PROJECT 1: Explore Weather Trends

Berlin vs. Global Average Temperature

1. Steps Taken

What tools did you use for each step? (Python, SQL, Excel, etc)

SQL is used to extract the yearly average temperature in Berlin and globally. The data is then downloaded as a CSV file which contains 3 columns: year, avg_temp_berlin, avg_temp_global. The CSV file is opened in Google Sheets, where moving averages are calculated and used to create data visualizations.

SQL Query:

```
SELECT g.year, c.avg_temp avg_temp_berlin, g.avg_temp avg_temp_global
FROM city_data c
JOIN global_data g
ON c.year = g.year
WHERE c.city = 'Berlin'
```

1. Steps Taken

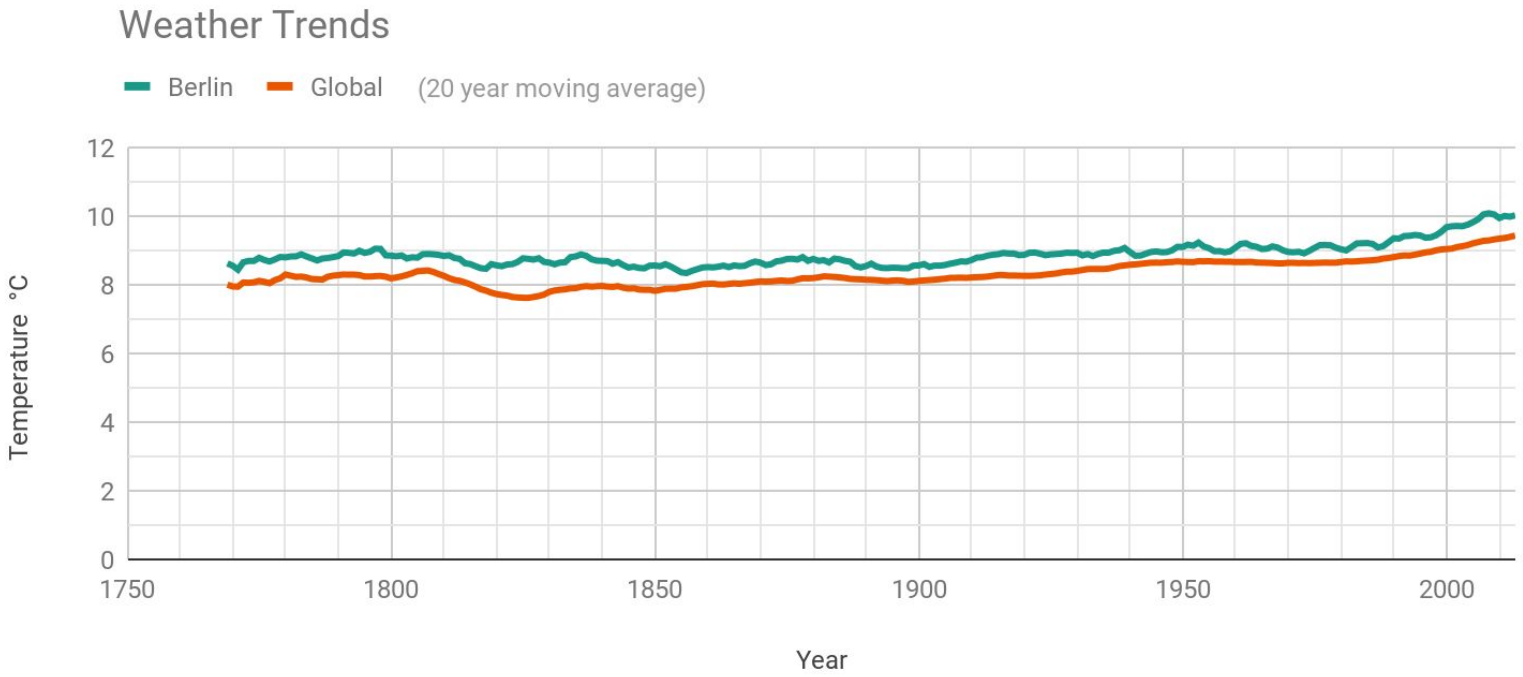
How did you calculate the moving average?

First, the average of the first 10 years is calculated in new columns, for both data sets, e.g. Berlin's 10 year average: D11 = AVERAGE(B2:B11). The same formula is applied for all the following cells, to get each 10 year average for both areas: Berlin and global. A line chart is created using this new data on the Y axis (Temperature in °C), and time period on the X axis (Years). This line chart represents a 10 year moving average of Berlin's and the globe's temperature.

What were your key considerations when deciding how to visualize the trends?

It is sought to show a moving average that is smooth enough for the general trends to be well represented, but without missing important details that could highlight differences between the two data sets. Moving averages of 10, 50, 30, and finally 20 years are created, the latter representing what was intended.

2. Line Chart


Weather Trends
Berlin
Global
(20 year moving average)
12
10
8
6
4
2
0
Temperature °C
1750
1800
1850
1900
1950
2000
Year

3. Observations

- The upward going trend in both areas indicates that the temperature is increasing globally.
- Berlin seems to be slightly warmer than the the global average, the difference being less than 1 degree.
- Although a similar general trend can be seen in both cases, Berlin’s moving average shows more fluctuations in temperature.
- A decrease in temperature can be observed in the early 1800s, more significant globally than in Berlin, the average global temperature dropping under 8 degrees for several years in a row before starting to increase again at the end of the 1820s.
- The average temperature seems to be increasing at a higher rate in the most recent years, since the 1980s at least, yearly averages of over 10 degrees being recorded more and more often in Berlin, the actual current average being 10 degrees.

THANK YOU!

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