

2020

Project 1

Weather Trends

[DATA ANALYST NANODEGREE PROGRAM] [UDACITY]

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Introduction

The aim of the project is to analyse both local and global temperature based on the data provided for the project. The local city nearest to the author is London; therefore, it shall be used for the data analysis when comparing local and global data. The author will answer 3 main questions in order to accomplish the aim of the project :

- Is London hotter or cooler on average compared to the global average? Has the difference been consistent over time?
- “How do the changes in London’s temperatures over time compare to the changes in the global average?”
- What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?

Data Extraction:

The first step was to extract the data of both local city and global from the database. By using SQL statement and the workload provided on the website, the author wrote the following code in order to extract the data:

```
SELECT *  
FROM city_data  
WHERE country='United Kingdom' AND city='London';
```

As the code explains, the author used WHERE statement in order to filter the unnecessary data for his project. Therefore, he got the temperature data of only London from the database and then downloaded it to be analysed.

The next step was to extract the data of global temperature by simply writing the following code in SQL and download it:

```
SELECT *  
FROM global_data;
```

Both statements were successfully performed without any error; consequently, the analyst saved them and moved to the next stage, which is the data analysis.

Data Analysis:

The next stage on the project is to perform the analysis. Thus, the analyst used Microsoft Excel software in his analysis. First, he set the two data set in one worksheet to use them in the analysis. London’s data set extracted from the database beginning with the year 1743 while global’s data set start with the year 1750. Consequently, the analyst decided to calculate the moving average of London starting by the year 1750. Moreover, he diced to calculate moving average for each decade of both London’s temperature and global temperature by using Excel formal `AVERAGE` figure xx shows the data set and new toe column added to the table MovAvgGlobal and MovAvgLondon the formal used for the global

