1、Significant earthquakes since 2150 B.C.

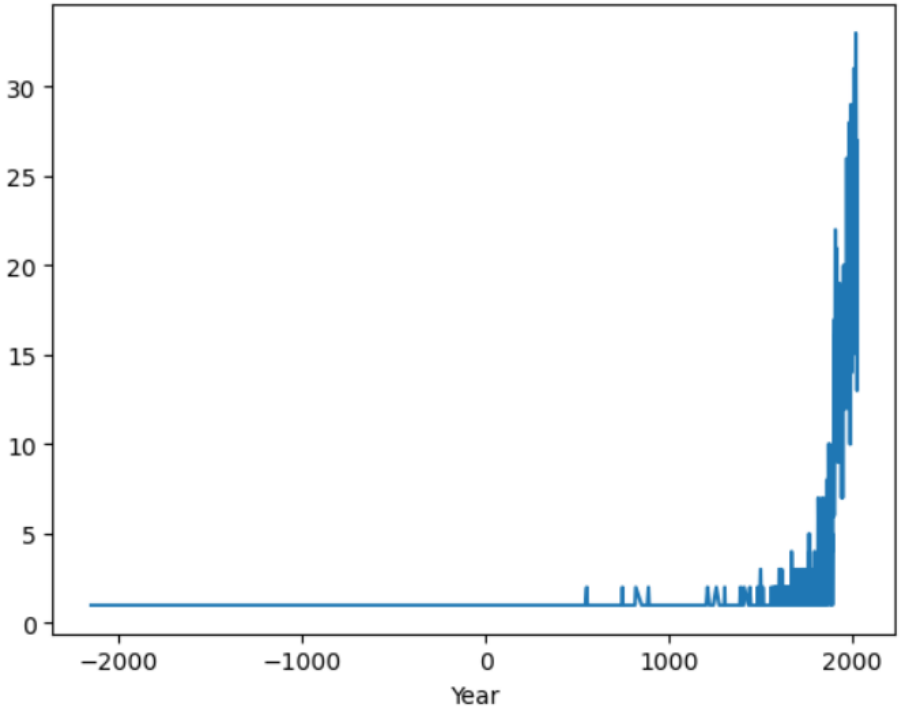
1.1 Print results

Location Name	Deaths
CHINA: SHAANXI PROVINCE	830313.0
TURKEY: ANTAKYA (ANTIOCH)	434870.0
HAITI: PORT-AU-PRINCE	316000.0
IRAN: TABRIZ	268750.0
TURKEY: ANTAKYA (ANTIOCH), SAMANDAG	250000.0
CHINA: NE: TANGSHAN	242769.0
CHINA: GANSU PROVINCE, SHANXI PROVINCE	235502.0
AZERBAIJAN: GYZNDZHA	230000.0
IRAN: DAMGHAN, QUMIS	200000.0
ARMENIA: DVIN; IRAN: ARDABIL	150000.0

1.2

Analysis:

Over time, the number of recorded earthquakes has gradually increased. The reason for this trend may be that early (BC) earthquake records were incomplete and fewer in number. This increasing trend mainly reflects the improvement in human recording capabilities, rather than an actual change in earthquake frequency.



1.3

Due to the large number of output results for this question, I have generated a result file called country_results.xlsx, where you can view the results sorted in descending order based on the total number of earthquakes by country.

