

# Exploring weather Trend Project



UDACITY

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Project One

## Overview

In this project, I will analyze the data from the local and global temperature to explore the weather trend in Mecca city in Saudi Arabia. Also, I will calculate the moving average and compare the weather trend with the global trend.

## Goals

1. Extract data from the database provided by Udacity.
2. Download the CVS files for both the city data and the global data.
3. Make data visualization using chart.
4. Make four observations on the weather trend.

## Tools

The tool used in this project are:

- SQL: To extract data.
- Excel: To calculate the moving average and make line chart.

## Steps applied

**Step One:** Extract data using SQL queries, I have applied the following queries.

The first query is used to extract the data of mecca city as figure 1 shows

```
1  SELECT * FROM city_data
2  WHERE city = 'Mecca' AND country = 'Saudi Arabia';
```



Figure 1 sql query for Mecca data

The second query is used to extract the data of the global as figure 2 shows

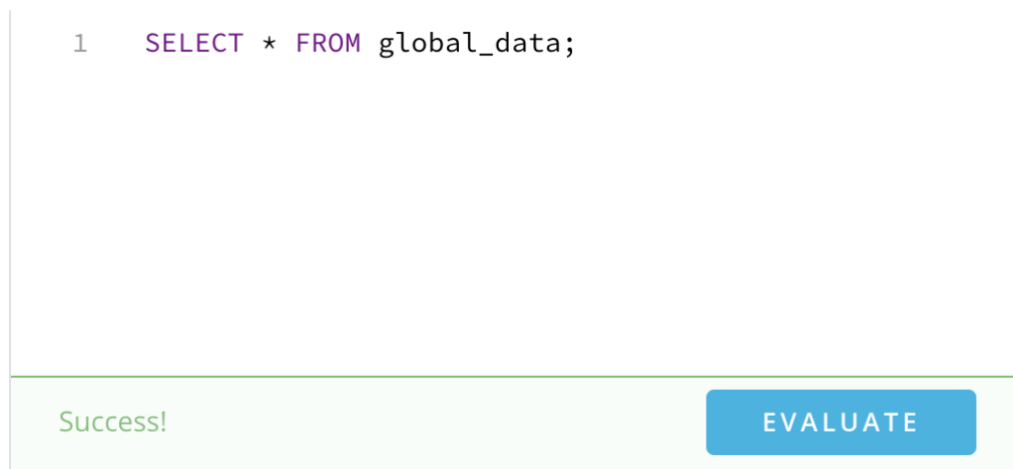


Figure 2 sql query for the global data

**Step Two:** Download the city data and global data CSV files and combine them in one Excel spreadsheet, as figure 3 explains

