

ASSIGNMENT 6

ARMA/ARIMA

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Problem Statement:

Apply ARMA or ARIMA on the dataset after figuring out whether the dataset has seasonality and hence forecast the required values.

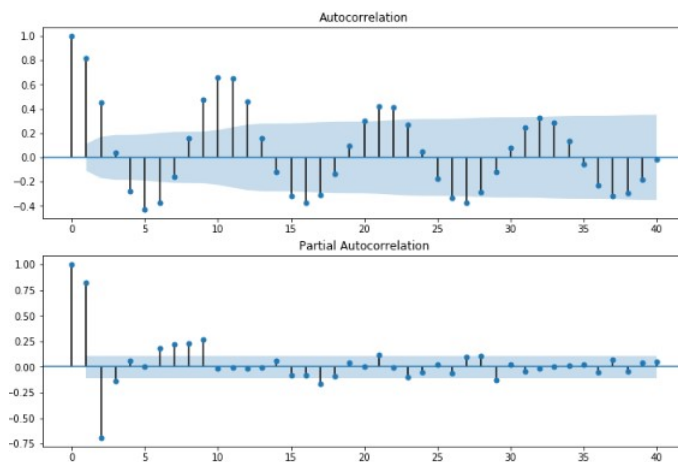
Number of Observations - 309 (Annual 1700 - 2008)

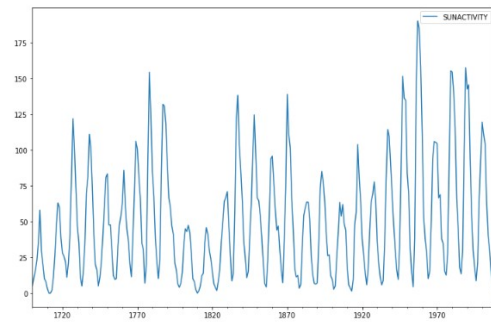
Number of Variables - 1

Variable name definitions::

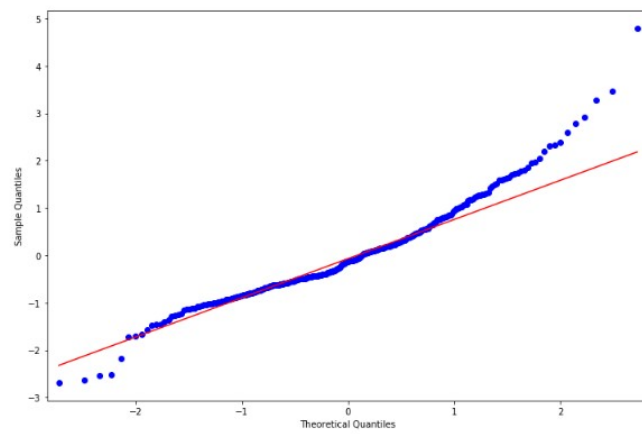
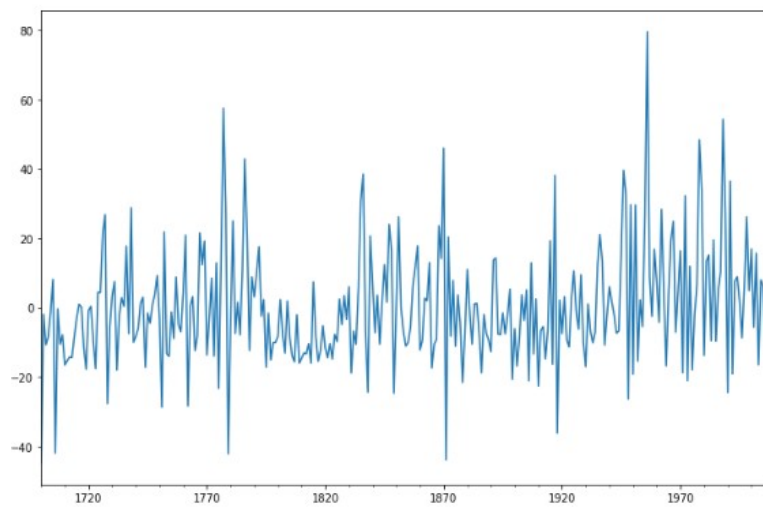
SUNACTIVITY - Number of sunspots for each year

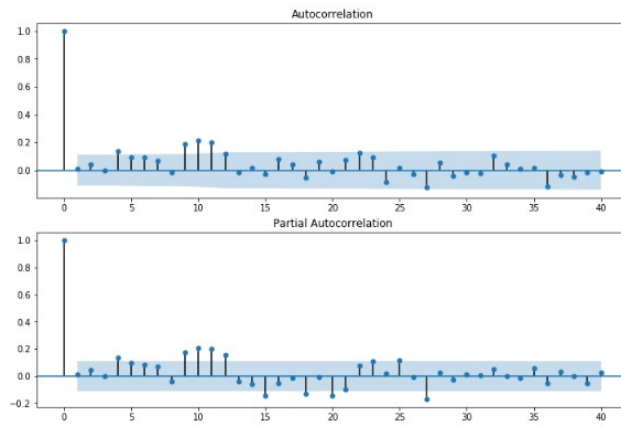
The data file contains a 'YEAR' variable that is not returned by load.





```
const          49.659343
ar.L1.SUNACTIVITY  1.390656
ar.L2.SUNACTIVITY -0.688571
dtype: float64
```





lag	AC	Q	Prob(>Q)
1.0	0.009179	0.026286	8.712029e-01
2.0	0.041793	0.573040	7.508721e-01
3.0	-0.001335	0.573599	9.024487e-01
4.0	0.136089	6.408911	1.706209e-01
5.0	0.092468	9.111815	1.046865e-01
6.0	0.091948	11.793226	6.674387e-02
7.0	0.068748	13.297181	6.519027e-02
8.0	-0.015020	13.369209	9.976194e-02
9.0	0.187592	24.641888	3.393936e-03
10.0	0.213718	39.321975	2.229492e-05
11.0	0.201082	52.361119	2.344968e-07
12.0	0.117182	56.804169	8.574328e-08
13.0	-0.014055	56.868306	1.893917e-07
14.0	0.015398	56.945544	3.997690e-07
15.0	-0.024967	57.149300	7.741527e-07
16.0	0.080916	59.296749	6.872217e-07
17.0	0.041138	59.853717	1.110952e-06
18.0	-0.052021	60.747408	1.548444e-06
19.0	0.062496	62.041671	1.831657e-06
20.0	-0.010301	62.076958	3.381267e-06
21.0	0.074453	63.926633	3.193609e-06
22.0	0.124955	69.154752	8.978416e-07
23.0	0.093162	72.071016	5.799821e-07
24.0	-0.082152	74.346668	4.713047e-07

1990-12-31	167.047416
1991-12-31	140.993005
1992-12-31	94.859126
1993-12-31	46.860920
1994-12-31	11.242606
1995-12-31	-4.721278
1996-12-31	-1.166911
1997-12-31	16.185676
1998-12-31	39.021854
1999-12-31	59.449836
2000-12-31	72.170109
2001-12-31	75.376759
2002-12-31	70.436446
2003-12-31	60.731586
2004-12-31	50.201804
2005-12-31	42.076036
2006-12-31	38.114292
2007-12-31	38.454641
2008-12-31	41.963804
2009-12-31	46.869268
2010-12-31	51.423238
2011-12-31	54.399696
2012-12-31	55.321672

Freq: A-DEC, dtype: float64

