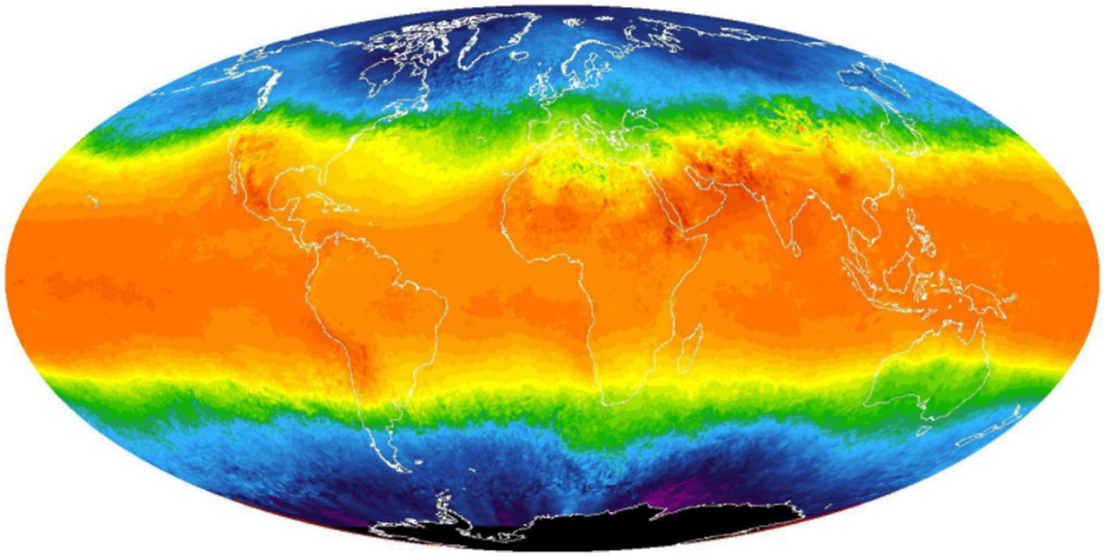

Project 1

Exploring Weather Trends

Melbourne, Australia

Vs.

Global

Data Analyst Nanodegree Program: Project 1

June 2019

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Project Overview

This project evaluates the weather trends in Melbourne, Australia and globally. This is completed by analysing the moving average of temperatures between them for the last 150 years (1864 to 2013).

Tools

Tools	Purpose
SQL	1. Accessing and extracting Data
Excel	1. Analysing the data sets whilst ensuring there no missing data between the years 2. Selecting data from both city_data and global_data to form a comparison 3. Calculating moving averages for Melbourne, Australia and Global data, formatted to two decimal places. 4. Creating a line graph to display a comparison on average temperatures for Melbourne, Australia and Global data

Below is the SQL queries used to extract the data in the available schemas:

Schema	Query	Output
city_list	Select * from city_list where country = 'Australia';	6 results
city_data	Select * from city_data where city = 'Melbourne' and country = 'Australia';	173 results
global_data	Select * from global_data;	266 results

Moving Average calculations

The datasets in the Temperature database contain differing range for years, globally and Melbourne, Australia as shown in ***Table 1*** below:

Temperatures database	Location range	Year beginning	Year ending
global_data	Global	1750	2015
city_data	Melbourne	1841	2013

Table 1: Range of years

Because the data availability for years differ, years 1864 to 2013 have been applied to draw a comparison in this project. This is to allow the moving average to be evenly distributed over every ten years for a total of 150 years

Please view ***Detailed Workings of Moving Average Calculations*** on page 4 on the formulas and outputs that frame the summarised moving average temperature in ***Table 2*** below.

Note: Column *Year* in ***Table 2*** (also depicted in the X axis of the line chart) has been revised to show the range of years in the decade the moving average is calculated on.

For example: In section ***Detailed Workings of Moving Average Calculations***, the column *Year* for 10 years moving average is 1873. In ***Table 2***, the year 1873 has been modified to display as *1864 – 1873*.

