

## Project 01: Explore Weather Trends

After using SQL to query all the cities listed in the city\_list table where country = 'Algeria'. I found Algiers to be the only city and so I used it to query the global and my city's average temperature as follows :

### 1- The SQL query:


```
SELECT    g.year, c.country , c.city, g.avg_temp as global_avg_temp , c.avg_temp as city_avg_temp
FROM      city_data c
JOIN      global_data g
ON        c.year = g.year
WHERE     c.city = 'Algiers'
```

Input

HISTORY ▾

MENU ▾

SCHEMA



year

city

country

avg\_temp

city\_list ▾

1 SELECT g.year, c.country, c.city, g.avg\_temp as global\_avg\_temp , c.avg\_temp as city\_avg\_temp

2 FROM city\_data c

3 join global\_data g

4 on c.year = g.year


5 where c.city = 'Algiers'

6

Success!

EVALUATE

Output 261 results

 Download CSV

year	country	city	global_avg_temp	city_avg_temp
1753	Algeria	Algiers	8.39	16.44
1754	Algeria	Algiers	8.47	16.48
1755	Algeria	Algiers	8.36	16.19
1756	Algeria	Algiers	8.85	16.58

### 2- The Data Set :

Imported as a csv from the SQL query and transformed as a table after calculating the moving average.  
The moving Average was calculated for **10 years** of the global and Algiers city average temperature.  
The formula used to calculate the moving average is : =Average(D2,D11) and then copied to the next cells.

year	country	city	global_avg_temp	Algiers_avg_temp	global_10_years_ma	Algiers_10_years_ma
1753	Algeria	Algiers	8.39	16.44		
1754	Algeria	Algiers	8.47	16.48		
1755	Algeria	Algiers	8.36	16.19		
1756	Algeria	Algiers	8.85	16.58		
1757	Algeria	Algiers	9.02	16.37		
1758	Algeria	Algiers	6.74	15.18		
1759	Algeria	Algiers	7.99	16.31		
1760	Algeria	Algiers	7.19	15.87		
1761	Algeria	Algiers	8.77	16.55		
1762	Algeria	Algiers	8.61	16.51	8.239	16.248
1763	Algeria	Algiers	7.5	15.85	8.15	16.189
1764	Algeria	Algiers	8.4	16.56	8.143	16.197
1765	Algeria	Algiers	8.25	16.54	8.132	16.232
1766	Algeria	Algiers	8.41	16.49	8.088	16.223
1767	Algeria	Algiers	8.22	16.31	8.008	16.217
1768	Algeria	Algiers	6.78	15.53	8.012	16.252
1769	Algeria	Algiers	7.69	16.25	7.982	16.246
1770	Algeria	Algiers	7.69	16.13	8.032	16.272
1771	Algeria	Algiers	7.85	16.65	7.94	16.282
1772	Algeria	Algiers	8.19	17.45	7.898	16.376
1773	Algeria	Algiers	8.22	16.21	7.97	16.412
1774	Algeria	Algiers	8.77	16.78	8.007	16.434
1775	Algeria	Algiers	9.18	16.92	8.1	16.472
1776	Algeria	Algiers	8.3	16.36	8.089	16.459
1777	Algeria	Algiers	8.26	16.13	8.093	16.441
1778	Algeria	Algiers	8.54	16.59	8.269	16.547
1779	Algeria	Algiers	8.98	16.69	8.398	16.591
1780	Algeria	Algiers	9.43	17.2	8.572	16.698
1781	Algeria	Algiers	8.1	16.65	8.597	16.698
1782	Algeria	Algiers	7.9	15.99	8.568	16.552
1783	Algeria	Algiers	7.68	16.29	8.514	16.56
1784	Algeria	Algiers	7.86	16.25	8.423	16.507
1785	Algeria	Algiers	7.36	16	8.241	16.415
1786	Algeria	Algiers	8.26	16.43	8.237	16.422
1787	Algeria	Algiers	8.03	16.49	8.214	16.458
1788	Algeria	Algiers	8.45	16.99	8.205	16.498
1789	Algeria	Algiers	8.33	15.82	8.14	16.411
1790	Algeria	Algiers	7.98	16.53	7.995	16.344
1791	Algeria	Algiers	8.23	16.62	8.008	16.341
1792	Algeria	Algiers	8.09	16.44	8.027	16.386
1793	Algeria	Algiers	8.23	16.21	8.082	16.378
1794	Algeria	Algiers	8.53	16.27	8.149	16.38
1795	Algeria	Algiers	8.35	16.45	8.248	16.425
1796	Algeria	Algiers	8.27	16.42	8.249	16.424
1797	Algeria	Algiers	8.51	16.24	8.297	16.399
1798	Algeria	Algiers	8.67	16.5	8.319	16.35