	A	B	C	D	E	F	G
1	year	city	country	mecca_avg_temp		year	avg_temp
2	1843	Mecca	Saudi Arabia	25.16		1843	8.17
3	1844	Mecca	Saudi Arabia	19.05		1844	7.65
4	1845	Mecca	Saudi Arabia	22.46		1845	7.85
5	1846	Mecca	Saudi Arabia			1846	8.55
6	1847	Mecca	Saudi Arabia			1847	8.09
7	1848	Mecca	Saudi Arabia			1848	7.98
8	1849	Mecca	Saudi Arabia			1849	7.98
9	1850	Mecca	Saudi Arabia			1850	7.9
10	1851	Mecca	Saudi Arabia			1851	8.18
11	1852	Mecca	Saudi Arabia			1852	8.1
12	1853	Mecca	Saudi Arabia			1853	8.04
13	1854	Mecca	Saudi Arabia			1854	8.21
14	1855	Mecca	Saudi Arabia			1855	8.11
15	1856	Mecca	Saudi Arabia			1856	8
16	1857	Mecca	Saudi Arabia			1857	7.76
17	1858	Mecca	Saudi Arabia			1858	8.1
18	1859	Mecca	Saudi Arabia			1859	8.25
19	1860	Mecca	Saudi Arabia			1860	7.96
20	1861	Mecca	Saudi Arabia	23.98		1861	7.85
21	1862	Mecca	Saudi Arabia	24.13		1862	7.56
22	1863	Mecca	Saudi Arabia	22.87		1863	8.11
23	1864	Mecca	Saudi Arabia	25.43		1864	7.98
24	1865	Mecca	Saudi Arabia	25.6		1865	8.18
25	1866	Mecca	Saudi Arabia	25.42		1866	8.29
26	1867	Mecca	Saudi Arabia	25.62		1867	8.44
27	1868	Mecca	Saudi Arabia	25.3		1868	8.25
28	1869	Mecca	Saudi Arabia	25.65		1869	8.43
29	1870	Mecca	Saudi Arabia	25.35		1870	8.2
30	1871	Mecca	Saudi Arabia	24.97		1871	8.12
31	1872	Mecca	Saudi Arabia	25.2		1872	8.19
32	1873	Mecca	Saudi Arabia	25.57		1873	8.35
33	1874	Mecca	Saudi Arabia	25.32		1874	8.43
34	1875	Mecca	Saudi Arabia	24.53		1875	7.86
35	1876	Mecca	Saudi Arabia	25.13		1876	8.08
36	1877	Mecca	Saudi Arabia	25.81		1877	8.54
37	1878	Mecca	Saudi Arabia	25.96		1878	8.83
38	1879	Mecca	Saudi Arabia	25.57		1879	8.17
39	1880	Mecca	Saudi Arabia	25.42		1880	8.12
40	1881	Mecca	Saudi Arabia	26.06		1881	8.27
41	1882	Mecca	Saudi Arabia	25.09		1882	8.13

Figure 3 city and global data

**Step Three:** Calculate the moving average and make the line chart.

Moving average:

To calculate the moving the average for 10 years, the following formula was used:

=AVERAGE(D2:D11)

As figure 4 illustrates

	A	B	C	D	E	F	G	H	I
1	year	city	country	avg_temp	Mecca average		year	avg_temp	Global average
2	1843	Mecca	Saudi Arabia	25.16	22.22333333		1843	8.17	8.045
3	1844	Mecca	Saudi Arabia	19.05	20.755		1844	7.65	8.032
4	1845	Mecca	Saudi Arabia	22.46	22.46		1845	7.85	8.088
5	1846	Mecca	Saudi Arabia		#DIV/0!		1846	8.55	8.114
6	1847	Mecca	Saudi Arabia		#DIV/0!		1847	8.09	8.059
7	1848	Mecca	Saudi Arabia		#DIV/0!		1848	7.98	8.026
8	1849	Mecca	Saudi Arabia		#DIV/0!		1849	7.98	8.038
9	1850	Mecca	Saudi Arabia		#DIV/0!		1850	7.9	8.065
10	1851	Mecca	Saudi Arabia		#DIV/0!		1851	8.18	8.071
11	1852	Mecca	Saudi Arabia		23.98		1852	8.1	8.038
12	1853	Mecca	Saudi Arabia		24.055		1853	8.04	7.984
13	1854	Mecca	Saudi Arabia		23.66		1854	8.21	7.991
14	1855	Mecca	Saudi Arabia		24.1025		1855	8.11	7.968
15	1856	Mecca	Saudi Arabia		24.402		1856	8	7.975
16	1857	Mecca	Saudi Arabia		24.57166667		1857	7.76	8.004
17	1858	Mecca	Saudi Arabia		24.72142857		1858	8.1	8.072
18	1859	Mecca	Saudi Arabia		24.79375		1859	8.25	8.087
19	1860	Mecca	Saudi Arabia		24.88888889		1860	7.96	8.105
20	1861	Mecca	Saudi Arabia	23.98	24.935		1861	7.85	8.129
21	1862	Mecca	Saudi Arabia	24.13	25.034		1862	7.56	8.156
22	1863	Mecca	Saudi Arabia	22.87	25.141		1863	8.11	8.219
23	1864	Mecca	Saudi Arabia	25.43	25.411		1864	7.98	8.243
24	1865	Mecca	Saudi Arabia	25.6	25.4		1865	8.18	8.288
25	1866	Mecca	Saudi Arabia	25.42	25.293		1866	8.29	8.256
26	1867	Mecca	Saudi Arabia	25.62	25.264		1867	8.44	8.235
27	1868	Mecca	Saudi Arabia	25.3	25.283		1868	8.25	8.245
28	1869	Mecca	Saudi Arabia	25.65	25.347		1869	8.43	8.303
29	1870	Mecca	Saudi Arabia	25.35	25.339		1870	8.2	8.277
30	1871	Mecca	Saudi Arabia	24.97	25.346		1871	8.12	8.269
31	1872	Mecca	Saudi Arabia	25.2	25.455		1872	8.19	8.284
32	1873	Mecca	Saudi Arabia	25.57	25.444		1873	8.35	8.278
33	1874	Mecca	Saudi Arabia	25.32	25.423		1874	8.43	8.241
34	1875	Mecca	Saudi Arabia	24.53	25.394		1875	7.86	8.175
35	1876	Mecca	Saudi Arabia	25.13	25.474		1876	8.08	8.181
36	1877	Mecca	Saudi Arabia	25.81	25.474		1877	8.54	8.168

