Project 1: Exploring Weather Trends

Data Extraction:

SQL Queries:

1. – Listing cities in Germany
   Select *
   From city_list
   Where country = 'Germany';
2. – Selecting Munich
   Select *
   From city_data
   Where city = 'Munich';
3. – Extracting Relevant data for the city of Munich
   Select year ,avg_temp
   From city_data
   Where city = 'Munich';
4. – Extracting Relevant data from Global database
   Select *
   From global_data;

Data Manipulation:

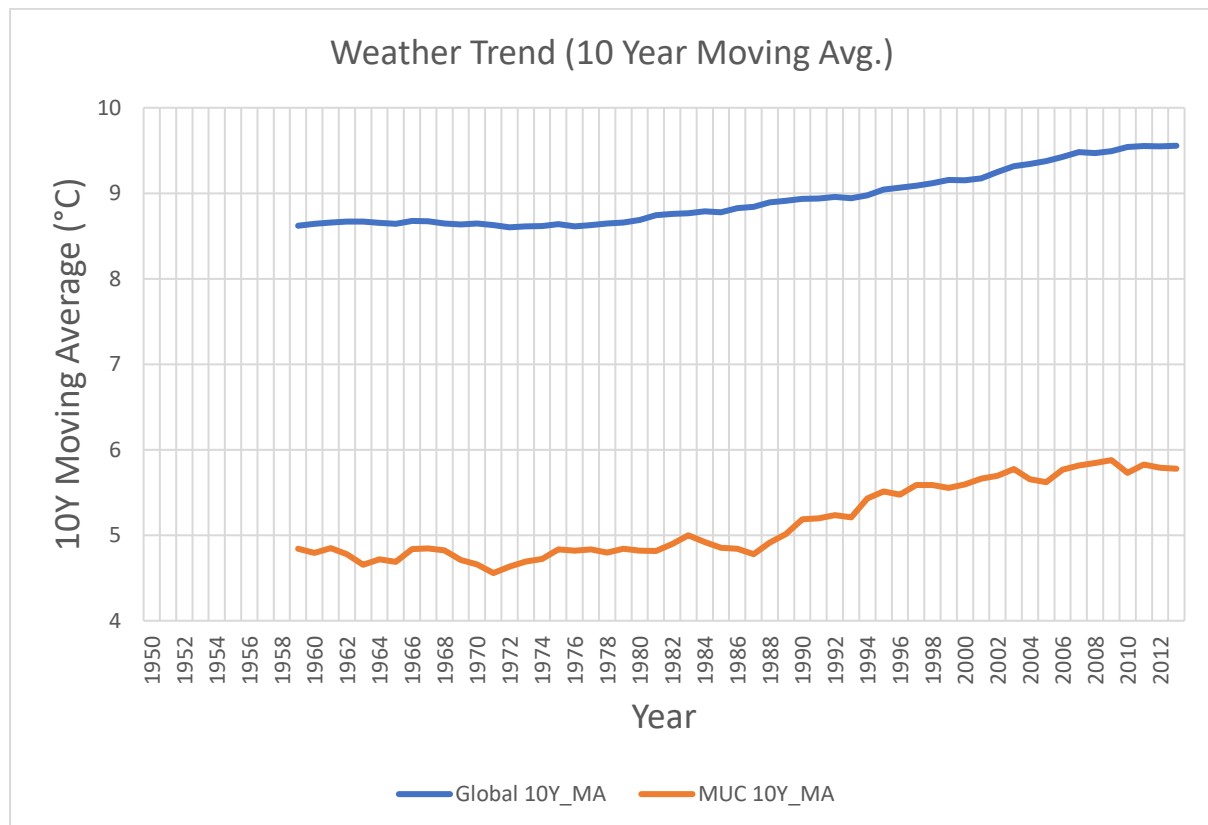The acquired datasets were worked on in Excel.

There was missing data between 1946 and 1949 in the Munich (MUC) dataset. Also, on inspection of the Global database and comparing it with the Munich set, it was found that for comparison only the Year window between 1950 and 2013 could be considered as 1950 was the first year in the Global dataset and 2013 was the last year in the Munich dataset. Therefore, the following SQL queries were used to acquire cleaner datasets within said window from the original and then Merged in one CSV file.

1. Select year ,avg_temp
   From city_data
   Where city = 'Munich' and year >= 1950 and year <= 2013;
2. Select year ,avg_temp
   From global_data
   Where year >= 1950 and year <= 2013;

A **moving average** over **10 Year period** was calculated for both global and Munich datasets.

Based on these considerations, the following Line chart was generated.

Data Visualization:

Weather Trend (10 Year Moving Avg.)

Data Observation:

From the above line chart, the following Observations can be made:

1. The city of Munich has been consistently cooler compared to the global average.
2. The Moving Average temperate over a 10Y period shows that in the city of Munich, the temperature has been relatively constant between 4.8°C up to 1980 with temperatures even dropping to 4.5°C around 1970. Relatively the Global average in the same time period has been constant around 8.6°C up to 1980.
3. Post 1980 there has been a significant increase year on year in both the global and Munich temperature readings till 2010. The Global temperatures have risen from 8.6°C in 1980 to 9.5°C in 2010. Similarly, the temperature in Munich has increased from 4.8°C in 1980 to 5.7°C in 2010. Thus, showing a rise of ca. 1°C overall.
4. It can also be seen that the temperatures in Munich do not have as smooth an upward trend compared to the global average with average temperatures dropping around 1970, 1987, 2005 and 2010 after an initial rise in the year before.
5. There is also a steeper rise in temperature around the 1990s to 2010.