Assignment 4 Report

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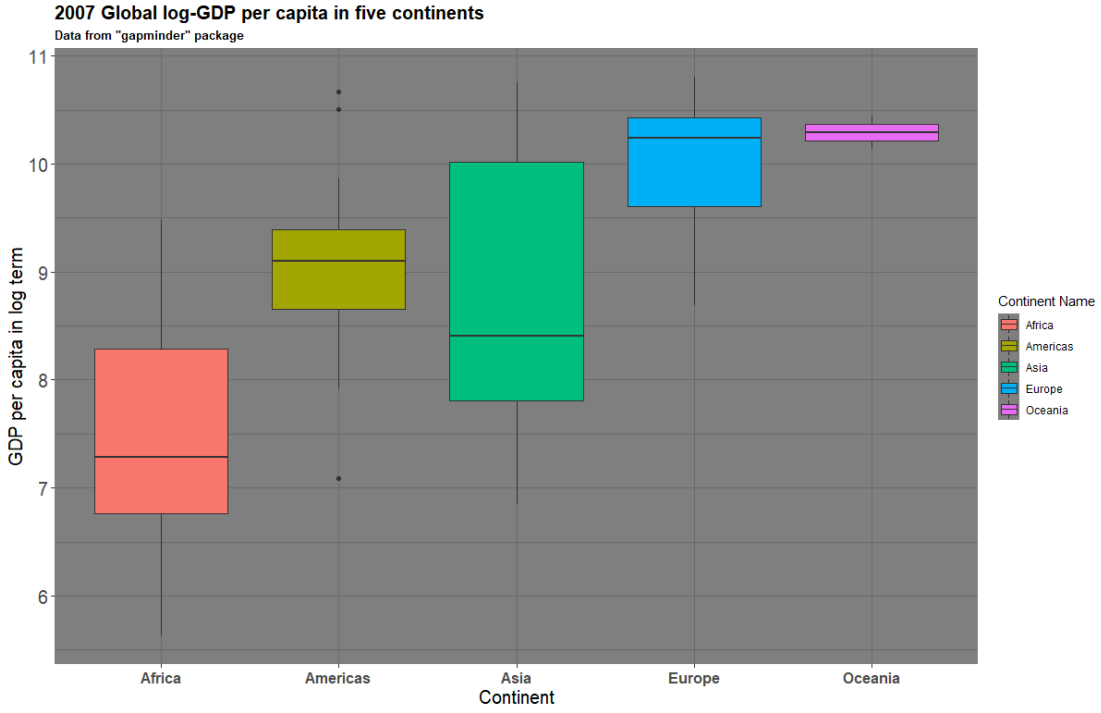
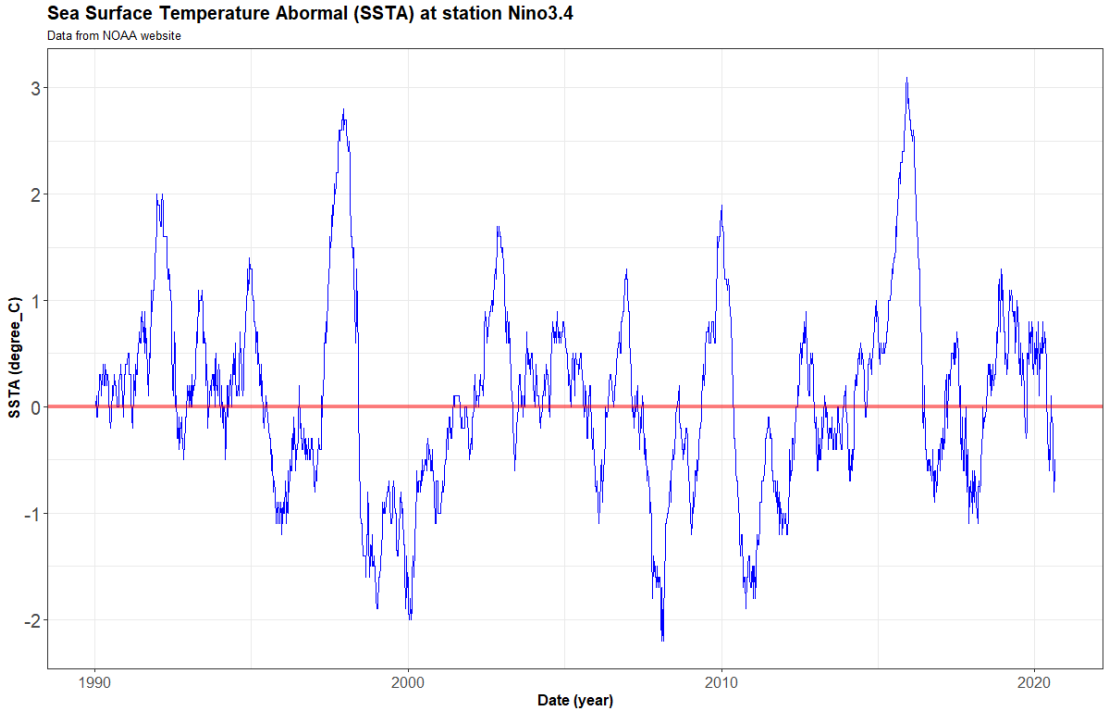
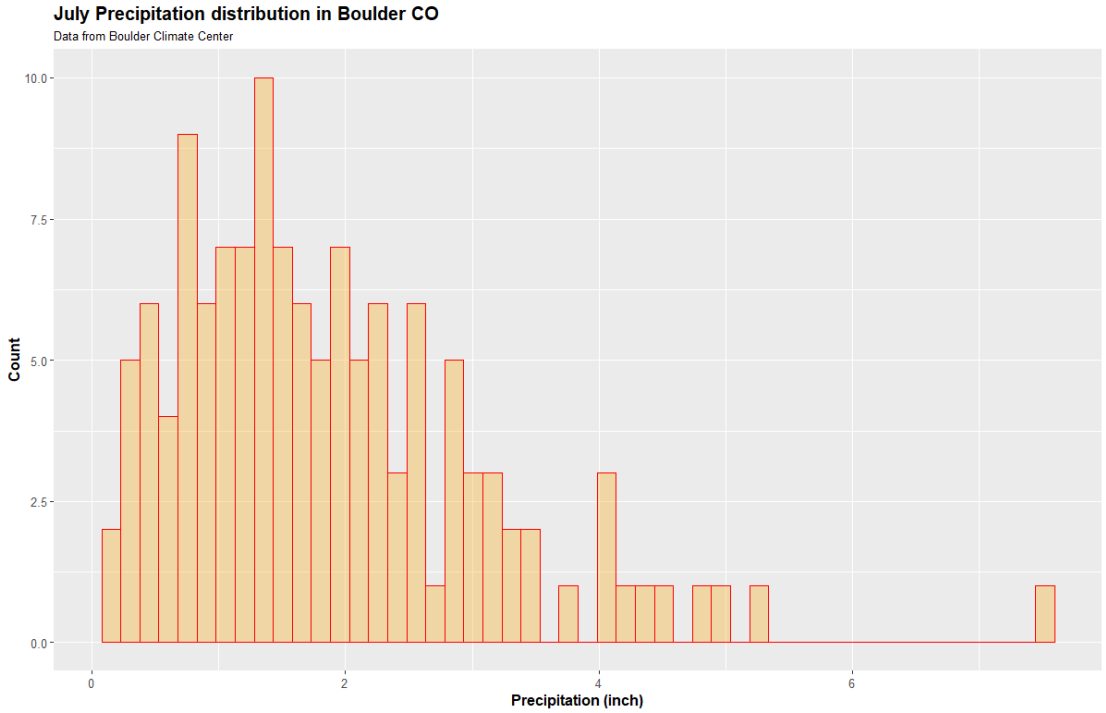
1.1 2007 GDP per capita in different continents.