2、Wind speed in Shenzhen from 2010 to 2020

Screening rules:

① Delete data where the wind direction angle is missing, i.e., values equal to 999;

② For wind direction quality code, only require numbers marked as 1 to pass all quality checks;

③ Regarding the wind direction type codes, filter out the data with type codes N, R, and C, and discard the rest.;

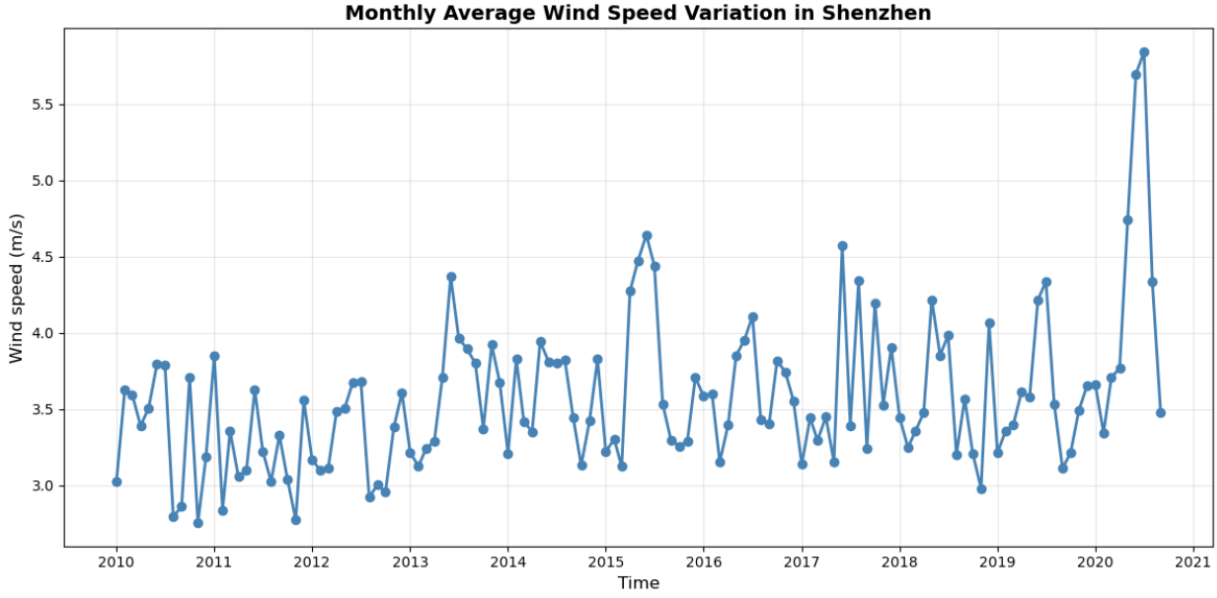
④ For wind speed rate, read it as is, and delete records marked as 9999, which indicates missing data. The read wind speed rate should be divided by a scaling factor of 10;

⑤ For wind speed quality code, only require values marked as 1 to pass all quality checks.

Only after these layers of screening can the wind speed data be used for mapping.

Trend:

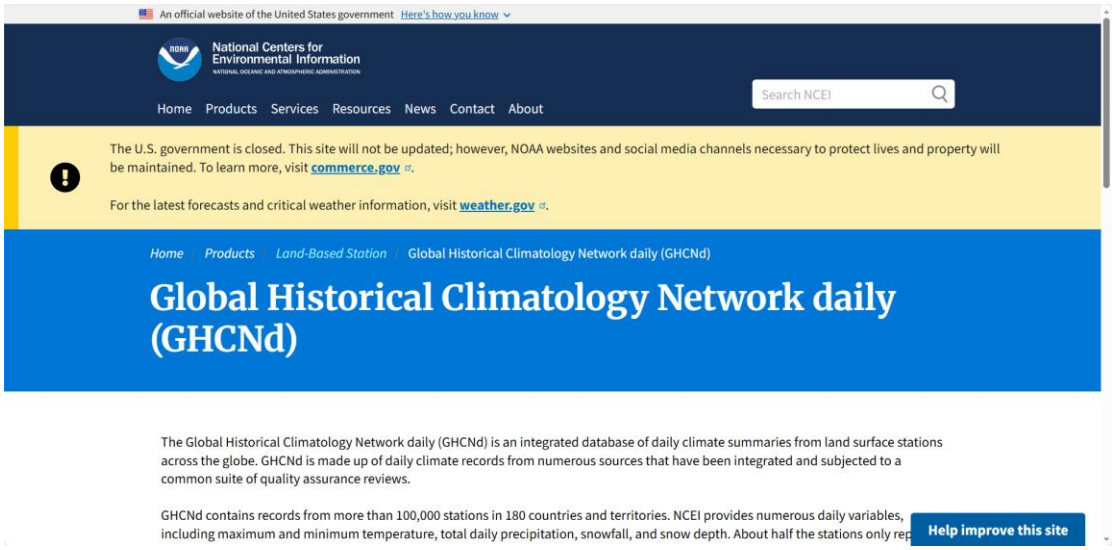
Over a ten-year period, the monthly average wind speed in Shenzhen has increased slowly and slightly, with the increase fluctuating along the way.