Year	Melbourne Moving Average	Global Moving Average
1864 - 1873	13.27	8.24
1874 - 1883	13.20	8.24
1884 - 1893	13.22	8.01
1904 - 1903	13.34	8.30
1914 - 1913	13.15	8.19
1914 - 1923	13.44	8.37
1924 - 1933	13.06	8.56
1934 - 1943	13.34	8.70
1944 - 1953	13.06	8.68
1954 - 1963	13.40	8.67
1964 - 1973	13.40	8.61
1974 - 1983	13.83	8.77
1984 - 1993	13.71	8.94
1994 - 2003	13.80	9.32
2004 - 2013	14.33	9.56

Table 2: Moving Average in decades between Year 1873 and 2013

Detailed Workings of Moving Average Calculations

Part A: Using the function AVERAGE in Excel:

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
2	1864	13.01	7.98		
3	1865	12.78	8.18		
4	1866	13.36	8.29		
5	1867	13.37	8.44		
6	1868	13.31	8.25		
7	1869	13.18	8.43		
8	1870	13.3	8.2		
9	1871	13.5	8.12		
10	1872	13.4	8.19		
11	1873	13.47	8.35	=AVERAGE(B2:B11)	=AVERAGE(C2:C11)
12	1874	12.96	8.43	=AVERAGE(B3:B12)	=AVERAGE(C3:C12)
13	1875	13.09	7.86	=AVERAGE(B4:B13)	=AVERAGE(C4:C13)
14	1876	13.22	8.08	=AVERAGE(B5:B14)	=AVERAGE(C5:C14)
15	1877	13.1	8.54	=AVERAGE(B6:B15)	=AVERAGE(C6:C15)
16	1878	13.34	8.83	=AVERAGE(B7:B16)	=AVERAGE(C7:C16)
17	1879	13.02	8.17	=AVERAGE(B8:B17)	=AVERAGE(C8:C17)
18	1880	13.4	8.12	=AVERAGE(B9:B18)	=AVERAGE(C9:C18)
19	1881	13.1	8.27	=AVERAGE(B10:B19)	=AVERAGE(C10:C19)
20	1882	13.34	8.13	=AVERAGE(B11:B20)	=AVERAGE(C11:C20)
21	1883	13.42	7.98	=AVERAGE(B12:B21)	=AVERAGE(C12:C21)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
22	1884	12.87	7.77	=AVERAGE(B13:B22)	=AVERAGE(C13:C22)
23	1885	13.01	7.92	=AVERAGE(B14:B23)	=AVERAGE(C14:C23)
24	1886	13.03	7.95	=AVERAGE(B15:B24)	=AVERAGE(C15:C24)
25	1887	13.47	7.91	=AVERAGE(B16:B25)	=AVERAGE(C16:C25)
26	1888	13.36	8.09	=AVERAGE(B17:B26)	=AVERAGE(C17:C26)
27	1889	13.54	8.32	=AVERAGE(B18:B27)	=AVERAGE(C18:C27)
28	1890	13.6	7.97	=AVERAGE(B19:B28)	=AVERAGE(C19:C28)
29	1891	13.11	8.02	=AVERAGE(B20:B29)	=AVERAGE(C20:C29)
30	1892	12.93	8.07	=AVERAGE(B21:B30)	=AVERAGE(C21:C30)
31	1893	13.23	8.06	=AVERAGE(B22:B31)	=AVERAGE(C22:C31)
32	1894	13.49	8.16	=AVERAGE(B23:B32)	=AVERAGE(C23:C32)
33	1895	13.53	8.15	=AVERAGE(B24:B33)	=AVERAGE(C24:C33)
34	1896	13.19	8.21	=AVERAGE(B25:B34)	=AVERAGE(C25:C34)