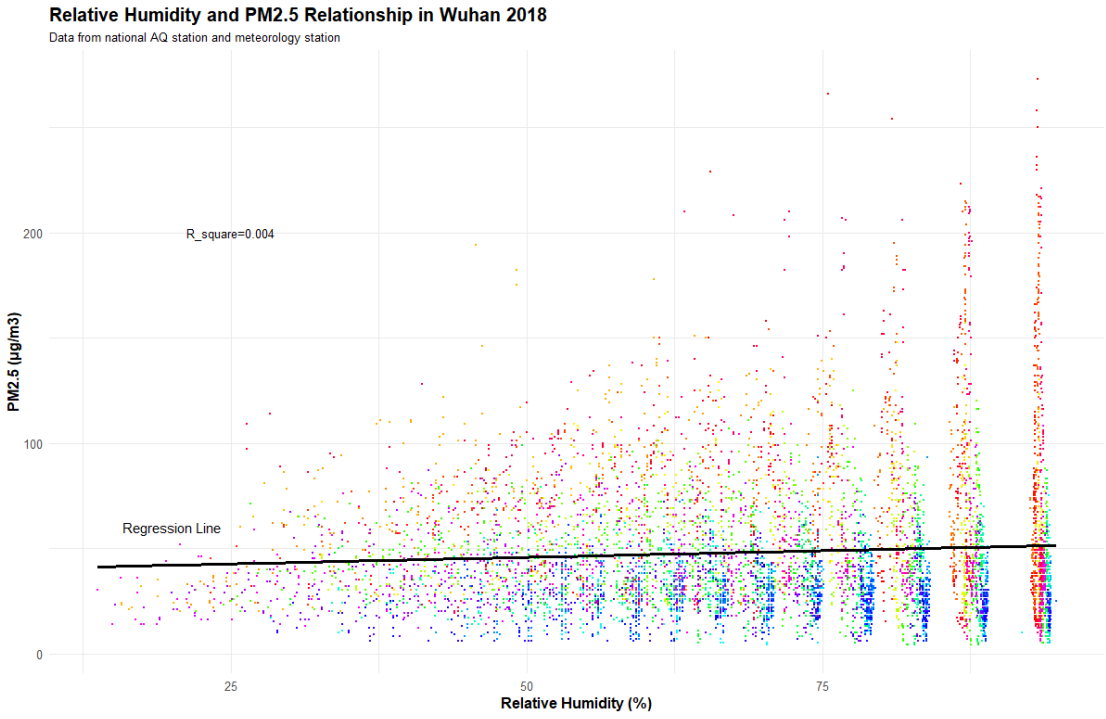
1.2 El Nino / La Nina index (ENSO index) from SSTA on southern Pacific Ocean in-situ measurement time series.