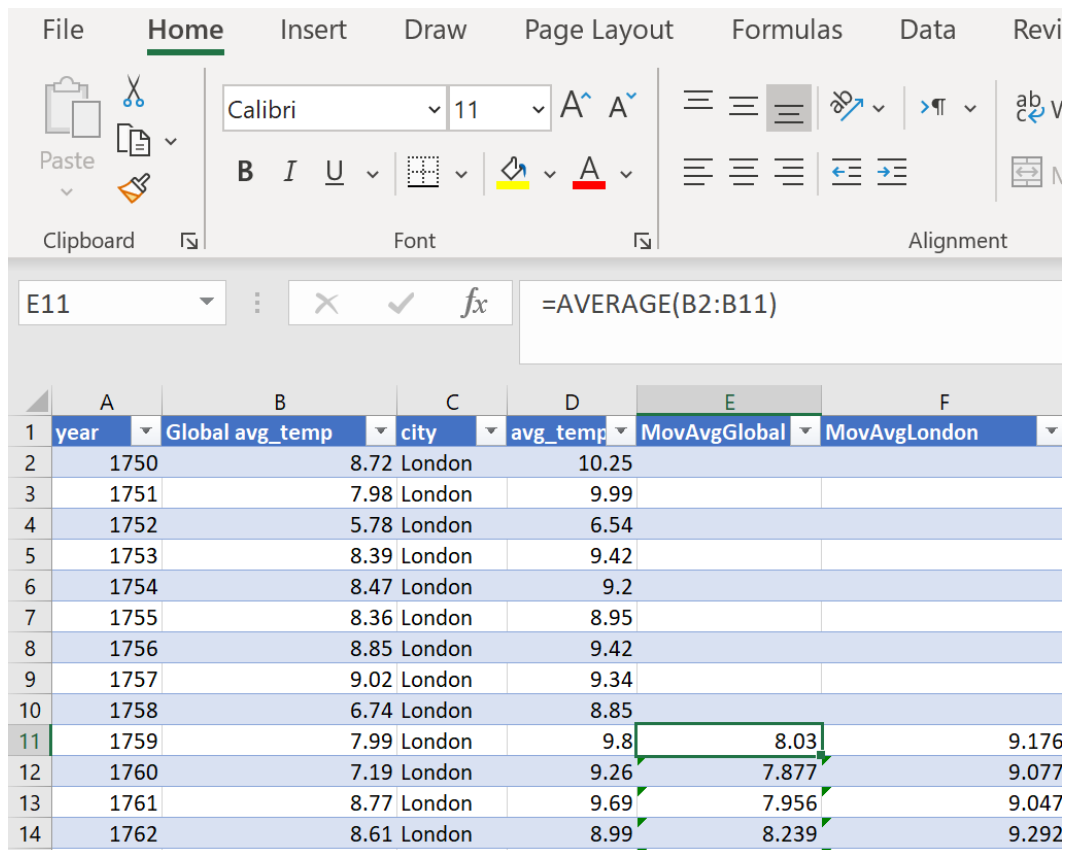


Figure 1 Moving Average formula

By calculating the moving average for both London city and the global temperature a line chart explains how the tow compare to each other as figure xx display

