Exploring Weather Trends

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In Udacity's workspace, I queried for which locations were in the UK[1] and was able to figure out that Edinburgh is the closest to me. I then downloaded the city data for Edinburgh[2] and selected all data from the "global data" table and downloaded it[3]. I then opened the files on Excel, which is also where all my analysis was done.

I decided to calculate a five-year moving average as it kept some integrity of the data. Edinburgh gave me data from 1743 to 2013, while global gave me 1750 to 2015. However, due to missing data for Edinburgh from 1746 to 1749, I removed all observations before this. I then added blank years of 1743 to 1749 to the global table, so that I could create a line graph that corresponded to the correct years. I then calculated the moving averages. For both tables, the first analysis is a moving-average calculation from 1750 to 1754[4]. I then dragged the calculation down with the fill handle.

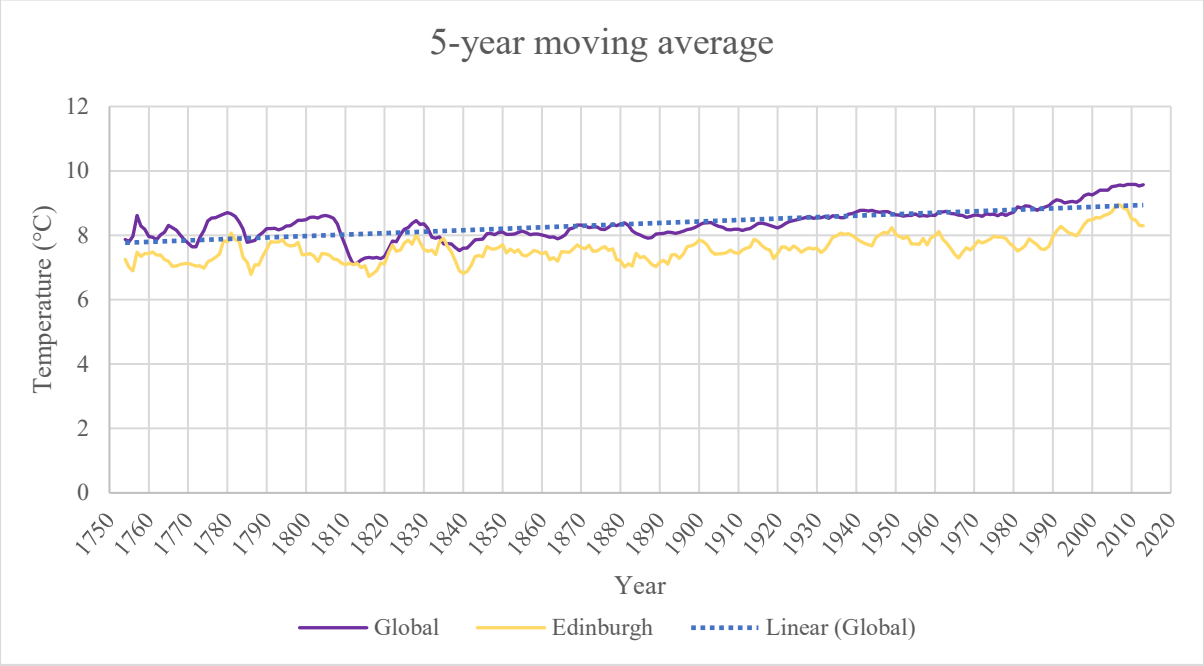

Figure 1: A graph with the five-year moving averages of the temperature in Edinburgh and the world between 1754 to 2015.

Figure 1 shows that Edinburgh is much cooler than the world. This is probably due to the fact that it rains a lot in Scotland and that it is higher up in the Northern Hemisphere. The average temperature difference between Edinburgh and the world is 0.756°C. The biggest difference was 1.37°C in 1881 and in 1835 Edinburgh was 0.17°C hotter than the world.

Overall, the world seems to be getting hotter. The linear trendline in Figure 1 verifies this. In 1743 it intercepts the graph at around 7.7°C and in 2015 this intercept is around 9°C. The temperature increases at around 0.46°C every 100 years. In comparison Edinburgh started at 7.1°C and is just above 8°C. The temperature increases at around 0.33°C every 100 years.

Since around 1986 the global temperature has consistently been above the trendline. This is probably due to global warming.

Generally, the two graphs increase and decrease together, meaning that they are slightly correlated. They are 81% correlated. However, there is a weird period between 1790 and 1810 where the world temperature is increasing, while Edinburgh's is decreasing.

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[1] SELECT * FROM city_list WHERE country = 'United Kingdom'
[2] SELECT * FROM city_data WHERE city = 'Edinburgh'
[3] SELECT * FROM global_data
[4] =AVERAGE(B9:B13)