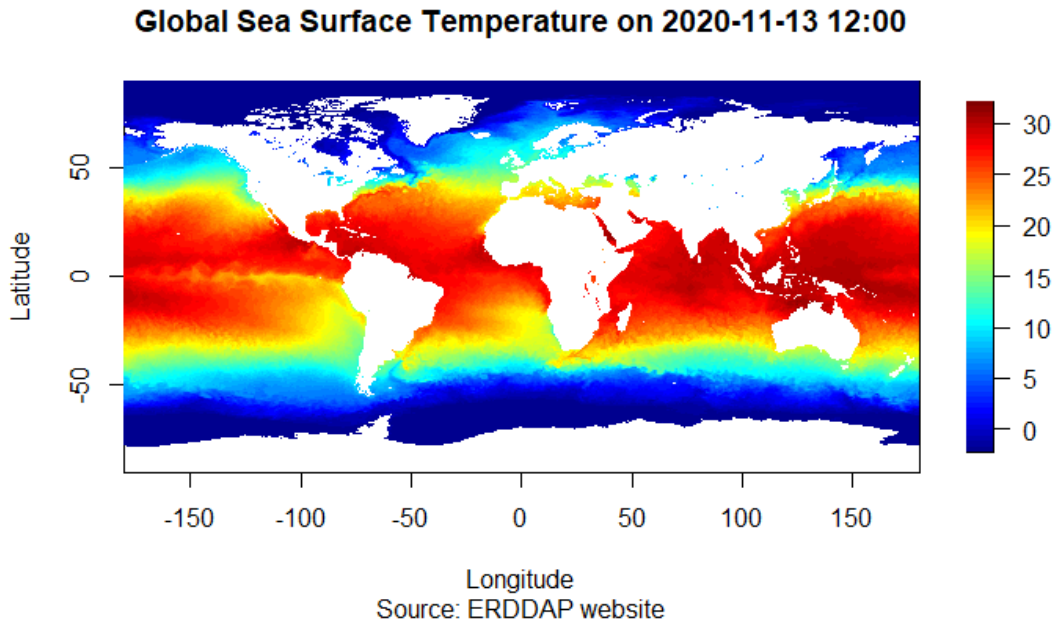
1.3 July precipitation distribution in count in Boulder, Colorado, U.S.



