

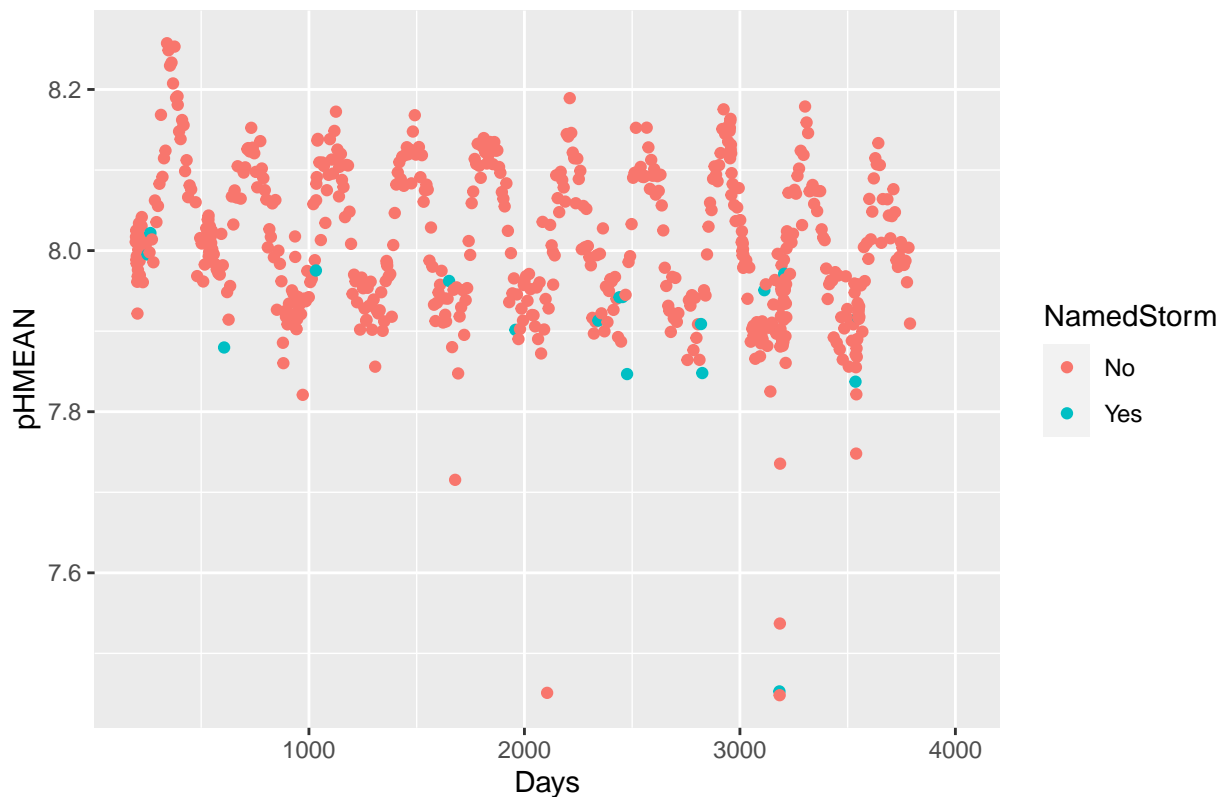
# EDA

Alexandra Lawrence

## Exploring pH

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

pHMEAN Plotted against Days

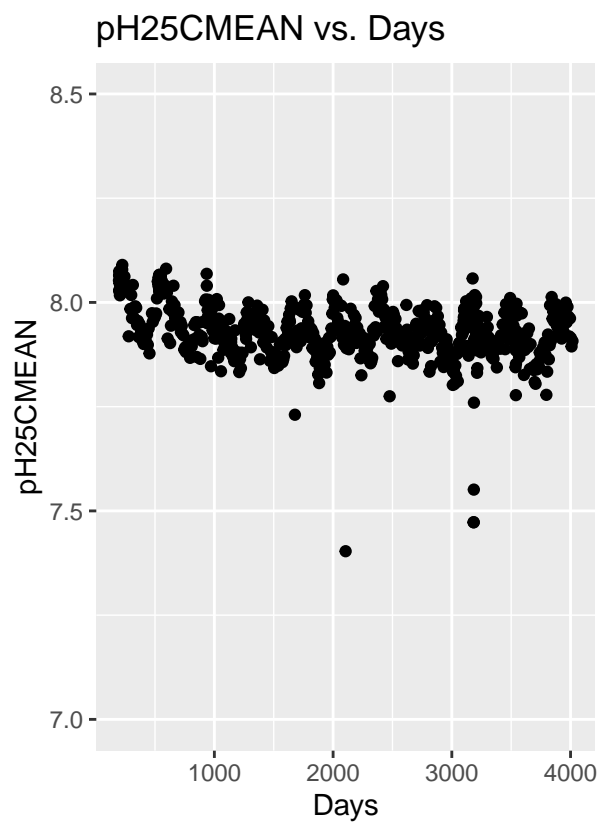
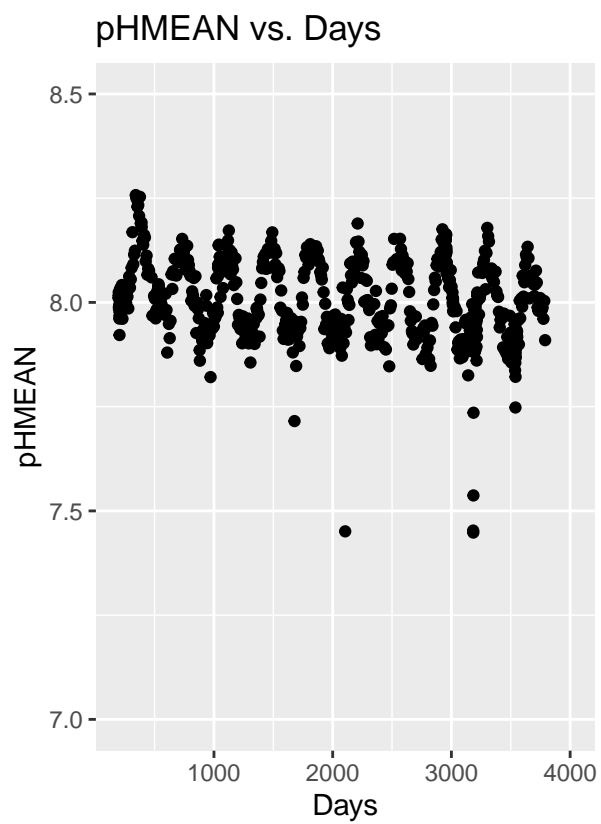


