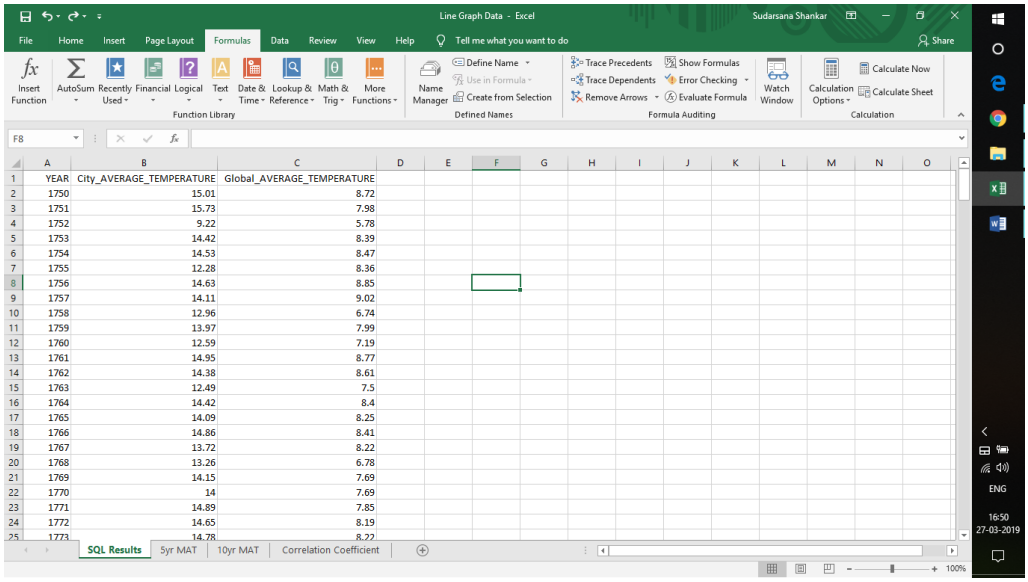
PROJECT 1: EXPLORING WEATHER TRENDS

1)SQL QUERIES USED TO EXTRACT DATA: -

SELECT year "YEAR", city "CITY", avg_temp "AVERAGE_TEMPERATURE" FROM city_data where city LIKE '%Atlanta%';

SELECT year "YEAR", avg_temp "AVERAGE_TEMPERATURE" FROM global_data;

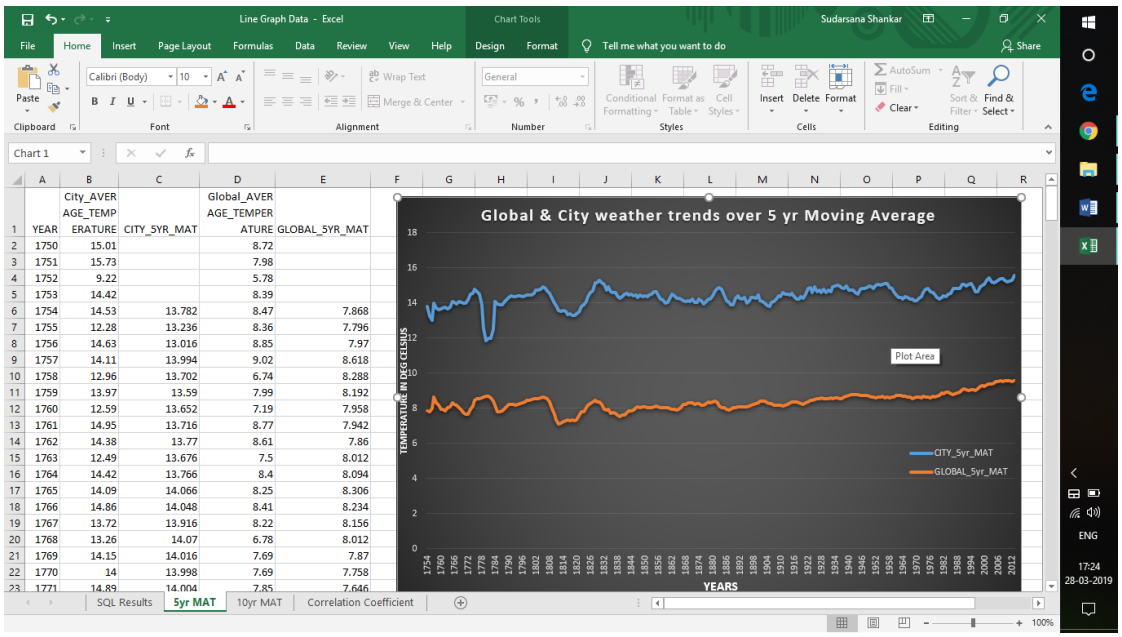
Combining the two exported CSV files, taking the average temperature values from both City and Global data along with the corresponding YEAR, for which data is available, results in the following as seen below-



YEAR	City_AVERAGE_TEMPERATURE	Global_AVERAGE_TEMPERATURE
1750	15.01	8.72
1751	15.73	7.98
1752	9.22	5.78
1753	14.42	8.39
1754	14.53	8.47
1755	12.28	8.36
1756	14.63	8.85
1757	14.11	9.02
1758	12.96	6.74
1759	13.97	7.99
1760	12.59	7.19
1761	14.95	8.77
1762	14.38	8.61
1763	12.49	7.5
1764	14.42	8.4
1765	14.09	8.25
1766	14.86	8.41
1767	13.72	8.22
1768	13.26	6.78
1769	14.15	7.69
1770	14	7.69
1771	14.89	7.85
1772	14.65	8.19
1773	14.78	8.22

2) CALCULATING THE MOVING AVERAGE FOR 5 YEARS: -

The moving average was calculated using the formula AVERAGE (B2:B6). The results along with the Line Graph are as seen below-



YEAR	City_AVERAGE_TEMPERATURE	CITY_5YR_MAT	Global_AVERAGE_TEMPERATURE	GLOBAL_5YR_MAT
1750	15.01		8.72	
1751	15.73		7.98	
1752	9.22		5.78	
1753	14.42		8.39	
1754	14.53	13.782	8.47	7.868
1755	12.28	13.236	8.36	7.796
1756	14.63	13.016	8.85	7.97
1757	14.11	13.994	9.02	8.618
1758	12.96	13.702	6.74	8.288
1759	13.97	13.59	7.99	8.192
1760	12.59	13.652	7.19	7.958
1761	14.95	13.716	8.77	7.942
1762	14.38	13.77	8.61	7.86
1763	12.49	13.676	7.5	8.012
1764	14.42	13.766	8.4	8.094
1765	14.09	14.066	8.25	8.306
1766	14.86	14.048	8.41	8.234
1767	13.72	13.916	8.22	8.156
1768	13.26	14.07	6.78	8.012
1769	14.15	14.016	7.69	7.87
1770	14	13.998	7.69	7.758
1771	14.89	14.004	7.85	7.646

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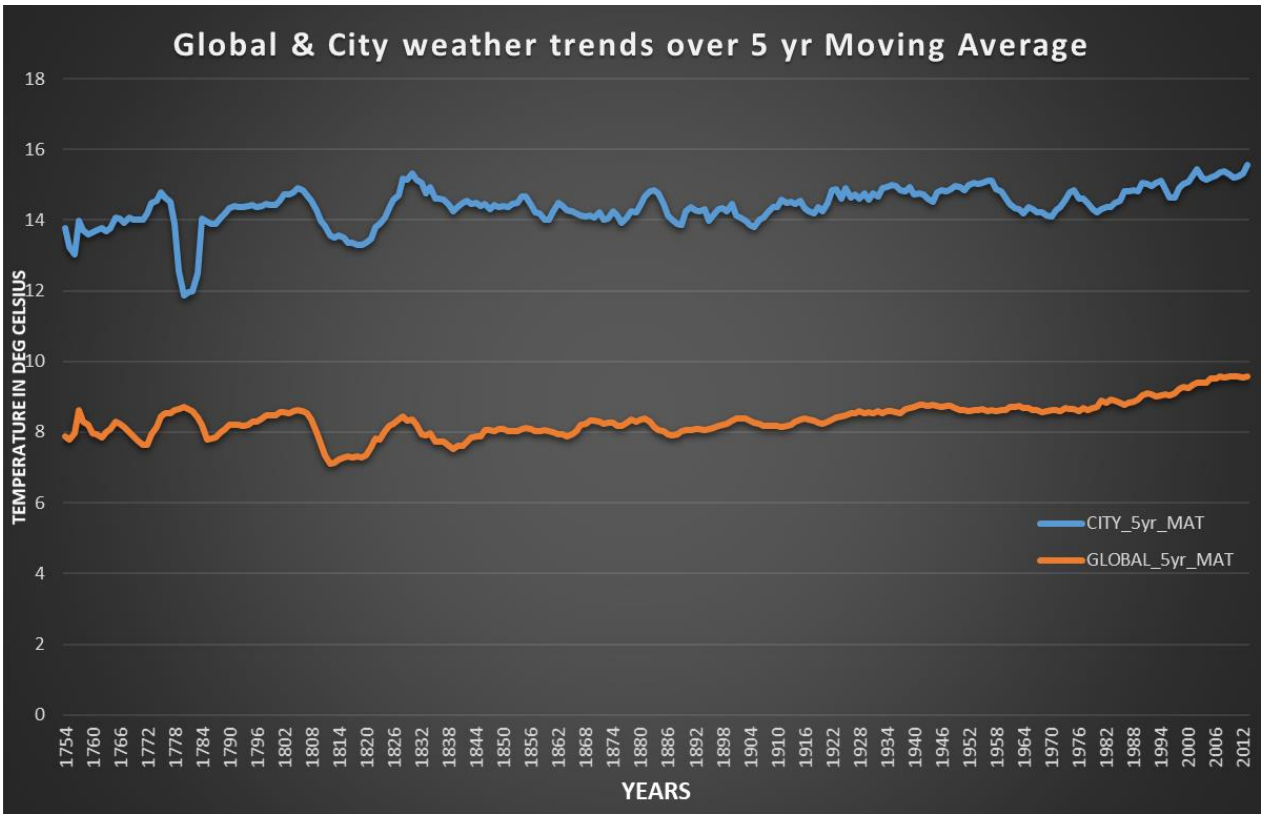

OBSERVATIONS: -

- My City (Atlanta) is definitely hotter than the rest of the world and it has remained the same over the last few hundred years.
- My City's average temperature has risen from 14 deg Celsius to close to 16 deg Celsius in spite of the decrease in the temperature once in the late 1700 & once in the early 1800.
- The Global average temperature is also seen rising from 8 deg Celsius to 10 deg Celsius with a decrease of temperature happening only once in the early 1800.
- After the early 1800, both the City and our world show a steady rise in their average temperatures. Although my City's weather is seen having a lot of fluctuations, they didn't make it much cooler either.

3) CALCULATING THE MOVING AVERAGE FOR 10 YEARS: -

The moving average for 10 years was calculated using the formula AVERAGE(B2:B11) and the Line Graph was plotted as seen below-

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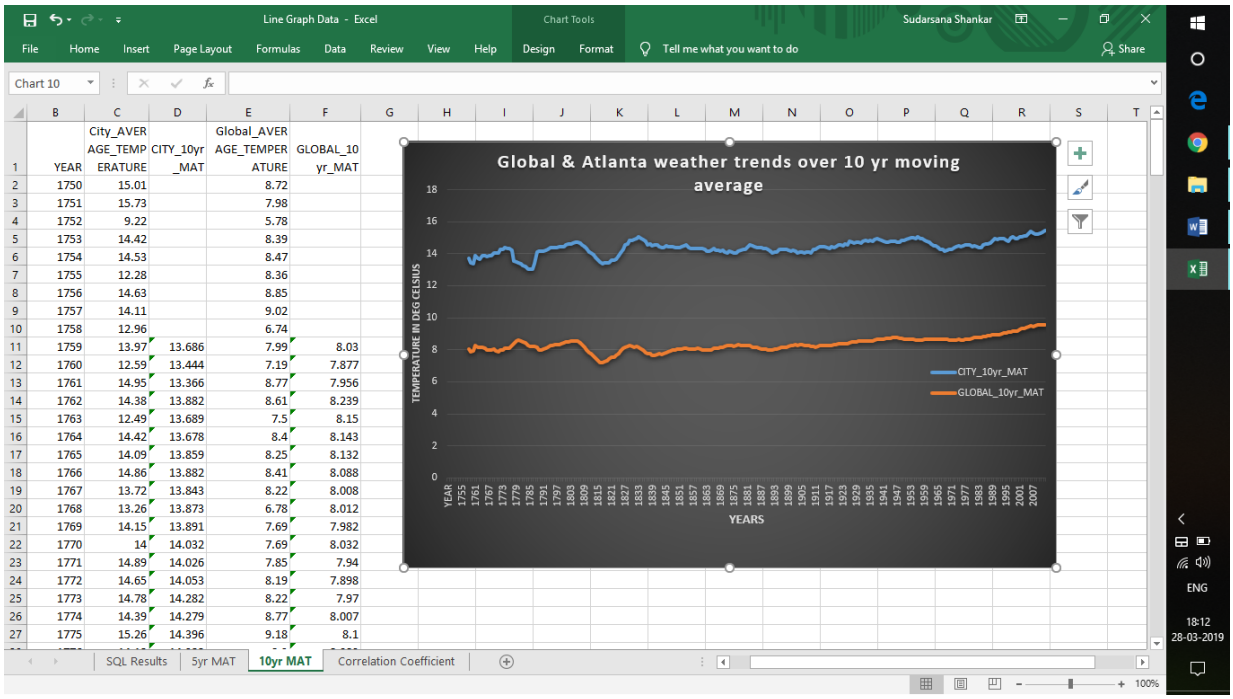
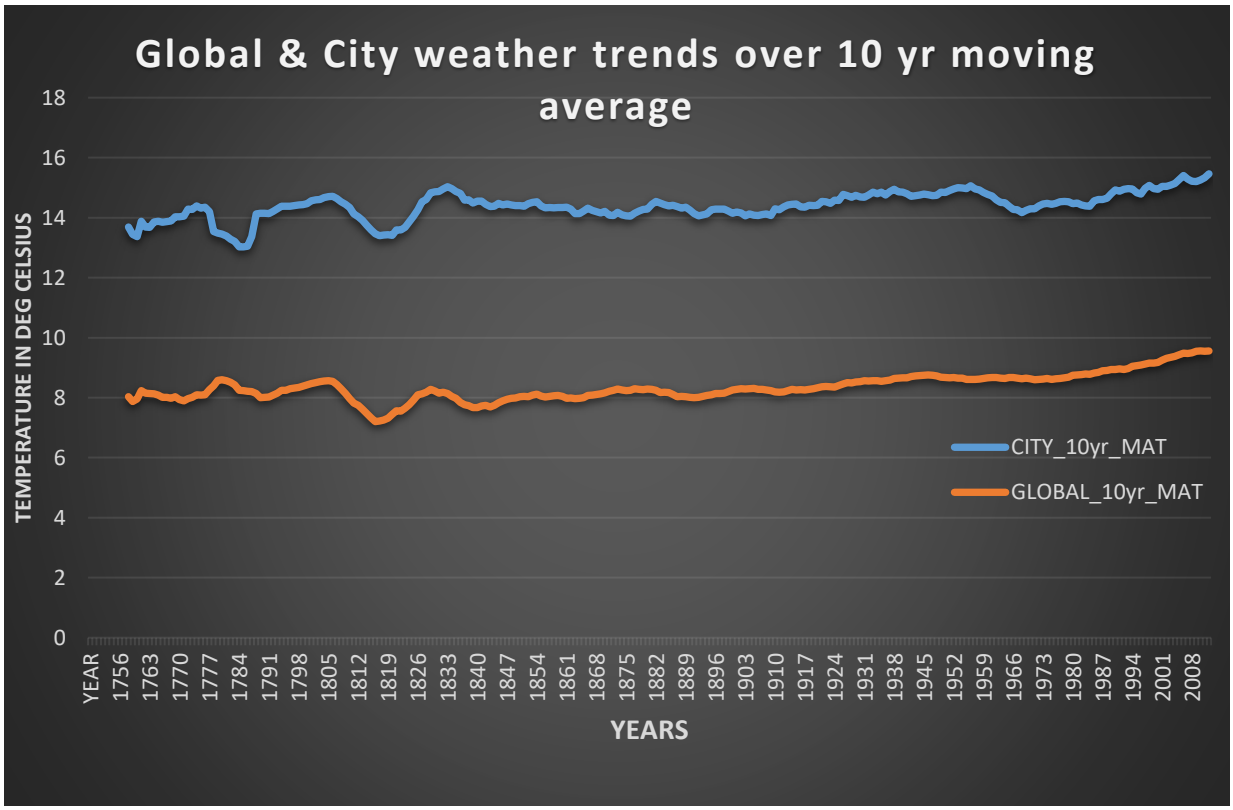


