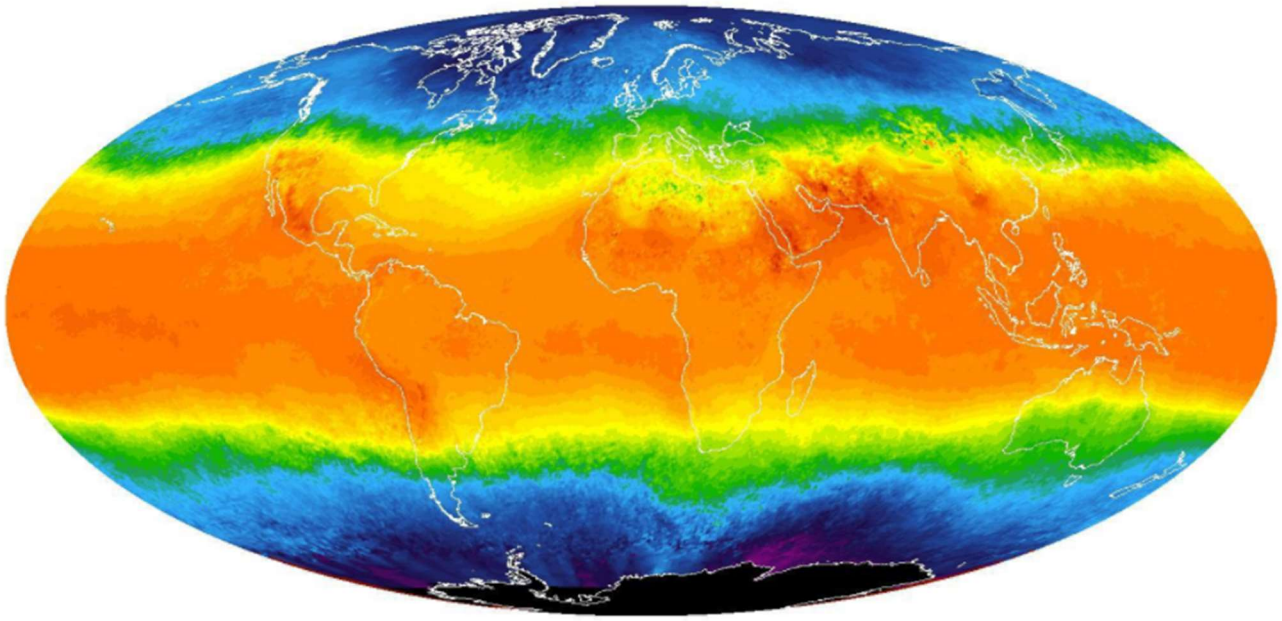

Project: Exploring Weather Trends

For Udacity Platform

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Date: Monday, May 20, 2019

Extract the data from database

Write a SQL query to extract the city level data. Export to CSV.
SELECT * FROM city_data WHERE country LIKE 'Saudi Arabia' AND city LIKE 'Riyadh'
Write a SQL query to extract the global data. Export to CSV.
SELECT * FROM global_data

Open CSV data files

In this project I use (Microsoft Excel 2016) to modify, perform calculations, and represent data.

Manipulate data on local city by (AVERAGE) Function

	A	B	C	D	E	F	G
1	year	city	country	avg_temp	7-Years-AVG	10-Years-AVG	Sparlines
11	1852	Riyadh	Saudi Arabia	24.85	24.72	23.07	
12	1853	Riyadh	Saudi Arabia	24.93	24.75	23.1	
13	1854	Riyadh	Saudi Arabia	24.72	24.75	24.26	
14	1855	Riyadh	Saudi Arabia	24.92	24.8	24.77	
15	1856	Riyadh	Saudi Arabia	24.57	24.77	24.75	
16	1857	Riyadh	Saudi Arabia	24.26	24.75	24.7	
17	1858	Riyadh	Saudi Arabia	25.01	24.75	24.74	
18	1859	Riyadh	Saudi Arabia	24.95	24.77	24.76	
19	1860	Riyadh	Saudi Arabia	24.94	24.77	24.82	
20	1861	Riyadh	Saudi Arabia	24.13	24.68	24.73	
21	1862	Riyadh	Saudi Arabia	23.77	24.52	24.62	
22	1863	Riyadh	Saudi Arabia	24.28	24.48	24.56	
23	1864	Riyadh	Saudi Arabia	25.03	24.59	24.59	
24	1865	Riyadh	Saudi Arabia	25.23	24.62	24.62	
25	1866	Riyadh	Saudi Arabia	24.92	24.61	24.65	
26	1867	Riyadh	Saudi Arabia	25.22	24.65	24.75	
27	1868	Riyadh	Saudi Arabia	25	24.78	24.75	
28	1869	Riyadh	Saudi Arabia	25.3	25	24.78	
29	1870	Riyadh	Saudi Arabia	25.02	25.1	24.79	
30	1871	Riyadh	Saudi Arabia	24.73	25.06	24.85	

