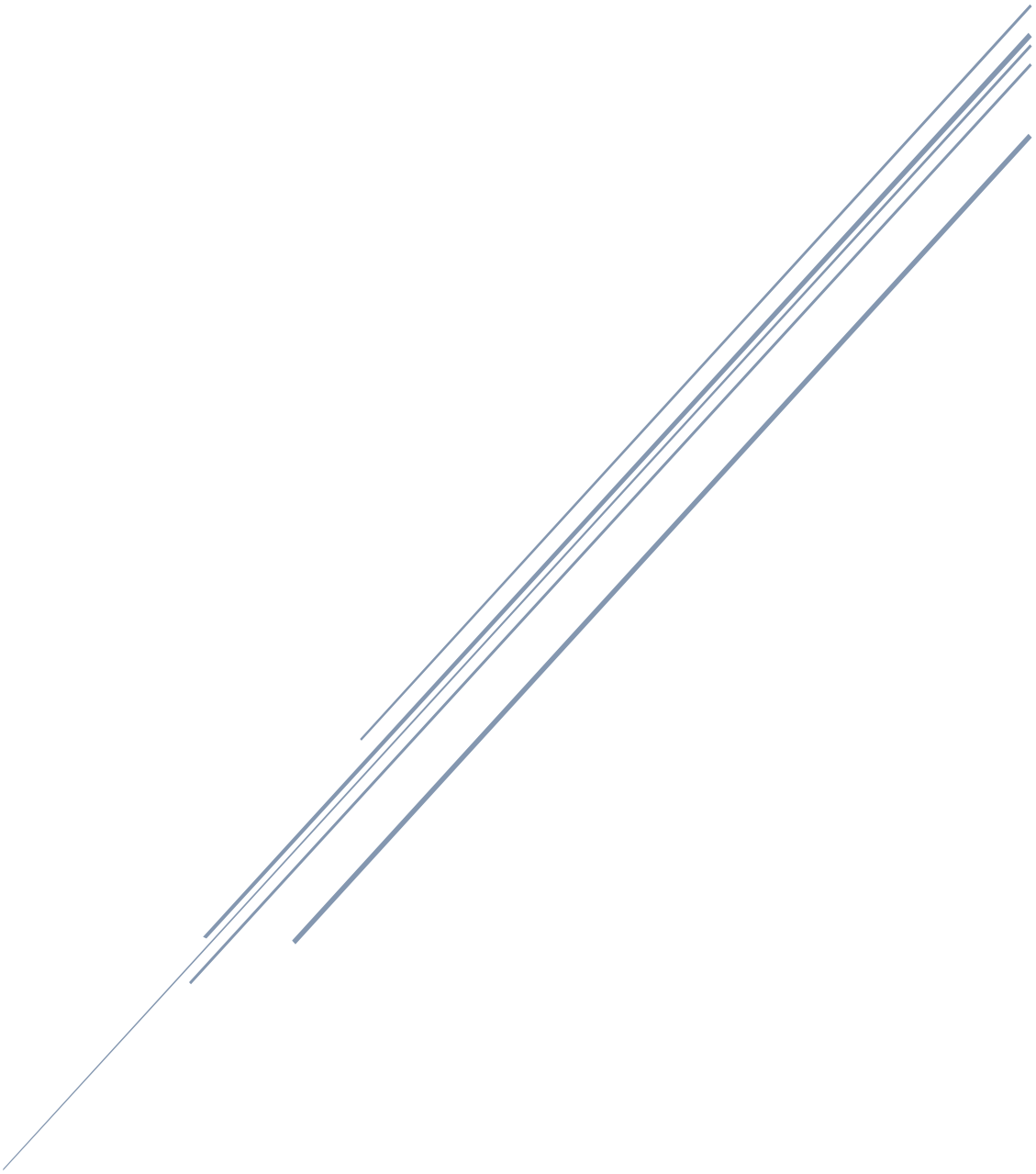
PROJECT 1

Weather Trends



Abdulrahman Almogbil

Outline:

Since my city Dammam located is Saudi Arabia is not listed in *city_list* table, I decided to go with Manama, Bahrain which is the nearest city to me. And I went with Excel to manipulate the data.

Based on the database given by the project, two ways can be implemented to extract the required data. One is to separate *city_data* and *global_data* in two different queries. This is the straight forward solution, it may look easy at the data extraction phase but you may face some difficulties when you want to create the line chart because it depends on two different sheets one for city data and other for global data.

Two, which I went with is to join *city_data* and *global_data* together using the year column. Year column is common in both tables, and I want all data in *global_data* to be joined with my nearest city average temperature. This is the reason behind using Full Outer Join. Query below shows my way of extracting the data.

```
1   SELECT city_data.year as Year, city_data.avg_temp as
    Manama_avg_temp,
2   global_data.avg_temp as Global_avg_temp
3   FROM city_data
4   FULL OUTER JOIN global_data ON
    city_data.year=global_data.year
5   Where city_data.city = 'Manama';
```

Success!