Lower pH values observed when there is a named storm – is this because of the storm or just a coincidence because pH tends to lower in warmer seasons and storms happen more often in summer?

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

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

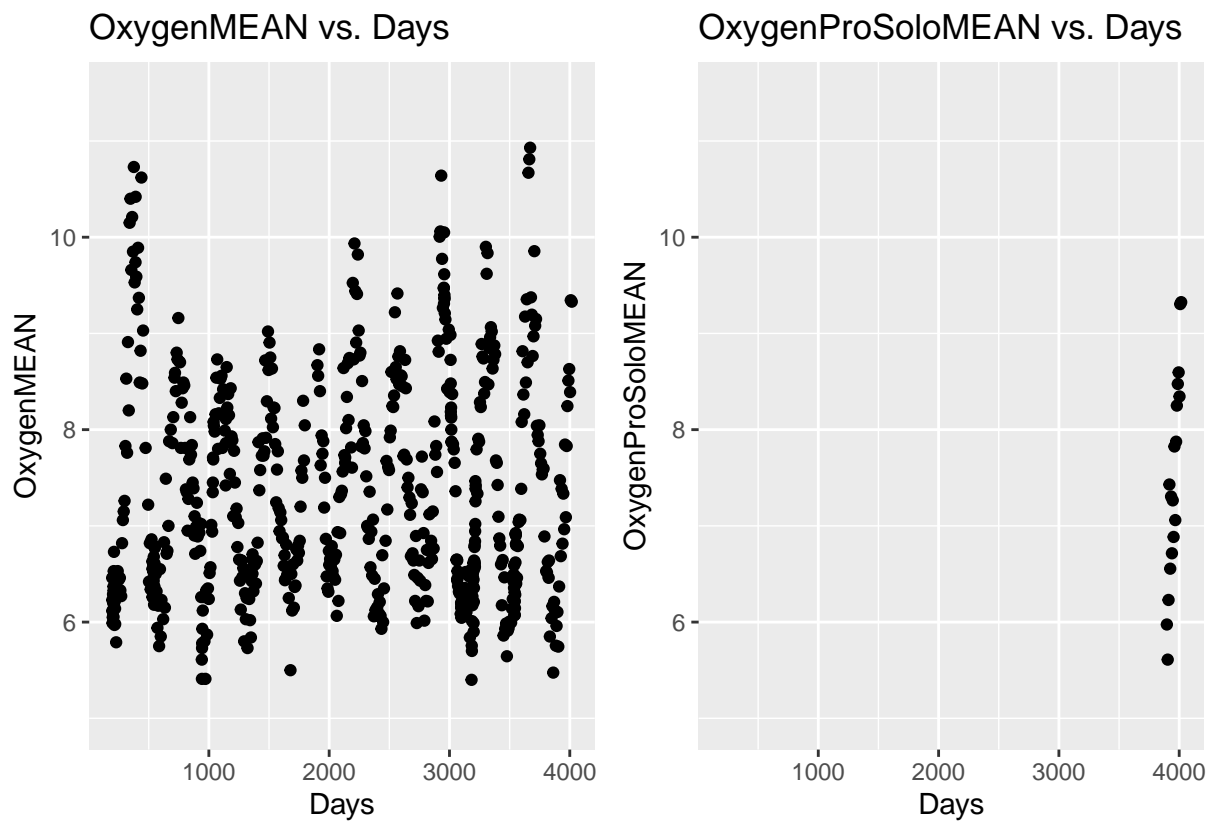
```
## Warning: Removed 48 rows containing missing values (geom_point).
## Warning: Removed 10 rows containing missing values (geom_point).
```



