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# WEATHER TRENDS PROJECT

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**FIRST PROJECT**



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## Overview:

In this project, I have extracted the local temperature data in Abu Dhabi, United Arab Emirates and the global temperature data from Udacity database, and I made comparison between them to reach to a meaningful results.

## Goals:

- 1- Extract of local and global temperature data from Udacity database.
- 2- Export CSV files.
- 3- Make chart visualization for the extracted data.
- 4- Write observation based on chart.

## Tools Used:

- 1- SQL: to extract data from Udacity database.
- 2- Excel: to export CSV files and, use chart visualization.

## Step 1: Extraction of Data in From Temperature Database:

I learned from several sites how to write SQL quires as well as I watched many helpful videos to support my knowledge.

**First,** I wrote SQL query to see the available countries in the database.

```
SELECT * FROM city-list;
```

I found that Saudi Arabia is not included and I choose the nearest to Saudi Arabia which is United Arab Emirates.

```
SELECT* FROM city-data WHERE city= 'Abu Dhabi' and country= ' United Arab Emirates';
```

**Third,** I wrote SQL query to see the global temperature data.

```
SELECT * FROM global-data;
```

## Step 2: Convert CSVS files to EXCEL:

**I opened blank sheet in EXCEL and I import the CSVS files.**

### Step 3: Calculating the Moving Average.

**I tried 5,7,10 years period to determine the best moving average to smooth data.**

I calculate the moving average in Excel using **Average** function as shown:

## The Global Moving Average for 5,7,10 years.

L	K	J	I	H	G	F	E	D	C	B	A	
							5 Years moving Average	7 years moving Average	10 years moving Average	avg_temp	year	
										8.72	1750	1
										7.98	1751	2
										5.78	1752	3
										8.39	1753	4
							7.868			8.47	1754	5
							7.868			8.36	1755	6
							7.868	8.07		8.85	1756	7
							7.868	8.07		9.02	1757	8
							7.868	8.07		6.74	1758	9
							7.868	8.07		7.99	1759	10
							7.868	8.07	7.877	7.19	1760	11
							7.868	8.07	7.956	8.77	1761	12
							7.868	8.07	8.239	8.61	1762	13
							7.868	8.07	8.15	7.5	1763	14
							7.868	8.07	8.143	8.4	1764	15
							7.868	8.07	8.132	8.25	1765	16
							7.868	8.07	8.088	8.41	1766	17
							7.868	8.07	8.008	8.22	1767	18
							7.868	8.07	8.012	6.78	1768	19
							7.868	8.07	7.982	7.69	1769	20
							7.868	8.07	8.032	7.69	1770	21
							7.868	8.07	7.94	7.85	1771	22
							7.868	8.07	7.898	8.19	1772	23
							7.868	8.07	7.97	8.22	1773	24

### The Local Moving Average for 5,7,10 years.

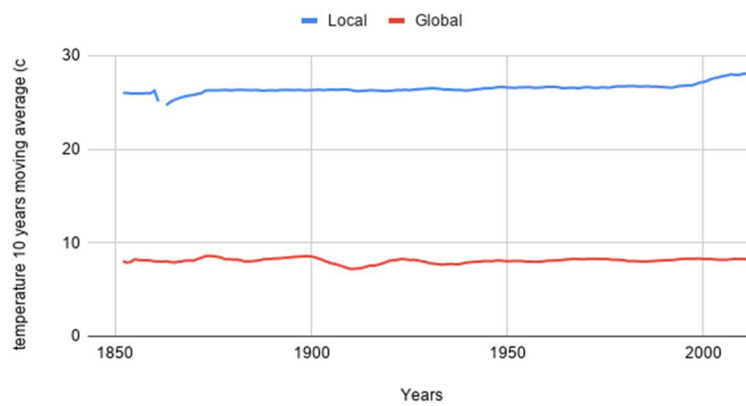
	N	M	L	K	J	I	H	G	F	E	D	C	B	A	1
								5 years moving average	7 years moving average	10 years moving average	avg. temp	country	city	year	
											26.04	United Arab Emirates	Abu Dhabi	1843	2
											26.26	United Arab Emirates	Abu Dhabi	1844	3
												United Arab Emirates	Abu Dhabi	1845	4
												United Arab Emirates	Abu Dhabi	1846	
								26.15				United Arab Emirates	Abu Dhabi	1847	6
								26.15			25.83	United Arab Emirates	Abu Dhabi	1848	7
								26.15	26.035		26.01	United Arab Emirates	Abu Dhabi	1849	8
								26.15	25.9475		25.69	United Arab Emirates	Abu Dhabi	1850	9
								26.15	25.945		26.25	United Arab Emirates	Abu Dhabi	1851	10
								26.15	25.945	26.01333333		United Arab Emirates	Abu Dhabi	1852	11
								26.15	25.945			United Arab Emirates	Abu Dhabi	1853	12
								26.15	25.945	25.945		United Arab Emirates	Abu Dhabi	1854	13
								26.15	25.98333333	25.945		United Arab Emirates	Abu Dhabi	1855	14
								26.15	25.97	25.945		United Arab Emirates	Abu Dhabi	1856	15
								26.15	26.25	25.945		United Arab Emirates	Abu Dhabi	1857	16
								26.15	#DIV/0!	25.98333333		United Arab Emirates	Abu Dhabi	1858	17
								26.15	#DIV/0!	25.97		United Arab Emirates	Abu Dhabi	1859	18
								26.15	#DIV/0!	26.25		United Arab Emirates	Abu Dhabi	1860	19
								26.15	25.1	25.1	25.1	United Arab Emirates	Abu Dhabi	1861	20
								26.15	25.22	25.22	25.34	United Arab Emirates	Abu Dhabi	1862	21
								26.15	24.68666667	24.68666667	23.62	United Arab Emirates	Abu Dhabi	1863	22
								26.15	25.015	25.015	26	United Arab Emirates	Abu Dhabi	1864	23
								26.15	25.264	25.264	26.26	United Arab Emirates	Abu Dhabi	1865	24
								26.15	25.40166667	25.40166667	26.09	United Arab Emirates	Abu Dhabi	1866	25
								26.15	25.55	25.55	26.44	United Arab Emirates	Abu Dhabi	1867	26
								26.15	25.72571429	25.6475	26.33	United Arab Emirates	Abu Dhabi	1868	27
								26.15	25.89285714	25.74333333	26.51	United Arab Emirates	Abu Dhabi	1869	28
								26.15	26.26714286	25.793	26.24	United Arab Emirates	Abu Dhabi	1870	29
								26.15	26.29142857	25.9	26.17	United Arab Emirates	Abu Dhabi	1871	30
								26.15	26.27714286	25.982	26.16	United Arab Emirates	Abu Dhabi	1872	31
								26.15	26.32428571	26.282	26.42	United Arab Emirates	Abu Dhabi	1873	32

