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Project 1: **Explore Weather Trends**

Introduction:

In this project, my local and global average temperature data will be extracted and analyzed. The temperature trends of Monrovia to the overall global temperature trends will be compared. The goal of the project is to visualize the trends and write up the description of the comparisons of the two temperatures- my city (Monrovia) and global average temperatures.

Technologies Used: Google spreadsheet (Excel), SQL, word)

Outlines of steps taken to explore the weather data:

1. **Step   1: Extracting the data:**

The first step is to extract data using the below SQL queries, a city level and global data and export to a CSV. The first five rows of each query are cut and pasted below.

SQL Code:

SELECT *

FROM city_list

WHERE city = 'Monrovia' and country = 'Liberia'

city	country
Monrovia	Liberia

SELECT *

FROM global_data

WHERE year between 1849 and 2013

GROUP BY year;

year	avg_global_temp
1849	7.98
1850	7.90
1851	8.18
1852	8.10
1853	8.04

Step   2: Data cleaning

The second step is data cleaning. That is to identify outliers and eliminate them and deal with missing values. From the data extracted, there was no outlier and I calculated the mean and replaced the missing values with it and calculated the 15-year moving average. Excel function was used to calculate the moving averages local and global temperature.

The SQL query below extracts the average of the avg_temp of Monrovia from 1849 to 2013.

SELECT city, country, Round(AVG(avg_temp), 2)
FROM city_data
WHERE country ='Liberia'
GROUP BY city, country

city	country	round
Monrovia	Liberia	25.13

Using excel function to compute the average of global avg_temp:

'=ROUND(AVERAGE(C2:C19), 2)'

Global Average Temp: = 25.13

**Using excel function to compute the average of local avg_temp:**

'=ROUND(E2:E166, 2): 8.10'

Using the join statement, selected columns from city_data and global_data were extracted. Please see the first five rows extracted. From the data extracted, a record of an average yearly temperature of Monrovia and global average temperature from **1849 to 2013** were extracted and exported to CSV.

SELECT local.year, local.avg_temp local_avg_temp,

global.avg_temp global_avg_temp

FROM city_data AS local

JOIN global_data AS global

ON local.year = global.year

WHERE local.city = 'Monrovia';

year	local_avg_temp	global_avg_temp
1849	25.12	7.98
1850	25.13	7.90
1851	25.16	8.18
1852		8.10
1853		8.04

A line chart of local (monrovia) and global temperature

LOCAL and Global Tempearture Trends
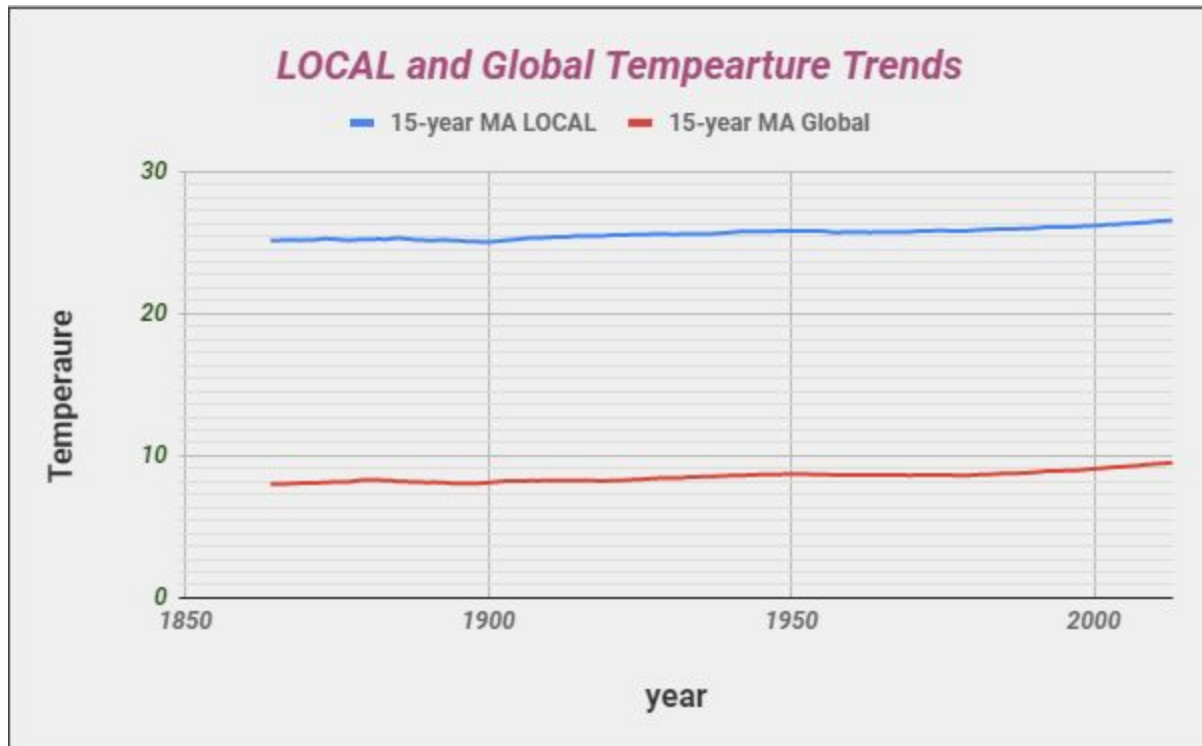
3. **Step   3: Observations:**

1. Based On the line chart, from 1849 to 2013, my city Monrovia is hotter on average compared to global temperature. The local temperature is 17.03 degrees more than the global temperature on average.

2. This difference has been consistent over the century and this is illustrated by the line chart. Over the time, there have been no significant changes in my city average temperature compared to global average temperature.

3. The overall trend looks like the world is getting hotter but at a very slow paste and the trend has been consistent over the last few hundred years.

   4. By percentage, my city average temperature increase by 4.8% while the global average temperature increases by 37.3% from 1849 to 2013