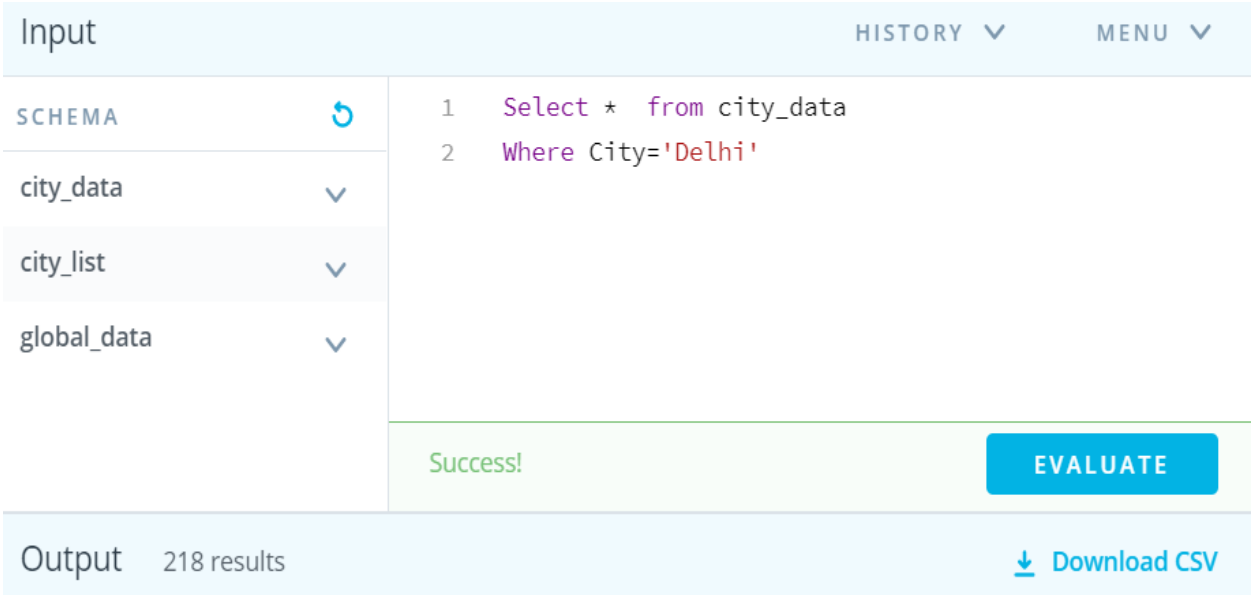
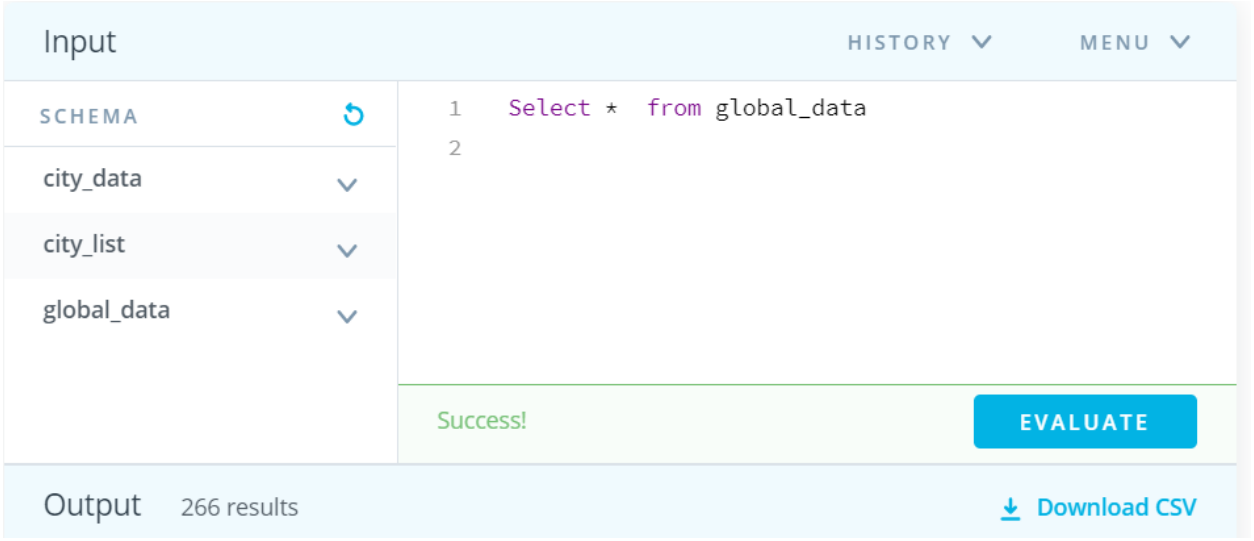
P1: Explore Weather Trends

Data Analyst Nanodegree Project

1. **Extract Data From Database:**
   Extract For Delhi:




```
Select *  from city_data
Where City='Delhi'
```




```
Select *  from global_data
```

2. Data selection and Manipulation:

2.1. Data selection:

Firstly I have extracted the Global and Delhi average datasets through sql queries. In Delhi and Global dataset year and avg_temperature two column are there. Global data are available for 1750-2013 and Delhi data are available for 1800-2013. For weather trend analysis we need time series data and our data is already available in time series.