1799	Algeria	Algiers	8.51	16.42	8.337	16.41
1800	Algeria	Algiers	8.48	16.99	8.387	16.456
1801	Algeria	Algiers	8.59	16.8	8.423	16.474
1802	Algeria	Algiers	8.58	17	8.472	16.53
1803	Algeria	Algiers	8.5	16.66	8.499	16.575
1804	Algeria	Algiers	8.84	17.03	8.53	16.651
1805	Algeria	Algiers	8.56	16.04	8.551	16.61
1806	Algeria	Algiers	8.43	16.5	8.567	16.618
1807	Algeria	Algiers	8.28	16.35	8.544	16.629
1808	Algeria	Algiers	7.63	15.36	8.44	16.515
1809	Algeria	Algiers	7.08	15.55	8.297	16.428
1810	Algeria	Algiers	6.92	15.49	8.141	16.278
1811	Algeria	Algiers	6.86	15.91	7.968	16.189
1812	Algeria	Algiers	7.05	15.31	7.815	16.02
1813	Algeria	Algiers	7.74	15.63	7.739	15.917
1814	Algeria	Algiers	7.59	15.18	7.614	15.732
1815	Algeria	Algiers	7.24	15.82	7.482	15.71
1816	Algeria	Algiers	6.94	15.16	7.333	15.576
1817	Algeria	Algiers	6.98	16.07	7.203	15.548
1818	Algeria	Algiers	7.83	16.43	7.223	15.655
1819	Algeria	Algiers	7.37	15.97	7.252	15.697
1820	Algeria	Algiers	7.62	16.07	7.322	15.755
1821	Algeria	Algiers	8.09	16.24	7.445	15.788
1822	Algeria	Algiers	8.19	16.68	7.559	15.925
1823	Algeria	Algiers	7.72	15.96	7.557	15.958
1824	Algeria	Algiers	8.55	16.22	7.653	16.062
1825	Algeria	Algiers	8.39	16.33	7.768	16.113
1826	Algeria	Algiers	8.36	16.11	7.91	16.208
1827	Algeria	Algiers	8.81	16.11	8.093	16.212
1828	Algeria	Algiers	8.17	16.62	8.127	16.231
1829	Algeria	Algiers	7.94	15.92	8.184	16.226
1830	Algeria	Algiers	8.52	16.4	8.274	16.259
1831	Algeria	Algiers	7.64	16.42	8.229	16.277
1832	Algeria	Algiers	7.45	16.16	8.155	16.225
1833	Algeria	Algiers	8.01	16.01	8.184	16.23
1834	Algeria	Algiers	8.15	16.56	8.144	16.264
1835	Algeria	Algiers	7.39	15.61	8.044	16.192
1836	Algeria	Algiers	7.7	15.82	7.978	16.163
1837	Algeria	Algiers	7.38	15.67	7.835	16.119
1838	Algeria	Algiers	7.51	16.23	7.769	16.08
1839	Algeria	Algiers	7.63	16.13	7.738	16.101
1840	Algeria	Algiers	7.8	16.21	7.666	16.082
1841	Algeria	Algiers	7.69	16.39	7.671	16.079
1842	Algeria	Algiers	8.02	16.19	7.728	16.082
1843	Algeria	Algiers	8.17	16.28	7.744	16.109
1844	Algeria	Algiers	7.65	16.26	7.694	16.079
1845	Algeria	Algiers	7.85	16.03	7.74	16.121