3、Explore a data set

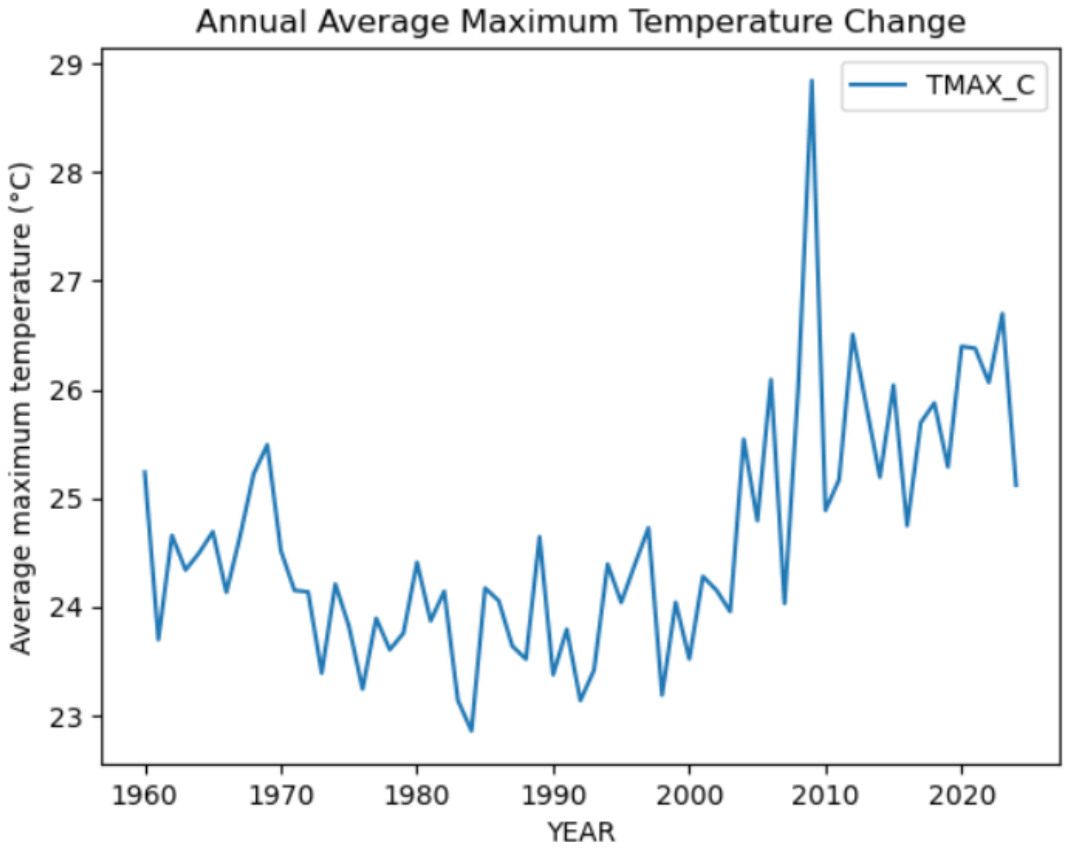
3.1

The data file loaded from the NCEI website is named AR000087374.csv.



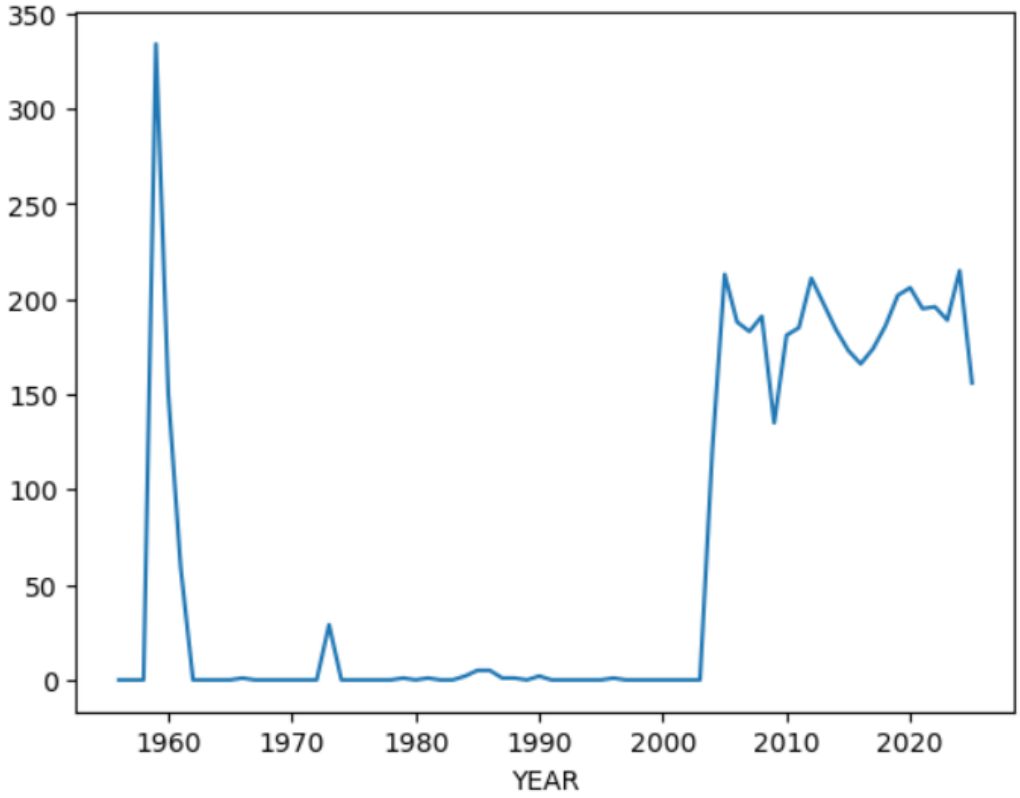
3.2

Plot the changes in the annual average maximum temperature recorded at the current site from 1960 to 2024, as shown in the image.