YEAR	City_AVERAGE_TEMPERATURE	CITY_10yr_MAT	Global_AVERAGE_TEMPERATURE	GLOBAL_10yr_MAT
1750	15.01		8.72	
1751	15.73		7.98	
1752	9.22		5.78	
1753	14.42		8.39	
1754	14.53		8.47	
1755	12.28		8.36	
1756	14.63		8.85	
1757	14.11		9.02	
1758	12.96		6.74	
1759	13.97	13.686	7.99	8.03
1760	12.59	13.444	7.19	7.877
1761	14.95	13.366	8.77	7.956
1762	14.38	13.882	8.61	8.239
1763	12.49	13.689	7.5	8.15
1764	14.42	13.678	8.4	8.143
1765	14.09	13.859	8.25	8.132
1766	14.86	13.882	8.41	8.088
1767	13.72	13.843	8.22	8.008
1768	13.26	13.873	6.78	8.012
1769	14.15	13.891	7.69	7.982
1770	14	14.032	7.69	8.032
1771	14.89	14.026	7.85	7.94
1772	14.65	14.053	8.19	7.898
1773	14.78	14.282	8.22	7.97
1774	14.39	14.279	8.77	8.007
1775	15.26	14.396	9.18	8.1



OBSERVATIONS: -

- My City is hotter than the rest of the world.
- Both my City's and the world's temperatures have seen a steady rise over the last hundred years.
- The decrease in the average temperatures in the City and the world is predominantly seen in the early 1800.

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CONCLUSIONS: -

My conclusions on calculating both the 5yr and 10yr moving average indicate that though I see similar trends in the rise of both the City's and Global average temperatures, I believe I am missing out more on data as I calculate the moving average over a 10yr period, in spite of the data recordings given for over 250 years.

4) CALCULATING THE CORRELATION COEFFICIENT: -

The Correlation Coefficient for the average City temperature and Years given was calculated using the function CORREL(A2:A265,B2:B265) and gave the result of 0.382812043 indicating a rise of temperature with every year on an average.