EXPLORE WEATHER TRENDS

- Extract the data:
  1. First, I write SQL queries to extract three CSV files from the database: city_data, city_list, global_data

     Queries:
     - SELECT * FROM CITY_LIST
     - SELECT * FROM CITY_DATA
     - SELECT * FROM GLOBAL_DATA

city_list

city	country
Abidjan	Côte D'Ivoire
Abu Dhabi	United Arab Emirates
Abuja	Nigeria
Accra	Ghana
Adana	Turkey
Adelaide	Australia
Agra	India
Ahmadabad	India
Albuquerque	United States
Alexandria	Egypt
Alexandria	United States
Algiers	Algeria

city_data

year	city	country	avg_temp
1849	Abidjan	Côte D'Ivoire	25.58
1850	Abidjan	Côte D'Ivoire	25.52
1851	Abidjan	Côte D'Ivoire	25.67
1852	Abidjan	Côte D'Ivoire	
1853	Abidjan	Côte D'Ivoire	
1854	Abidjan	Côte D'Ivoire	
1855	Abidjan	Côte D'Ivoire	
1856	Abidjan	Côte D'Ivoire	26.28
1857	Abidjan	Côte D'Ivoire	25.17
1858	Abidjan	Côte D'Ivoire	25.49
1859	Abidjan	Côte D'Ivoire	25.92
1860	Abidjan	Côte D'Ivoire	25.46
1861	Abidjan	Côte D'Ivoire	25.67

global_data

year	avg_temp
1750	8.72
1751	7.98
1752	5.78
1753	8.39
1754	8.47
1755	8.36
1756	8.85
1757	9.02
1758	6.74
1759	7.99
1760	7.19
1761	8.77

- Create charts:
  1. I use Excel to calculate 25 years moving average (25-Y MA) of temperature (start in 1875) for both Los Angeles, USA and global using AVERAGE Excel function. I attach how I calculate 25-Y MA of global data below.

     - Los Angeles, CA Data

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E36497   =AVERAGE(D36451:D36497)

	A	B	C	D	E	F
1	year	city	country	avg_temp	25-Y MA	
36450	1849	Los Angeles	United States	15.71		
36451	1850	Los Angeles	United States	15.28		
36452	1851	Los Angeles	United States	15.53		
36453	1852	Los Angeles	United States	15.61		
36454	1853	Los Angeles	United States	16.27		
36455	1854	Los Angeles	United States	15.74		
36457	1855	Los Angeles	United States	15.94		
36459	1856	Los Angeles	United States	15.52		
36461	1857	Los Angeles	United States	16.19		
36463	1858	Los Angeles	United States	15.67		
36465	1859	Los Angeles	United States	15.29		
36467	1860	Los Angeles	United States	15.41		
36469	1861	Los Angeles	United States	16.51		
36471	1862	Los Angeles	United States	16.05		
36473	1863	Los Angeles	United States	15.88		
36475	1864	Los Angeles	United States	16.62		
36477	1865	Los Angeles	United States	15.89		
36479	1866	Los Angeles	United States	16.33		
36481	1867	Los Angeles	United States	16.51		
36483	1868	Los Angeles	United States	16.09		
36485	1869	Los Angeles	United States	16.05		
36487	1870	Los Angeles	United States	15.64		
36489	1871	Los Angeles	United States	15.89		
36491	1872	Los Angeles	United States	15.66		
36493	1873	Los Angeles	United States	15.7		
36495	1874	Los Angeles	United States	15.33		
36497	1875	Los Angeles	United States	19	14.11148936	
36499	1876	Los Angeles	United States	15.7	14.05361702	
36501	1877	Los Angeles	United States	16.24	13.99553191	
36503	1878	Los Angeles	United States	15.44	14.03808511	
36505	1879	Los Angeles	United States	15.55	14.04468085	
36507	1880	Los Angeles	United States	14.36	14.0306383	
36509	1881	Los Angeles	United States	15.65	14.01893617	
36511	1882	Los Angeles	United States	14.85	14.0006383	
36513	1883	Los Angeles	United States	15.52	14.00382979	
36515	1884	Los Angeles	United States	15.28	14.00191489	
36517	1885	Los Angeles	United States	16.44	13.99978723	
36519	1886	Los Angeles	United States	15.74	14.00510638	
36521	1887	Los Angeles	United States	15.62	14	
36523	1888	Los Angeles	United States	15.91	13.98297872	

city_data

- Global Data

C127 | f_x | =AVERAGE(B102:B127)

