1. **Extract data from database with 3 SQL command lines**

```
select * from global_data;        # to get global data

select * from city_data           # get nearest city data
where city = 'Albuquerque';    # here must be single quote
```

And download the data as csv files

2. Calculate Moving/rolling Average(purpose: smooth out the daily fluctuations and make it easier to observe long-term trends)

Step 1: open google sheet

Step 2: open global data csv file , create a third column called Global 7 Day Moving Average

Step 3: Go down to the eighth row(first row is title) and use the AVERAGE() function to calculate the average temperature for the first seven rows(B2:B8),

Step 4: then the second seven rows (B3:B9) , continue this process

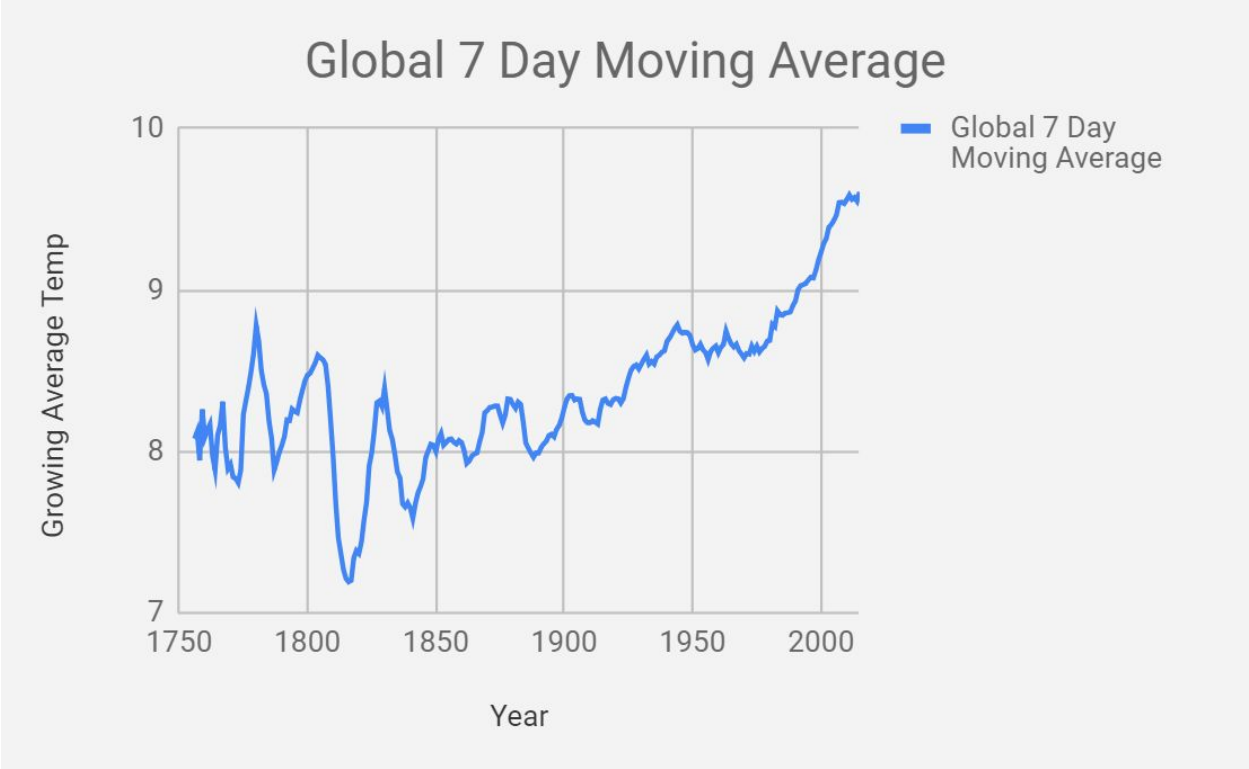
Step 5: just pull the right bottom corner down to the last line of data, then all the rolling averages will pop out.

