**How the data were prepared for the visualization:**

- I downloaded the csv file containing the data and upload it on Google 's spreadsheets and manipulated the data

- I gathered the average temp for my city(Alexandria- Egypt) and the global average temp in one spread sheet , I calculated the average moving temperature for 5 years for each of them using the average formula in excel and applies the formula on all of the data
  Ex: for the first value in moving average ➔ =average (B2:B6) ,
       For second value➔=average (B3:B7),…excreta

- The key considerations when deciding to visualize the data :
    - I needed to smooth the average temperature but not too much were details can be lost or too little were the general patterns won't be obvious , I tried taking different moving averages on different periods but I settled on the moving average every 10 years

    - For the comparison of global and city moving averages , I needed to plot together in the same graph as y-axis against the years as x-axis

    - Taking care of the details that make the graph user-friendly , and understandable , naming the labels and the graph with descriptive names

- **Line chart** with local and global temperature trends : red for global trends and blue for city trends

comparison between Global and City Moving Averages
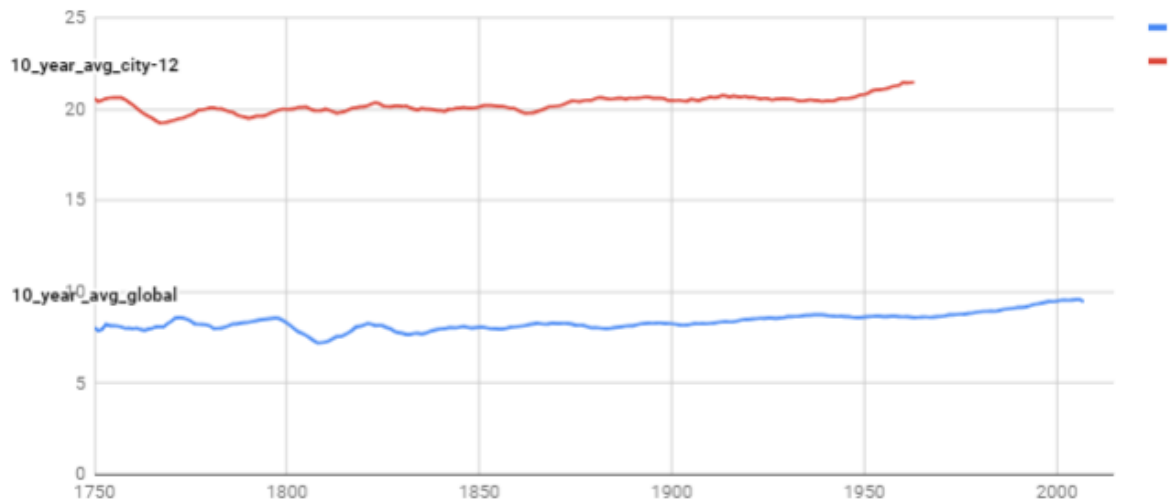
And decreasing the city moving average by 12 Celsius to monitor the pattern

comparison between Global and City Moving Averages

- Observations on the chart :

  1- Alexandria average temp. Have a mean of 20.3 where the global average temp have a mean of 8.34 , there is a seemingly constant difference of 12 degree Celsius

  2-from period (1750-1800) → the global and city averages have same pattern of increasing and decreasing until year 1760 , where the patterns of the global and city averages seem to contradict
  The overall intensity of changes in patterns in the city averages is higher

  That make sense as in global averages it takes in consideration different countries that can have extreme different avg temperature that results in a chart with less intense changes when taking the average

  3-for period(1800-1850) → the global and city average patterns seems to be the same but again the intensity of the city average temp. patterns is higher

  4-for period(1850-1940)→the global and city averages patterns contradict
  5-for period(1940-2015)→ the patterns are the same but the gap in intensities increases
  6- the overall average temperature patterns shows that the temperature is increasing on earth as year passes

  7-Predicting the weather in my city based on the past patterns and the global average :
    First : at year 1760 average temperature was 20.4 , and global one was 8.2 , there is seemingly constant difference between both of 12 degree Celsius

    At year 1967 Alexandria average was 21.4 and global one was 8.6 , so they both increase but Alexandria incremental value is greater than that of the global

    At recent years from 1980 to 2015 there is no recorded measurements of Alexandria temp. but the global temp. average witnessed a rise from 8.6 up to 9.4 in this period only
  The rate of how temperature increases increased dramatically over the years