## Exploring Oxygen

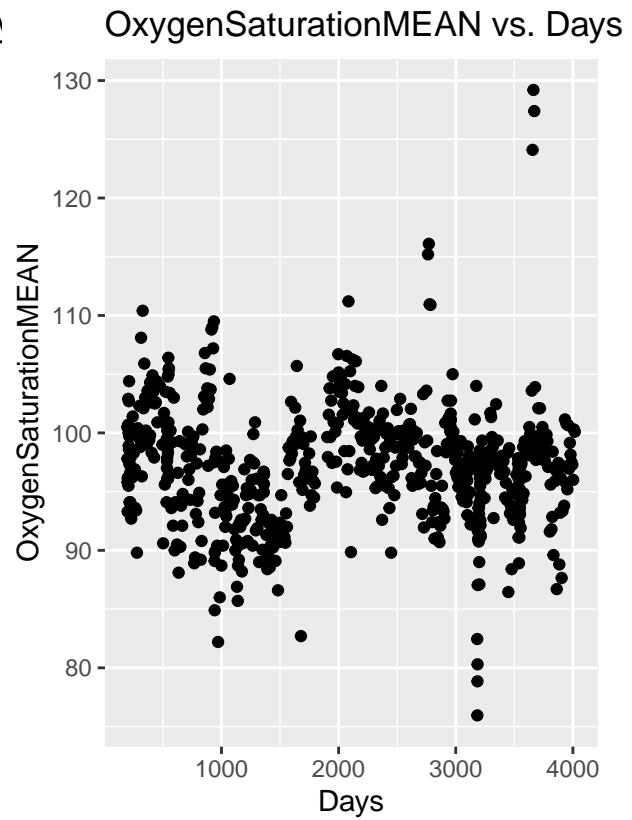
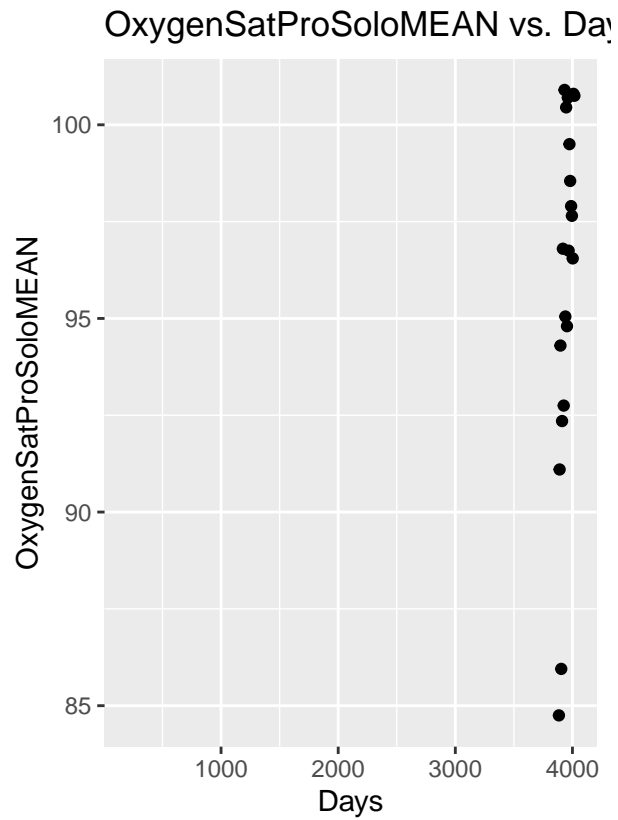
```
## Warning: Removed 31 rows containing missing values (geom_point).
```

```
## Warning: Removed 661 rows containing missing values (geom_point).
```



```
## Warning: Removed 659 rows containing missing values (geom_point).
```

```
## Warning: Removed 30 rows containing missing values (geom_point).
```



