

# Weather Trends

## Steps: -

- Extraction.
- Cleaning.
- Exploration.
- Visualization.
- Observations.

## Data Extraction: -

- Used a query with joins to pull all the data with 1 query

The screenshot shows a SQL query interface with an 'Input' section on the left containing a schema and a query editor on the right. The query is a SELECT statement with joins. Below the query editor is a 'Success!' message and an 'EVALUATE' button. The 'Output' section shows 342 results in a table with columns: year, city, local\_temp, and global\_temp. The table contains 8 rows of data for the years 1843 to 1846, for the cities Mecca and Riyadh. At the bottom of the interface are 'Menu' and 'Expand' buttons.

**Input** HISTORY MENU

**SCHEMA** ↻

- city\_data ▼
- city\_list ▼
- global\_data ▼

```
1 SELECT cd.year, cd.city, cd.avg_temp as
   local_temp, gd.avg_temp as global_temp
2 FROM city_data cd
3 JOIN city_list cl
4 ON cl.city = cd.city
5 JOIN global_data gd
6 ON gd.year = cd.year
7 WHERE cd.city = 'Mecca' OR cd.city = 'Riyadh'
```

Success! EVALUATE

**Output** 342 results Download CSV

year	city	local_temp	global_temp
1843	Riyadh	24.74	8.17
1843	Mecca	25.16	8.17
1844	Mecca	19.05	7.65
1844	Riyadh	15.45	7.65
1845	Mecca	22.46	7.85
1845	Riyadh	20.82	7.85
1846	Mecca		8.55
1846	Riyadh		8.55

Menu Expand

- We can use to pull global data in a separate file.

```
SELECT *
FROM global_data
```

- Extract CSV file from the database for Mecca and Riyadh weather trend data using SQL.

## Data Cleaning: -

- Cleaning the data using MS Excel.
- There were some missing values

Mecca (from 1846 – 1860 I fill it with the average)

1	Year	Riyadh	Riyadh 14-Day MA	Mecca	Mecca 14-Day MA	Global	Global 14-Day MA		
2	1843	24.56		25.16		8.17			
3	1844	24.8		19.05		7.65			
4	1845	24.34		22.46		7.85		Mecca Average	25.61
5	1846	25.03		25.61		8.55		Riyadh Average	25.30
6	1847	24.85		25.61		8.09		Global Average	8.54
7	1848	24.93		25.61		7.98			
8	1849	24.72		25.61		7.98			
9	1850	24.92		25.61		7.9			
10	1851	24.57		25.61		8.18			
11	1852	24.26		25.61		8.1			
12	1853	25.01		25.61		8.04			
13	1854	24.95		25.61		8.21			
14	1855	24.94		25.61		8.11			
15	1856	24.13	24.72	25.61	24.88	8	8.06		
16	1857	23.77	24.66	25.61	24.92	7.76	8.03		
17	1858	24.28	24.62	25.61	25.38	8.1	8.06		
18	1859	25.03	24.67	25.61	25.61	8.25	8.09		
19	1860	25.23	24.69	25.61	25.61	7.96	8.05		
20	1861	24.92	24.69	23.98	25.49	7.85	8.03		
21	1862	25.22	24.71	24.13	25.39	7.56	8.00		
22	1863	25	24.72	22.87	25.10	8.11	8.01		

Missing Values  
used Average to fill date from  
1846-1855.

And Riyadh (from 2009 – 2013 I fill it with the average)

166	2007	26.83	26.57	26.58	26.49	9.73	9.39
167	2008	27.78	26.62	26.64	26.51	9.43	9.42
168	2009	25.30	Missing Values used average to fill it 200-2013.		26.55	9.51	9.43
169	2010	25.30			26.62	9.7	9.47
170	2011	25.30			26.67	9.52	9.50
171	2012	25.30	26.26	27.02	26.71	9.51	9.50
172	2013	25.30	26.20	27.57	26.77	9.61	9.52
173							