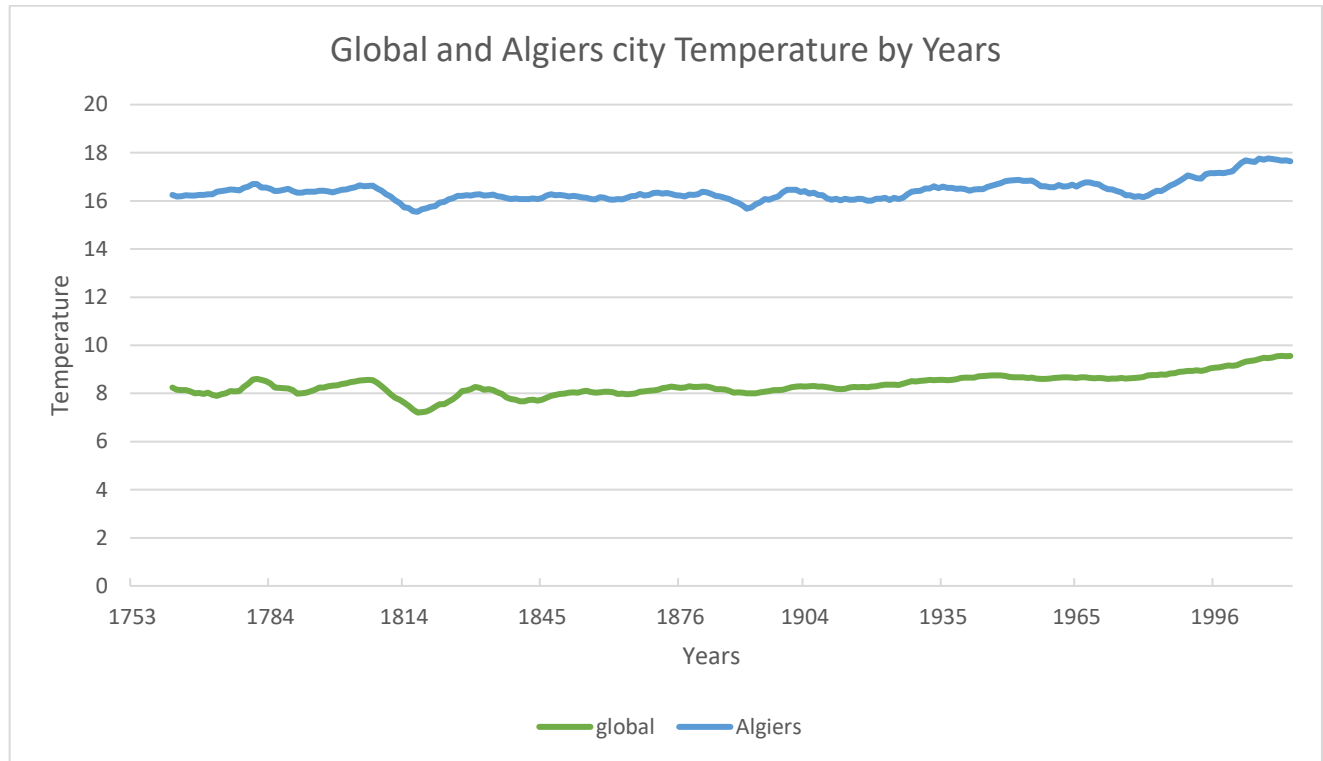
1846	Algeria	Algiers	8.55	16.84	7.825	16.223
1847	Algeria	Algiers	8.09	16.16	7.896	16.272
1848	Algeria	Algiers	7.98	15.91	7.943	16.24
1849	Algeria	Algiers	7.98	16.26	7.978	16.253
1850	Algeria	Algiers	7.9	15.95	7.988	16.227
1851	Algeria	Algiers	8.18	15.91	8.037	16.179
1852	Algeria	Algiers	8.1	16.51	8.045	16.211
1853	Algeria	Algiers	8.04	16.05	8.032	16.188
1854	Algeria	Algiers	8.21	15.86	8.088	16.148
1855	Algeria	Algiers	8.11	15.91	8.114	16.136
1856	Algeria	Algiers	8	16.27	8.059	16.079
1857	Algeria	Algiers	7.76	16.03	8.026	16.066
1858	Algeria	Algiers	8.1	16.81	8.038	16.156
1859	Algeria	Algiers	8.25	15.96	8.065	16.126
1860	Algeria	Algiers	7.96	15.31	8.071	16.062
1861	Algeria	Algiers	7.85	15.84	8.038	16.055
1862	Algeria	Algiers	7.56	16.7	7.984	16.074
1863	Algeria	Algiers	8.11	15.98	7.991	16.067
1864	Algeria	Algiers	7.98	16.51	7.968	16.132
1865	Algeria	Algiers	8.18	16.5	7.975	16.191
1866	Algeria	Algiers	8.29	16.49	8.004	16.213
1867	Algeria	Algiers	8.44	16.77	8.072	16.287
1868	Algeria	Algiers	8.25	16.18	8.087	16.224
1869	Algeria	Algiers	8.43	16.2	8.105	16.248
1870	Algeria	Algiers	8.2	16.09	8.129	16.326
1871	Algeria	Algiers	8.12	15.98	8.156	16.34
1872	Algeria	Algiers	8.19	16.35	8.219	16.305
1873	Algeria	Algiers	8.35	16.21	8.243	16.328
1874	Algeria	Algiers	8.43	16.12	8.288	16.289
1875	Algeria	Algiers	7.86	15.98	8.256	16.237
1876	Algeria	Algiers	8.08	16.37	8.235	16.225
1877	Algeria	Algiers	8.54	16.41	8.245	16.189
1878	Algeria	Algiers	8.83	16.9	8.303	16.261
1879	Algeria	Algiers	8.17	16.03	8.277	16.244
1880	Algeria	Algiers	8.12	16.37	8.269	16.272
1881	Algeria	Algiers	8.27	17.05	8.284	16.379
1882	Algeria	Algiers	8.13	16.09	8.278	16.353
1883	Algeria	Algiers	7.98	15.56	8.241	16.288
1884	Algeria	Algiers	7.77	15.33	8.175	16.209
1885	Algeria	Algiers	7.92	15.78	8.181	16.189
1886	Algeria	Algiers	7.95	15.84	8.168	16.136
1887	Algeria	Algiers	7.91	15.86	8.105	16.081
1888	Algeria	Algiers	8.09	15.86	8.031	15.977
1889	Algeria	Algiers	8.32	15.45	8.046	15.919
1890	Algeria	Algiers	7.97	15.22	8.031	15.804
1891	Algeria	Algiers	8.02	15.84	8.006	15.683
1892	Algeria	Algiers	8.07	16.6	8	15.734