    Given that and knowing the that the incremental value of Alexandria average temp. is greater than that of the global average
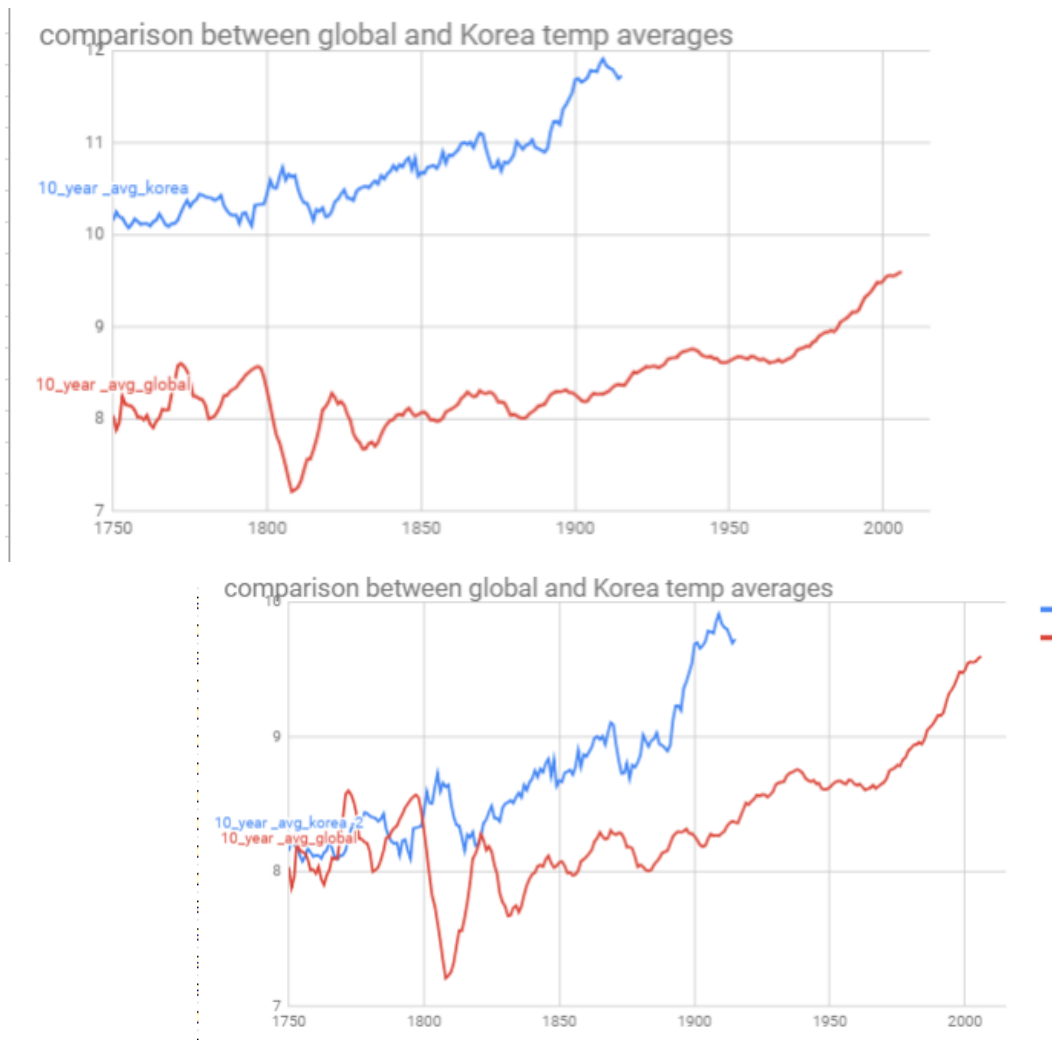
  The average weather of recent years in Alexandria may range from 21.5 to 25 degree Celsius

  8-The correlation coefficient is a statistical measure of the degree to which changes to the value of one variable predict change to the value of another. In positively correlated variables, the value increases or decreases in tandem. In negatively correlated variables, the value of one increases as the value of the other decreases.

- The correlation coefficient between the global moving average and the city moving average is 0.4193782478

Which indicates that overall the city average temp. is directly proportional to the global average temp and we can somehow predict the average temp. of Alexandria using global weather averages

9-Using another country statistics with different weather as korea

comparison between global and Korea temp averages

comparison between global and Korea temp averages

Again the overall pattern of the weather in Korea agrees with the global weather

1- There are only 2 degree Celsius difference on average between average temp. of the global and Korea's average

2- the difference in intensities increases as time passes that shows in how the two data lines are getting further apart with time

The correlation coefficient here is 0.1810196496

Where the changes in the global weather averages don't help much in prediction in weather in Korea