35	1897	13.11	8.29	=AVERAGE(B26:B35)	=AVERAGE(C26:C35)
36	1898	13.97	8.18	=AVERAGE(B27:B36)	=AVERAGE(C27:C36)
37	1899	13.24	8.4	=AVERAGE(B28:B37)	=AVERAGE(C28:C37)
38	1900	12.98	8.5	=AVERAGE(B29:B38)	=AVERAGE(C29:C38)
39	1901	13.33	8.54	=AVERAGE(B30:B39)	=AVERAGE(C30:C39)
40	1902	13.35	8.3	=AVERAGE(B31:B40)	=AVERAGE(C31:C40)
41	1903	13.18	8.22	=AVERAGE(B32:B41)	=AVERAGE(C32:C41)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
42	1904	13.19	8.09	=AVERAGE(B33:B42)	=AVERAGE(C33:C42)
43	1905	12.74	8.23	=AVERAGE(B34:B43)	=AVERAGE(C34:C43)
44	1906	13.41	8.38	=AVERAGE(B35:B44)	=AVERAGE(C35:C44)
45	1907	13.1	7.95	=AVERAGE(B36:B45)	=AVERAGE(C36:C45)
46	1908	13.51	8.19	=AVERAGE(B37:B46)	=AVERAGE(C37:C46)
47	1909	12.62	8.18	=AVERAGE(B38:B47)	=AVERAGE(C38:C47)
48	1910	13.47	8.22	=AVERAGE(B39:B48)	=AVERAGE(C39:C48)
49	1911	13.13	8.18	=AVERAGE(B40:B49)	=AVERAGE(C40:C49)
50	1912	13.16	8.17	=AVERAGE(B41:B50)	=AVERAGE(C41:C50)
51	1913	13.12	8.3	=AVERAGE(B42:B51)	=AVERAGE(C42:C51)
52	1914	14.13	8.59	=AVERAGE(B43:B52)	=AVERAGE(C43:C52)
53	1915	13.13	8.59	=AVERAGE(B44:B53)	=AVERAGE(C44:C53)
54	1916	13.02	8.23	=AVERAGE(B45:B54)	=AVERAGE(C45:C54)
55	1917	13	8.02	=AVERAGE(B46:B55)	=AVERAGE(C46:C55)
56	1918	13.44	8.13	=AVERAGE(B47:B56)	=AVERAGE(C47:C56)
57	1919	13.87	8.38	=AVERAGE(B48:B57)	=AVERAGE(C48:C57)
58	1920	13.25	8.36	=AVERAGE(B49:B58)	=AVERAGE(C49:C58)
59	1921	13.96	8.57	=AVERAGE(B50:B59)	=AVERAGE(C50:C59)
60	1922	13.34	8.41	=AVERAGE(B51:B60)	=AVERAGE(C51:C60)
61	1923	13.21	8.42	=AVERAGE(B52:B61)	=AVERAGE(C52:C61)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
62	1924	12.51	8.51	=AVERAGE(B53:B62)	=AVERAGE(C53:C62)
63	1925	13.02	8.53	=AVERAGE(B54:B63)	=AVERAGE(C54:C63)
64	1926	13.48	8.73	=AVERAGE(B55:B64)	=AVERAGE(C55:C64)
65	1927	13.18	8.52	=AVERAGE(B56:B65)	=AVERAGE(C56:C65)
66	1928	13.45	8.63	=AVERAGE(B57:B66)	=AVERAGE(C57:C66)
67	1929	12.62	8.24	=AVERAGE(B58:B67)	=AVERAGE(C58:C67)
68	1930	13.61	8.63	=AVERAGE(B59:B68)	=AVERAGE(C59:C68)
69	1931	12.73	8.72	=AVERAGE(B60:B69)	=AVERAGE(C60:C69)
70	1932	12.89	8.71	=AVERAGE(B61:B70)	=AVERAGE(C61:C70)