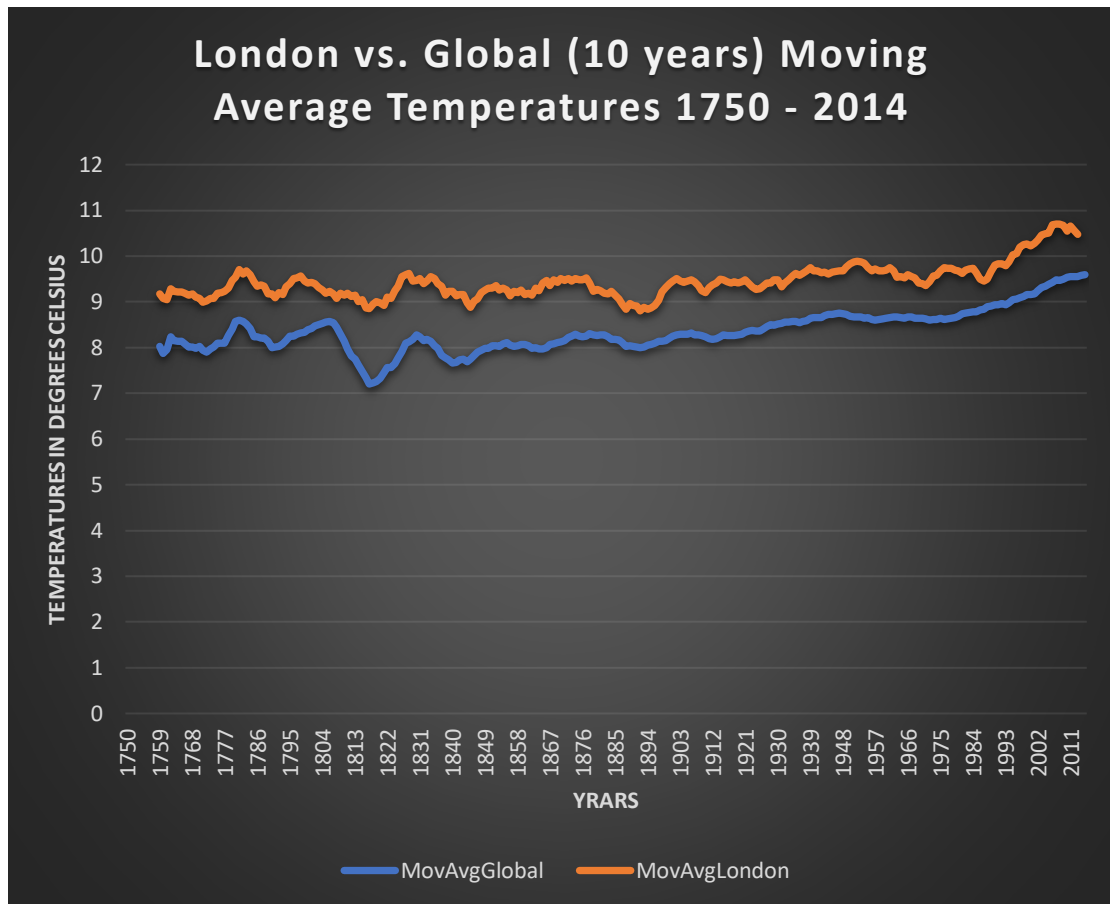


Figure 2 Moving Average comparison

Figure 2 illustrates how the average global move compared to LondonAverage move from 1750 until the year 2014. We can conclude from the chart that Moving average temperature has been in continuous increase since the 1700s. However, In the beginning of the 1800s century there was a drop in temperature from the period 1806-1820 where Global temperature had witness the lowest degree on the scale reaching 7 but after this period the temperature continuous to rise to almost reach 10 as an average by the year 2014. The pattern of continuous increasing of the temperature apply to London as well where London were at the point of 9 by 1700s reach almost 11 by 2000s. Noticeably London average temperature is higher than the global average by 1 degree.

In addition, the analyst analyses each century starting by 1700s to support his analysis and look thoroughly in each decade. Figure xx and figure explain the average temperature each century in London

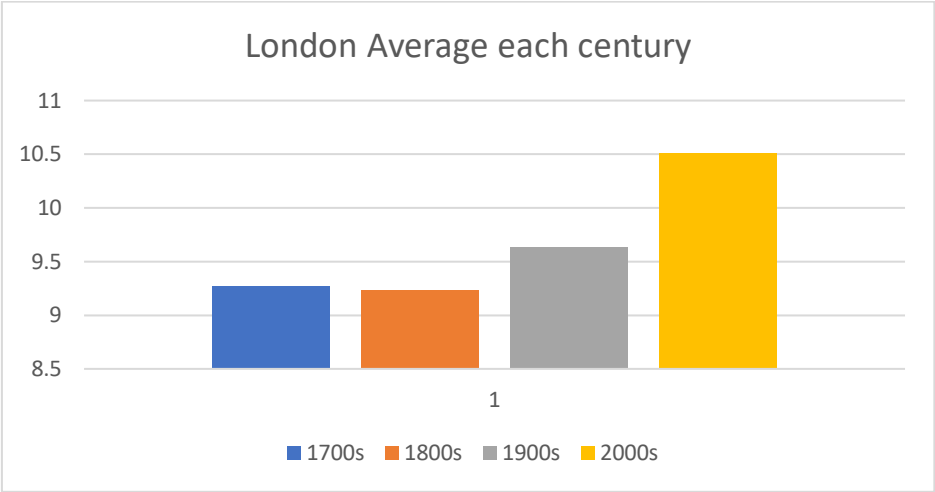


Figure 3 London Average each century

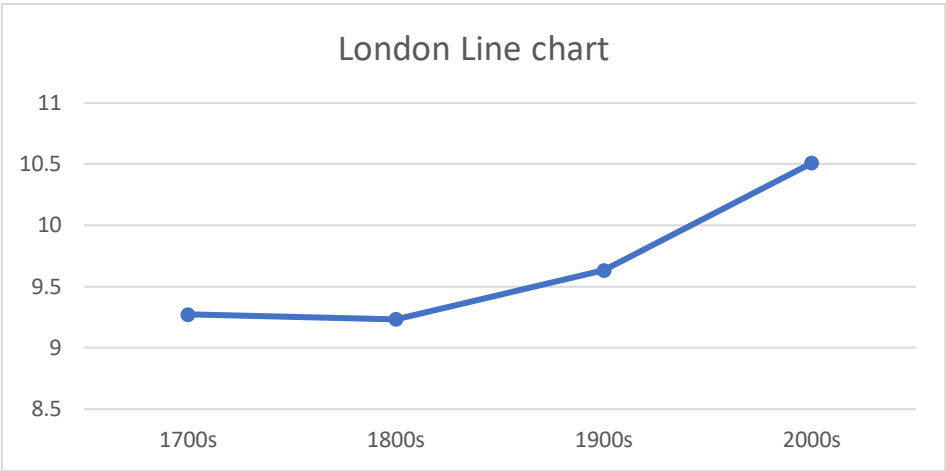


Figure 4 London Line Chart

We can clearly see the increasing pattern of the temperature and how it changed especially since the 1900s to until now. In comparison of London and global temperature figure 4 and figure xx shows the