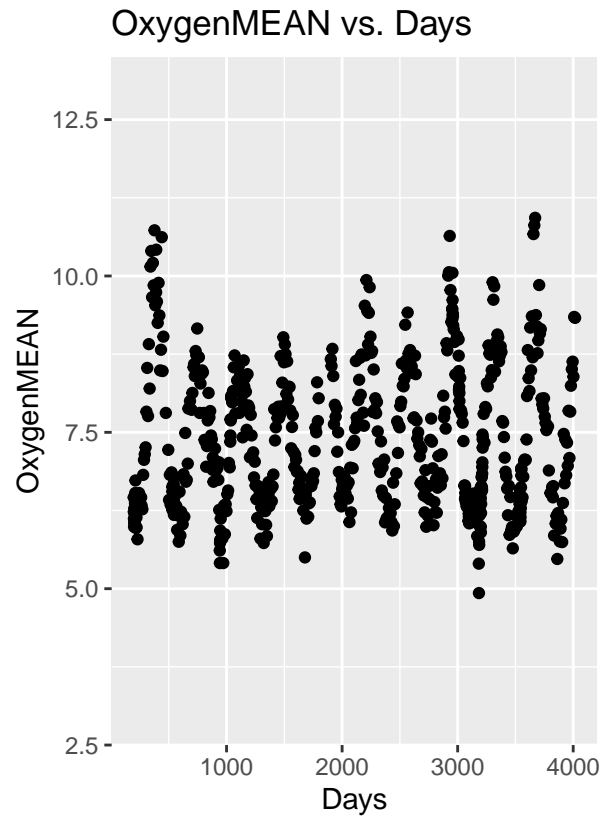
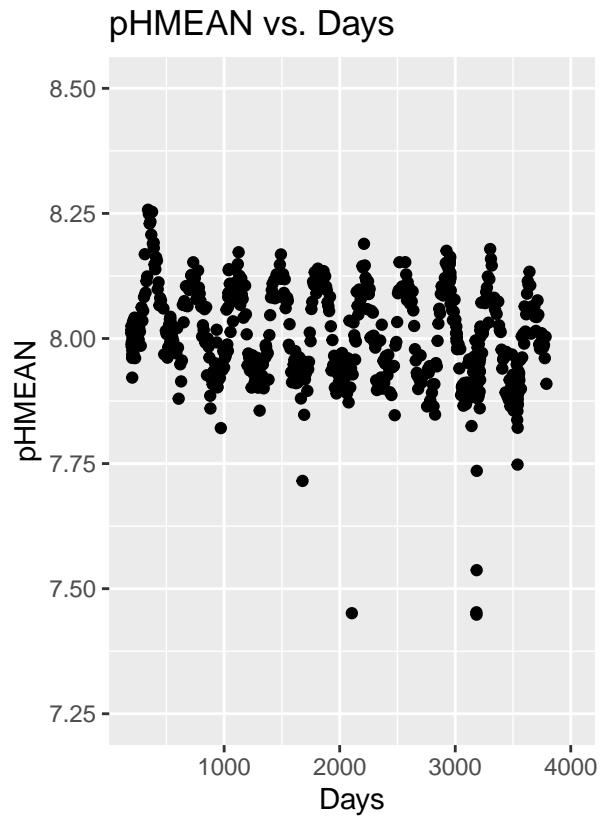
| ##   | OxygenSaturationMEAN | Date      | OxygenMEAN | TemperatureMEAN |
|------|----------------------|-----------|------------|-----------------|
| ## 1 | 75.95                | 9/20/2018 | 4.93       | 27.15           |
| ## 2 | 129.20               | 1/12/2020 | 10.81      | 14.10           |

Max mean oxygen saturation: 129.20% on 1/12/2020 – cooler temp than min  
 Min mean oxygen saturation: 75.95% on. 9/20/2018

## Looking at pH alongside Oxygen

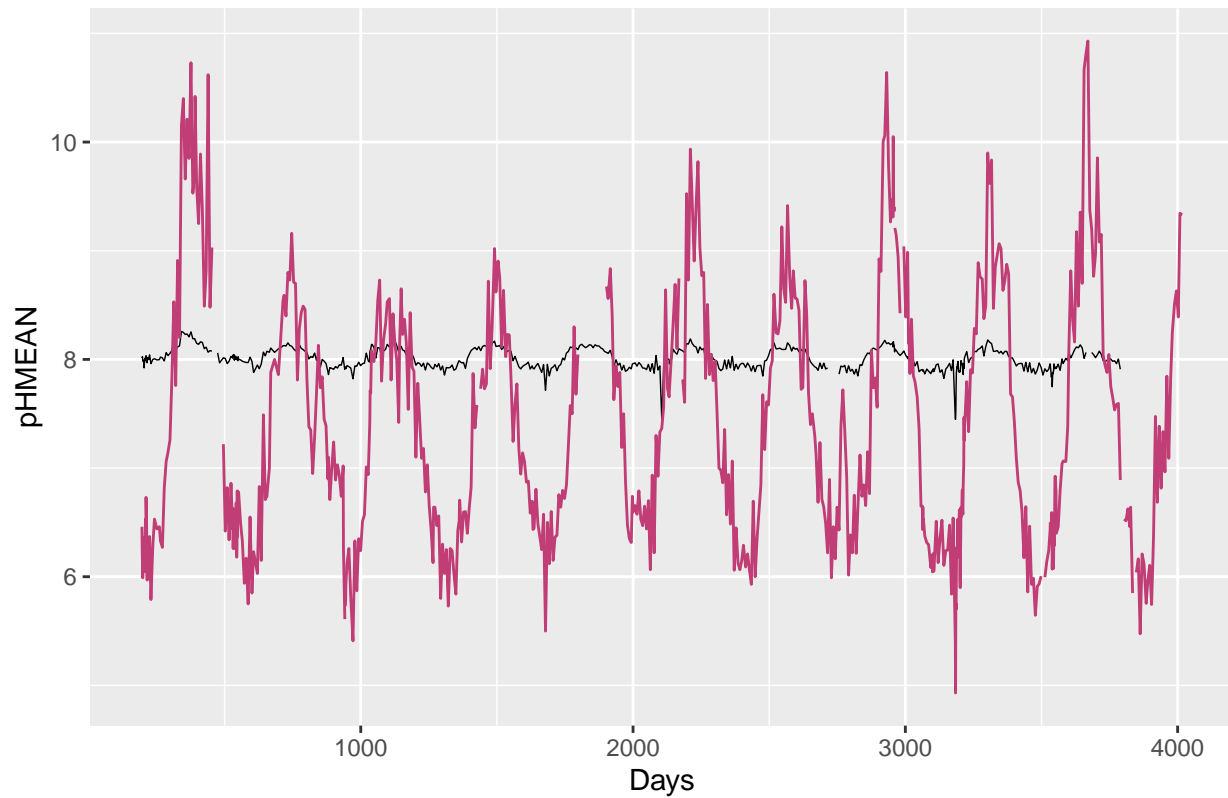
```
## Scale for 'y' is already present. Adding another scale for 'y', which will
## replace the existing scale.
## Scale for 'y' is already present. Adding another scale for 'y', which will
## replace the existing scale.

## Warning: Removed 48 rows containing missing values (geom_point).
## Warning: Removed 30 rows containing missing values (geom_point).
```



