

## Exploring Weather Trends Project

### Goal:

In this project, I will analyze local and global temperature data and compare the temperature trends where I live to overall global temperature trends.

### Solution steps:

#### 1. Extract data from the database:

##### 1.1. Retrieve cities in my country:

Retrieve cities in Saudi Arabia from <city\_list> table.

Input		HISTORY ▾	MENU ▾
SCHEMA	↻	<pre>1 SELECT * 2 FROM city_list 3 WHERE country = 'Saudi Arabia'</pre>	
city_data	▾		
city_list	▾		
global_data	▾		
		Success!	EVALUATE
Output		2 results	Download CSV
city	country		
Mecca	Saudi Arabia		

##### 1.2. Extract the closest city data:

Two cities were retrieved, Mecca and Riyadh. Mecca is closer to where I live. So, retrieve Mecca temperature data from <city\_data> table.

Input		HISTORY ▾	MENU ▾
SCHEMA	↻	<pre>1 SELECT year, avg_temp 2 FROM city_data 3 WHERE city = 'Mecca'</pre>	
city	▴		
country			
avg_temp			
city_list	▾		
global_data	▾	Success!	EVALUATE
Output		171 results	Download CSV
year	avg_temp		
1843	25.16		
1844	19.05		
...	...		

### 1.3. Extract global data:

Now it is time to retrieve global data to pursue the comparisons. From <global\_data> table, retrieve the global temperature data.

The screenshot shows a web-based data query interface. At the top, there's a header with 'Input', 'HISTORY', and 'MENU' dropdowns. Below the header, on the left, is a 'SCHEMA' section with a refresh icon and a list of tables: 'city', 'country', 'avg\_temp', 'city\_list', and 'global\_data'. The 'global\_data' table is selected. In the center, a SQL query is displayed: '1 SELECT \*' and '2 FROM global\_data'. To the right of the query is a green 'EVALUATE' button. Below the query, a green bar indicates 'Success!'. At the bottom, an 'Output' section shows '266 results' and a 'Download CSV' link. A table of results is visible, with columns 'year' and 'avg\_temp'. The first two rows are: (1750, 8.72) and (1751, 7.98).

year	avg_temp
1750	8.72
1751	7.98

## 2. Data processing:

### 2.1. Data selection:

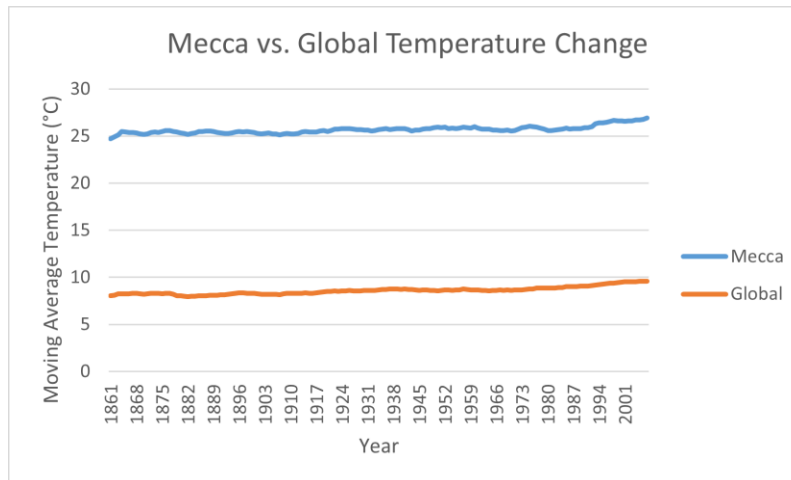
Since Mecca temperature data is null in this period (1846-1860), I started observing from 1861 to 2013. The same range was taken from the global temperature data.

### 2.2. Data smoothing:

I calculated the moving averages for every 7-years to smooth out data to make it easier to observe long term trends and not get lost in daily fluctuations.

## 3. Data visualization:

Excel was used to draw line chart for Mecca and the global temperature data, over the period of 1861 to 2013. Line graphs or charts are used to track changes over time periods. Such graphs are better to observe and compare smaller changes over the same period of time for more than one group.



#### 4. Data observations:

- The average temperature of Mecca is warmer than that of the global.
- The overall average temperature is increasing over time.
- In the last years, there is an obvious increase in the heat.
- In the last years, the average temperature of Mecca is increasing faster than the global average.
- Mecca temperature is more fluctuated, where the global temperature is steadier.