71	1933	13.06	8.34	=AVERAGE(B62:B71)	=AVERAGE(C62:C71)
72	1934	13.59	8.63	=AVERAGE(B63:B72)	=AVERAGE(C63:C72)
73	1935	13.02	8.52	=AVERAGE(B64:B73)	=AVERAGE(C64:C73)
74	1936	13.26	8.55	=AVERAGE(B65:B74)	=AVERAGE(C65:C74)
75	1937	13.45	8.7	=AVERAGE(B66:B75)	=AVERAGE(C66:C75)
76	1938	13.76	8.86	=AVERAGE(B67:B76)	=AVERAGE(C67:C76)
77	1939	13.41	8.76	=AVERAGE(B68:B77)	=AVERAGE(C68:C77)
78	1940	13.36	8.76	=AVERAGE(B69:B78)	=AVERAGE(C69:C78)
79	1941	13.16	8.77	=AVERAGE(B70:B79)	=AVERAGE(C70:C79)
80	1942	13.69	8.73	=AVERAGE(B71:B80)	=AVERAGE(C71:C80)
81	1943	12.68	8.76	=AVERAGE(B72:B81)	=AVERAGE(C72:C81)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
82	1944	13.05	8.85	=AVERAGE(B73:B82)	=AVERAGE(C73:C82)
83	1945	13	8.58	=AVERAGE(B74:B83)	=AVERAGE(C74:C83)
84	1946	12.63	8.68	=AVERAGE(B75:B84)	=AVERAGE(C75:C84)
85	1947	13.47	8.8	=AVERAGE(B76:B85)	=AVERAGE(C76:C85)
86	1948	12.81	8.75	=AVERAGE(B77:B86)	=AVERAGE(C77:C86)
87	1949	12.42	8.59	=AVERAGE(B78:B87)	=AVERAGE(C78:C87)
88	1950	13.42	8.37	=AVERAGE(B79:B88)	=AVERAGE(C79:C88)
89	1951	13.56	8.63	=AVERAGE(B80:B89)	=AVERAGE(C80:C89)
90	1952	12.94	8.64	=AVERAGE(B81:B90)	=AVERAGE(C81:C90)
91	1953	13.31	8.87	=AVERAGE(B82:B91)	=AVERAGE(C82:C91)
92	1954	13.32	8.56	=AVERAGE(B83:B92)	=AVERAGE(C83:C92)
93	1955	13.24	8.63	=AVERAGE(B84:B93)	=AVERAGE(C84:C93)
94	1956	13.06	8.28	=AVERAGE(B85:B94)	=AVERAGE(C85:C94)
95	1957	13.05	8.73	=AVERAGE(B86:B95)	=AVERAGE(C86:C95)
96	1958	12.99	8.77	=AVERAGE(B87:B96)	=AVERAGE(C87:C96)
97	1959	13.79	8.73	=AVERAGE(B88:B97)	=AVERAGE(C88:C97)
98	1960	13.17	8.58	=AVERAGE(B89:B98)	=AVERAGE(C89:C98)
99	1961	14.33	8.8	=AVERAGE(B90:B99)	=AVERAGE(C90:C99)
100	1962	13.55	8.75	=AVERAGE(B91:B100)	=AVERAGE(C91:C100)
101	1963	13.51	8.86	=AVERAGE(B92:B101)	=AVERAGE(C92:C101)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
102	1964	12.88	8.41	=AVERAGE(B93:B102)	=AVERAGE(C93:C102)
103	1965	13.32	8.53	=AVERAGE(B94:B103)	=AVERAGE(C94:C103)
104	1966	13.1	8.6	=AVERAGE(B95:B104)	=AVERAGE(C95:C104)
105	1967	13.52	8.7	=AVERAGE(B96:B105)	=AVERAGE(C96:C105)
106	1968	13.62	8.52	=AVERAGE(B97:B106)	=AVERAGE(C97:C106)