Figure 4 Moving average for 10 years

## Line chart

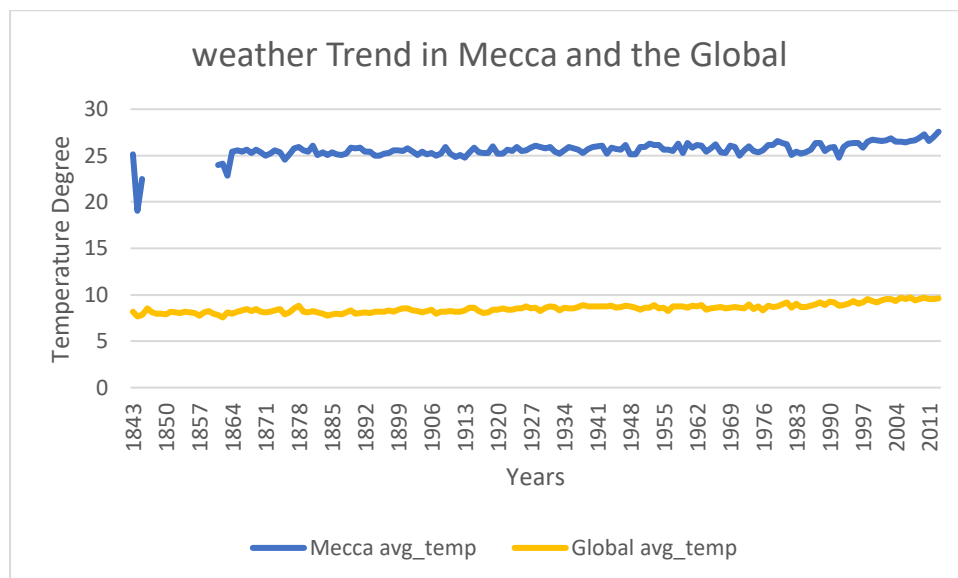


Figure 5 Weather trend

## Observation

After analyzing the data, I came up with the following observations:

- 1- The global average is between 7.56 and 9.73 degree, on the other hand, Mecca is between 19.5 and 27.57 degree.
- 2- Figure 5 shows that the weather trend in mecca is hotter than the weather trend in the global.

- 3- The data analyzing has shown that from 1843 to 2013, the weather in Mecca have increased 2.41 degree over the years, For the global, it increased by 1.44. This change means the world going to hotter.
- 4- The moving average of the global seems to be moving faster that the moving average of Mecca.