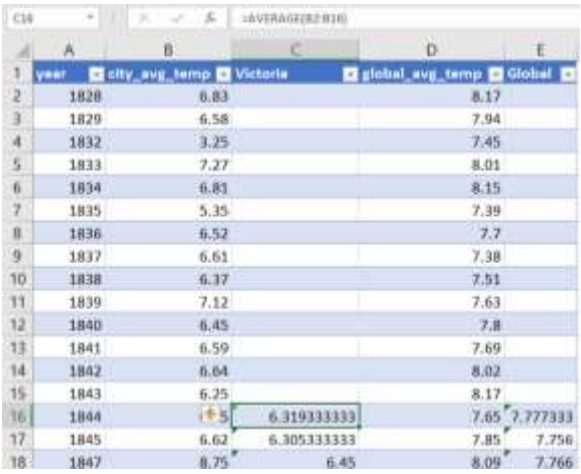
Data Preparation

1. I used the following SQL code to extract my data from the database (with closest_city_data as (select * from city_data where city = 'Victoria' and avg_temp is not null) select closest_city_data.year, closest_city_data.avg_temp as city_avg_temp, global_data.avg_temp as global_avg_temp from closest_city_data join global_data on closest_city_data.year = global_data.year).
2. I used Excel to prepare the data for visualization. I calculated the moving average over 15 years. I applied "=average(B2:B16)" on cell "C16" to calculate the 15-year moving average temperature for Victoria and "=average(D2:D16)" on cell E16 to calculate the 15-year moving average for Global.



	A	B	C	D	E
1	year	city_avg_temp	Victoria	global_avg_temp	Global
2	1828	6.83		8.17	
3	1829	6.58		7.94	
4	1832	3.25		7.45	
5	1833	7.27		8.01	
6	1834	6.83		8.15	
7	1835	5.35		7.39	
8	1836	6.52		7.7	
9	1837	6.61		7.38	
10	1838	6.37		7.51	
11	1839	7.12		7.63	
12	1840	6.45		7.8	
13	1841	6.59		7.69	
14	1842	6.64		8.02	
15	1843	6.25		8.17	
16	1844	5	6.319333333	7.65	7.777333
17	1845	6.62	6.305333333	7.85	7.756
18	1847	8.75	6.45	8.09	7.766