2.2. Data manipulation:

In my data some missing value are manipulated by the mean value.

```
globaltemp.fillna(globaltemp.mean(), inplace=True)

delhitemp.fillna(delhitemp.mean(), inplace=True)
```

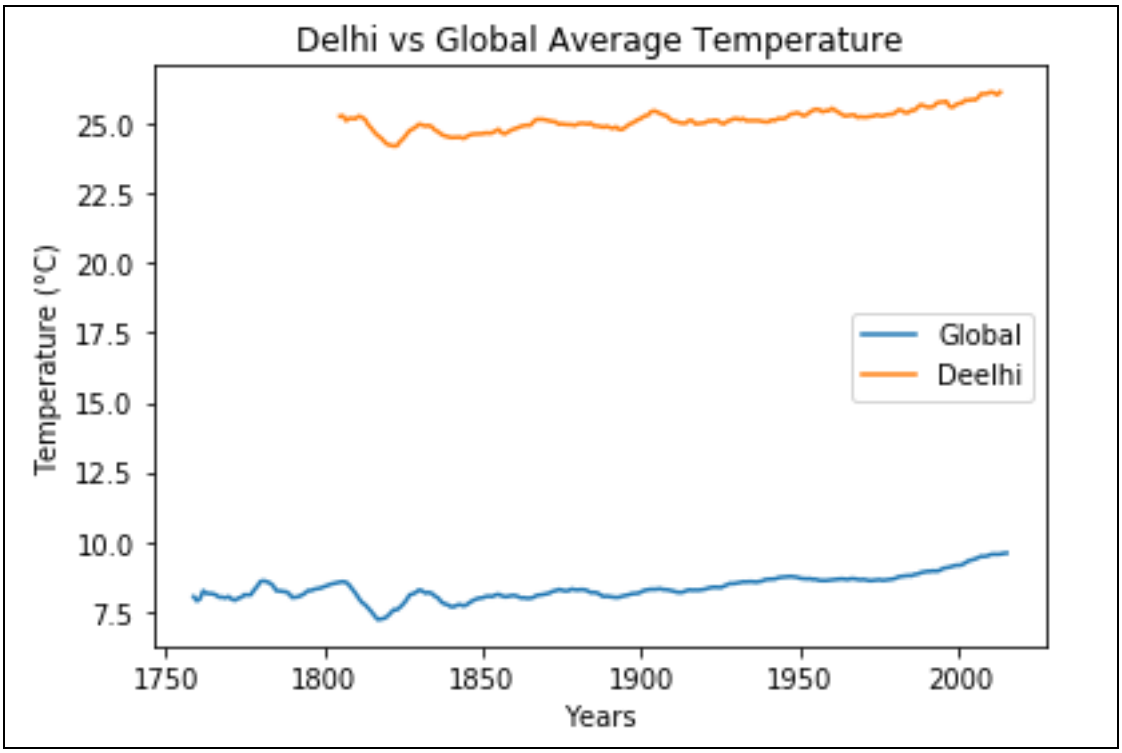
The moving average I have prepare on the Python Jupyter Notebook by a 10 – year basis. This is done by using rolling function in python.

```
glb_mv_avg = globaltemp['avg_temp'].rolling(10).mean()

delhi_mv_avg = delhitemp['avg_temp'].rolling(10).mean()
```

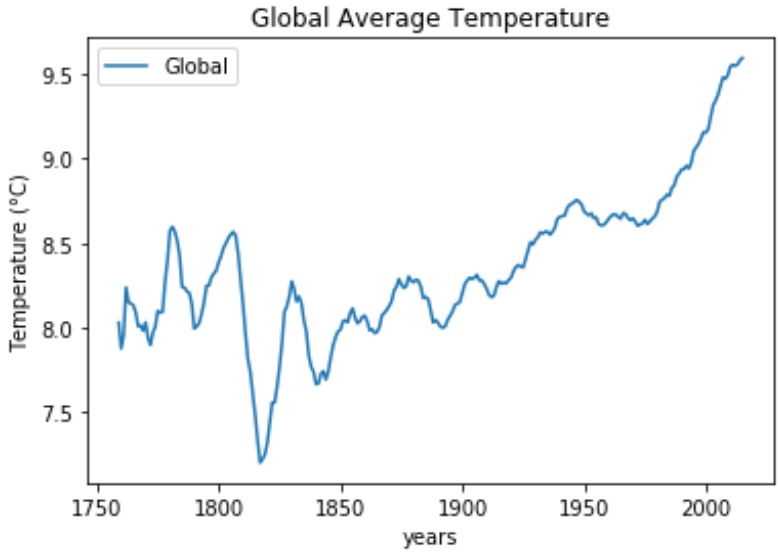
3.Data Visualization

Now i am able to plot a line chart to show a comparison between the Delhi vs Global average temperature change. This is done by using python.