EVALUATE

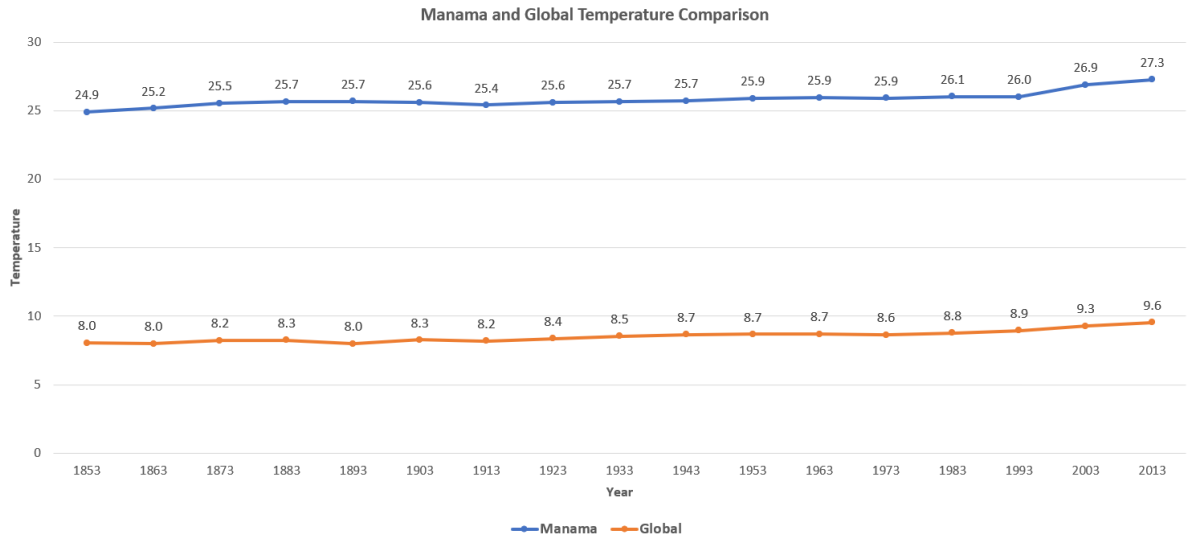
The next step is to get the data as shown below and calculate a logical moving average based on the years. I decided to go with 10 years moving average. The reason behind going with 10 years is the extracted data starts with 1843 and ends with 2013. So, 10 years seems logical. For both my city which is Manama, Bahrain, and global. I have calculated the moving average by summing up 10 years average temperature and divide them by 10, Excel can do all that using Average formula as shown below.

year	manama_	global_avg_temp	10Year MA Manama	10Year MA Global
1843	25.26	8.17		
1844	25.71	7.65		
1845	21.18	7.85		
1846		8.55		
1847		8.09		
1848	25.12	7.98		
1849	25.37	7.98		
1850	24.95	7.9		
1851	25.62	8.18		
1852	25.44	8.1		
1853	25.47	8.04	=AVERAGE(C2:C12)	8
1854	25.26	8.21		
1855	25.5	8.11		
1856	25.15	8		
1857	24.84	7.76		
1858	25.57	8.1		
1859	25.58	8.25		
1860	25.5	7.96		
1861	24.75	7.85		
1862	24.46	7.56		
1863	24.9	8.11	25.2	8

AVERAGE(**number1**, [number2], ...)

Line chart:

After manipulating the extracted data and calculating the moving average, the line chart below shows the comparison between weather temperature in my city Manama and global temperature every 10 years as shown below.



Observations:

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

If we take a look at the graph above, we can see clearly that my city Manama is considered hotter on average compared with the global average temperature. The difference is not consistent over time, but the changes are considered small and it shows from the graph that weather getting hotter and temperature increases overtime for both my city Manama and globally.

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

We can tell that my city is getting hotter over time based on the data shown above. Every 10 years temperature increases on average. This also applies to global data, it gets hotter over time every 10 years temperature increases on average.

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?

The trend for both my city Manama and globally are considered hotter. For the last few hundred years, we can say the trend was consistent, but not a hundred percent there are small ups and downs but it won't affect the temperature trend.

4- Can you estimate the average temperature for the next 50 years? Is your city getting hotter compared to the global data?

Based on the past data given, my prediction is my city Manama and global_data are getting hotter for the next 50 years. The reason behind that is if we go throughout the chart and see

the temperature increases over time. So, in my opinion, I think it will be hotter for my city Manama and globally.