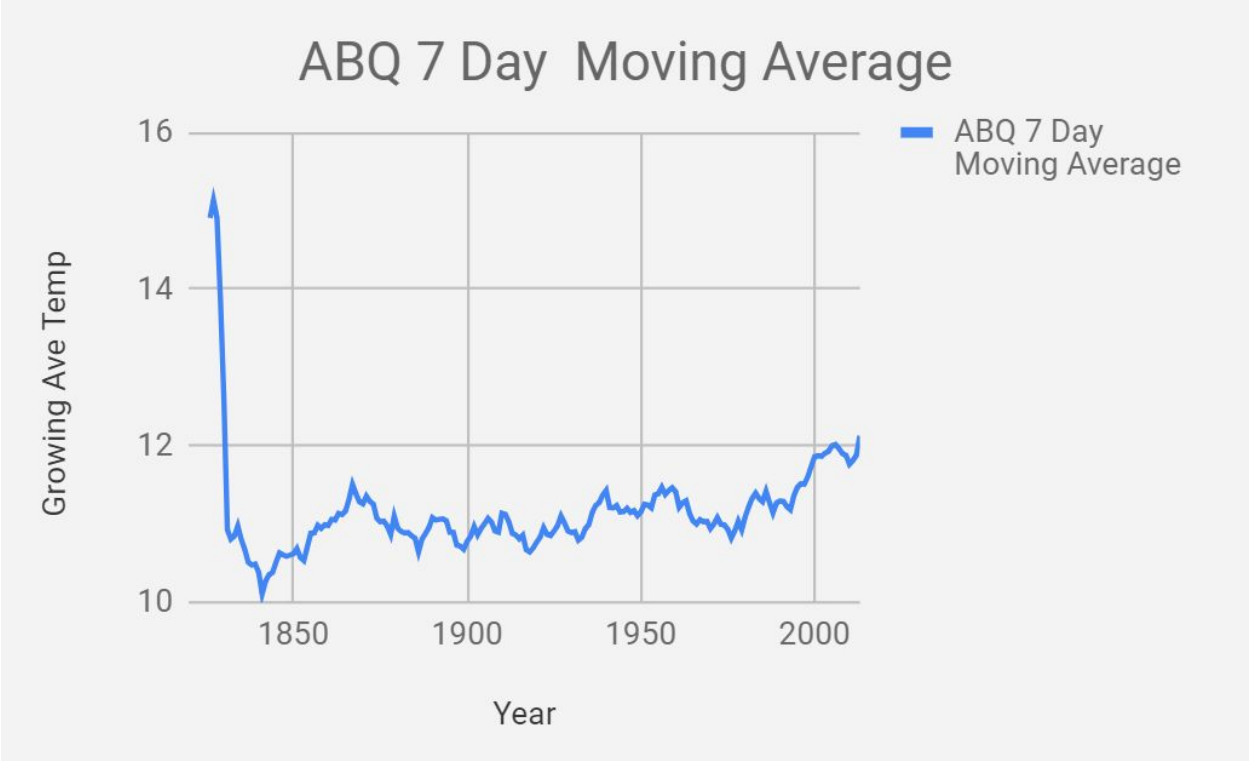
The same steps for calculate the moving average temperatures for my nearest city ABQ.

3. Visualize the data

Select the moving average column, click insert, insert data and customize the charts:

Change background color, title ,add x axis


Global 7 Day Moving Average
Global 7 Day Moving Average
Growing Average Temp
10
9
8
7
1750
1800
1850
1900
1950
2000
Year


ABQ 7 Day Moving Average
ABQ 7 Day Moving Average
Growing Ave Temp
16
14
12
10
1850
1900
1950
2000
Year

4. My Observations

Similarities :

1. 1850 is a turning point for both global and ABQ. The temperature fluctuates a lot before 1850. After 1850, the changes is much smaller.
2. After 1970, both global and ABQ temperature steadily increases(ABQ 10 to 12 C, global 8 to 10 C).

Difference:

1. ABQ has a bigger temperature fluctuation(drop from 15C to 10C) than that of global(from 8.5C to 7.5C).
2. From year 1800 to year 2000, ABQ highest average temperature reaches to 15C while the global highest average temperature never reaches to 10C
3. From year 1800 to year 2000, ABQ lowest average temperature is not lower than 10C While global lowest average temperature is around 7.5C.

We can make the conclusion:

1. Overall, ABQ moving average temperature is higher global's.
2. Since 2000, no matter ABQ or global temperature increases.

My reference :

https://www.youtube.com/watch?v=zsisAyzLzDs (How to make a chart on google sheet)