

# Exploring Weather Trends Project

Since I am a Chinese student, and my hometown is Nanjing, I prefer to investigate the moving average temperature of China, especially Nanjing.

## Extract the data Using SQL

```
select * from global_data;
```

This query is to select every data for the year vs. global temperature.

```
select * from city_data  
where country = 'China';
```

This query is to pick up the row where the country of these row in China.

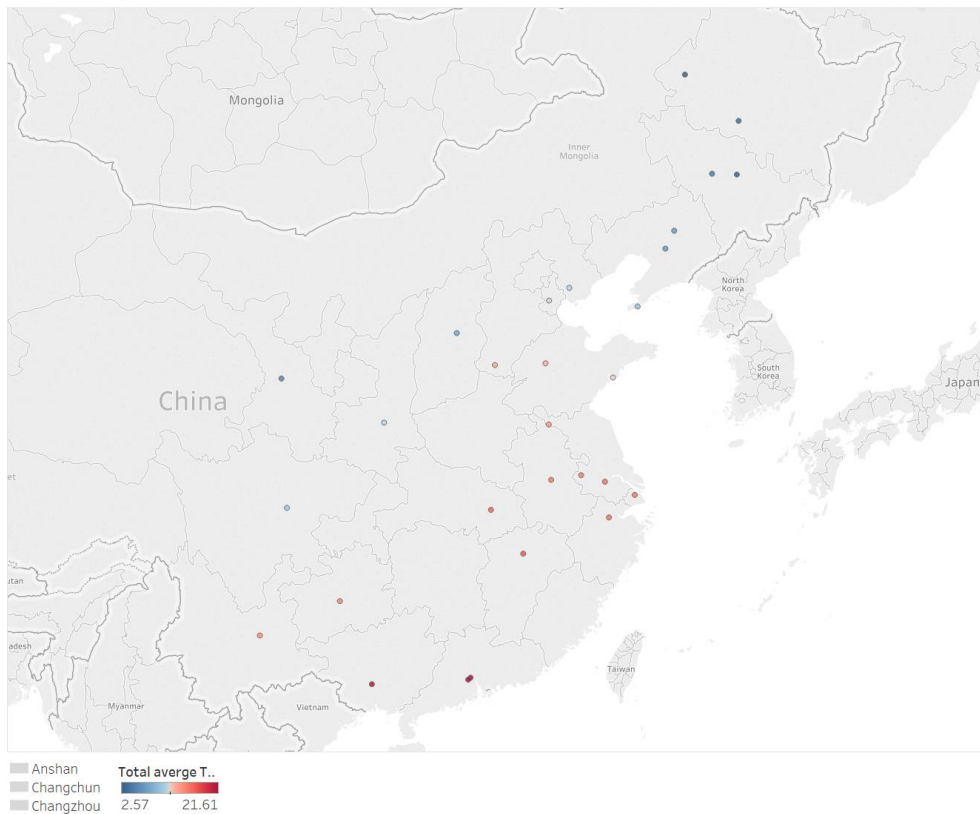
```
select * from city_data  
where city = 'Nanjing';
```

This query is to choose the data where the city is Nanjing

## Create a line chart

I just learn the tableau, so I try to use tableau to explore the dataset. First of all, the average temperature is increasingly low when the latitude is higher or farther away from the sea.