	A	B	C	D	E
101	1849	7.98			
102	1850	7.9			
103	1851	8.18			
104	1852	8.1			
105	1853	8.04			
106	1854	8.21			
107	1855	8.11			
108	1856	8			
109	1857	7.76			
110	1858	8.1			
111	1859	8.25			
112	1860	7.96			
113	1861	7.85			
114	1862	7.56			
115	1863	8.11			
116	1864	7.98			
117	1865	8.18			
118	1866	8.29			
119	1867	8.44			
120	1868	8.25			
121	1869	8.43			
122	1870	8.2			
123	1871	8.12			
124	1872	8.19			
125	1873	8.35			
126	1874	8.43			
127	1875	8.36	8.10961538		
128	1876	8.08	8.11653846		
129	1877	8.54	8.13038462		
130	1878	8.83	8.15846154		
131	1879	8.17	8.16346154		
132	1880	8.12	8.16		
133	1881	8.27	8.16615385		
134	1882	8.13	8.17115385		
135	1883	7.98	8.17961538		
136	1884	7.77	8.16692308		
137	1885	7.92	8.15423077		
138	1886	7.95	8.15384615		
139	1887	7.91	8.15615385		
140	1888	8.09	8.17653846		
141	1889	8.32	8.18461538		
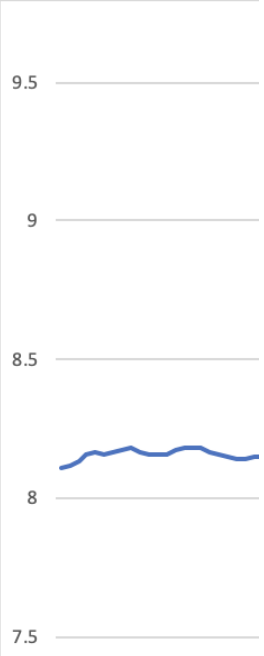
2. Next, I create line charts for Los Angeles data and global data.