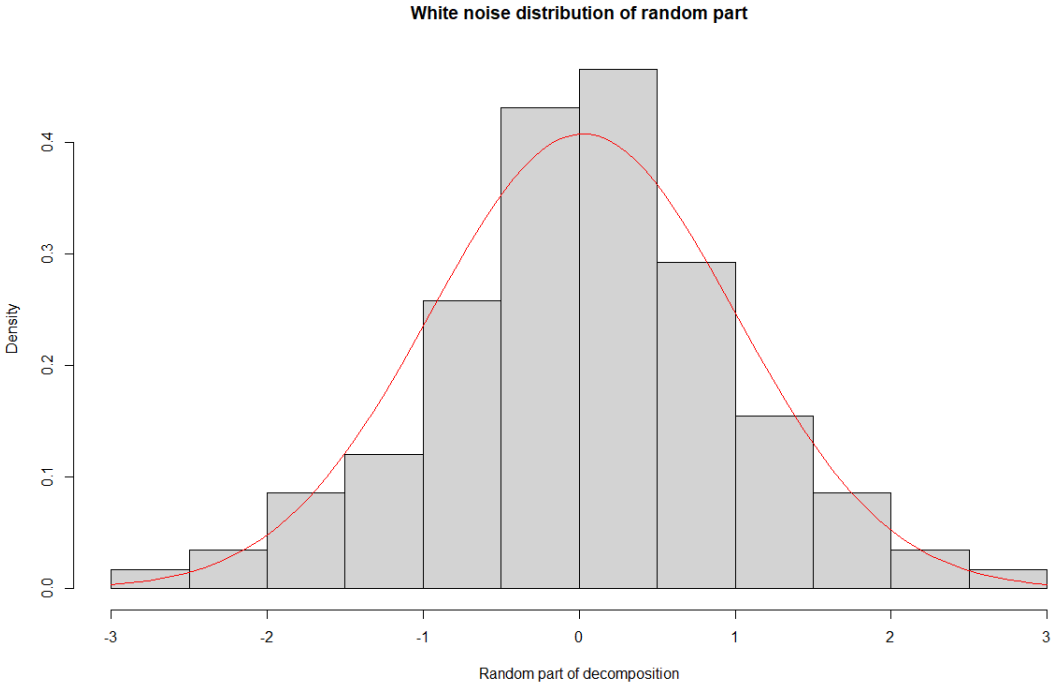
1.4 Relationship between concentration of $PM_{2.5}$ and relative humidity in Wuhan 2018.



1.5 Global Sea Surface Temperature (SST) on 12:00 13th Nov, 2020.
Note: this code runs super slow.



2.2 The distribution of random noise follows the white noise.



2.3 Function auto.arima returns a best ARIMA indexes with $p=d=0$, and $q=2$ with drift. According to the result, it was a pure MA model instead of ARMA model, which means the previous values did nothing towards the current one. Monthly temperatures are independent to the observed time series, if excluded the seasonality.

2.4 The observation result of Sep. is 29.45206 and the forecast result is 29.04255, with difference only 1.3%. The forecast of Oct. is 26.40132 (all unit in ℃).