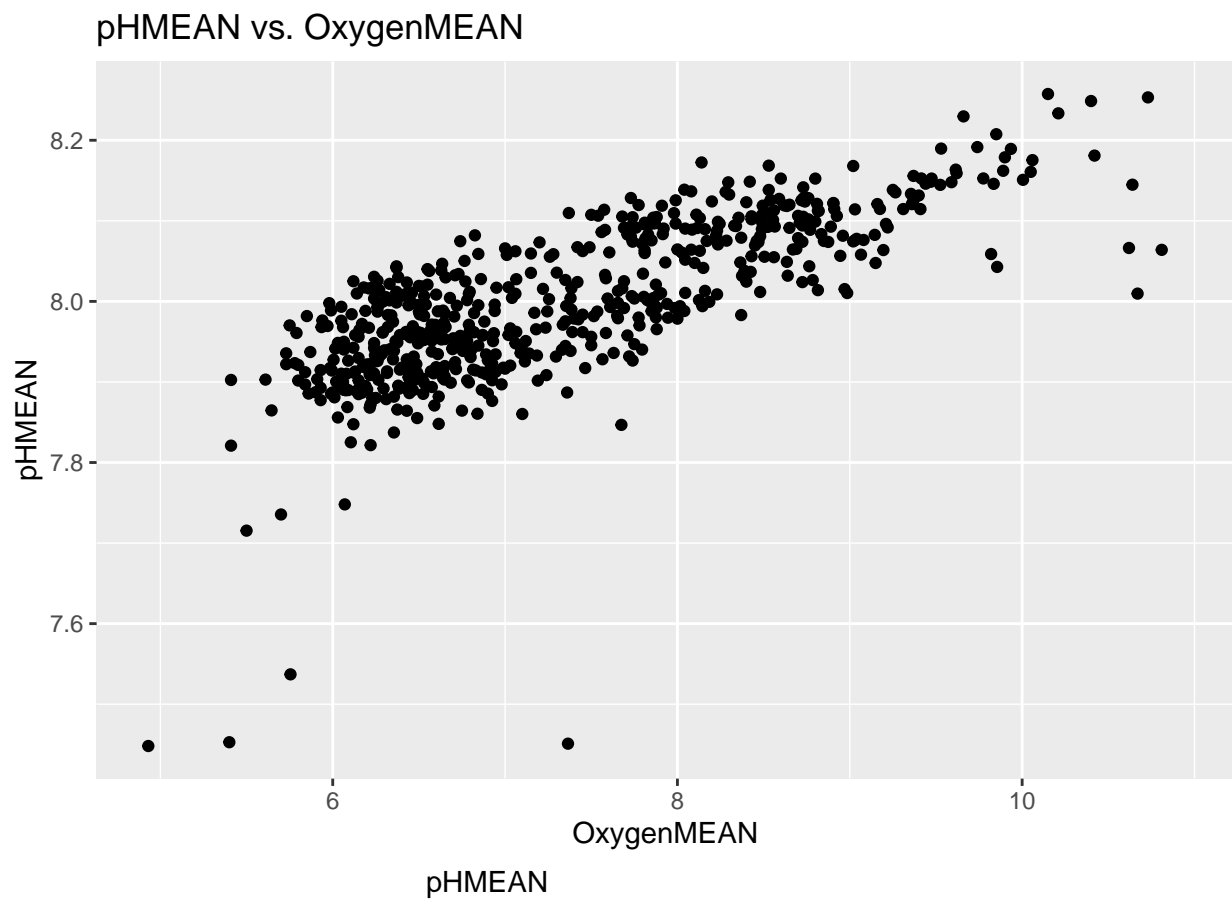
```
## Warning: Removed 33 row(s) containing missing values (geom_path).
```

Mean Oxygen Plotted with Mean pH



The mean oxygen measured by ProODO appears to follow a similar pattern of peaks as the mean pH calculated using CO2SYS.

