

## Udacity Project 1 submission: Exploring weather trends

### Outline:

Below paragraph describes steps taken to prepare and extract local and global weather temperature.

#### Data Extraction

- 1- Identify nearest city data
  - a. Searched city\_list table for existence of Saudi Arabia and Riyadh with exact spelling for country and city
  - b. Extract Riyadh data from city\_data using `select * from city_data where city ='Riyadh'`
- 2- Identify global data using `"select * from global_data"`
- 3- Combined global and local city temperature in one csv file `"riyadh_global average.csv"`

### Data preparation:

Since Riyadh data only started from year 1843, the global temperature data before this data was removed from the file so both data set have similar start date

### Tool

Used jupyter notebook and python pandas as a tool to read and manipulate the data with pandas DataFrame with year column set as an index

```
df = pd.read_csv('riyadh_global average.csv', index_col='year')
```

### Moving Average calculation

Moving average is calculated using pandas rolling function with a window of 10 years. For example, to calculate moving average for global temperature I used the following command

```
df['global_ma_10']=df['Global Average'].rolling(10).mean()
```

local moving average calculate command

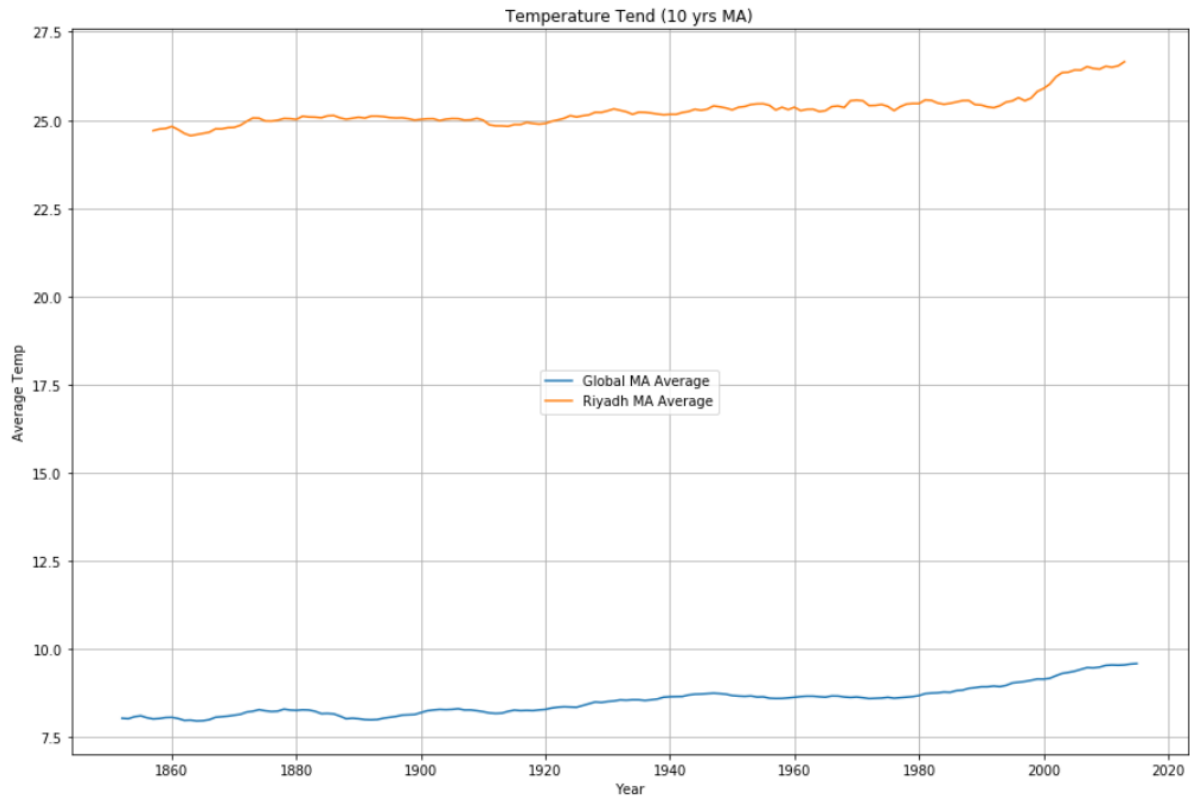
```
df['riyadh_ma_10']=df['Riyadh Average'].rolling(10).mean()
```

### Line Chart

A line chart created using python matplotlib

```
plt.figure(figsize=(15,10))
plt.grid(True)
plt.xlabel('Year')
plt.ylabel('Average Temp')
plt.title('Temperature Trend (10 yrs MA)')
plt.plot(df['global_ma_10'], label='Global MA Average')
plt.plot(df['riyadh_ma_10'], label='Riyadh MA Average')
```

```
plt.legend(('global_ma_10','riyadh_ma_10'))  
plt.legend(loc=10)
```



## Observations

- 1- Big difference in Riyadh temperate with global average, about 3 times more than global average.
- 2- Both global and local average temperatures are increasing as years pass
- 3- The increase in average temperature is noticeable with the beginning of 1920s
- 4- Global average temperature encountered sharp change around year 2000, the increase is more compared to previous years.
- 5- Difference between max and min for global is 2.27, while the difference for Riyadh is 12.33