1893	Algeria	Algiers	8.06	16.89	8.008	15.867
1894	Algeria	Algiers	8.16	16.15	8.047	15.949
1895	Algeria	Algiers	8.15	17.11	8.07	16.082
1896	Algeria	Algiers	8.21	15.5	8.096	16.048
1897	Algeria	Algiers	8.29	16.73	8.134	16.135
1898	Algeria	Algiers	8.18	16.32	8.143	16.181
1899	Algeria	Algiers	8.4	17.22	8.151	16.358
1900	Algeria	Algiers	8.5	16.26	8.204	16.462
1901	Algeria	Algiers	8.54	15.87	8.256	16.465
1902	Algeria	Algiers	8.3	16.61	8.279	16.466
1903	Algeria	Algiers	8.22	15.94	8.295	16.371
1904	Algeria	Algiers	8.09	16.55	8.288	16.411
1905	Algeria	Algiers	8.23	16.06	8.296	16.306
1906	Algeria	Algiers	8.38	15.8	8.313	16.336
1907	Algeria	Algiers	7.95	15.85	8.279	16.248
1908	Algeria	Algiers	8.19	16.24	8.28	16.24
1909	Algeria	Algiers	8.18	15.89	8.258	16.107
1910	Algeria	Algiers	8.22	15.71	8.23	16.052
1911	Algeria	Algiers	8.18	16.22	8.194	16.087
1912	Algeria	Algiers	8.17	16.02	8.181	16.028
1913	Algeria	Algiers	8.3	16.62	8.189	16.096
1914	Algeria	Algiers	8.59	16.06	8.239	16.047
1915	Algeria	Algiers	8.59	16.15	8.275	16.056
1916	Algeria	Algiers	8.23	16.16	8.26	16.092
1917	Algeria	Algiers	8.02	15.64	8.267	16.071
1918	Algeria	Algiers	8.13	15.66	8.261	16.013
1919	Algeria	Algiers	8.38	15.81	8.281	16.005
1920	Algeria	Algiers	8.36	16.6	8.295	16.094
1921	Algeria	Algiers	8.57	16.16	8.334	16.088
1922	Algeria	Algiers	8.41	16.47	8.358	16.133
1923	Algeria	Algiers	8.42	15.63	8.37	16.034
1924	Algeria	Algiers	8.51	16.95	8.362	16.123
1925	Algeria	Algiers	8.53	15.62	8.356	16.07
1926	Algeria	Algiers	8.73	16.8	8.406	16.134
1927	Algeria	Algiers	8.52	17	8.456	16.27
1928	Algeria	Algiers	8.63	16.74	8.506	16.378
1929	Algeria	Algiers	8.24	16.06	8.492	16.403
1930	Algeria	Algiers	8.63	16.84	8.519	16.427
1931	Algeria	Algiers	8.72	17.09	8.534	16.52
1932	Algeria	Algiers	8.71	16.41	8.564	16.514
1933	Algeria	Algiers	8.34	16.59	8.556	16.61
1934	Algeria	Algiers	8.63	16.08	8.568	16.523
1935	Algeria	Algiers	8.52	16.32	8.567	16.593
1936	Algeria	Algiers	8.55	16.25	8.549	16.538
1937	Algeria	Algiers	8.7	17.04	8.567	16.542
1938	Algeria	Algiers	8.86	16.32	8.59	16.5
1939	Algeria	Algiers	8.76	16.2	8.642	16.514