- Los Angeles

Los Angeles, CA - Temperature 25 Years Moving Averages

- Global

Global Temperature 25 Years Moving Averages
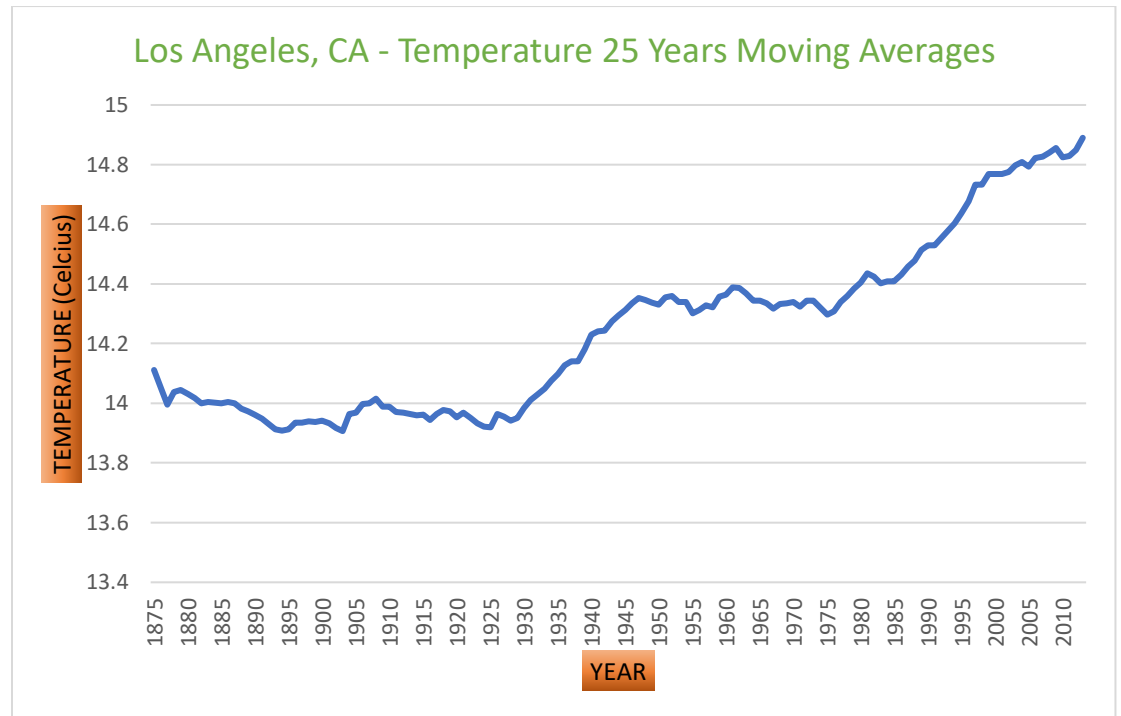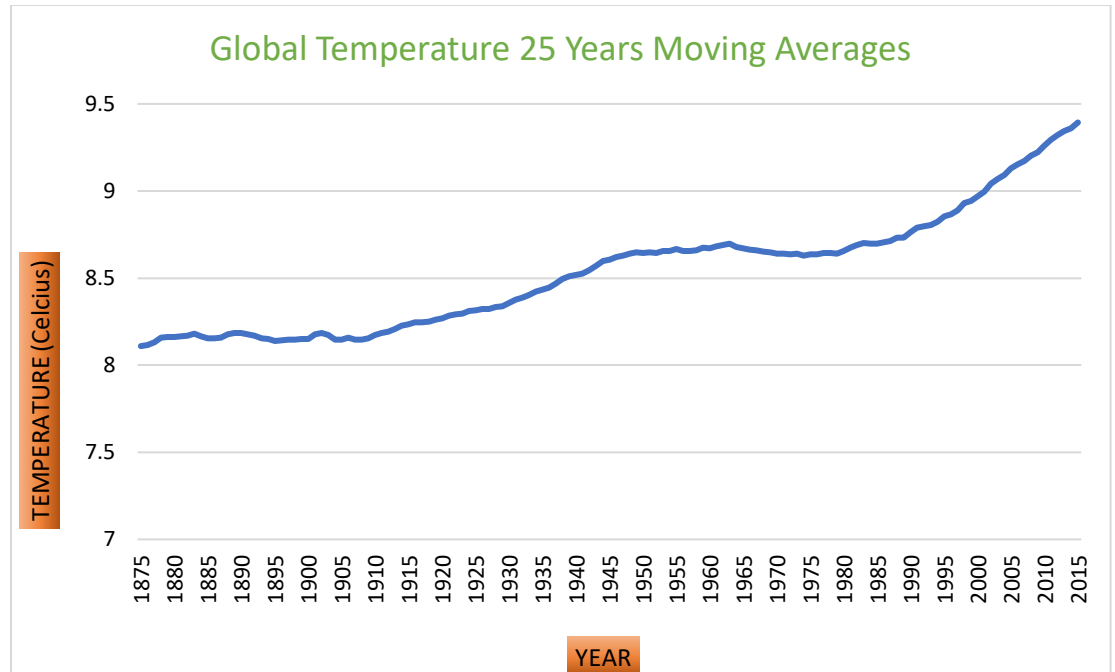
- Los Angeles and Global Data

