

# Explore Weather Trends

## 1. Extracting Data From database using SQL

1. SELECT \* FROM global\_data;
2. SELECT \* FROM city\_data WHERE city = 'Munich' AND country = 'Germany';

## 2. Moving averages are calculated by Python (short-window simple moving average)

## 3. Code for loading the CSV and Visualization

```
In [69]: #importing necessary libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

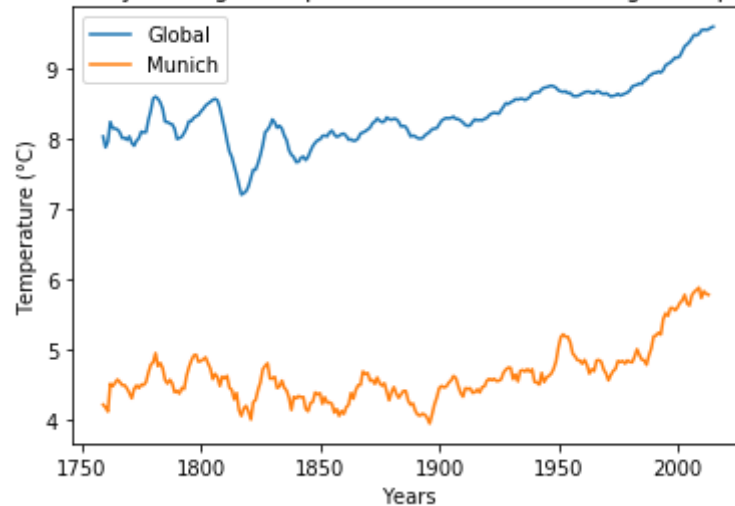
```
In [76]: # importing the data for city and global
globaltemp = pd.read_csv('global_data.csv')
citytemp = pd.read_csv('Munich_data.csv')
```

```
In [77]: # merged = globaltemp.merge(citytemp, on='year')
# There were some missing information in city temp data (1746-1749), but it really doesn't have any impact as the the
global data starts from 1750
```

```
In [78]: # Moving Average for Global and Local Data
global_mv_avg = globaltemp['avg_temp'].rolling(10).mean()
local_mv_avg = citytemp['avg_temp'].rolling(10).mean()
```

```
In [80]: # visualization of Data w.r.t year
plt.plot(globaltemp['year'],global_mv_avg,label='Global')
plt.plot(citytemp['year'],local_mv_avg,label='Munich')
plt.legend()
plt.xlabel("Years")
plt.ylabel("Temperature (°C)")
plt.title("Munich City Average Temperature and Global Average Temperature")
plt.show()
```

Munich City Average Temperature and Global Average Temperature



## 4. Observation

The window (rolling) has taken 10(moving average 10), but in order to have a smooth line 50 can be taken but in that case the range of year will increase.

Observation from the Line Chart

1. Munich city is cooler compared to the Global Average Temperature.
2. The difference has been pretty consistent expect for the year range 1940- 1960 (approx) there were a surge of Munich's Avg temeprature compared to the Global avg temperature.
3. The Overall trend is pretty volatile at some point.But at the end both avg temperature is increasing as time goes. That means the world is getting hotter.
4. In case of last 100 hundred year, the avg global temp is kept rising but in Munich the avg temp has raised as well but seems to drop a little in coming years.