pHExploration

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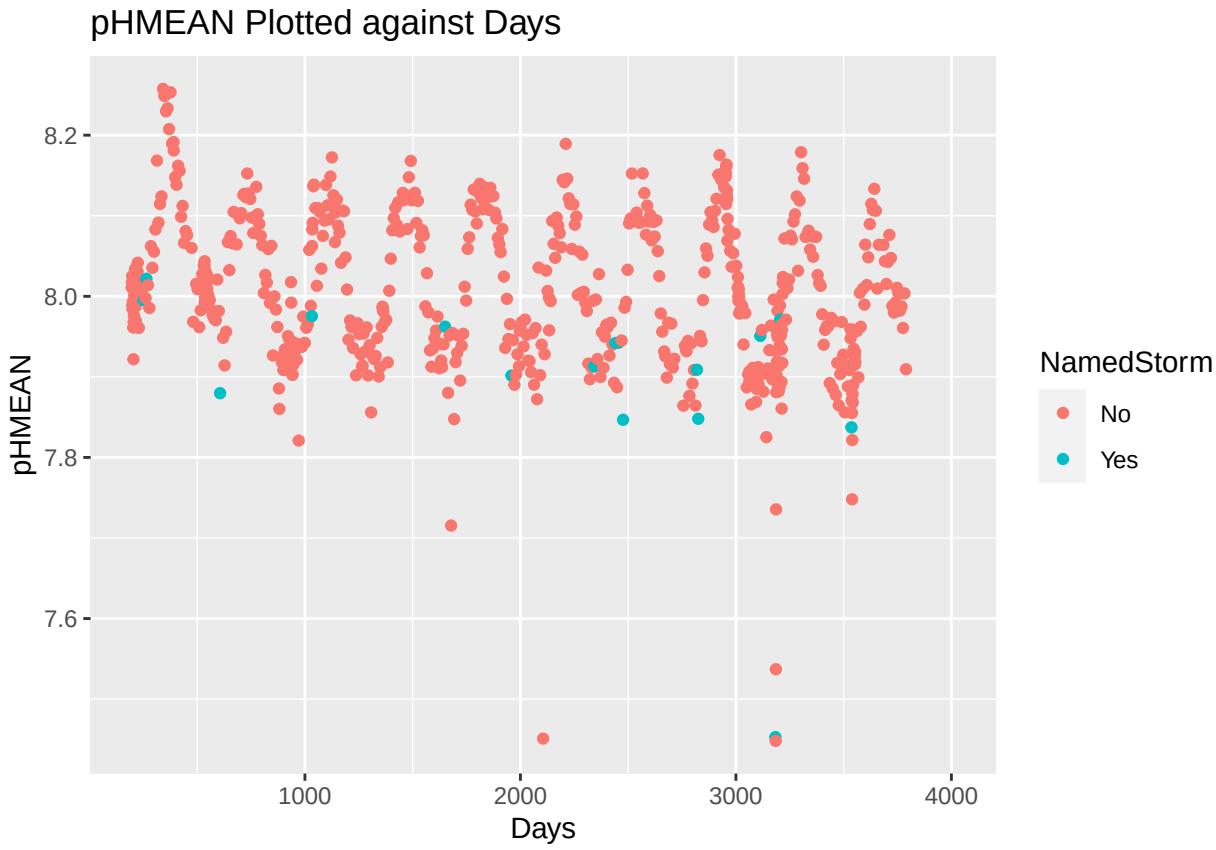
```
## Warning: Removed 48 rows containing missing values (geom_point).
```




```
##     pHMEAN      Date
## 1 7.448091 9/20/2018
```

The smallest pH value was 9/20/2018 – About a week after Hurricane Florence hit NC

```
## Warning: Removed 48 rows containing non-finite values (stat_boxplot).
```

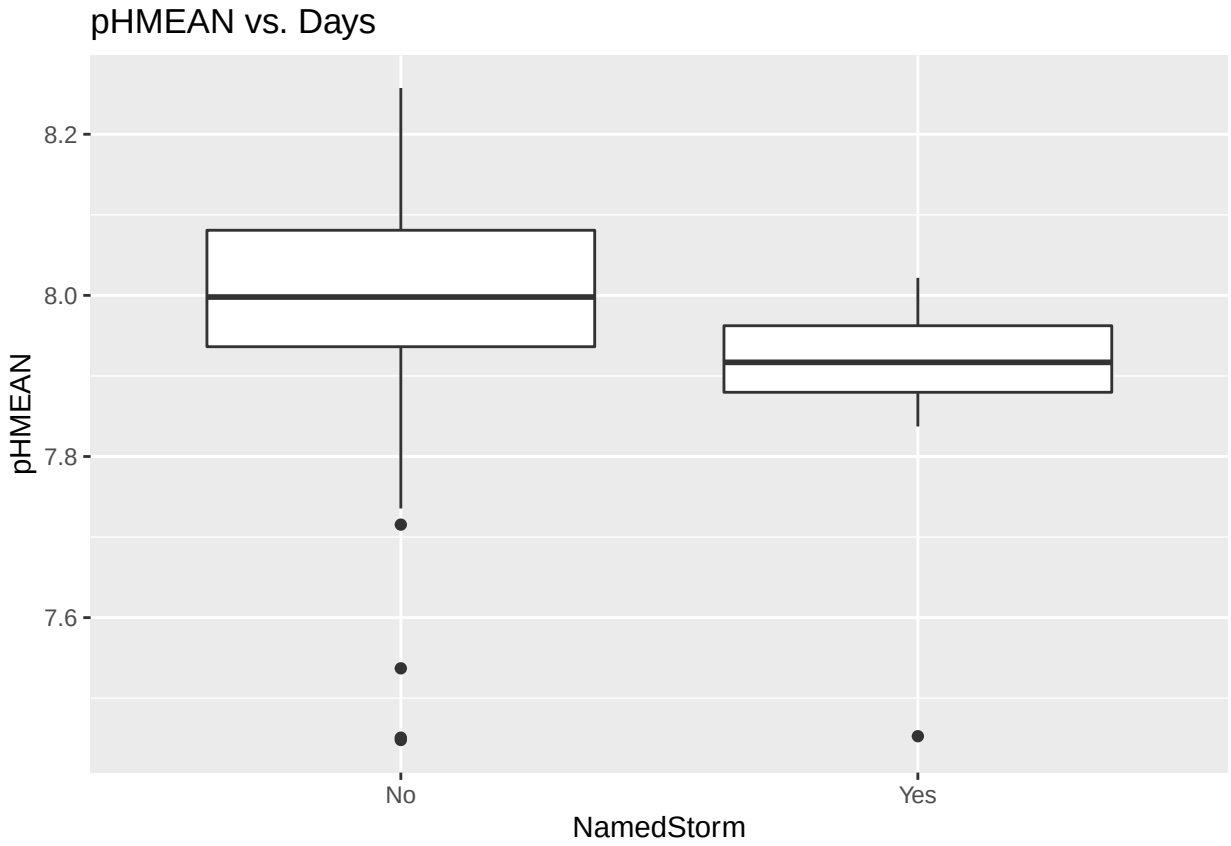
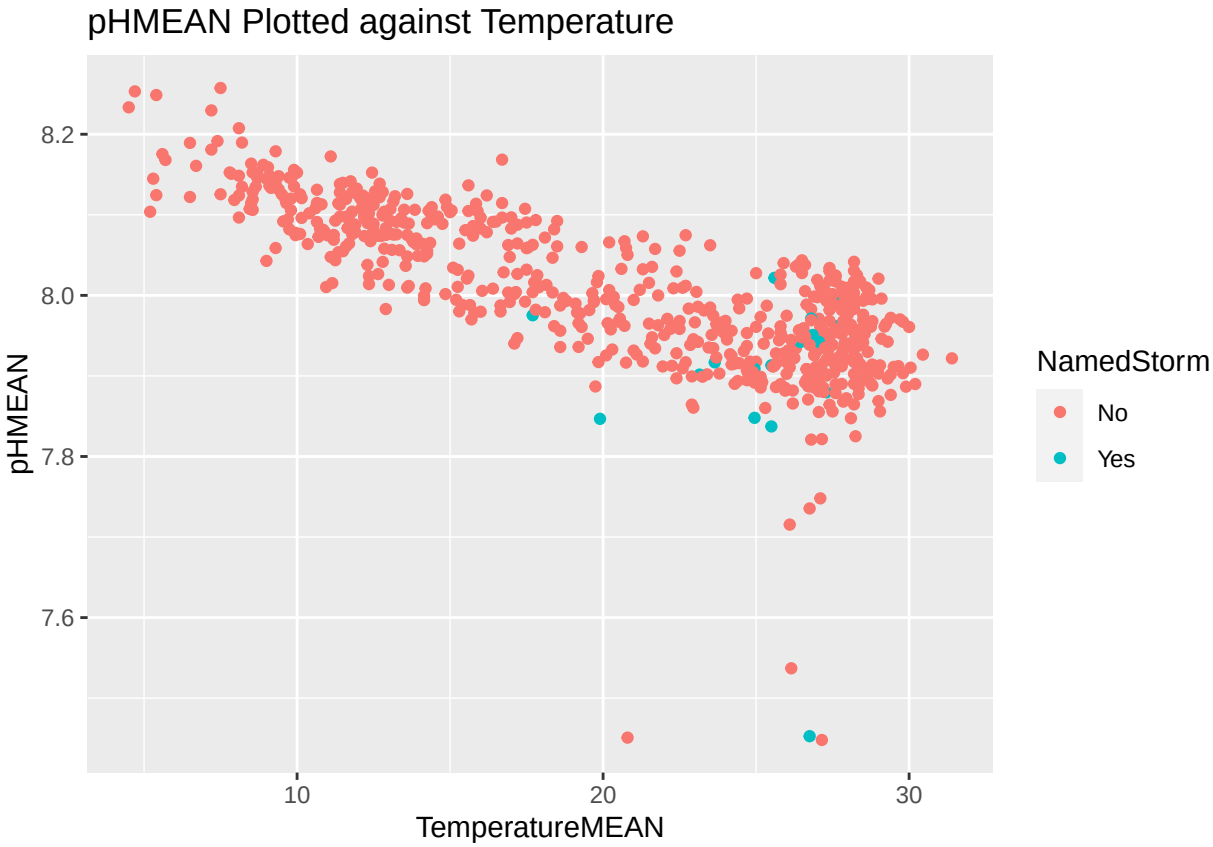


Table 1: Pairwise Wilcox Test

group1	group2	p.value
Yes	No	9e-05

```
## Warning: Removed 48 rows containing missing values (geom_point).
```

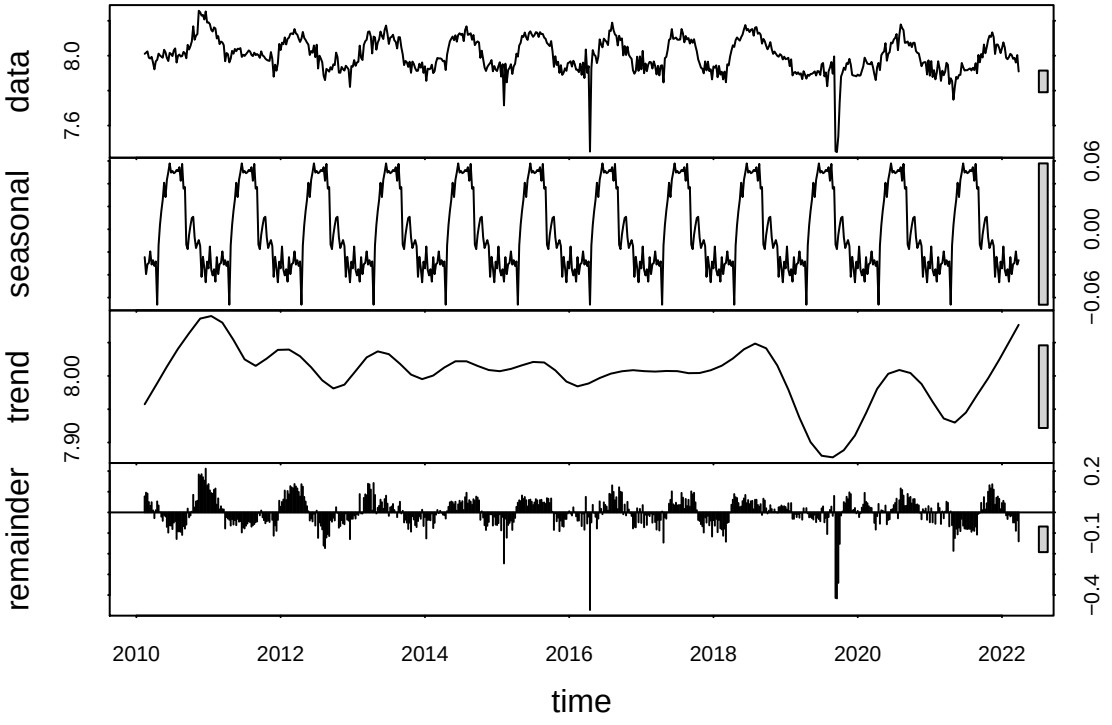


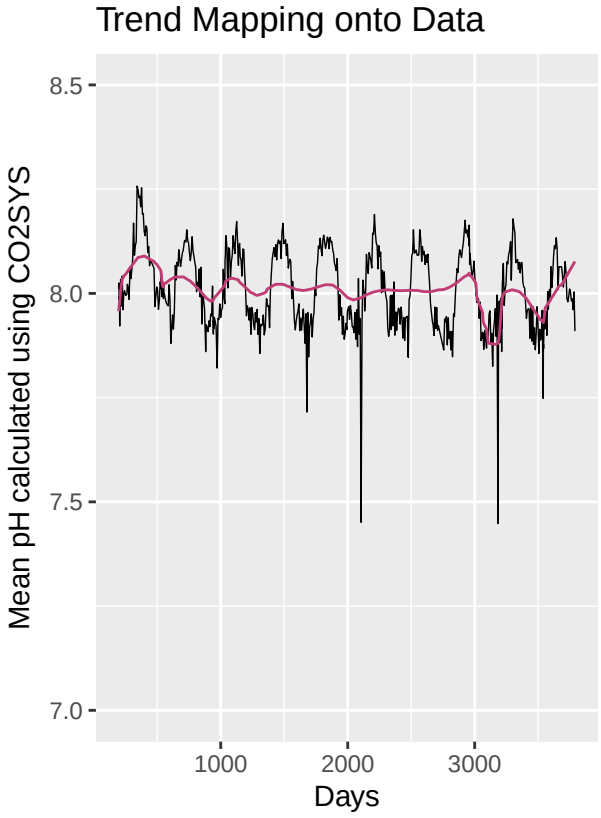
Lower pH values observed when there is a named storm – is this because of the storm or just a coincidence because pH tends to lower in warmer seasons and storms happen more often in summer?

Table 2: Linear Model of pH and Days

term	estimate	std.error	statistic	p.value
(Intercept)	8.046527	0.0078787	1021.301971	0
Days	-0.000022	0.0000034	-6.440201	0

Time Series


data
seasonal
trend
remainder
8.0
7.6
8.00
7.90
0.06
0.00
−0.06
0.2
−0.1
−0.4
2010
2012
2014
2016
2018
2020
2022
time


Trend Mapping onto Data
Mean pH calculated using CO2SYS
8.5
8.0
7.5
7.0
1000
2000
3000
Days

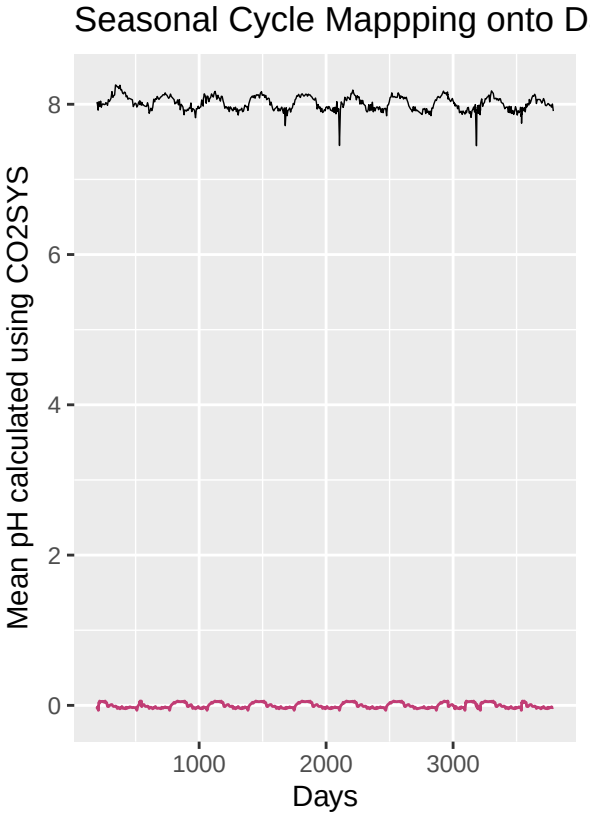
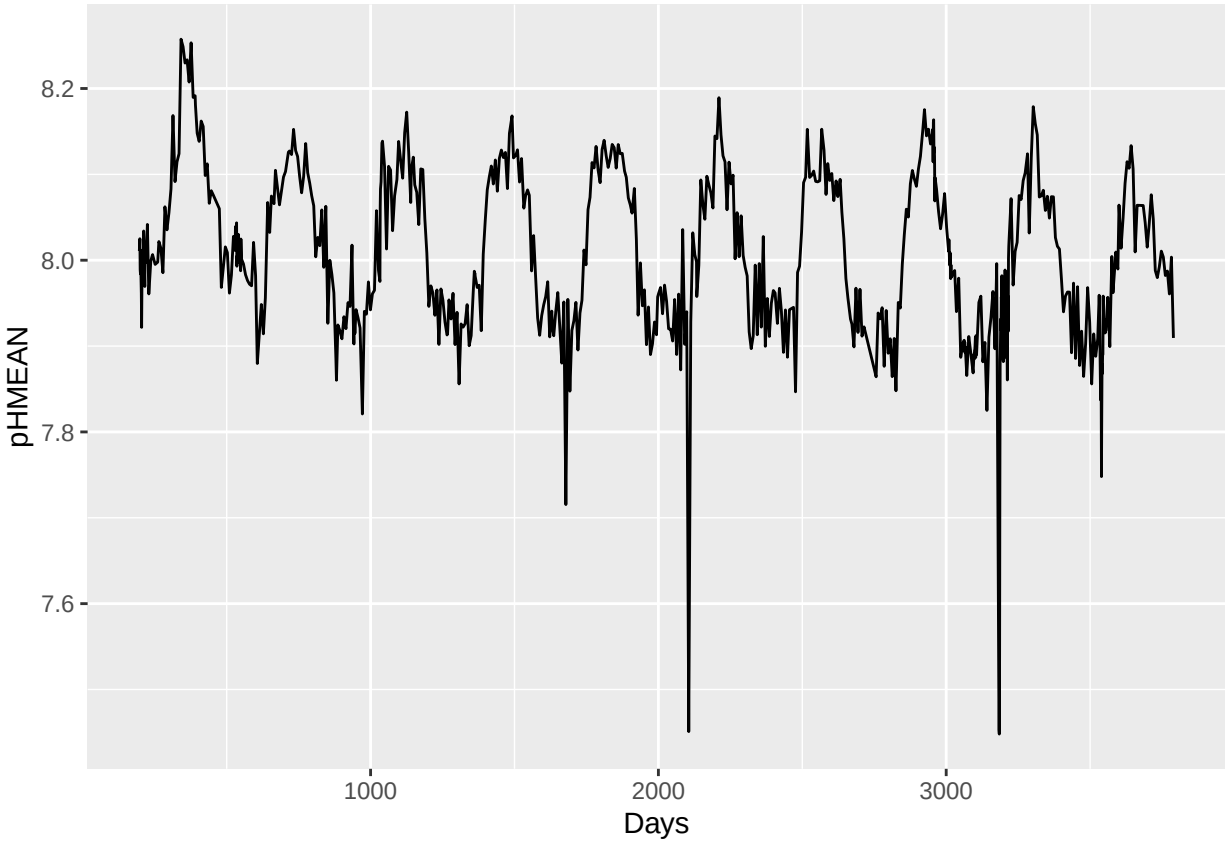
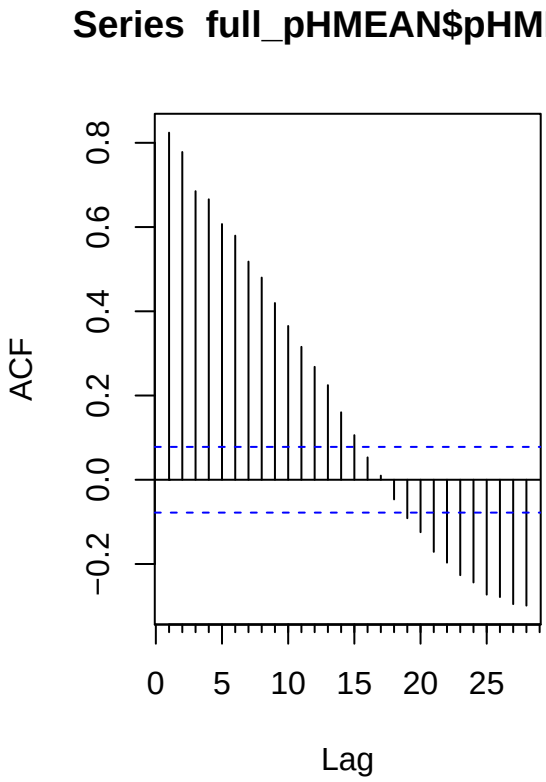

Seasonal Cycle Mappping onto Da
Mean pH calculated using CO2SYS
8
6
4
2
0
1000
2000
3000
Days

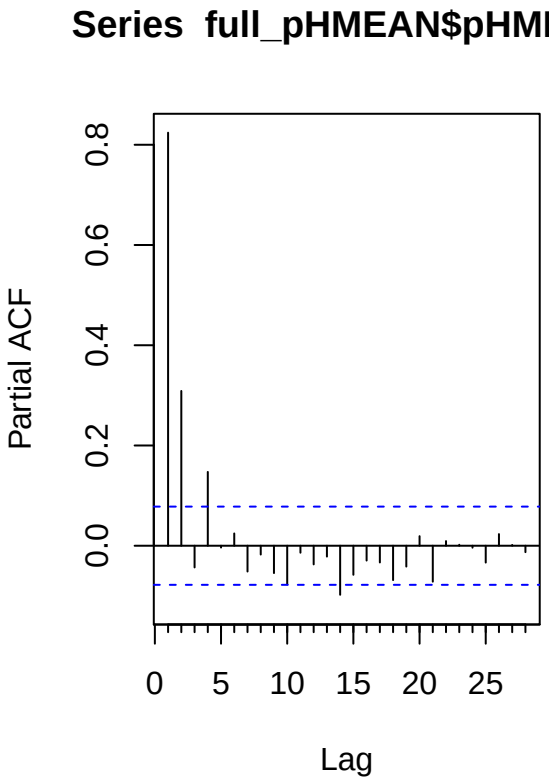
Table 3: Seasonal Mann Kendall test for pH

statistic	p.value	kendall_score	denominator	var_kendall_score
-0.0932878	0.0021753	-328	3516	11450.67

p-vale is less than 0.05, so we can reject the null hypothesis – There is a possible trend in the data








```
## Series: pico1.ts
## ARIMA(1,1,3)
##
## Coefficients:
##           ar1     ma1      ma2      ma3
##       -0.7071  0.3294  -0.2159  -0.1328
## s.e.   0.1300  0.1343   0.0685   0.0410
##
## sigma^2 estimated as 0.002793:  log likelihood=960.33
## AIC=-1910.66   AICc=-1910.57   BIC=-1888.43
```