

Explore Weather Trends Data Analyst Nanodegree Term 1 - Fall 2017

Hardware

MacBook Pro (Retina, 13-inch, early 2015)
macOS Sierra 10.12.5

Software

Numbers version 4.2

Explore Weather Trends - Sept 2017

<https://classroom.udacity.com/nanodegrees/nd002>

Get database information

```
SELECT current_database();  
temp
```

Get database information, continued ...

```
SELECT * FROM information_schema.sql_implementation_info;  
DBMS NAME          PostgreSQL  
DBMS VERSION        09.06.0005
```

Get table information

```
SELECT DATA_TYPE FROM information_schema.columns  
WHERE table_name = 'city_list';  
city          character  
country       character
```

Get table information - example row

```
SELECT * FROM city_list LIMIT 1;  
Abidjan      Côte D'Ivoire
```

Get country, city of interest

```
SELECT * FROM city_list WHERE country LIKE 'United States' AND city LIKE  
'Houston';  
city          country  
Houston       United States
```

Get the temperature data for the country, city of interest

```
SELECT * FROM city_data WHERE country LIKE 'United States'  
AND city LIKE 'Houston';  
1820 Houston    United States    19.11  
2013 Houston    United States    22.28
```

Look at the downloaded country - city - temperature, comma separated values file

```
$ pwd
/Users/menfi/Downloads
```

Look at the downloaded country, city temperature, comma separated values file, continued ...

```
$ ls -ltr | tail -1
-rw-r--r--@ 1 menfi  staff    6429 Sep 14 14:43 results.csv
```

Look at the downloaded country - city - temperature, comma separated values file, continued ...

```
$ head -2 results.csv; tail -1 results.csv
year,city,country,avg_temp
1820,Houston,United States,19.11
2013,Houston,United States,22.28
```

Rename the downloaded country - city - temperature comma separated values file

```
$ mv results.csv year_Houston_temp.csv
$ ls -ltr | tail -1
-rw-r--r--@ 1 menfi  staff    6429 Sep 14 14:43 year_Houston_temp.csv
```

Get the global data - limit global years to correspond with country ('United States') , city ('Houston') years

```
SELECT * FROM global_data WHERE year > 1819 AND year < 2014
```

Look at the downloaded global year - avg_temp, comma separated values file

```
$ ls -ltr | tail -1
-rw-r--r--@ 1 menfi  staff    1954 Sep 14 22:06 results.csv
```

Look at the downloaded global year - avg_temp, comma separated values file, continued ...

Verify global first and last year, match Houston

```
$ head -2 results.csv ; tail -1 results.csv
year,avg_temp
1820,7.62
2013,9.61
```

Rename global average - temperature file

```
$ mv results.csv year_global_avgTemp.csv
```

Please see [Weather Trends Charts](#) below.

Please note moving averages calculations and plots in the Weather Trends Charts below, to include 3 Correlation Coefficient calculations .

Chart 1

Observation - moving averages line chart shows an increase in the rate, the upward slope of the trend lines. After 1950 the upward slope of both the Houston and Global temperature trend lines increase.

Observation - Houston and the Global trend lines rates of change are very similar.

Correlation Coefficient calculated by hand - 0.9053

Correlation Coefficient calculated formula - 0.9053

Correlation IS NOT Causation.

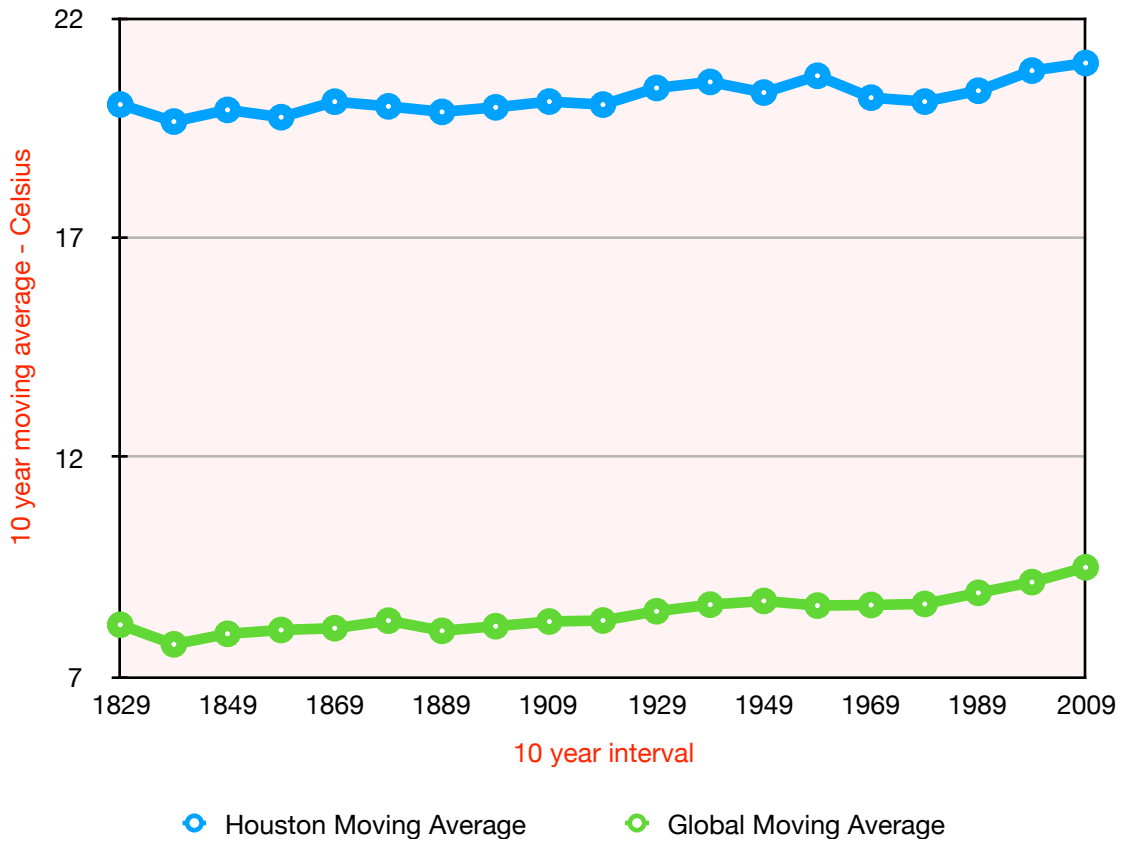
Observation - Houston consistently tracks warmer than the Global trend line. Houston, Texas is in a temperate climate.

Chart 2

Observation - Percent change in Houston temperature after 1950 greatest increase in slope, greatest increase in the rate of change in temperature. This Numbers line chart clearly illustrates the difference in the rate of temperature change, Houston, Texas versus Global.

Correlation Coefficient calculated formula - 0.5138

Weather Trends - Houston vs Global Temperature



Weather Trends - Houston vs Global Temperature