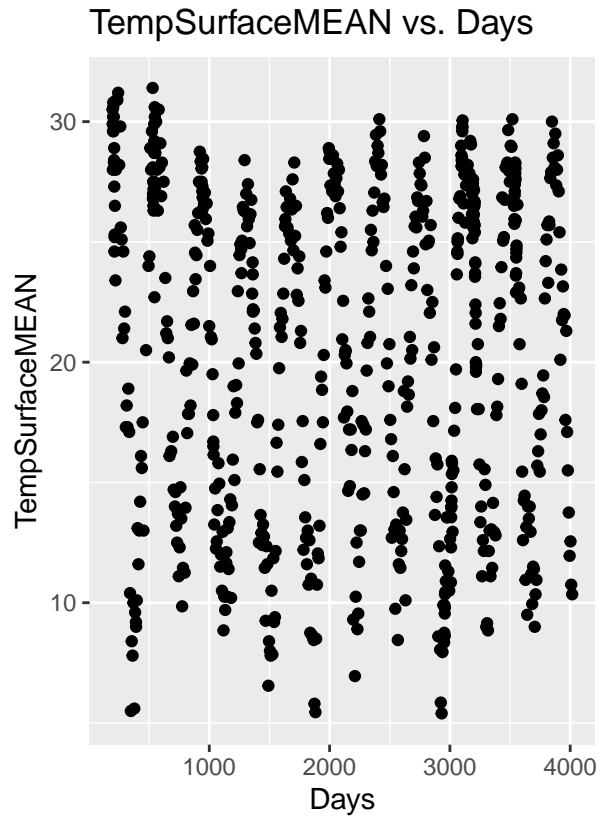
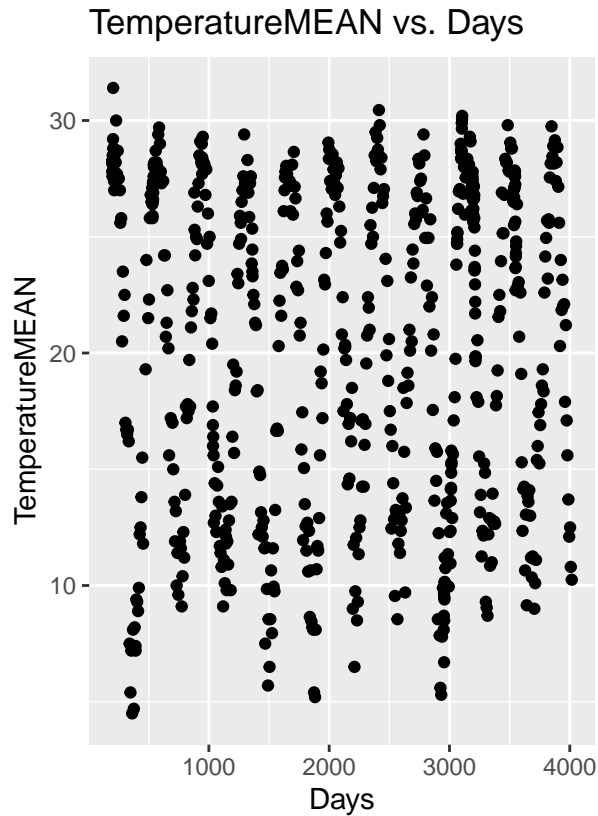
```
## Warning: Removed 68 rows containing missing values (geom_point).
```



There appears to be a pretty strong positive correlation between the mean oxygen and pH levels.

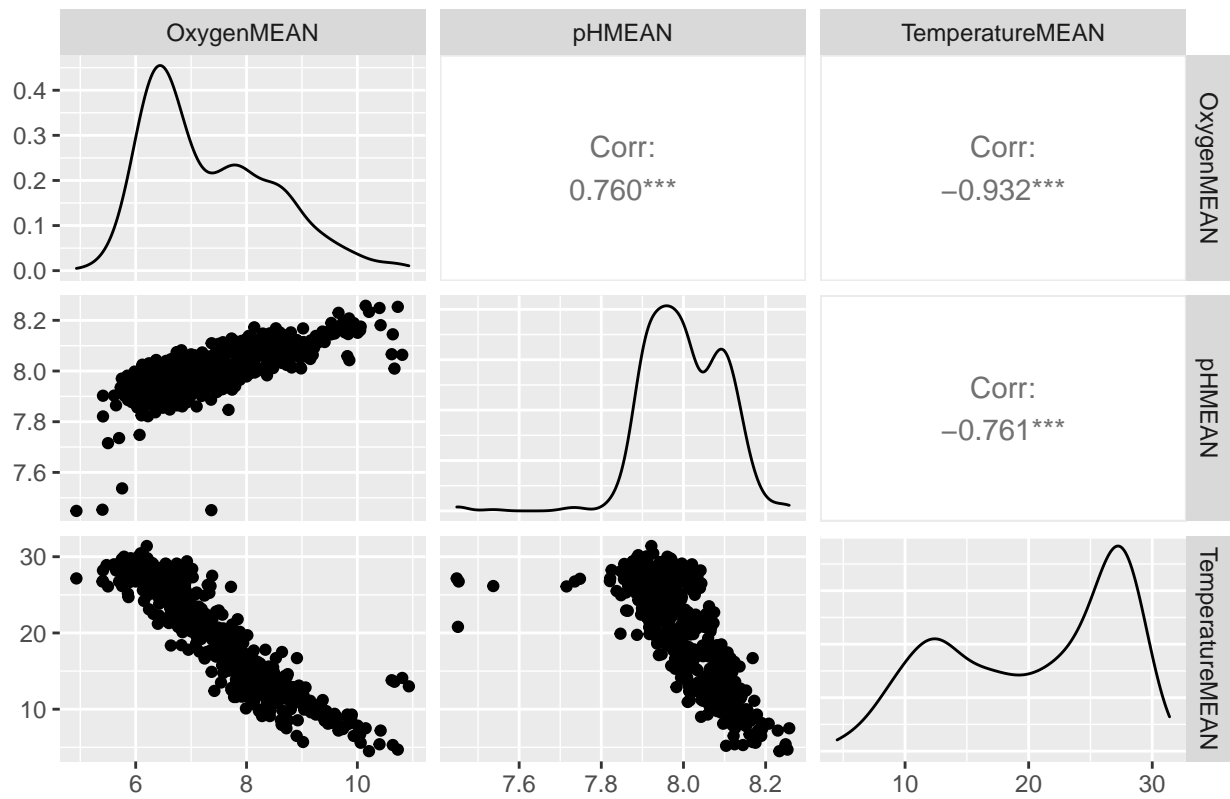
```
## Warning: Removed 8 rows containing missing values (geom_point).
```

```
## Warning: Removed 13 rows containing missing values (geom_point).
```



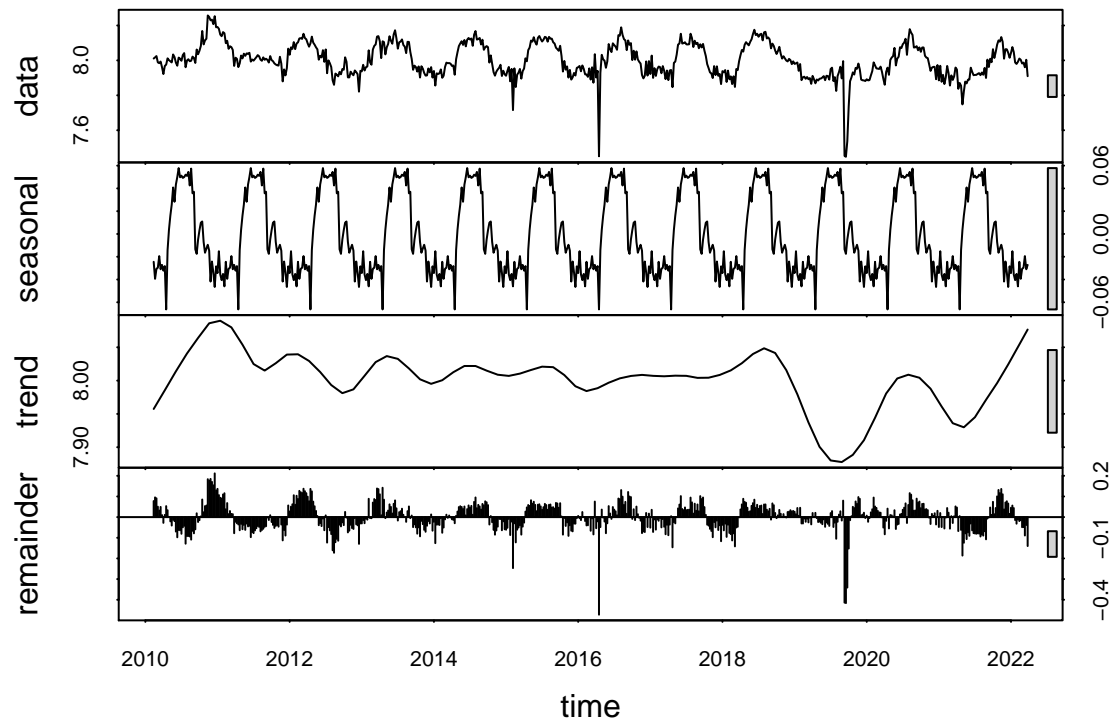
```
## Warning: Removed 30 rows containing non-finite values (stat_density).
## Warning in ggally_statistic(data = data, mapping = mapping, na.rm = na.rm, :
## Removed 68 rows containing missing values
## Warning in ggally_statistic(data = data, mapping = mapping, na.rm = na.rm, :
## Removed 30 rows containing missing values
## Warning: Removed 68 rows containing missing values (geom_point).
## Warning: Removed 48 rows containing non-finite values (stat_density).
## Warning in ggally_statistic(data = data, mapping = mapping, na.rm = na.rm, :
## Removed 48 rows containing missing values
## Warning: Removed 30 rows containing missing values (geom_point).
## Warning: Removed 48 rows containing missing values (geom_point).
## Warning: Removed 8 rows containing non-finite values (stat_density).
```



