temp"],label='Global avg Temp')
plt.title("Comparison of Avg Temperatures")
plt.xlabel("Year")
plt.ylabel("Temperature")
plt.legend()
```

[85]: <matplotlib.legend.Legend at 0x1199826d0>



The Above Plot shows the variation of global and local Temperature over the period 1750 - 2000

2.0.1 Observations:

The average temperature of Chicago is high when compared to global temperature.

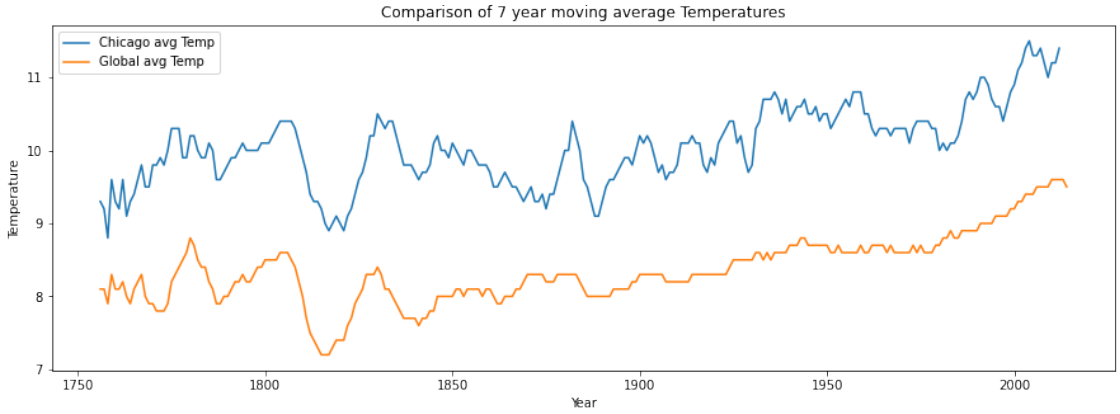
The chicago's temperature seems to be 2-6 units high when comapred to global temperature.

The Average temperature of global and chicago temperature is fluctuating but they are parallel

There isn't much increase of temperatue over 250 years

[87]:
```
plt.figure(figsize=(15,5))
plt.plot(df_city["year"],df_city["7_year_mov_avg"],label='Chicago avg Temp')
plt.plot(df_global["year"],df_global["7_year_mov_avg"],label='Global avg Temp')
plt.title("Comparison of 7 year moving average Temperatures")
plt.xlabel("Year")
plt.ylabel("Temperature")
plt.legend()
```

[87]: <matplotlib.legend.Legend at 0x119b9d350>



The Above Plot shows the variation of global and local moving avaerage Temperature over the period 1750 - 2000

3 Observations:

The moving avaerage Temperature temperature of Chicago is high when compared to global temperature.

The chicago's moving avaerage Temperature seems to be 1-4 units high when comapred to global temperature.

The moving avaerage Temperature temperature of global and chicago temperature is fluctuating but they are parallel

There isn't much increase of moving avaerage Temperature over 250 years

[ ]: