1. Tool

   Excel, SQL

2. Procedge:
   a. Use SQL to check all the cities and export the temperature information of the nearest city, Shanghai and the globe.

      *SELECT **

      FROM city_list

      ORDER BY country

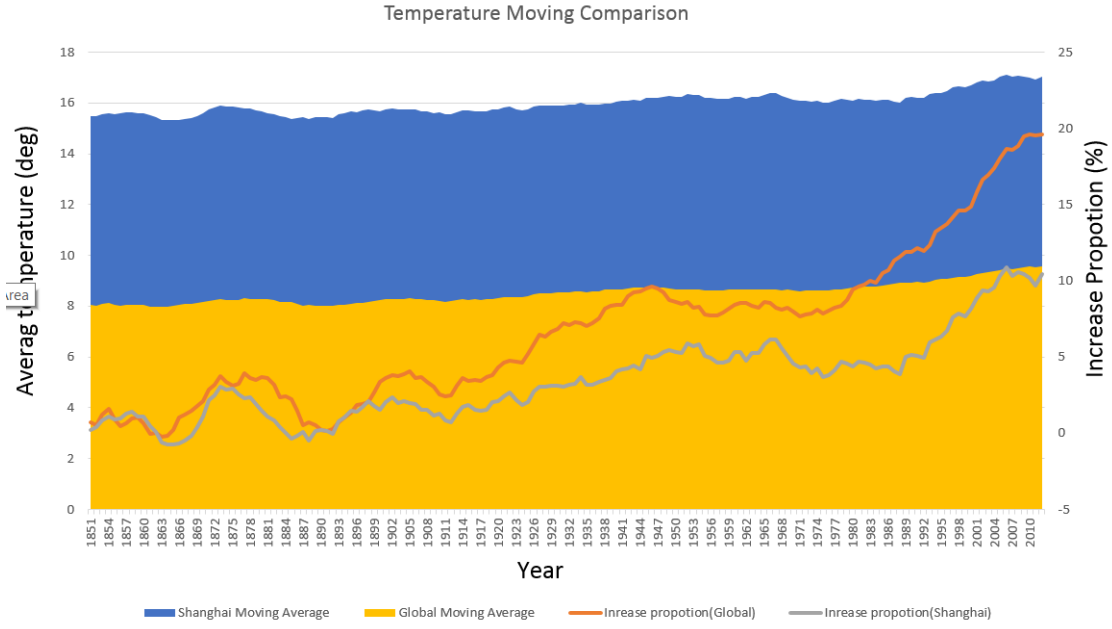
      *SELECT **

      FROM city_data

      WHERE city='Shanghai'

   b. How to visualize the temperature plot

      The temperature information is visualized below with two areas indicated average temperature for the globe in yellow and for Shanghai in red. The line parts show the percentage of the temperature increase from 1841.



   c. How to calculate the moving average

      The moving average is calculated as the average for 10 years. The equation is illustrated in the figure below for all the values in this column . It is applied for the average temperature in Shanghai and for globe. Besides, the percentage of the temperature increase is also applied with 10 years moving average equation.

SH_avg_temp2	temperature difference	Global Moving Average	Shanghai Moving Average
14.87	7.18		
15.43	7.41		
15.53	7.36		
15.33	7.68		
15.43	7.58		
15.85	7.3		
15.78	7.69		
15.02	7.04		
15.44	7.46		
15.6	7.7	7.988	=AVERAGE(C2:C11)
15.22	7.04	8.037	15.463
15.44	7.34	8.045	15.464
15.79	7.75	8.032	15.49
15.99	7.78	8.088	15.556
15.84	7.73	8.114	15.597
15.55	7.55	8.059	15.567
15.93	8.17	8.026	15.582
15.49	7.39	8.038	15.629
15.64	7.39	8.065	15.649
15.05	7.09	8.071	15.594
15.29	7.44	8.038	15.601
14.47	6.91	7.984	15.504
15.2	7.09	7.991	15.445
14.85	6.87	7.968	15.331
15.72	7.54	7.975	15.319
15.54	7.25	8.004	15.318
15.95	7.51	8.072	15.32
15.86	7.61	8.087	15.357

d. What are the main concerns to visualize the plot?
   1. *The clear comparison between the average temperature in Shanghai and in globe*
   2. *The trend of the average temperature from 1841 to 2013*
   3. *The increasing rate of the average temperature in Shanghai and in globe*
   4. *Clear presentation for each line and area*

3. Conclusion
   a. Which is warmer, average temperature in Shanghai or in globe?
   The average temperature is higher in Shanghai compared to globe one.

   b. What is the different/similar part of the temperature trend between the globe and Shanghai?
   The temperature trends both for the globe and Shanghai are increasing. The increasing rate are similar, but the average temperature for the globe grows faster than it for Shanghai.

   c. In which period the temperature grow faster?
   The temperature from 1863 to 1872 and from 1977 to 2013 increase faster than other period. Both for the temperature of the global and of Shanghai

   d. What about the long-term trend of the global average temperature? The global temperature is becoming warmer or colder? Is the trend the same with the pass hundreds of years?
   From observation of the data from 1841, the future expectation for the average temperature is still increasing. The global temperature will become warmer.