Exploring Weather Trends - Project 1

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Introduction

I chose the city I live in Cairo, Egypt. I used SQL Queries to extract the data needed from the database. I used google sheets to calculated moving averages, plot the graph, calculation the correlation coefficient and in predicting the average temperature in Cairo based on the global.

Observations

- Cairo's yearly average temperature is getting warmer.
- Cairo's temperature has always been warmer than the average Global temperature.
- The data shows that the Global temperature has been getting warmer over the last few hundred years.
- There's a consistency between the climate record in Egypt and The Global average reflected onto the correlation coefficient between the 2 (nearly 0.5827).

Data Analysis Steps :

- SQL to extract data from database - Queries Used :

```sql
Select *
FROM city_list
WHERE country = 'Egypt';
```

```sql
SELECT year, avg_temp
FROM city_data
WHERE country = 'Egypt' AND city = 'Cairo'
ORDER BY year;
```

```sql
SELECT year, avg_temp
FROM global_data
WHERE year BETWEEN 1808 AND 2013
ORDER BY year;
```
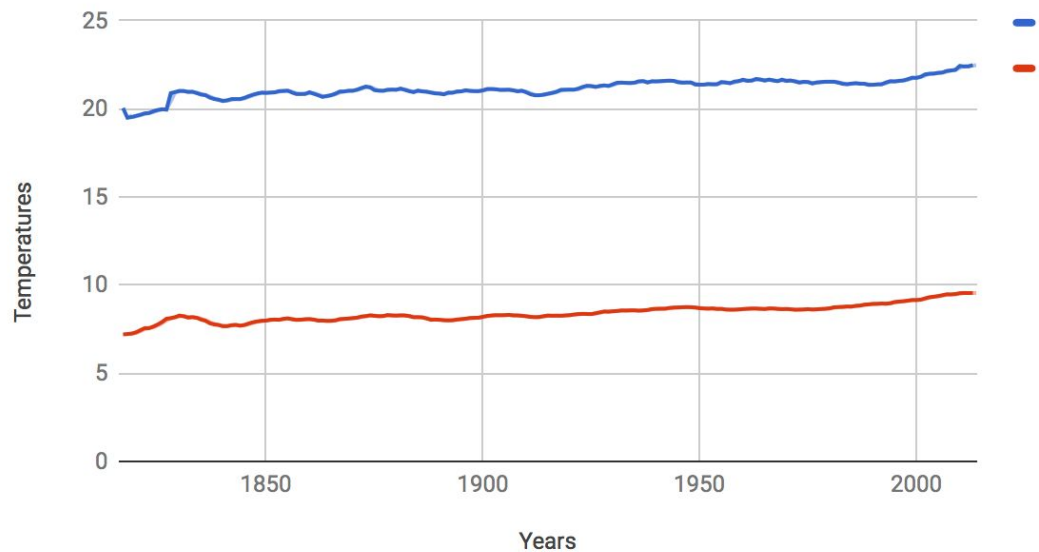
- Calculating Moving Averages in Google Spreadsheet.
  - Used same method in the previous lesson.

	A	B	C	D	
				20.047 ×	
fx	=AVERAGE(B2:B11)				
	Year	avg_t - Cairo	avg_t - Global	MovAv.10-Cairo	Mc
1	Year	avg_t - Cairo	avg_t - Global	MovAv.10-Cairo	Mc
2	1808	17.11	7.63		
3	1809	19.87	7.08		
4	1810	19.93	6.92		
5	1811	20	6.86		
6	1812	19.93	7.05		
7	1813	20.51	7.74		
8	1814	20.43	7.59		
9	1815	20.3	7.24		
10	1816	20.51	6.94		
11	1817	21.88	6.98	=AVERAGE(B2:B11)	
12	1818	11.6	7.83	19.496	
13	1819	20.31	7.37	19.54	
14	1820	20.58	7.62	19.605	

- Plotted Moving Average Graph to compare between Cairo and Global temperatures.
  - Blue : Cairo
  - Red : Global

Cairo vs. Global
Using Moving Average - 10 years

- Calculated the Correlation Coefficient using the CORREL Function provided in Google Spreadsheet.
  - CORREL(C2:C207,B2:B207)
- Estimated the average temperature in Cairo based on the Global average temperature by linear regression method : FORECAST Function provided in Google Spreadsheet.
  - FORECAST(F5,B2:B207,C2:C207)

Note: There's xlsx file of the project provided in the project's folder.