



Project Name: Explore Weather Trends
Project Area: Istanbul, Turkish Republic & London, United Kingdom
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Program: Udacity – Data Analyst Nanodegree

OVERVIEW

I am from Turkish Republic and live in London, United Kingdom. I defined the cities of this project as Istanbul where I was born and London where I live in. I have analyzed the local temperatures of Istanbul and London in accordance with global temperature data and compared them by using Udacity database portal. I have extracted, managed and visualized the data as shown in the following goals.

GOALS

- Step 1. Extracting the data from Udacity database portal and exporting to CSV file.
- Step 2. Making a chart visualization on extracted data from database.
- Step 3. Observations based on schema.

TOOLS

- 1. SQL: Query was used to extract data from Udacity database.
- 2. MS Excel: It was used to calculate moving average, plotting line chart and making observations.
- 3. MS Word: It was used for writing project document.

NOTES

I got help from resources in order to use the data correctly and more efficient. Resources were linked in references section which is mentioned below and indexed by using a capital letter like (A) or (B).

STEP 1 – Extracting The Data

I have a basic knowledge of SQL and writing queries. I learned them from lessons in university. First thing to do is, I decided to check the cities (Istanbul, London) which I want to use in my project from the database.

```
SELECT *  
  FROM city_list  
 WHERE country LIKE 'Turkey'
```

```
SELECT *  
  FROM city_list  
 WHERE country LIKE 'United Kingdom'
```

After checking this step, Istanbul and London were in database and I decided to select them in my project.

I realized that city_data and global_data contains same column named 'avg_temp'.
I changed the column names in order to extract the joined table. (A)

```
ALTER TABLE city_data RENAME COLUMN avg_temp to CityAverageTemp;
ALTER TABLE global_data RENAME COLUMN avg_temp to GlobalAverageTemp;
```

```
SELECT global_data.year, global_data.GlobalAverageTemp, city_data.CityAverageTemp
FROM global_data JOIN city_data      -- Joining the two tables (B)
ON global_data.year = city_data.year -- Reference for joining
WHERE city LIKE 'Istanbul';
```

```
SELECT global_data.year, global_data.GlobalAverageTemp, city_data.CityAverageTemp
FROM global_data JOIN city_data      -- Joining the two tables (B)
ON global_data.year = city_data.year -- Reference for joining
WHERE city LIKE 'London';
```

Then I extracted the data with 3 columns as CSV format for Istanbul and London separately.

STEP 2 – MS Excel for Making a Line Chart and Calculating of Moving Average

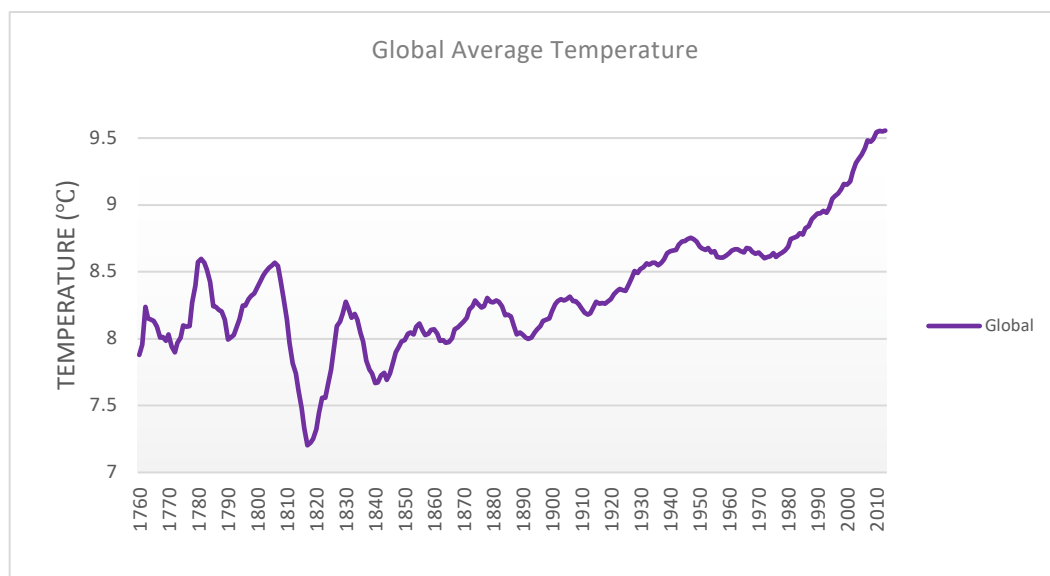
I used MS Excel in order to open CSV files and combine the datas of Istanbul and London into a sheet.

year	globalaveragetemp	IST cityaveragetemp	LDN cityaveragetemp
1750	8.72	13.83	8.34
1751	7.98	14.14	8.84
1752	5.78	9.48	1.64
1753	8.39	13.42	7.87
1754	8.47	13.58	8.15
1755	8.36	13.36	5.12
1756	8.85	14.1	8.59
1757	9.02	13.9	7.29
1758	6.74	12.1	6.47
1759	7.99	13.13	7.39
1760	7.19	12.57	5.97