1940	Algeria	Algiers	8.76	16.6	8.655	16.49
1941	Algeria	Algiers	8.77	16.4	8.66	16.421
1942	Algeria	Algiers	8.73	16.95	8.662	16.475
1943	Algeria	Algiers	8.76	16.77	8.704	16.493
1944	Algeria	Algiers	8.85	16.08	8.726	16.493
1945	Algeria	Algiers	8.58	17.23	8.732	16.584
1946	Algeria	Algiers	8.68	16.8	8.745	16.639
1947	Algeria	Algiers	8.8	17.51	8.755	16.686
1948	Algeria	Algiers	8.75	16.82	8.744	16.736
1949	Algeria	Algiers	8.59	17.03	8.727	16.819
1950	Algeria	Algiers	8.37	16.88	8.688	16.847
1951	Algeria	Algiers	8.63	16.56	8.674	16.863
1952	Algeria	Algiers	8.64	17.09	8.665	16.877
1953	Algeria	Algiers	8.87	16.34	8.676	16.834
1954	Algeria	Algiers	8.56	16.12	8.647	16.838
1955	Algeria	Algiers	8.63	17.29	8.652	16.844
1956	Algeria	Algiers	8.28	15.75	8.612	16.739
1957	Algeria	Algiers	8.73	16.15	8.605	16.603
1958	Algeria	Algiers	8.77	16.87	8.607	16.608
1959	Algeria	Algiers	8.73	16.69	8.621	16.574
1960	Algeria	Algiers	8.58	16.78	8.642	16.564
1961	Algeria	Algiers	8.8	17.49	8.659	16.657
1962	Algeria	Algiers	8.75	16.5	8.67	16.598
1963	Algeria	Algiers	8.86	16.43	8.669	16.607
1964	Algeria	Algiers	8.41	16.77	8.654	16.672
1965	Algeria	Algiers	8.53	16.55	8.644	16.598
1966	Algeria	Algiers	8.6	16.79	8.676	16.702
1967	Algeria	Algiers	8.7	16.78	8.673	16.765
1968	Algeria	Algiers	8.52	16.87	8.648	16.765
1969	Algeria	Algiers	8.6	16.23	8.635	16.719
1970	Algeria	Algiers	8.7	16.53	8.647	16.694
1971	Algeria	Algiers	8.6	16.17	8.627	16.562
1972	Algeria	Algiers	8.5	15.8	8.602	16.492
1973	Algeria	Algiers	8.95	16.23	8.611	16.472
1974	Algeria	Algiers	8.47	16.11	8.617	16.406
1975	Algeria	Algiers	8.74	15.98	8.638	16.349
1976	Algeria	Algiers	8.35	15.65	8.613	16.235
1977	Algeria	Algiers	8.85	16.79	8.628	16.236
1978	Algeria	Algiers	8.69	16.19	8.645	16.168
1979	Algeria	Algiers	8.73	16.5	8.658	16.195
1980	Algeria	Algiers	8.98	16.19	8.686	16.161
1981	Algeria	Algiers	9.17	16.82	8.743	16.226
1982	Algeria	Algiers	8.64	16.83	8.757	16.329
1983	Algeria	Algiers	9.03	17.14	8.765	16.42
1984	Algeria	Algiers	8.69	16.03	8.787	16.412
1985	Algeria	Algiers	8.66	16.99	8.779	16.513
1986	Algeria	Algiers	8.83	16.82	8.827	16.63