Los Angeles, CA and Global Data - - Temperature 25 Years Moving Averages
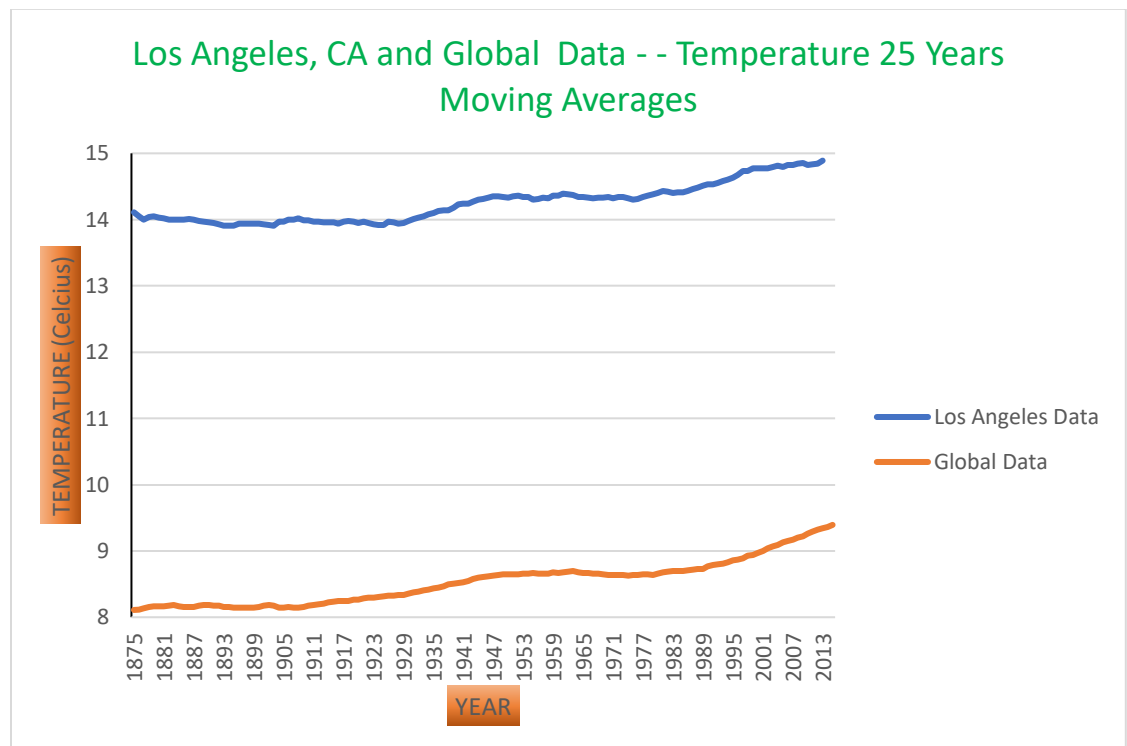
- Observations:
    1. My city, Los Angeles, is warmer on average compared to the global average.
       (based on the graphs)

2. I can see that in 50 years (1875-1925), the average temperature in Los Angeles was consistent in 13.90 ~ 14.00 Celsius range. The global average temperature was consistent in 30 years (1875-1905) around 8.14 ~ 8.17 Celsius range.
3. In 25 years (from 1825-1950), the Los Angeles temperature average was increasing consistently from low 14.00 Celsius to 14.30 Celsius. In 50 years (1905-1955), global temperature average was increasing consistently from low 8.15 Celsius to 8.64 Celsius
4. In 25 years (1950-1975), the average temperature in Los Angeles was consistent in 14.31 ~ 14.34 Celsius range. We can see the same for global average temperature was; It was consistent in 25 years (1950-1975) around 8.63 ~ 8.66 Celsius range.
5. Since 1975, we can see that Los Angeles and the global average temperature is consistently increasing.
6. In my observation, I can see that the rise of the global average temperature is more quickly and more consistent than my city, Los Angeles. We can see the result of the global warming trend based on this data.