

## An outline:

\* What tools did you use for each step?

Step 1: I utilize SQL to query data from global table and city level table.

Step 2: I utilize Python to process data : Pandas to read the csv file and Matplotlib to plot lines.

\* How did you calculate the moving average?

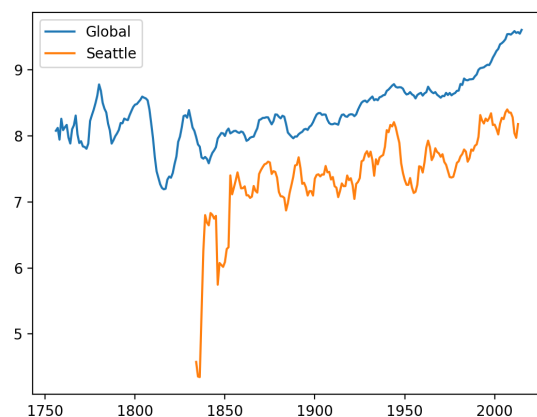
I utilize Python to build up a function as follows (in which l is the list and N is window length)

```
def running_mean(l, N):  
    sum = 0  
    result = list( 0 for x in l)  
    for i in range (0, N):  
        sum = sum + l[i]  
        result[i] = sum / (i+1)  
    for i in range (N, len(l)):  
        sum = sum - l[i-N] + l[i]  
        result[i] = sum / N  
    return result
```

\* What were your key considerations when deciding how to visualize the trends?

I think of Matplotlib gallery, finding the code to visualize. I think of my dataset having 2 factors namely year and temperature so I have to find a graph that can integrate these 2 factors. I have a larger range of the year of global temperature file compared to my local city data's range of year. It means my graph could look odd a bit and it is explainably shortage of data. The year presented as horizontal axis whilst the temperature presented as vertical axis.

## Line chart:



## **Observations about the similarities and/or differences in the trends:**

1. The temperature in global scale and Seattle local share an upward trend in light of global warming.
2. Seattle's average temperature has been always lower than Global's average temperature at any given period of time.
3. There is a significant change in Seattle's average temperature during 1835-1850 period as it decreased sharply and afterwards rocketed while global's average temperature witness a gradual increase over the same period of time.
4. For the most 50 recent years, Seattle's average temperature fluctuates just around 8 degree yet global's one increases quite lot by 1 degree.