**Comparing Global Temperature and Ottawa Temperature**

**Outline of the steps:**

**Step 1: Download the data from dataset by using SQL**

1. Download the global data

SELECT year,avg\_temp

FROM global\_data

1. Download Ottawa’s data

SELECT year,city,avg\_temp

FROM city\_data

Where city ='Ottawa'

**Step 2: Combine the two table by using Excel**

Copy the data from global data file to Ottawa’s data file

**Step 3: Calculate the moving average in Excel**

Since the global data was from year 1750, in order to compare Ottawa’s temperature with global temperature, I calculated the 5-year moving average to smooth out data from 1750. I used Average() function to calculate the average temperature for the five years of temperature in the excel.

A screenshot of a cell phone

Description automatically generated

**Step 4: Draw line chat with Ottawa and global temperature in Excel**

Insert the 2-D line of the data to draw the line chat of the global temperature and Ottawa’s temperature. The key consideration of visualizing the trend is what is the type of the data set. This data set is 2-D type.

**Last Step: Make observations**

Question 1: Is your city hotter or cooler on average compared to the global average? Has the difference been consistent over time?

Answer: From the graph, we could see that the moving average of Ottawa’s temperature is cooler than global temperature since the line of Ottawa’s temperature is below the global temperature. I check the column differences for the different temperature between the Ottawa and Global, all the cell is consistent, which means the difference is consistent over time. Also, we could see the consistent from the graph, since Ottawa’s temperature is always lower than the global temperature, the difference has been consistent over time.

Question 2: How do the changes in Ottawa’s temperatures over time compare to the changes in the global average?

Answer: From the graph, the fluctuation of Ottawa’s temperature is more significant compare with the global temperature. The coefficient of the Ottawa temperature is 0.0065, and the coefficient of the Global temperature is 0.0045, so the changes in Ottawa’s temperatures over time are more significant than global temperature.

Question 3: What does the overall trend look like? Has the trend been consistent over the last few hundred years?

Answer: The overall trend of Ottawa’s temperature and global temperature is increasing steadily, which means the wold is getting hotter over the last hundred years. And the trend has been consistent over the last few hundred years. The value of global temperature is 0.5026, which means the trendline fits about 50.26% of the data. Since the value of Ottawa’s temperature is 0.5101, which means the trendline fits about 51.01% of the data. Ottawa’s temperature is more accurate than the global temperature. After checked the check the column differences, the trend for Ottawa and global are consistent over the last few hundred years.

Question 4: What is the correlation coefficient between Ottawa’s temperature and global temperature?

Answer: I use the function CORREL(). The coefficient is 0.8606658, which means there is a positive correlation between Ottawa’s temperature and global temperature. For example, when the global temperature increases, Ottawa’s temperature increases.