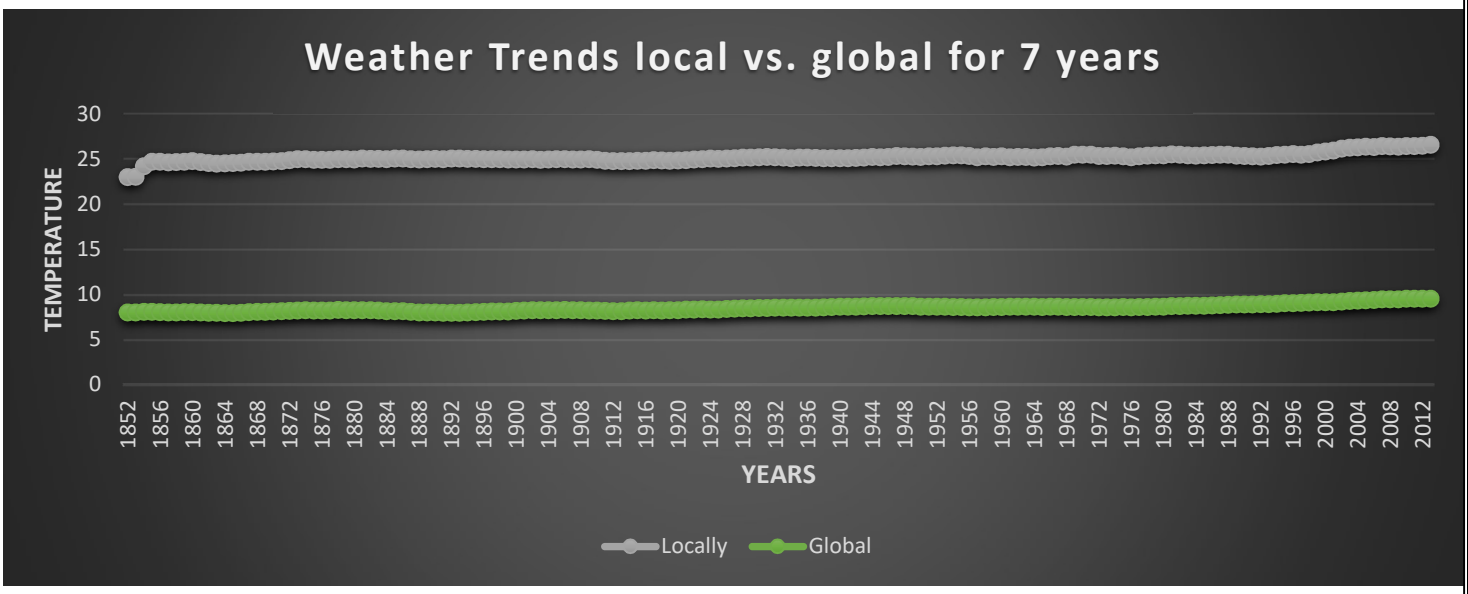
Manipulate data on global city by (AVERAGE) Function

	A	B	C	D	E
1	year	avg_temp	7-Years-AVG	10-Years-AVG	Sparlines
11	1759	7.99	8.26	8.03	
12	1760	7.19	8.09	7.88	
13	1761	8.77	8.13	7.96	
14	1762	8.61	8.17	8.24	
15	1763	7.50	7.97	8.15	
16	1764	8.40	7.89	8.14	
17	1765	8.25	8.10	8.13	
18	1766	8.41	8.16	8.09	
19	1767	8.22	8.31	8.01	
20	1768	6.78	8.02	8.01	
21	1769	7.69	7.89	7.98	
22	1770	7.69	7.92	8.03	
23	1771	7.85	7.84	7.94	
24	1772	8.19	7.83	7.90	
25	1773	8.22	7.81	7.97	
26	1774	8.77	7.88	8.01	
27	1775	9.18	8.23	8.10	
28	1776	8.30	8.31	8.09	
29	1777	8.26	8.40	8.09	
30	1778	8.54	8.49	8.27	

We observe that there is a time gap between the cities of Riyadh (locally) and other international cities. The monitoring was carried out for 164 years (locally) while the monitoring (globally) was for 265 years.

