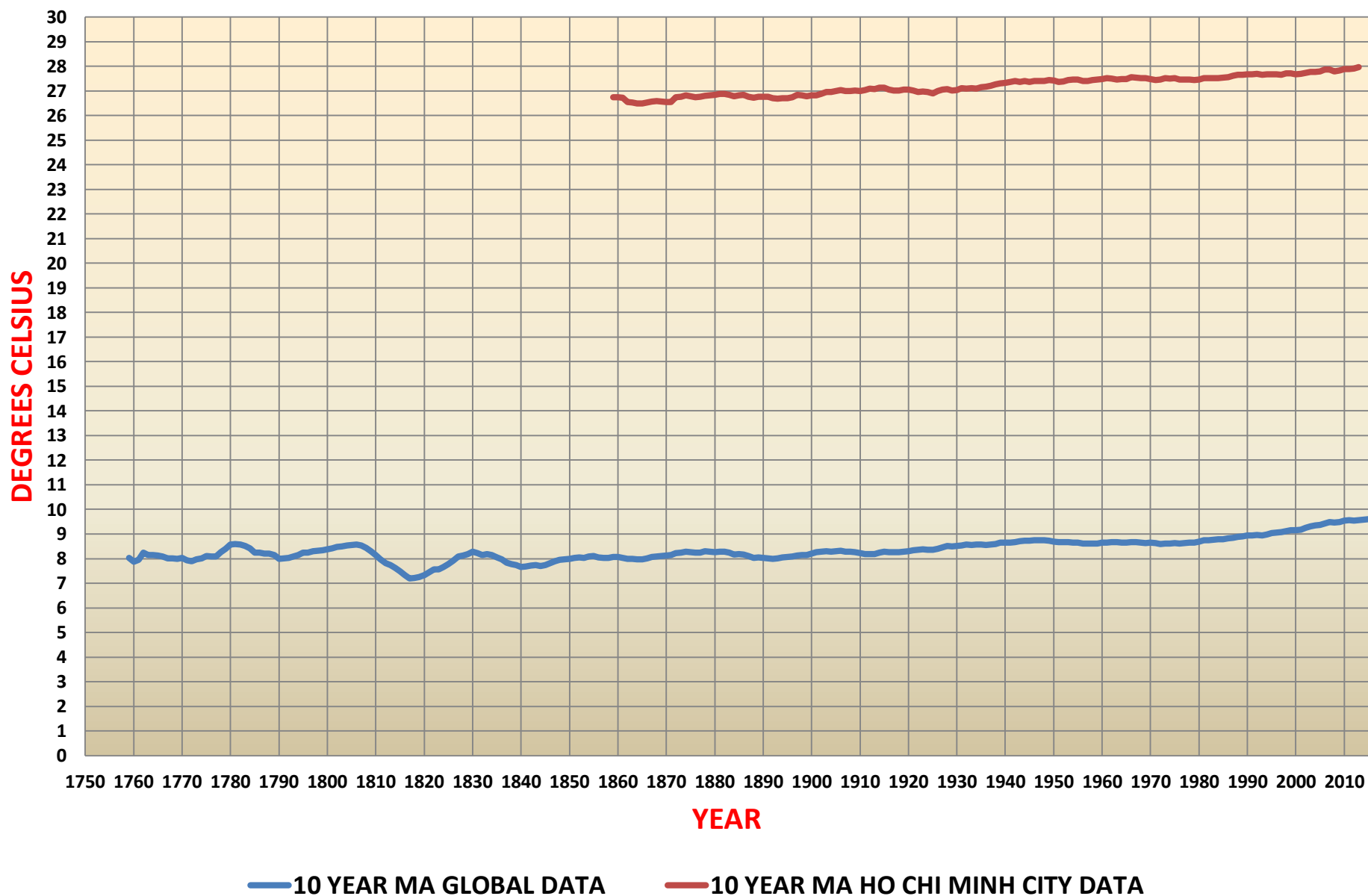


PROJECT: EXPLORE WEATHER TRENDS

Udacity's Data Analyst Nanodegree Project

GLOBAL & HO CHI MINH CITY-VIETNAM 10-YEAR MA LINE CHART



KEY NOTES:

The raw data for the average temperatures of the world and the city where I am living in (Ho Chi Minh City, Vietnam) from each year was extracted from Udacity's database using the following queries:

- Global data (from year 1750 to 2015):

```
SELECT *  
FROM global_data  
ORDER BY year;
```

- Ho Chi Minh City, Viet Nam data (from year 1839 to 2013):

```
SELECT *  
FROM city_data  
WHERE city_data.city LIKE 'Ho Chi Minh City'  
ORDER BY year;
```

- After being pulled out and downloaded to my computer, the data was then copied to an Excel sheet for further processing and analyzing. The length of the moving average (MA) was chosen to be **10-YEAR**.
- As such, with **Global data**, the starting point for calculating MA value and visualizing data is year **1759** (the tenth year counting from **1750**, the first year in which the average temperature was recorded in our data set).
- Regarding data for **Ho Chi Minh city**, since there are missing values for average temperatures during **1826 – 1838** and **1848 – 1849** period, the starting point was therefore delayed to year **1859**.
- The function used for calculating 10-year MA value in Excel was **AVERAGE()** function, which takes into account 10 cells that store average temperature values up to the year being analyzed. For example, to find out MA value for year **2010**, we will call an **AVERAGE** function for AVG temperatures from year **2001** to **2010**.

SNAPSHOT OF EXCEL SHEET IN WHICH ALL CALCULATIONS WERE DONE

New Microsoft Office Excel Worksheet - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

F111 =AVERAGE(E102:E111)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
	year	avg_temp (global)	10 year MA global		avg_temp (Ho Chi Minh City)	10 year MA HCM City			YEAR	10 YEAR MA GLOBAL DATA	10 YEAR MA HO CHI MINH CITY DATA	DIFFERENCE	DIFFERENCE IN PERCENTAGE					
00	1848	7.98	7.94						1848	7.94								
01	1849	7.98	7.98						1849	7.98								
02	1850	7.9	7.99		26.65				1850	7.99								
03	1851	8.18	8.04		26.82				1851	8.04								
04	1852	8.1	8.05		26.7				1852	8.05								
05	1853	8.04	8.03		26.87				1853	8.03								
06	1854	8.21	8.09		26.89				1854	8.09								
07	1855	8.11	8.11		26.76				1855	8.11								
08	1856	8	8.06		26.53				1856	8.06								
09	1857	7.76	8.03		26.51				1857	8.03								
10	1858	8.1	8.04		26.83				1858	8.04								
11	1859	8.25	8.07		26.74	26.74			1859	8.07	26.74	18.68	231.61%					
12	1860	7.96	8.07		26.69	26.75			1860	8.07	26.75	18.68	231.41%					
13	1861	7.85	8.04		26.58	26.72			1861	8.04	26.72	18.69	232.47%					
14	1862	7.56	7.98		24.85	26.54			1862	7.98	26.54	18.56	232.40%					
15	1863	8.11	7.99		26.67	26.52			1863	7.99	26.52	18.53	231.86%					
16	1864	7.98	7.97		26.52	26.48			1864	7.97	26.48	18.51	232.35%					
17	1865	8.18	7.98		26.89	26.50			1865	7.98	26.50	18.52	232.23%					
18	1866	8.29	8.00		26.84	26.53			1866	8.00	26.53	18.52	231.41%					

Sheet1 Sheet2 Sheet3

Ready 100%

SOME OBSERVATIONS

- Both the 10-YEAR MA temperatures of the entire world and Ho Chi Minh City have been in an upward trend since the turn of the 20th century, or more specifically from around year 1893. Starting from year 1970, the 10-YEAR MA temperatures of the world and Ho Chi Minh City have been on the constant increase, with nearly each year recorded a higher degree than the previous ones.
- The highest 10-YEAR MA temperatures of the world and Ho Chi Minh City both belong to the latest years during which data was recorded, which are 2015 and 2013 respectively.
- The 10-YEAR MA temperature of Ho Chi Minh City is always greater than that of the world during the same year, with the difference consistently ranging from 18.31 to 18.91 degrees Celsius. This is due to geographical reasons as Viet Nam is located close to the equator line. Hence, using the global data, we can estimate the numbers for Ho Chi Minh City with small margin of error (and vice versa).
- Interestingly, the difference between 10-YEAR MA temperature of Ho Chi Minh City and the world has been on the decline from 18.90 (or 219.49 %) in 1973 down to 18.41 degrees Celsius (or 192.60 %) in 2013. This might hint that the pace of climate change is slower in Ho Chi Minh City than the rest of the world combined during this time period.