

Explore Weather Trends Project

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Overview

In this project, I will analyze the Riyadh temperature and global temperature to see the difference between them over the years.

Skills Used

- SQL
- Excel


1. Get Data from Database


First, I searched for all cities in the database then I noticed that Riyadh exists in the database. To do that in SQL I wrote this query to make sure that Riyadh exists:


The Database Schema
There are three tables in the database:


- city_list - This contains a list of cities and countries in the database. Look through them in order to find the city nearest to you.
- city_data - This contains the average temperatures for each city by year (°C).
- global_data - This contains the average global temperatures by year (°C).

Input


SCHEMA 


city_data 

city_list 

global_data 

```
1 select *
2 from city_list
3 where city = 'Riyadh'
```

Success!  **EVALUATE**

Output 1 results  Download CSV

city	country
Riyadh	Saudi Arabia

Figure 1: SQL Local City


1.1 Get Riyadh Data


I wrote this query to get the years and the temperature data for Riyadh city:


The Database Schema
There are three tables in the database:


- city_list - This contains a list of cities and countries in the database. Look through them in order to find the city nearest to you.
- city_data - This contains the average temperatures for each city by year (°C).
- global_data - This contains the average global temperatures by year (°C).


Input


SCHEMA 

city_data 


year 


city 

country 

avg_temp 

```
1 select year , avg_temp
2 from city_data
3 where city = 'Riyadh'
```

Success!  **EVALUATE**

Output 171 results  Download CSV

year	avg_temp
1843	24.74
1844	15.45
1845	20.82
1846	

Figure 2: SQL Riyadh Data

1.2 Get Global Data

Similarly, I wrote this query to get global temperature data from the database:

The Database Schema

There are three tables in the database:

- city_list - This contains a list of cities and countries in the database. Look through them in order to find the city nearest to you.
- city_data - This contains the average temperatures for each city by year (°C).
- global_data - This contains the average global temperatures by year (°C).

The screenshot shows a SQL query editor interface. On the left, under the 'Input' tab, there is a 'SCHEMA' section with a list of tables: 'city_data', 'city_list', and 'global_data'. The 'global_data' table is selected, and its columns 'year' and 'avg_temp' are listed below it. On the right, the SQL query is written as follows:

```
1 select year, avg_temp
2 from global_data
3
```

Below the query, there is a green 'Success!' message and a blue 'EVALUATE' button. Under the 'Output' tab, it shows '266 results' and a 'Download CSV' link. The output is displayed as a table with two columns: 'year' and 'avg_temp'. The first few rows are:

year	avg_temp
1750	8.72
1751	7.98
1752	5.78
1753	8.39

Figure 3: SQL Global Data

2. Moving Average

In statistics, a moving average is a calculation used to analyze data points by creating a series of averages of different subsets of the full data set. In finance, a moving average (MA) is a stock indicator that is commonly used in technical analysis. The reason for calculating the moving average of a stock is to help smooth out the price data by creating a constantly updated average price. (Moving Average (MA), n.d.)

I applied the moving average on an 8-year basis using excel. Done by calculating the first 8-year average temperature for Global and Riyadh data then calculating the next 8-year and so on.

3. Data Visualization

Now I can plot a line chart to see the difference between Riyadh average temperature and Global average temperature using the moving average to smooth out the data, Shown in the figure below.

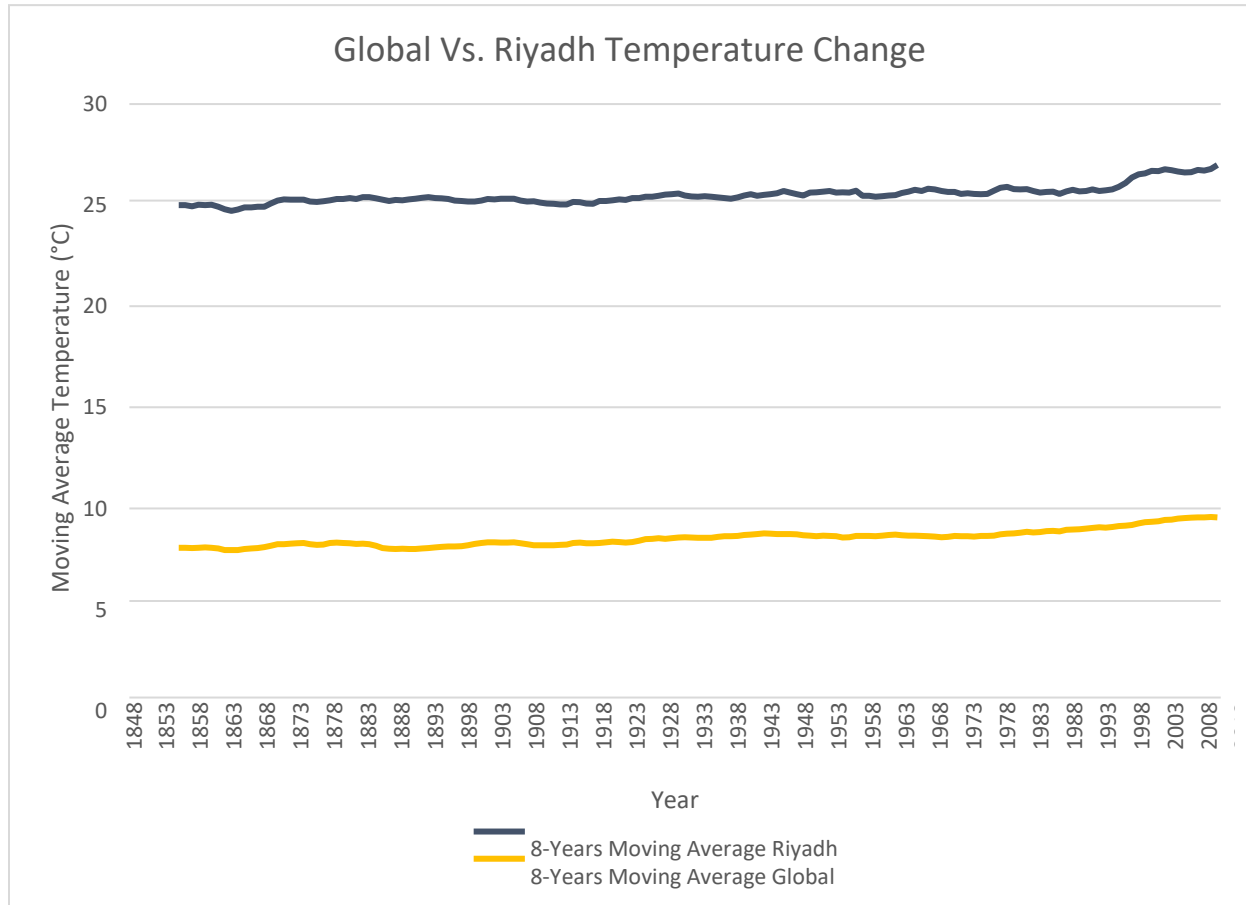


Figure 4: Global Vs. Riyadh Temperature Change

4. Observations

- Riyadh temperature is greater than the global temperature in the past two hundred years.
- The average temperature is gradually increasing throughout the time.
- Huge rise in Riyadh from 1998 to 2013.
- The difference between the years 1855 and 2013 in Riyadh is more than 2 degrees (Increasing).

References

Moving Average (MA). (n.d.). Retrieved from Investopedia:

<https://www.investopedia.com/terms/m/movingaverage.asp#:~:text=In%20statistics%2C%20a%20moving%20average,commonly%20used%20in%20technical%20analysis.>