3.3

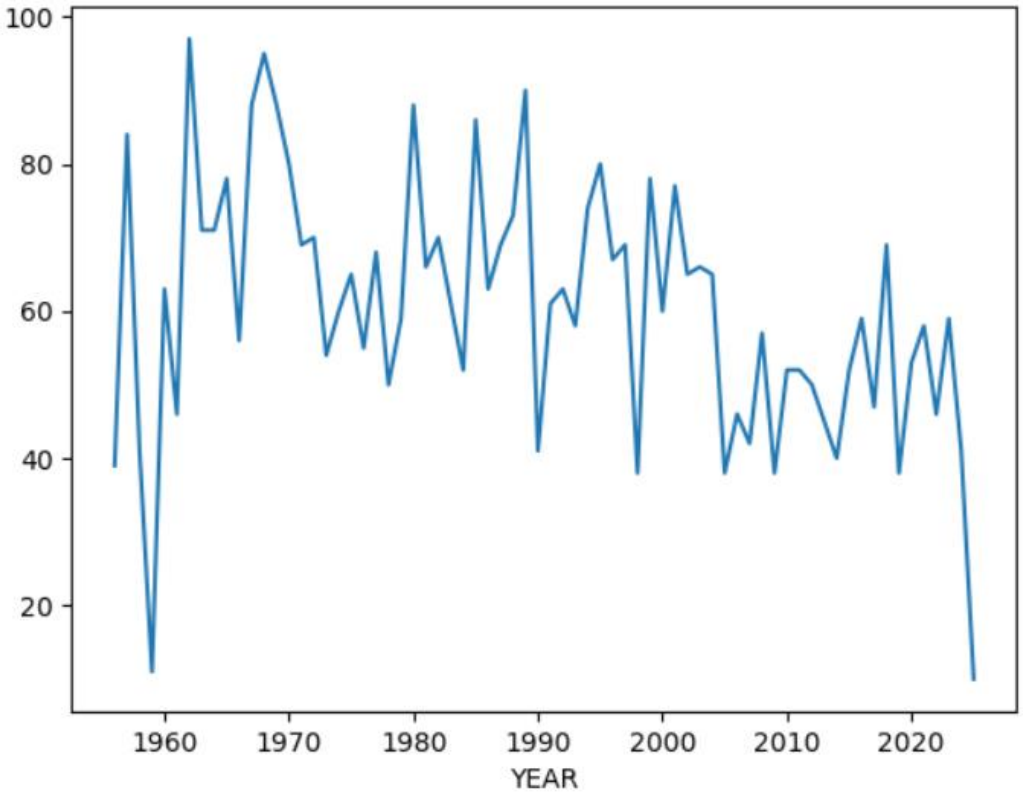
①Number of days with missing maximum temperature data each year.



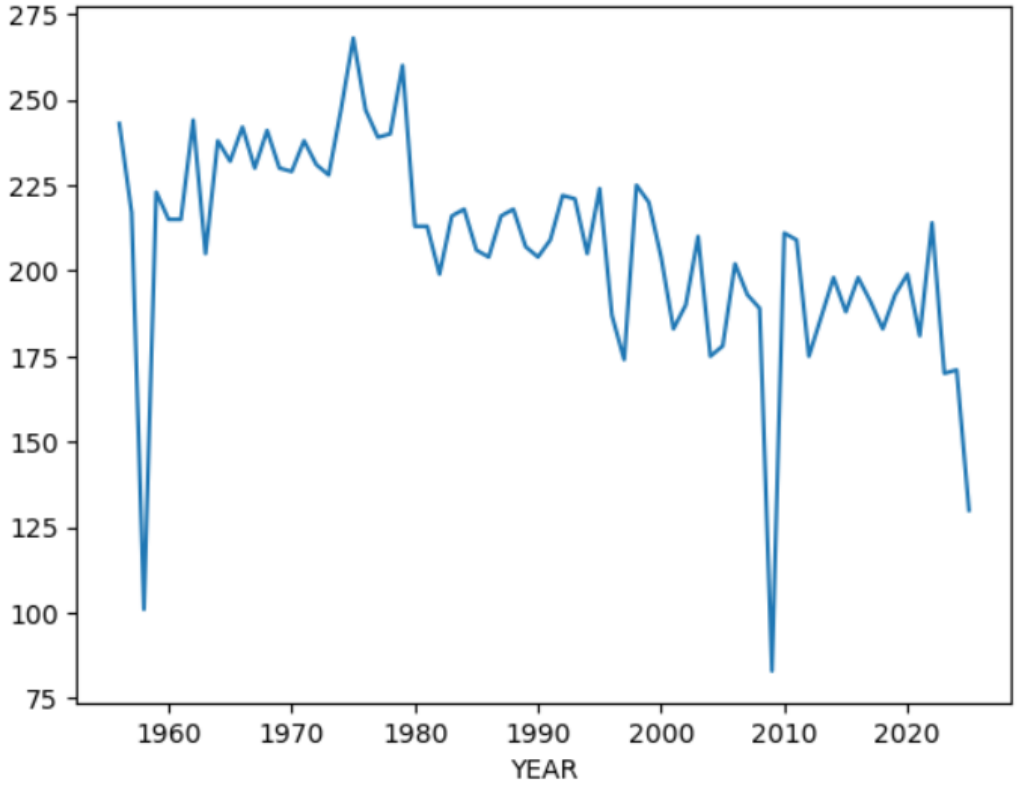
②Top 10 highest average annual temperatures.