107	1969	13.39	8.6	=AVERAGE(B98:B107)	=AVERAGE(C98:C107)
108	1970	13.12	8.7	=AVERAGE(B99:B108)	=AVERAGE(C99:C108)
109	1971	13.58	8.6	=AVERAGE(B100:B109)	=AVERAGE(C100:C109)
110	1972	13.73	8.5	=AVERAGE(B101:B110)	=AVERAGE(C101:C110)
111	1973	13.69	8.95	=AVERAGE(B102:B111)	=AVERAGE(C102:C111)
112	1974	13.82	8.47	=AVERAGE(B103:B112)	=AVERAGE(C103:C112)
113	1975	13.9	8.74	=AVERAGE(B104:B113)	=AVERAGE(C104:C113)
114	1976	13.55	8.35	=AVERAGE(B105:B114)	=AVERAGE(C105:C114)
115	1977	13.5	8.85	=AVERAGE(B106:B115)	=AVERAGE(C106:C115)
116	1978	13.48	8.69	=AVERAGE(B107:B116)	=AVERAGE(C107:C116)
117	1979	13.9	8.73	=AVERAGE(B108:B117)	=AVERAGE(C108:C117)
118	1980	14.12	8.98	=AVERAGE(B109:B118)	=AVERAGE(C109:C118)
119	1981	14.26	9.17	=AVERAGE(B110:B119)	=AVERAGE(C110:C119)
120	1982	14.03	8.64	=AVERAGE(B111:B120)	=AVERAGE(C111:C120)
121	1983	13.72	9.03	=AVERAGE(B112:B121)	=AVERAGE(C112:C121)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
122	1984	13.25	8.69	=AVERAGE(B113:B122)	=AVERAGE(C113:C122)
123	1985	13.7	8.66	=AVERAGE(B114:B123)	=AVERAGE(C114:C123)
124	1986	13.19	8.83	=AVERAGE(B115:B124)	=AVERAGE(C115:C124)
125	1987	13.47	8.99	=AVERAGE(B116:B125)	=AVERAGE(C116:C125)
126	1988	14.53	9.2	=AVERAGE(B117:B126)	=AVERAGE(C117:C126)
127	1989	13.86	8.92	=AVERAGE(B118:B127)	=AVERAGE(C118:C127)
128	1990	14.16	9.23	=AVERAGE(B119:B128)	=AVERAGE(C119:C128)
129	1991	13.77	9.18	=AVERAGE(B120:B129)	=AVERAGE(C120:C129)
130	1992	13.31	8.84	=AVERAGE(B121:B130)	=AVERAGE(C121:C130)
131	1993	13.81	8.87	=AVERAGE(B122:B131)	=AVERAGE(C122:C131)
132	1994	13.52	9.04	=AVERAGE(B123:B132)	=AVERAGE(C123:C132)
133	1995	13.14	9.35	=AVERAGE(B124:B133)	=AVERAGE(C124:C133)
134	1996	13.05	9.04	=AVERAGE(B125:B134)	=AVERAGE(C125:C134)
135	1997	13.93	9.2	=AVERAGE(B126:B135)	=AVERAGE(C126:C135)
136	1998	13.61	9.52	=AVERAGE(B127:B136)	=AVERAGE(C127:C136)
137	1999	14.2	9.29	=AVERAGE(B128:B137)	=AVERAGE(C128:C137)
138	2000	14.32	9.2	=AVERAGE(B129:B138)	=AVERAGE(C129:C138)
139	2001	14.18	9.41	=AVERAGE(B130:B139)	=AVERAGE(C130:C139)
140	2002	14.08	9.57	=AVERAGE(B131:B140)	=AVERAGE(C131:C140)
141	2003	13.99	9.53	=AVERAGE(B132:B141)	=AVERAGE(C132:C141)

