姓名：万思晨

学号：12332276

Problem 1

The usage of pd.isnull() finds on https://blog.csdn.net/xc_zhou/article/details/87635568.

The usage of ~ finds on https://zhuanlan.zhihu.com/p/422963510.

The frequency of major earthquakes has been increasing year by year. This may be due to the lower earthquake detection technology and lost records many years ago, while recent technological advancements have improved monitoring accuracy, allowing for more precise data detection. It is also possible that we are currently in a period of increased geological plate activity, leading to a rise in earthquake frequency.

Number of Earthquakes with Magnitude > 6.0 each Year
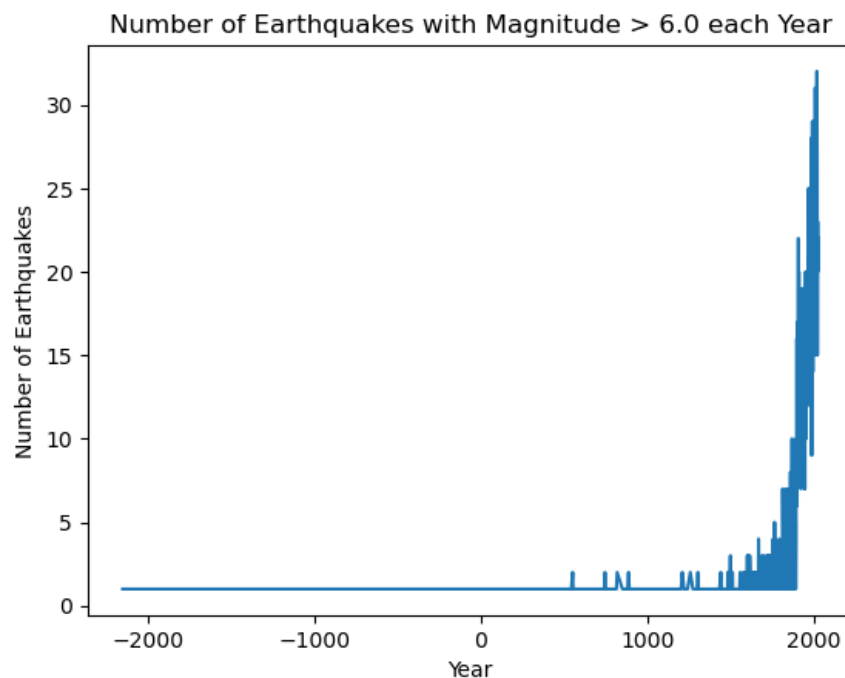
Problem 2

The usage of str.split() finds on https://www.runoob.com/python/att-string-split.html

First, filter out the fourth data in the WND column, which represents the wind speed, to remove any outliers. Then, extract the wind speed separately. Extract the date and its corresponding wind speed, resample by month to calculate the average wind speed for each month.

The average monthly wind speed over the past 10 years has shown a yearly increasing trend.

Monthly Average Wind Speed Over Time
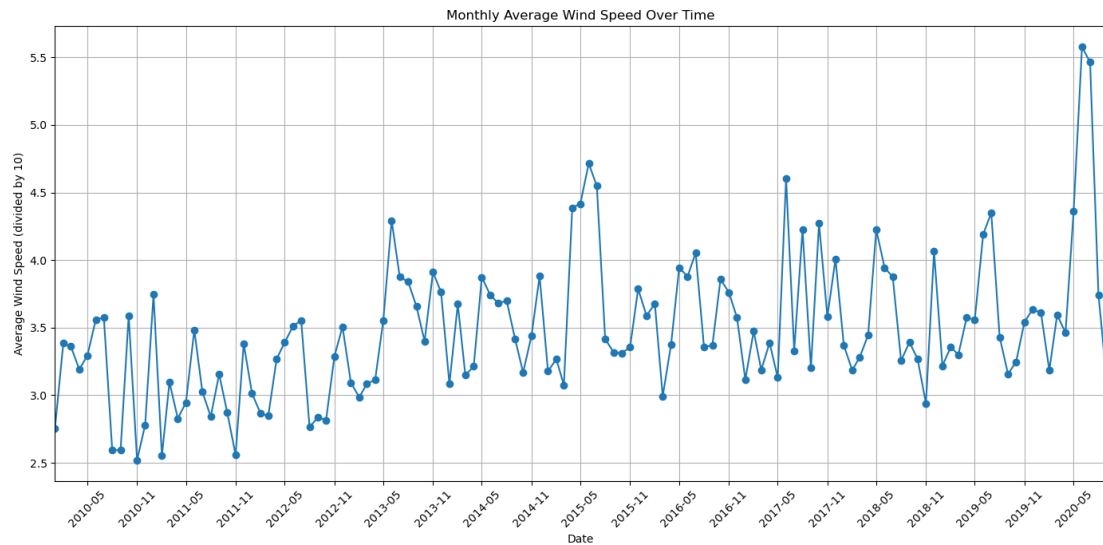
Problem 3

ZHU Yuguang explained to me what is asked in problem set 3

Download the temperature anomalies of the ClimDiv and USCRN Datasets for the Contiguous U.S. from https://www.ncei.noaa.gov/access/monitoring/national-temperature-index/.

Remove outliers from the temperature data, convert Fahrenheit to Celsius, and calculate the average of the temperature data from both ClimDiv and USCRN datasets. Then, calculate the mean, median, standard deviation, maximum value, and minimum value as the five statistical features.

The difference between the median and the mean is small, and there is only a 2-degree Celsius difference between the maximum and minimum values. The meteorological anomaly data is relatively stable, indicating that there is no worsening trend in extreme weather conditions.

Temperature Anomalies for the Contiguous U.S.