YEAR	
2009	28.844211
1959	28.570968
2023	26.698295
2012	26.505844
2020	26.396875
2021	26.378571
2006	26.091477
2022	26.063905
2015	26.038743
2008	26.014943

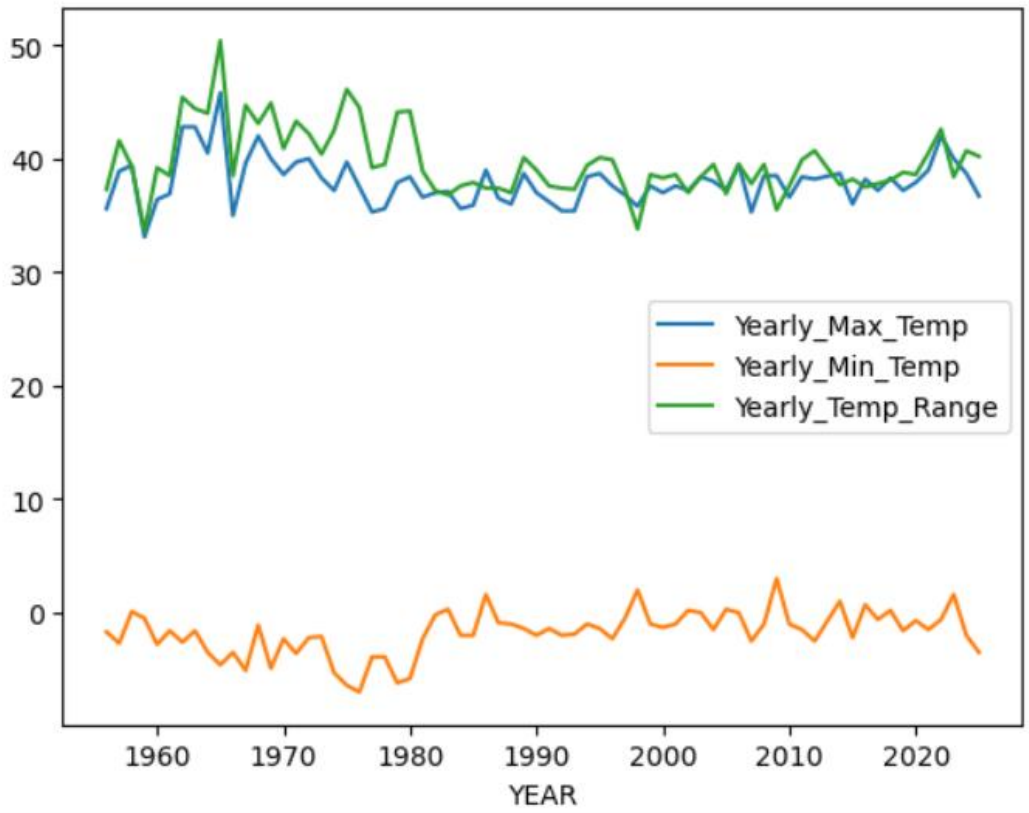
③Number of hot days per year (>30°C).



④Number of days with low temperatures (<15°C) each year.



⑤The annual difference between the highest and lowest temperatures.


50
40
30
20
10
0
1960
1970
1980
1990
2000
2010
2020
YEAR
Yearly_Max_Temp
Yearly_Min_Temp
Yearly_Temp_Range