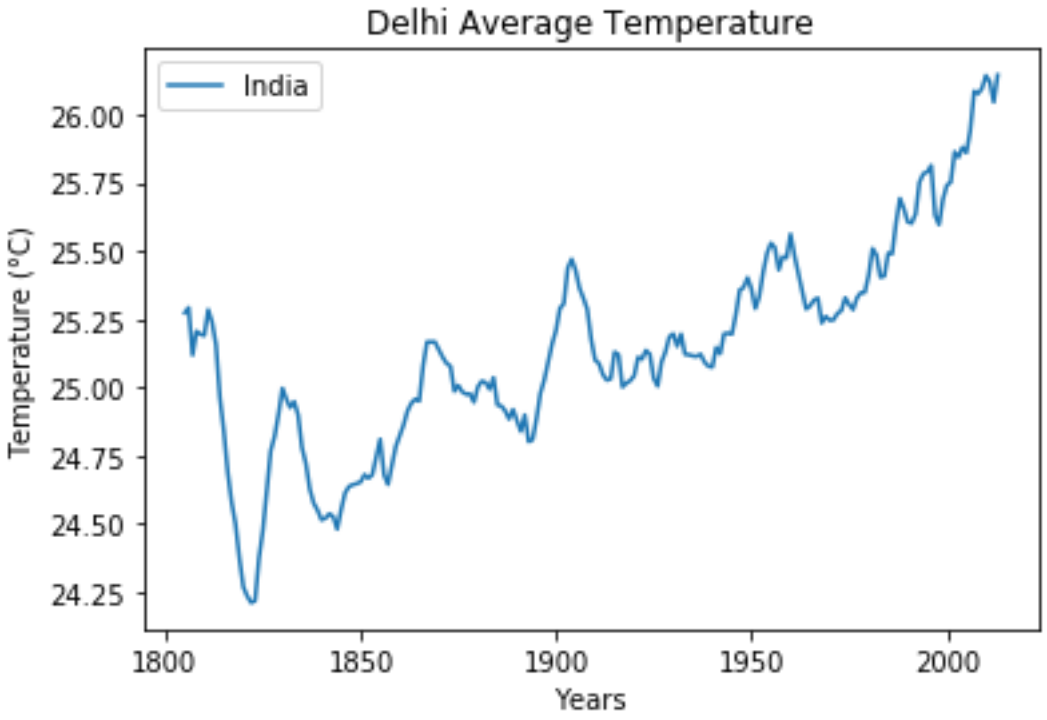
```
plt.plot(globaltemp['year'],glb_mv_avg,label='Global')

plt.plot(delhitemp['year'],delhi_mv_avg,label='Deelhi')

plt.legend()

plt.xlabel("Years")

plt.ylabel("Temperature (°C)")

plt.title("Delhi vs Global Average Temperature")

plt.show()
```




```
plt.plot(globaltemp['year'],glb_mv_avg,label='Global')
plt.legend()
plt.xlabel("years")
plt.ylabel("Temperature (°C)")
plt.title("Global Average Temperature")
plt.show()
```



```
plt.plot(indiatemp['year'],delhi_mv_avg,label='India')
plt.legend()
plt.xlabel("Years")
plt.ylabel("Temperature (°C)")
plt.title("Delhi Average Temperature")
plt.show()
```



4. Observations:

1: I observe that when compare Global average temperature with Delhi average temperature there was a difference in the average. From 1800 to 2000 the average global temperature is between 7.5 to 10 degree Celsius and Delhi average temperature is nearly 25 degree Celsius in 200 years.

2: The relation between Global and Delhi average temperature was increasing significantly. When Global average temperature was increasing Delhi average temperature was also increasing.

3: In Global average temperature between 1800 and 1850 was lowest and after 1850 the average temperature is increasing years by years. In 1750 to 1800 the Global temperature was nearly 8.0 to 8.5 degree Celsius.

4: Delhi average temperature mid between 1800 and 1850 was the lowest average temperature and after that average temperature is increasing gradually years by years. In 1800 the temperature is

nearly 25.25 degree Celsius. From 1800 to 2000 the temperature is increased up to 26.0 degree Celsius.