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
142	2004	13.74	9.32	=AVERAGE(B133:B142)	=AVERAGE(C133:C142)
143	2005	14.38	9.7	=AVERAGE(B134:B143)	=AVERAGE(C134:C143)
144	2006	13.99	9.53	=AVERAGE(B135:B144)	=AVERAGE(C135:C144)
145	2007	14.99	9.73	=AVERAGE(B136:B145)	=AVERAGE(C136:C145)
146	2008	14.11	9.43	=AVERAGE(B137:B146)	=AVERAGE(C137:C146)
147	2009	14.65	9.51	=AVERAGE(B138:B147)	=AVERAGE(C138:C147)
148	2010	14.23	9.7	=AVERAGE(B139:B148)	=AVERAGE(C139:C148)
149	2011	14.19	9.52	=AVERAGE(B140:B149)	=AVERAGE(C140:C149)
150	2012	14.27	9.51	=AVERAGE(B141:B150)	=AVERAGE(C141:C150)
151	2013	14.74	9.61	=AVERAGE(B142:B151)	=AVERAGE(C142:C151)

Part B: Output derived from function AVERAGE in Excel:

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
2	1864	13.01	7.98		
3	1865	12.78	8.18		
4	1866	13.36	8.29		
5	1867	13.37	8.44		
6	1868	13.31	8.25		
7	1869	13.18	8.43		
8	1870	13.3	8.2		
9	1871	13.5	8.12		
10	1872	13.4	8.19		
11	1873	13.47	8.35	13.27	8.24
12	1874	12.96	8.43	13.26	8.29
13	1875	13.09	7.86	13.29	8.26
14	1876	13.22	8.08	13.28	8.24
15	1877	13.1	8.54	13.25	8.25
16	1878	13.34	8.83	13.26	8.30
17	1879	13.02	8.17	13.24	8.28
18	1880	13.4	8.12	13.25	8.27
19	1881	13.1	8.27	13.21	8.28
20	1882	13.34	8.13	13.20	8.28
21	1883	13.42	7.98	13.20	8.24

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
22	1884	12.87	7.77	13.19	8.18
23	1885	13.01	7.92	13.18	8.18
24	1886	13.03	7.95	13.16	8.17
25	1887	13.47	7.91	13.20	8.11
26	1888	13.36	8.09	13.20	8.03
27	1889	13.54	8.32	13.25	8.05
28	1890	13.6	7.97	13.27	8.03
29	1891	13.11	8.02	13.28	8.01
30	1892	12.93	8.07	13.23	8.00
31	1893	13.23	8.06	13.22	8.01
32	1894	13.49	8.16	13.28	8.05
33	1895	13.53	8.15	13.33	8.07
34	1896	13.19	8.21	13.35	8.10
35	1897	13.11	8.29	13.31	8.13
36	1898	13.97	8.18	13.37	8.14
37	1899	13.24	8.4	13.34	8.15
38	1900	12.98	8.5	13.28	8.20
39	1901	13.33	8.54	13.30	8.26
40	1902	13.35	8.3	13.34	8.28
41	1903	13.18	8.22	13.34	8.30

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
42	1904	13.19	8.09	13.31	8.29
43	1905	12.74	8.23	13.23	8.30
44	1906	13.41	8.38	13.25	8.31
45	1907	13.1	7.95	13.25	8.28
46	1908	13.51	8.19	13.20	8.28
47	1909	12.62	8.18	13.14	8.26
48	1910	13.47	8.22	13.19	8.23
49	1911	13.13	8.18	13.17	8.19
50	1912	13.16	8.17	13.15	8.18
51	1913	13.12	8.3	13.15	8.19
52	1914	14.13	8.59	13.24	8.24
53	1915	13.13	8.59	13.28	8.28
54	1916	13.02	8.23	13.24	8.26
55	1917	13	8.02	13.23	8.27
56	1918	13.44	8.13	13.22	8.26
57	1919	13.87	8.38	13.35	8.28
58	1920	13.25	8.36	13.33	8.30
59	1921	13.96	8.57	13.41	8.33
60	1922	13.34	8.41	13.43	8.36
61	1923	13.21	8.42	13.44	8.37

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
62	1924	12.51	8.51	13.27	8.36
63	1925	13.02	8.53	13.26	8.36
64	1926	13.48	8.73	13.31	8.41
65	1927	13.18	8.52	13.33	8.46
66	1928	13.45	8.63	13.33	8.51
67	1929	12.62	8.24	13.20	8.49
68	1930	13.61	8.63	13.24	8.52
69	1931	12.73	8.72	13.12	8.53
70	1932	12.89	8.71	13.07	8.56
71	1933	13.06	8.34	13.06	8.56
72	1934	13.59	8.63	13.16	8.57
73	1935	13.02	8.52	13.16	8.57
74	1936	13.26	8.55	13.14	8.55
75	1937	13.45	8.7	13.17	8.57
76	1938	13.76	8.86	13.20	8.59
77	1939	13.41	8.76	13.28	8.64
78	1940	13.36	8.76	13.25	8.66
79	1941	13.16	8.77	13.30	8.66
80	1942	13.69	8.73	13.38	8.66
81	1943	12.68	8.76	13.34	8.70

