




Explore Weather Trends

In order to compare between local and global temperatures on average, these steps have been followed:

1. Used one SQL query to extract data for the global temperature and the city I live in, using join. As for the missing values in the city data it was replaced with mean.
2. Exported a CSV file and open it by using Excel.
3. The data contains a yearly averages temperatures for the world as well as for the city I live in which is Riyadh from 1843 to 2013.

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4. To smooth the data and make it easier to observe the trends I calculated the moving average.
 5. To choose the optimum time period for the moving average that make the trends more observable and the graph less noisy, I tested many time period such as 5 years, 10 years, 15 years, 20 years. I found that the most acceptable time period was 20 years.

6. In order to calculate the moving average. first, I created two new columns to store the moving averages, one for the Riyadh city and the other for the world. Second, selected the cell in Riyadh column that is placed in the same row of 20th year (1862) and used the " AVERAGE() " function to calculate average for the first 20th years (1843 – 1862). Then, dragged the formula all the way down to the end of the data. finally, the same process was applied for world column.
7. After preparing the data, I create a line chart using the moving average for both Riyadh city and world.

SQL Query Used To Extract The Data

```
1
2  /* Query used to extract both the city level data  and global data */
3
4  SELECT c.year,
5         coalesce(c.avg_temp,avg(c.avg_temp ) over ():: DECIMAL(10,2)) as Riyadh_temp,
6         g.avg_temp as global_temp
7  FROM city_data c
8  left join global_data g
9  on c.year = g.year
10 where city = 'Riyadh';
```

- The graph shows the moving average temperature for Riyadh and world over 151-year period from 1862 to 2013.

- As Shown, The Riyadh city has a hotter temperatures on average more than the Global temperatures during past years.

- Regard to the changes in temperatures over time, it is relatively remained stable either in Riyadh or in world.

- The averages temperatures was consistent over last years, but in the year 2002 and after it began to rise slightly , so It might be an indication that the world will be warmer in the future.