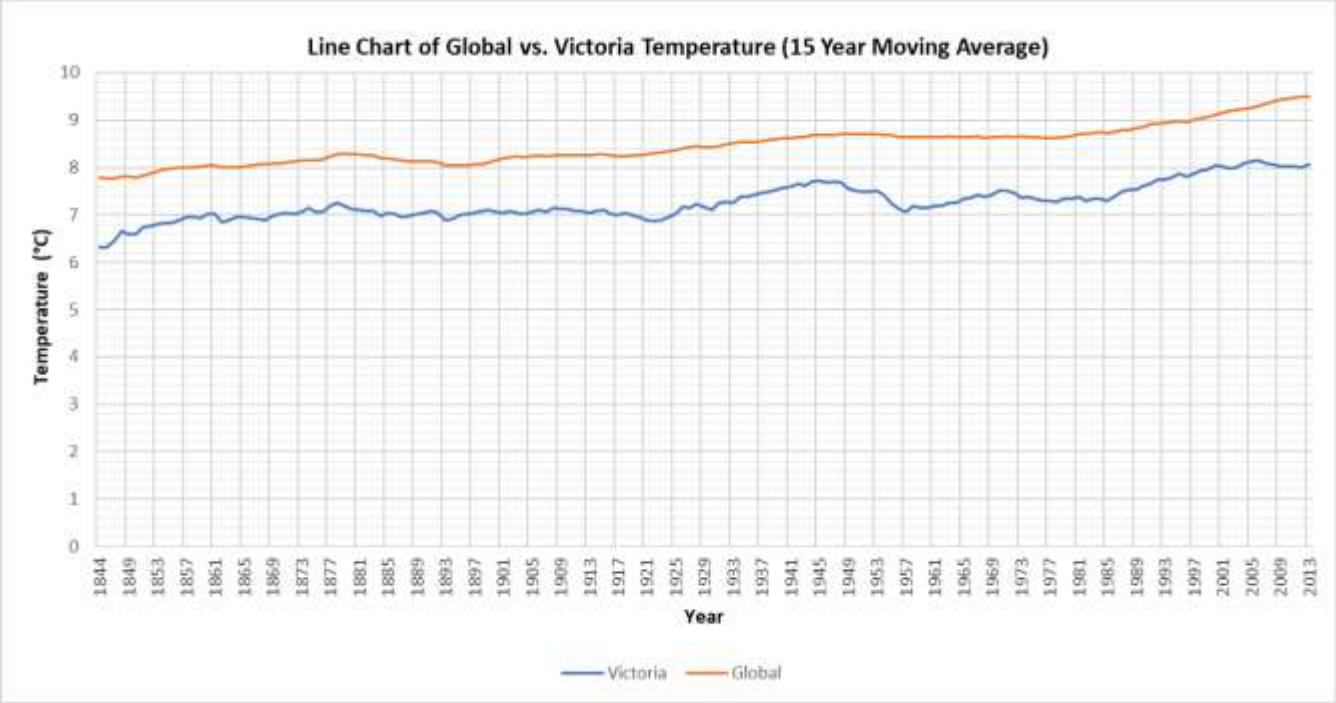
3. The key considerations for me when deciding how to visualize the trends are as follows
    a. Writing SQL query that would 'inner join' the tables while excluding rows with missing values in the city_data table.
    b. Used a 15-year moving average to help remove noise from the curve. 15 years was ideal as the curves were not too smooth nor noisy for analytic purposes.
    c. Removed the information from 1828 to 1844 from the Data source horizontal axis labels. This helped to eliminate empty spaces from the chart.

    d. Increased the units for the horizontal axis by 5 to avoid cluttering the information presented on the axis.

Observations

1. The Global and Victoria average temperatures have increased over the years. As of 1828, the average temperature for Victoria and Global were 6.83 and 8.17, respectively, but as of 2013, the average temperature had increased to 9.85 and 9.61, respectively.
2. The change in average temperature was higher for Victoria than for Global The percentage change in average temperature for Victoria was 44.22% while the Global experienced a 17.63% change.
3. The average temperature of Victoria fluctuated more than the global average temperature. The standard deviation for Victoria and Global were 0.77 and 0.50, respectively
4. Between 1836 and 1839, Victoria's average temperature increased while the global average temperature decreased.
5. The average temperature for Victoria was lower than Global (7.26 for Victoria as against 8.48 for Global).
6. A strong correlation existed between the global average temperature and Victoria's average temperature between 1828 and 2013. The correlation coefficient was 0.64.

	year	Victoria_avg_tem	global_avg_temp
2	1828	6.83	8.17
3	1829	6.58	7.94
4	1832	3.25	7.45
5	1833	7.27	8.01
6	1834	6.81	8.15
7	1835	5.35	7.39
8	1836	6.52	7.7
9	1837	6.61	7.38
10	1838	6.37	7.51
11	1839	7.12	7.63
182	2011	7.21	9.52
183	2012	7.85	9.51
184	2013	9.85	9.61
185	**Minimum Temp**	3.25	7.38
186	**Maximum Temp**	9.85	9.73
187	**Change (%)**	44.22%	17.63%
188	**Mean**	7.26	8.48
189	**Median**	7.23	8.44
190	**Mode**	7.27	8.18
191	**St dev**	0.77	0.50
192	**Correlation**	0.64	


Line Chart of Global vs. Victoria Temperature (15 Year Moving Average)
Temperature (°C)
Year
Victoria
Global