1987	Algeria	Algiers	8.99	17.59	8.841	16.71
1988	Algeria	Algiers	9.2	17.32	8.892	16.823
1989	Algeria	Algiers	8.92	17.55	8.911	16.928
1990	Algeria	Algiers	9.23	17.48	8.936	17.057
1991	Algeria	Algiers	9.18	16.26	8.937	17.001
1992	Algeria	Algiers	8.84	16.27	8.957	16.945
1993	Algeria	Algiers	8.87	17	8.941	16.931
1994	Algeria	Algiers	9.04	17.88	8.976	17.116
1995	Algeria	Algiers	9.35	17.36	9.045	17.153
1996	Algeria	Algiers	9.04	16.76	9.066	17.147
1997	Algeria	Algiers	9.2	17.84	9.087	17.172
1998	Algeria	Algiers	9.52	17.14	9.119	17.154
1999	Algeria	Algiers	9.29	17.97	9.156	17.196
2000	Algeria	Algiers	9.2	17.9	9.153	17.238
2001	Algeria	Algiers	9.41	18.13	9.176	17.425
2002	Algeria	Algiers	9.57	17.85	9.249	17.583
2003	Algeria	Algiers	9.53	18.07	9.315	17.69
2004	Algeria	Algiers	9.32	17.38	9.343	17.64
2005	Algeria	Algiers	9.7	17.19	9.378	17.623
2006	Algeria	Algiers	9.53	18.13	9.427	17.76
2007	Algeria	Algiers	9.73	17.42	9.48	17.718
2008	Algeria	Algiers	9.43	17.55	9.471	17.759
2009	Algeria	Algiers	9.51	17.78	9.493	17.74
2010	Algeria	Algiers	9.7	17.59	9.543	17.709
2011	Algeria	Algiers	9.52	17.79	9.554	17.675
2012	Algeria	Algiers	9.51	17.91	9.548	17.681
2013	Algeria	Algiers	9.61	17.65	9.556	17.639

### 3- The Line Chart :



### 4- The Correlation :

The CORREL function was used in Excel to calculate the correlation coefficient between the global average temperature and Algiers city's temperature ( not the moving averages) :

=CORREL(D2:D262, E2:E262)

The result :

$$\rho = 0.719033306$$

The interpretation :

- The global average temperature and Algiers city temperature are positively correlated which means they have a positive relation.
- The coefficient of correlation is equal to 0.72 approx which means the relation between the two variables (The global average temperature and Algiers city temperature) is somehow strong.



## 5- My Observations :

1. Algiers is a much hotter city comparing to the global temprature. Its average temperature 16.43 C° is almost double the global temprature 8.36 C°.
2. The difference in temprature between Algiers and the Global average has been consistent over the years.
3. The changing in the average temprature of Algiers city through the years has been somehow parallel to the changing in the average temprature of the world. For example :  
in 1817 both Algiers and the world have witnessed a drop in the average temprature.
4. Over all, both in Algiers and the world, the average temperature seems to rise.
5. Since 1817, the big temperature drop, the world and Algiers are getting hotter and the temperature have never dropped to that extent again ( world : 7.20 , Algiers : 15.54)
6. The trend of a hotter world has been consistent over the years.