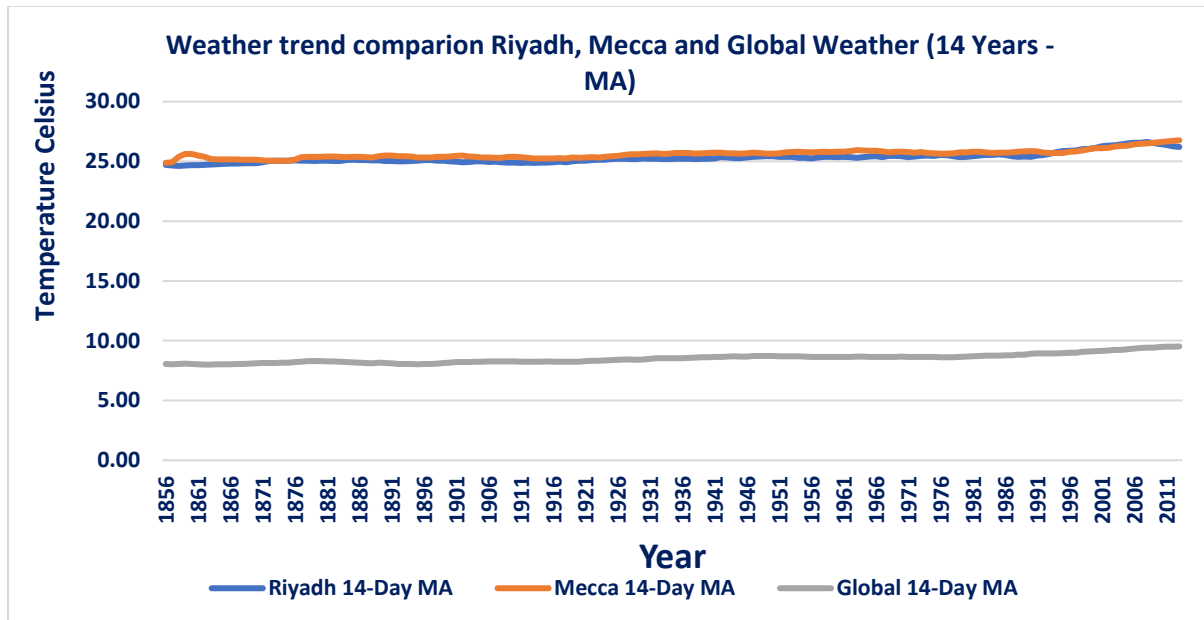
## Data Exploration: -

Calculated 14 years moving average for Mecca, Riyadh, and Global weather, for better visualization and because I have some missing values.

A	B	E	F	I	J	M
Year	Riyadh	Riyadh 14-Day MA	Mecca	Mecca 14-Day MA	Global	Global 14-Day MA
1843	24.56		25.16		8.17	
1844	24.8		19.05		7.65	
1845	24.34		22.46		7.85	
1846	25.03		25.61		8.55	
1847	24.85		25.61		8.09	
1848	24.93		25.61		7.98	
1849	24.72		25.61		7.98	
1850	24.92		25.61		7.9	
1851	24.57		25.61		8.18	
1852	24.26		25.61		8.1	
1853	25.01		25.61		8.04	
1854	24.95		25.61		8.21	
1855	24.94		25.61		8.11	
1856	24.13	24.72	25.61	24.88	8	8.06
1857	23.77	24.66	25.61	24.92	7.76	8.03
1858	24.28	24.62	25.61	25.38	8.1	8.06
1859	25.03	24.67	25.61	25.61	8.25	8.09
1860	25.23	24.69	25.61	25.61	7.96	8.05
1861	24.92	24.69	23.98	25.49	7.85	8.03
1862	25.22	24.71	24.13	25.39	7.56	8.00
1863	25	24.73	22.87	25.19	8.11	8.01
1864	25.3	24.76	25.43	25.18	7.98	8.02
1865	25.02	24.79	25.6	25.18	8.18	8.02
1866	24.73	24.82	25.42	25.16	8.29	8.03
1867	24.87	24.81	25.62	25.17	8.44	8.06
1868	25.24	24.83	25.3	25.14	8.25	8.06
1869	24.98	24.84	25.65	25.15	8.43	8.08
1870	24.43	24.86	25.35	25.13	8.2	8.10
1871	24.89	24.94	24.97	25.08	8.12	8.12
1872	25.47	25.02	25.2	25.05	8.19	8.13
1873	25.51	25.06	25.57	25.05	8.35	8.14
1874	25.24	25.06	25.32	25.03	8.43	8.17

## Data Visualization: -

Plotted a line graph with local and global weather temperature trends, show axis title as Y-axis for the moving average and the X-axis shows the years.



## Observations: -

- Over the time Mecca and Riyadh weather getting hotter than the global average temperatures.
- Mecca is slightly hotter than Riyadh
- Over the time the Mecca and Riyadh temperatures ranged between 24.72 to 26.77 c and the temperature increased over the time by average 1.89 c
- Global weather ranged between 8.06 to 9.52 c and the temperature increased over time by average 0.29 c.
- From 1872 to 1997 Mecca and Riyadh temperatures ranged between 25.02 to 25.91 c and from 1998 the temperature starts increasing to 26.77 c.
- From 1872 to 1997 Global temperature ranged between 8.06 to 9.00 c and from 1998 the temperate start increasing to 9.52 c.