Project 1: Explore Weather Trends

The data that I searched for 'Explore Weather Trends' outline the difference in temperature over the years between the closet city that I live by and the global temperature. I analyzed local and global degree data and compared the climate trends where I live to overall global climate trends.

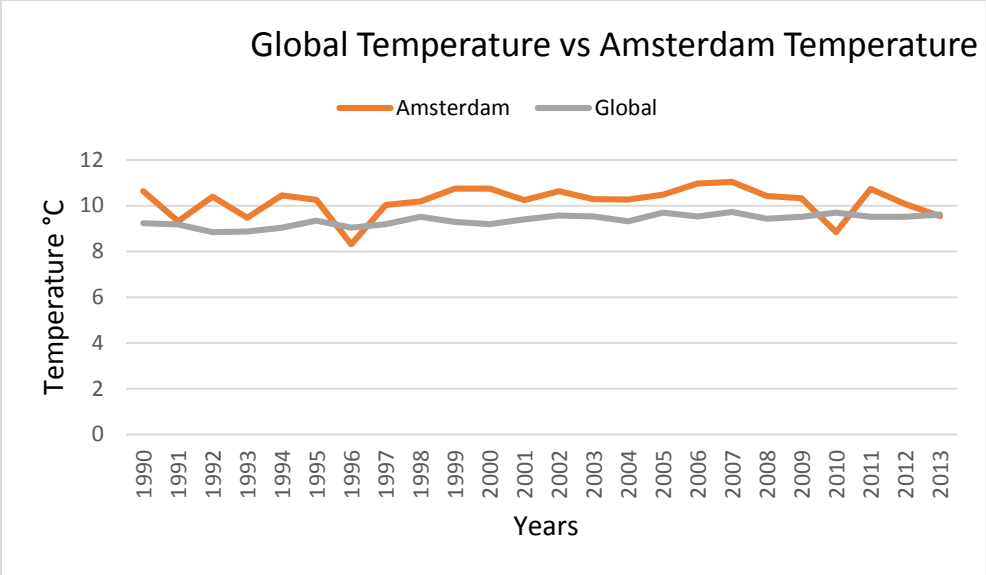
I did the following steps to reach the requested results:

1) The following SQL query explain how I extract the city level and global data, then I export them to EXCEL file:

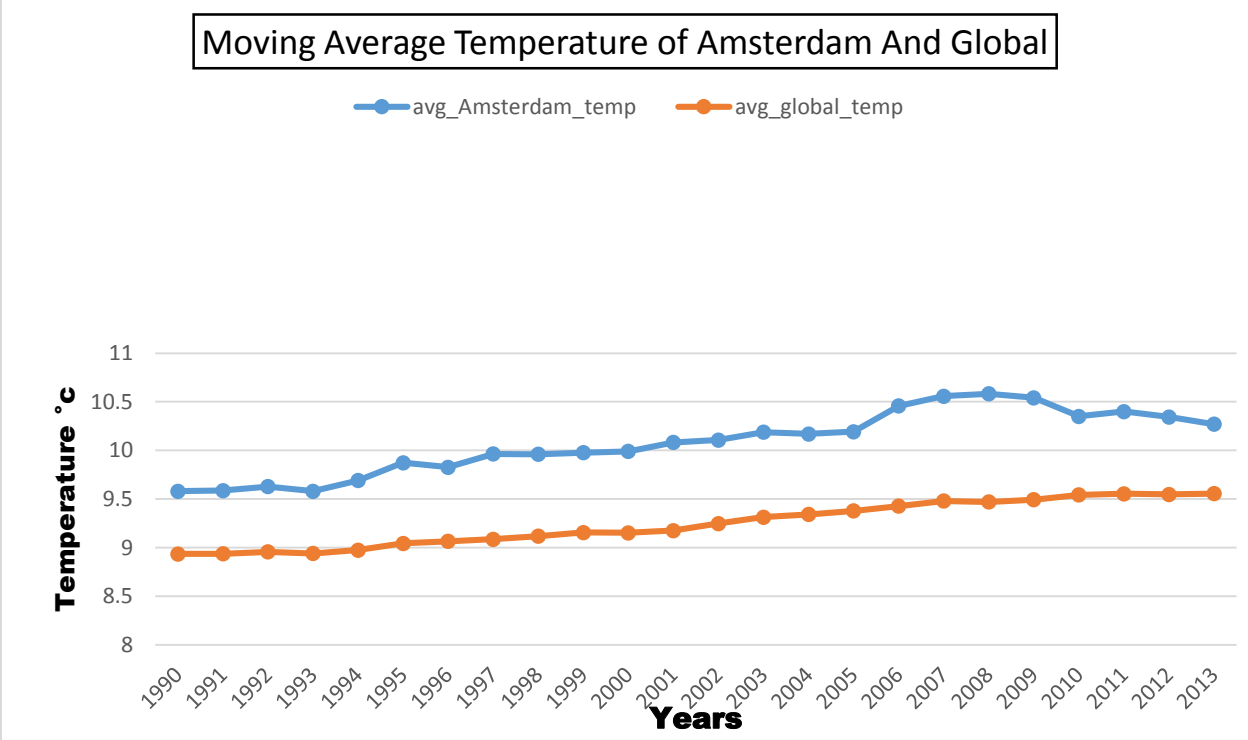
```
WITH t1 AS (SELECT c.city,A.year,A.avg_temp AS city_temp
FROM city_data  A
JOIN city_list  c
ON A.city=c.city
WHERE c.city='Amsterdam'),
t2 AS (SELECT avg_temp AS global_temp,year
FROM global_data)
SELECT *
FROM t1
JOIN t2
ON t1.year=t2.year
ORDER BY 1;
```

2) In addition I calculated the moving average "10 years moving average" for both the global and my city to smooth out data to make it easier, to observe long term trends and to not get lost in daily fluctuations. I created two additional columns called 10 years moving average for the city and global, which is where the moving average field will be stored. I went down to the tenth year (1759) and use the AVERAGE() function to calculate the average temperature for the first 10 years.

3) Then I did 2 line chart that compare:
    a) My city temperature "Amsterdam" to global temperature.



b) 10 years average moving temperature “Amsterdam” to 10 years global average moving temperature.



Finally after finishing the previous steps I conclude:

(1) The ranging degree of Amsterdam and the global degree over the years are lightly differs from each other and in some cases the temperature are nearly equal. In 10 years moving average chart, I realized that even sometimes the two lines intersect, the city climate is slightly more than the global climate.

(2) There is no critical change in temperature over the years for both 'Amsterdam' and the global temperature. For instance, the degrees are nearly equal in 1898 and 1951 which are (9.57 and 9.4) respectively.

(3) Overall both '10 years average moving temperature' is increasing over the years, it is a slight increase, but if we look to the bigger image for example; comparing "Amsterdam" to the "global" by noticing the temperature in the first year 1750 and last year 2013, the temperatures are (8.864,8.03) and (10.27,9.556) respectively.

(4) The results show that the world is slowly getting hotter.

(5) The trend hasn't been consistent because it increased and decreased over the time. To illustrate; in 1959 it was 10.17 then it fell down 7.81 in 1963 at the end it went up again to 10.73 in 2012.

(6) This conclude that although there is no significant increase in the temperature over the last few hundred years, in the future this increase might lead to several problems with global warming over the next hundred years.

(7) The standard deviations of Amsterdam temperature and global temperature are 0.77 and 0.58 respectively.

(8) The mean for both Amsterdam and global temperature are 9.13 and 8.35 respectively so we can conclude that there is no significant difference in these values