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
82	1944	13.05	8.85	13.28	8.73
83	1945	13	8.58	13.28	8.73
84	1946	12.63	8.68	13.22	8.75
85	1947	13.47	8.8	13.22	8.76
86	1948	12.81	8.75	13.13	8.74
87	1949	12.42	8.59	13.03	8.73
88	1950	13.42	8.37	13.03	8.69
89	1951	13.56	8.63	13.07	8.67
90	1952	12.94	8.64	13.00	8.67
91	1953	13.31	8.87	13.06	8.68
92	1954	13.32	8.56	13.09	8.65
93	1955	13.24	8.63	13.11	8.65
94	1956	13.06	8.28	13.16	8.61
95	1957	13.05	8.73	13.11	8.61
96	1958	12.99	8.77	13.13	8.61
97	1959	13.79	8.73	13.27	8.62
98	1960	13.17	8.58	13.24	8.64
99	1961	14.33	8.8	13.32	8.66
100	1962	13.55	8.75	13.38	8.67
101	1963	13.51	8.86	13.40	8.67

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
102	1964	12.88	8.41	13.36	8.65
103	1965	13.32	8.53	13.37	8.64
104	1966	13.1	8.6	13.37	8.68
105	1967	13.52	8.7	13.42	8.67
106	1968	13.62	8.52	13.48	8.65
107	1969	13.39	8.6	13.44	8.64
108	1970	13.12	8.7	13.43	8.65
109	1971	13.58	8.6	13.36	8.63
110	1972	13.73	8.5	13.38	8.60
111	1973	13.69	8.95	13.40	8.61
112	1974	13.82	8.47	13.49	8.62
113	1975	13.9	8.74	13.55	8.64
114	1976	13.55	8.35	13.59	8.61
115	1977	13.5	8.85	13.59	8.63
116	1978	13.48	8.69	13.58	8.65
117	1979	13.9	8.73	13.63	8.66
118	1980	14.12	8.98	13.73	8.69
119	1981	14.26	9.17	13.80	8.74
120	1982	14.03	8.64	13.83	8.76
121	1983	13.72	9.03	13.83	8.77

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
122	1984	13.25	8.69	13.77	8.79
123	1985	13.7	8.66	13.75	8.78
124	1986	13.19	8.83	13.72	8.83
125	1987	13.47	8.99	13.71	8.84
126	1988	14.53	9.2	13.82	8.89
127	1989	13.86	8.92	13.81	8.91
128	1990	14.16	9.23	13.82	8.94
129	1991	13.77	9.18	13.77	8.94
130	1992	13.31	8.84	13.70	8.96
131	1993	13.81	8.87	13.71	8.94
132	1994	13.52	9.04	13.73	8.98
133	1995	13.14	9.35	13.68	9.05
134	1996	13.05	9.04	13.66	9.07
135	1997	13.93	9.2	13.71	9.09
136	1998	13.61	9.52	13.62	9.12
137	1999	14.2	9.29	13.65	9.16
138	2000	14.32	9.2	13.67	9.15
139	2001	14.18	9.41	13.71	9.18
140	2002	14.08	9.57	13.78	9.25
141	2003	13.99	9.53	13.80	9.32

	A	B	C	D	E
1	Year	Melbourne avg_temp	Global avg_temp	Melbourne Moving Average	Global Moving Average
142	2004	13.74	9.32	13.82	9.34
143	2005	14.38	9.7	13.95	9.38
144	2006	13.99	9.53	14.04	9.43
145	2007	14.99	9.73	14.15	9.48
146	2008	14.11	9.43	14.20	9.47
147	2009	14.65	9.51	14.24	9.49
148	2010	14.23	9.7	14.23	9.54
149	2011	14.19	9.52	14.24	9.55
150	2012	14.27	9.51	14.25	9.55
151	2013	14.74	9.61	14.33	9.56