Therefore, the time period from 1852 to 2013 will be approved because it contains complete data, which is 161 years. The average has been approved for the first two periods (7 years) and the second (10 years).

Create Line Chart for (Weather trends locally vs. global for 7 Years)



We note from the table that the average of the highest temperature recorded locally was (26.83), the average of the lowest temperature recorded (24.48). We also note that the highest global average temperature has been recorded at (9.59), with the lowest temperature recorded (7.93).

Calculate (Max, Min, Difference) for 7 years

We can use formula or pivot table I use formula.

Calculate max locally =MAX(E11:E172)

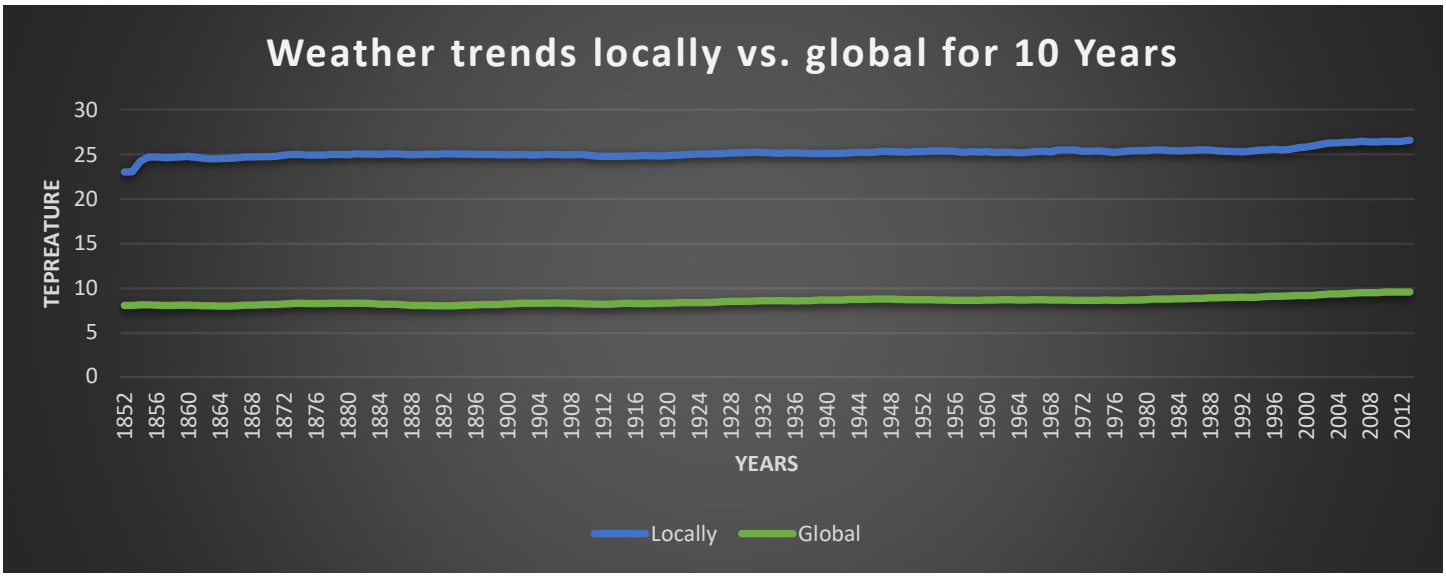
Calculate min locally =MIN(E11:E172)

Calculate max global =MAX(E11:E172)

Calculate min global =MAX(E11:E172)

7-year temperature comparison				
Local		Global		Difference
MAX	26.83	MAX	9.59	17.24
MIN	24.48	MIN	7.93	16.55

Create Line Chart for (Weather trends locally vs. global for 10 Years)



We note from the table that the average of the highest temperature recorded locally was (26.65), the average of the lowest temperature recorded (23.07). We also note that the highest global average temperature has been recorded at (9.56), with the lowest temperature recorded (7.69).

Calculate (Max, Min, Difference) for 10 years

We can use formula or pivot table I use formula.

Calculate max locally =MAX(E11:E172)

Calculate min locally =MIN(E11:E172)

Calculate max global =MAX(E11:E172)

Calculate min global =MAX(E11:E172)

10-year temperature comparison				
Local		Global		Difference
MAX	26.65	MAX	9.56	17.09
MIN	23.07	MIN	7.97	15.10

Observations

- The Riyadh is hotter than the global temperature

- The Riyadh and global temperature are simple decreases in the temperature.

- There is a slight difference between the average temperature and the lowest temperature at local and global level.

- The global moving average experiences fewer fluctuations than the local moving average in Riyadh.

- The global temperature levels have a smaller variance than the local temperature changes.