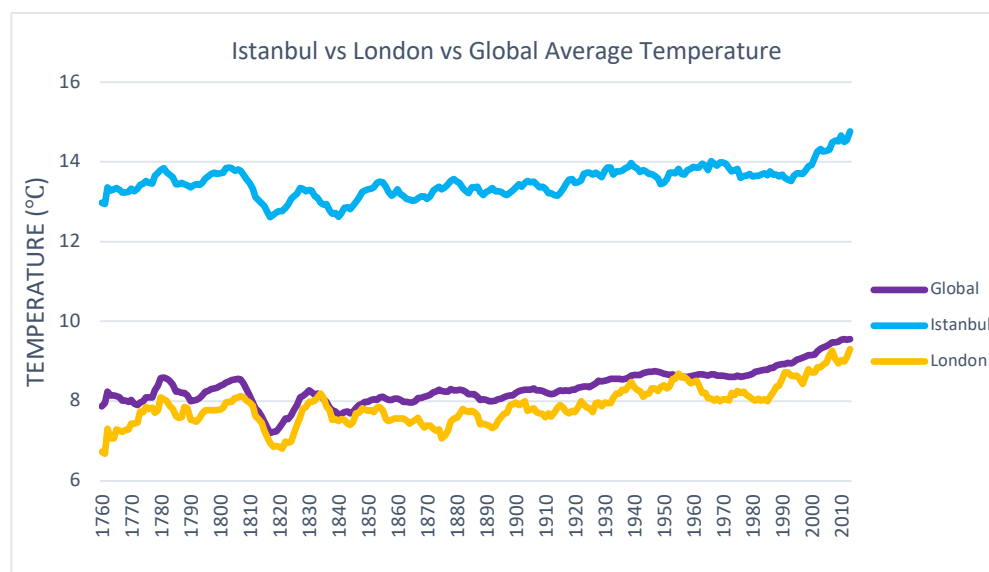


I used *fx* function “=AVERAGE” in order to calculate global temperature and I have got the following output. I wanted to check and distinguish it from combined data and chart to be able to understand the global temperature change in the world year by year.

year	globalaveragtemp	IST cityaveragtemp	LDN cityaveragtemp		Year	GlobaMovingAverage	IST MovingAverage	LDN MovingAverage
1750	8.72	13.83	8.34		1760	=AVERAGE(B3:B12)	12.978	6.733
1751	7.98	14.14	8.84		1761	7.956	12.94	6.685
1752	5.78	9.48	1.64		1762	8.239	13.358	7.306
1753	8.39	13.42	7.87		1763	8.15	13.288	7.073
1754	8.47	13.58	8.15		1764	8.143	13.309	7.061
1755	8.36	13.36	5.12		1765	8.132	13.345	7.286
1756	8.85	14.1	8.59		1766	8.088	13.295	7.265
1757	9.02	13.9	7.29		1767	8.008	13.237	7.233
1758	6.74	12.1	6.47		1768	8.012	13.236	7.275
1759	7.99	13.13	7.39		1769	7.982	13.252	7.29
1760	7.19	12.57	5.97		1770	8.032	13.323	7.437
1761	8.77	13.76	8.36		1771	7.94	13.267	7.442



After checking global temperature changes separately, I combined city figures of Istanbul and London with global temperature figures into a graph.



STEP 3 (RESULTS) – Observations

I have observed that;

- >if I choose a short moving average like 5, graph will be more waved and messy.
- >If I choose a long moving average like 100 or 150, graph will be more stable and smooth.

1. When I compared the temperatures, Istanbul has a big temperature difference in accordance with Global and London figures.
2. I separated the global temperature figures in order to understand the climate and temperature change in the world.
3. As a result of the first separated global temperature graphic, the world becomes hotter than before every year after 1890 (suddenly change). The temperature increases quite constantly.
4. It may be an effect of beginning industrialization in the world. (Global warming)
5. It seems that Istanbul will be hotter than most of the countries.

Regarding to my experiences and knowledge for Istanbul, City is surrounded with a lot of roads. Tube and train system do not cover all areas of the city. People who live in Istanbul use their own cars in order to go to their jobs or personal activities.

On the other hand, Population increases in the city every year due to high job opportunities and industrial location.

Low Emission Zones;

Istanbul: There is no regulation related with car emissions in the Istanbul. It may cause traffic jam and effect the global warming day by day.

London: Low emission zone will be applied in Central London in April, 2019. People expect that the effect of the emissions to global warming will be positively reduced.

KEY CONSIDERATIONS

1. Unit of Temperature is Centigrade, on Y-axis / Years, on X-axis
2. Moving average applied for a smooth line
3. Saved all codes for later needs

REFERENCES

Cover pictures – Istanbul

<http://g20.org.tr/bosphorus-bridge-turkey/>

Cover pictures – London

<https://www.visitlondon.com/things-to-do/visiting-london-for-the-first-time/where-is-london>

(A) Changing the column name

<https://www.1keydata.com/sql/alter-table-rename-column.html>

(B) Joining the tables

<https://www.dofactory.com/sql/join>