## Step 4: Line Chart Visualizing.

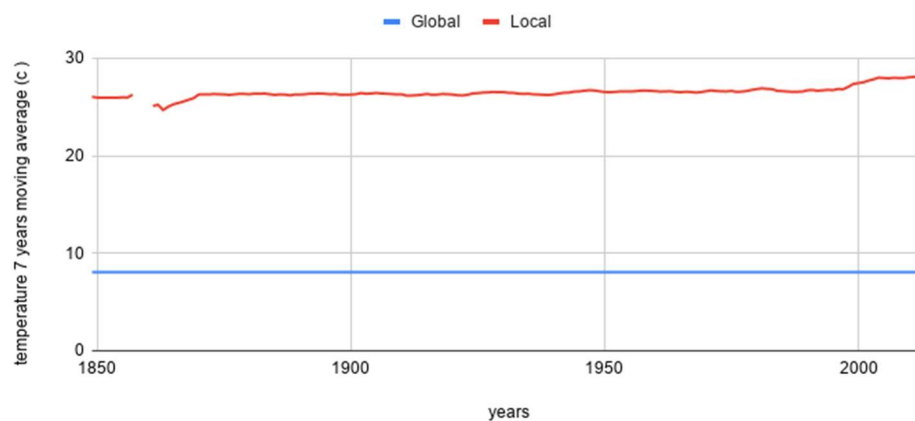
### Important considerations:

The local temperature data period start from 1843 to 2013 and the global temperature data period start from 1750 to 2015. The line chart cover the local period from 1843 to 2013.

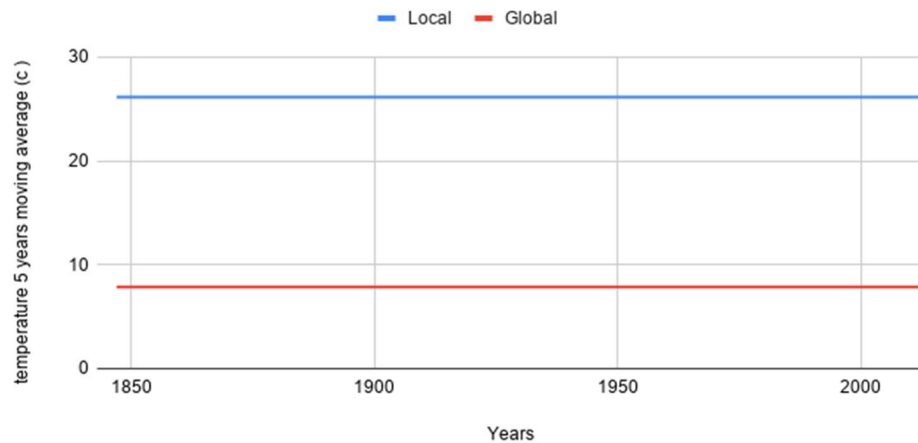
10 years moving average



7 years moving average



### 5 years moving average



### Results:

1. For 10 years moving average: both global and local shows fluctuations with increase average temperature in the local temperature.
2. For 7 years moving average: the local average temperature shows more fluctuation than the global average temperature.
3. For 5 years moving average: both local and global average temperature they did not show any fluctuation.
4. The local average temperature is hotter than the global average temperature.
5. When we choose decrease the period we are more able to smooth data such as 5 years moving average

**References:**

<https://prvnirupama.wordpress.com/project-portfolio/dand-weather/>

[http://www.sql-easy.com/#!where greater than or equal.](http://www.sql-easy.com/#!where_greater_than_or_equal)

[https://classroom.udacity.com/nanodegrees/nd002-connect/dashboard/overview.](https://classroom.udacity.com/nanodegrees/nd002-connect/dashboard/overview)