

Monthly measurements of sea levels in Stockholm

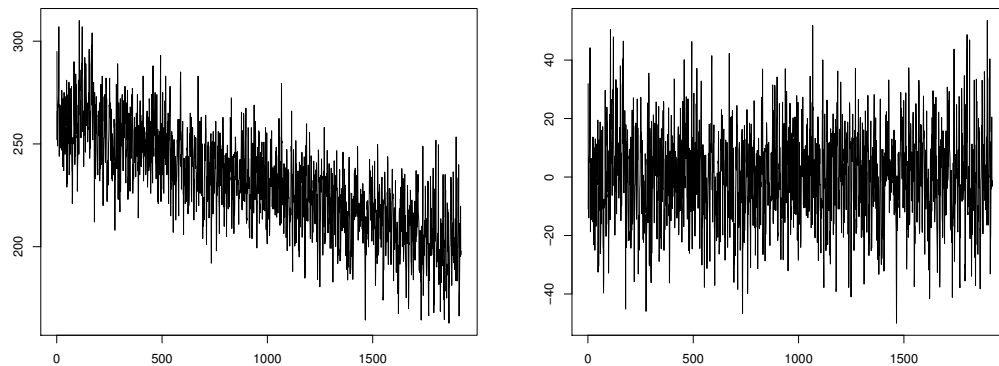


Figure 1: Left: monthly measurements of sea levels in Stockholm. Right: centered and with a linear trend removed

Call:

```
lm(formula = sealevels ~ months)
```

Residuals:

Min	1Q	Median	3Q	Max
-49.978	-10.964	0.252	10.318	53.492

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	2.631e+02	7.124e-01	369.35	<2e-16 ***
months	-3.334e-02	6.427e-04	-51.87	<2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 15.6 on 1917 degrees of freedom

Multiple R-squared: 0.584, Adjusted R-squared: 0.5838

F-statistic: 2691 on 1 and 1917 DF, p-value: < 2.2e-16

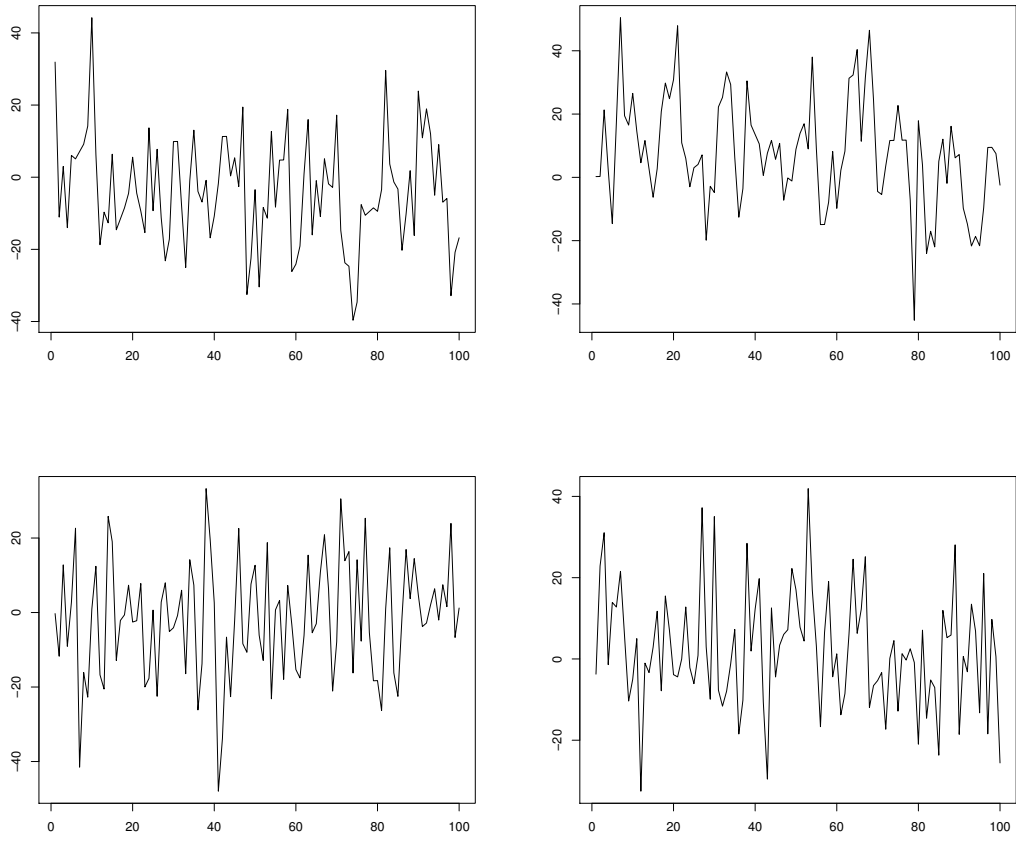


Figure 2: Upper: the first 200 data points. Lower: Gaussian noise with the estimated standard deviation