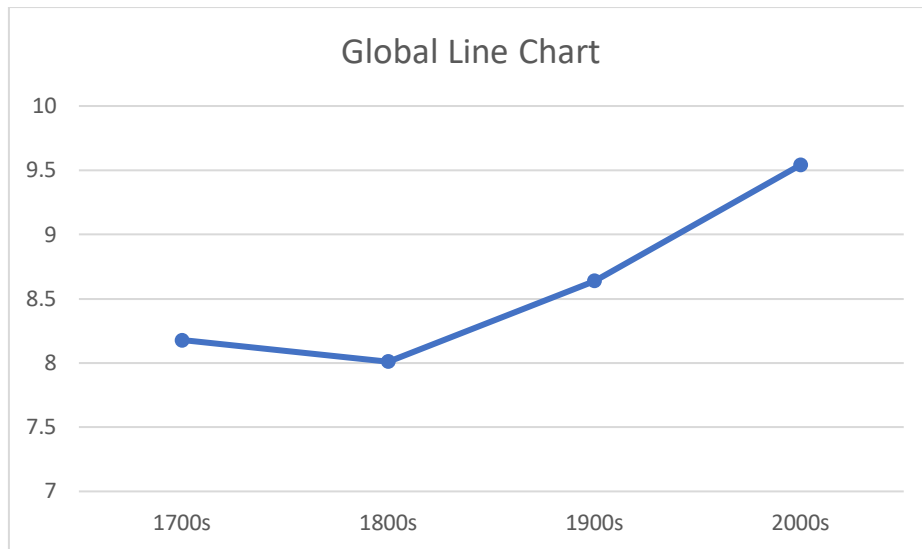


Figure 5 Global Chart

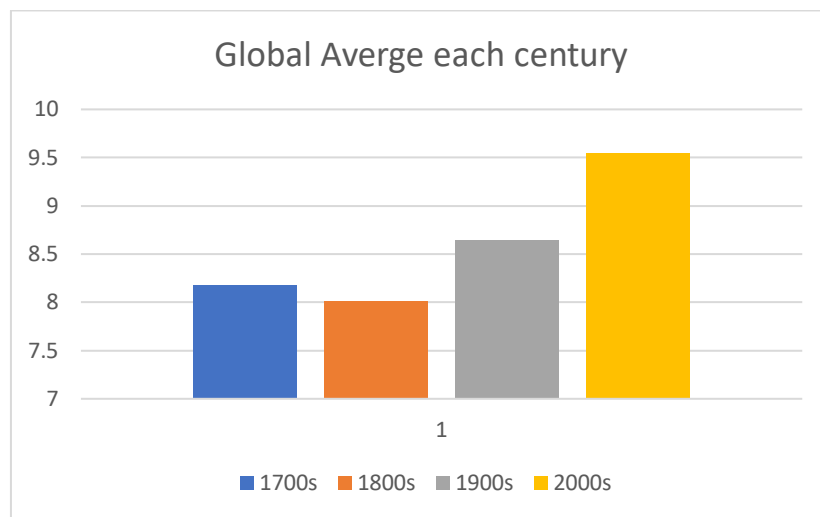


Figure 6 Global each century

By Calculating the correlation between Global temperature and London temperature we get the result of **0.563099** which approve a positive relation between the two trends

Conclusion

To sum up the result of the analysis, the analyst answers the three question addressed in the introduction:

- **Is London hotter or cooler on average compared to the global average? Has the difference been consistent over time?**
 - London is hotter compared to global temperature. Yes, it has been consistent over time, and the correlation is evidence of this consistency
- **“How do the changes in London’s temperatures over time compare to the changes in the global average?”**
 - London is higher by one degree than global temperature, London is very consists regarding the increase of the temperature where the global tempura has slightly drop noticeably in the early 1800s.
- **What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?**
 - The overall trend of the global temperature is that the world id getting hooter by time and the increase of the heat has been noticeably in 2000s and 1900s more than 1800s and 1700s. So it not consistent.