<China Map>



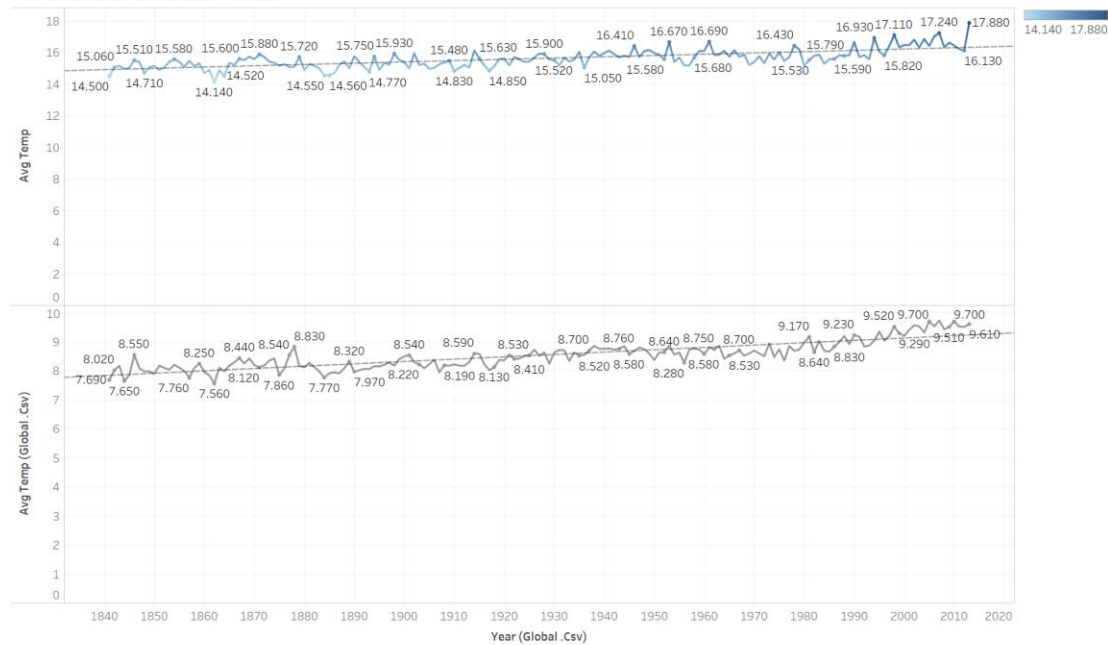
Secondly, I check several cities' average temperature trend in China. It seems that these cities share similar trends. Nanning and Guangzhou have a higher average temperature than Nanjing. Jilin has a lower average temperature than Nanjing. Nanjing, Suzhou, Shanghai, and Zhenjiang are close to each other. These cities have similar average temperatures.

Chinese Cities' Moving Average Temperature



Then, I draw the line plot of Nanjing average temperature and Global average temperature. It shows that Nanjing's temperature is around 7 degrees C higher than the global average.