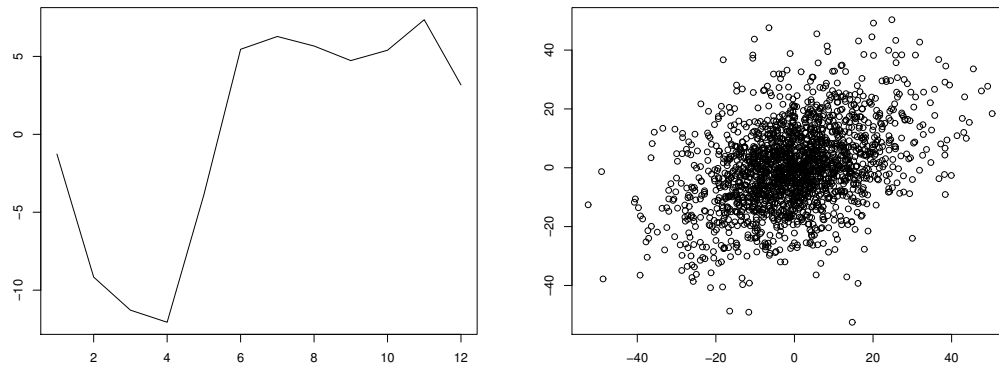


Figure 3: Left: monthly averages of the centered and trend adjusted data series. Right: scatter plot of the centered data with trend and seasonal component removed against itself with a one-month time lag.

Call:

```
lm(formula = sealevels_nts[4:1919] ~ sealevels_nts[3:1918] +
    sealevels_nts[2:1917] + sealevels_nts[1:1916] - 1)
```

Residuals:

	Min	1Q	Median	3Q	Max
	-48.608	-8.044	-0.202	7.668	43.794

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
sealevels_nts[3:1918]	0.41910	0.02283	18.355	< 2e-16 ***
sealevels_nts[2:1917]	-0.06948	0.02470	-2.813	0.00496 **
sealevels_nts[1:1916]	0.04323	0.02281	1.895	0.05818 .

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 12.74 on 1913 degrees of freedom

Multiple R-squared: 0.1611, Adjusted R-squared: 0.1598

F-statistic: 122.5 on 3 and 1913 DF, p-value: < 2.2e-16

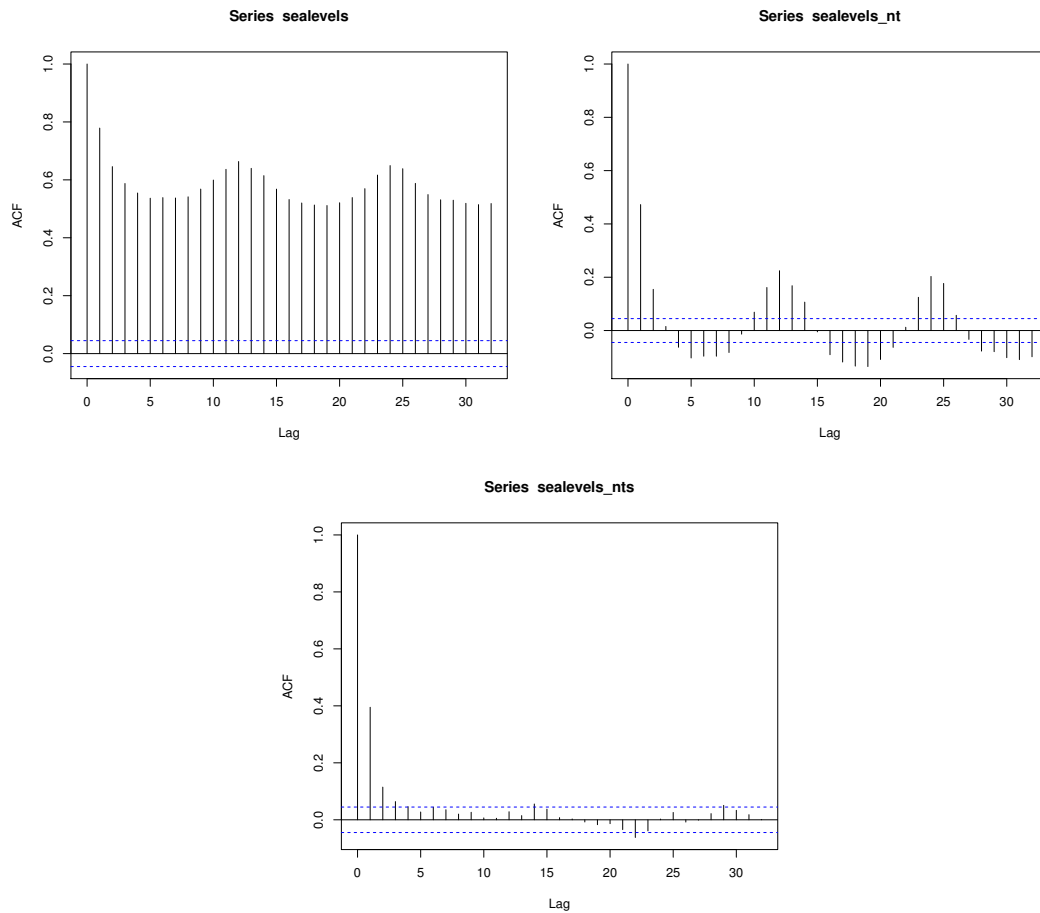


Figure 4: Upper left: sample acf of sea level measurements. Upper right: sample acf after centering and removal of linear trend. Lower: sample acf after removal of also the seasonal component.