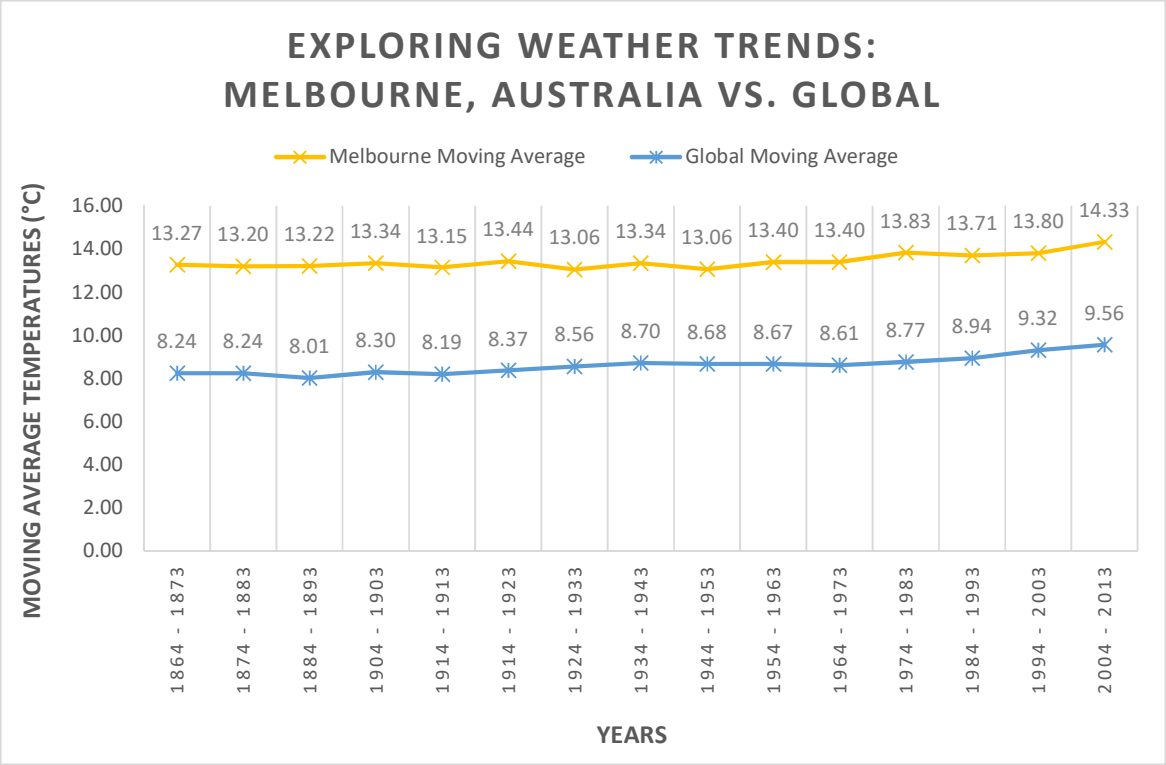
Key considerations

Key considerations when deciding how to visualize the trends:

1. The years used to compare the moving average of temperatures
2. World events that may have influenced the charted temperatures

Line chart

Below is the line chart depicting the moving average temperatures trends for Melbourne, Australia and globally.



Observations

1. Melbourne, Australia has been hotter compared to the global average. The average temperatures in Melbourne have been consistently higher than the global average temperatures over the period of 150 years
2. Years *1914 - 1923* show an incline on average temperatures for both Melbourne and global average. This could be a by-product of World War 1 (28 July 1914 – 11 November 1918)[1]
3. Years *1934 - 1943* illustrate an increase on average temperatures for both Melbourne and globally. This could be due to the aftereffect of World War 2 (1 September 1939 – 2 September 1945)[2]
4. Years *1964 - 1973* show that the global average temperature dipped by 0.06 °C whilst Melbourne's average temperature remains the same as the prior decade at 13.40 °C. This could be due to "Global Cooling" [3] theory with its veracity still being debated up to present time.
5. The overall trend indicates that the average temperatures for both Melbourne and globally have been rising and the world is getting consistently hotter over the last 150 years

[1] https://en.wikipedia.org/wiki/World_War_I
[2] https://en.wikipedia.org/wiki/World_War_II
[3] https://en.wikipedia.org/wiki/Global_cooling