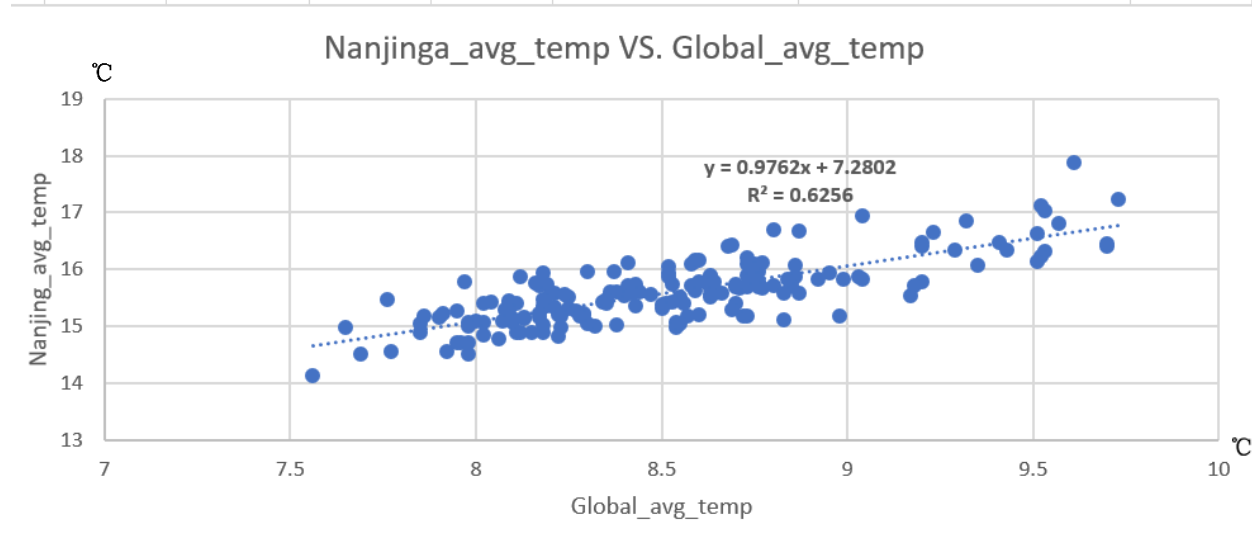
<Gobal temp vs Nanjing temp>



The trends of sum of Avg Temp and sum of Avg Temp (Global .Csv) for Year (Global .Csv). For pane Sum of Avg Temp: Color shows sum of Avg Temp. The marks are labeled by sum of Avg Temp. For pane Sum of Avg Temp (Global .Csv): The marks are labeled by sum of Avg Temp (Global .Csv).

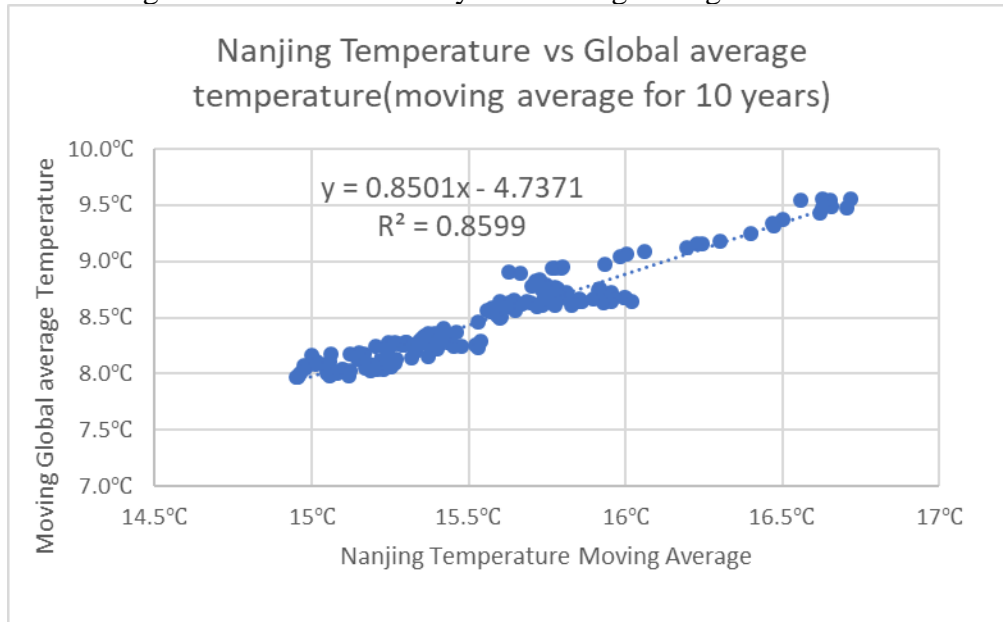
I use the excel to calculate the correlation between global average temperature and Nanjing average temperature. The correlation is 0.79095. The predictive trend line is  $y = 0.9762x + 7.2803$ , with  $R^2$  is equal to 0.6256.

		YEAR	global_avg_temp	Nanjing_avg_temp Prediction
		2014	9.57	16.622434
		2015	9.83	16.876246
	correlation	0.79095		



I use the predictive trend line to calculate the Nanjing average temperature for 2014, and 2015, which are 16.622434°C and 16.876246°C.

To smooth out data, I used the moving average of temperature with 10 years interval. This graph is using the Nanjing Temperature vs Global average temperature. We got a higher square error for trending line since we use a 10 years moving average.



The graph for 10 years moving average temperature for Nanjing's and Global temperature. Nanjing's temperature is 7 degree C higher than Global.