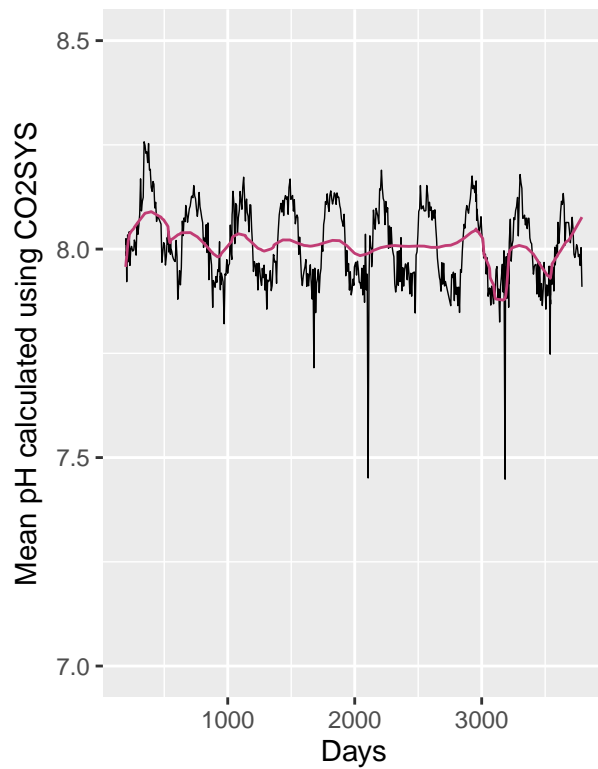


# TIME SERIES

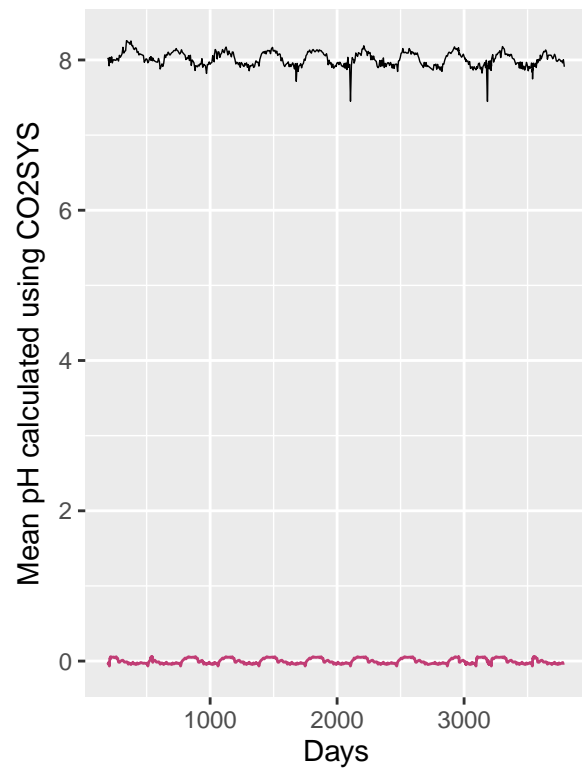
pH Mean



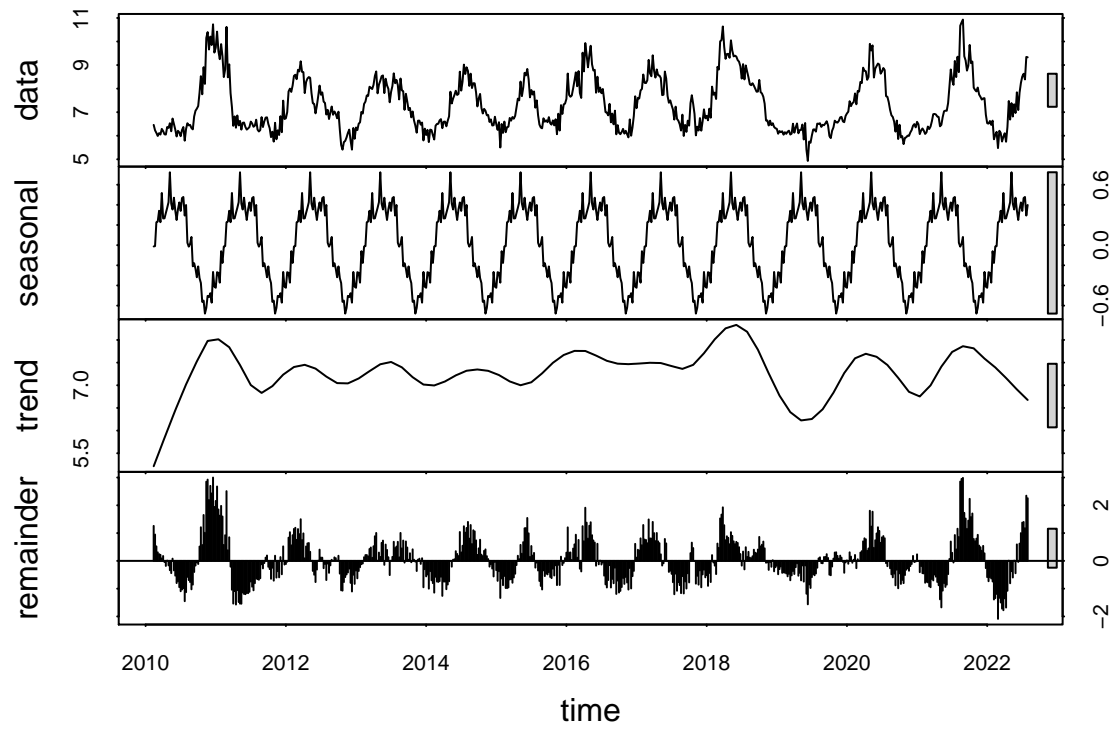
Trend Mapping onto Data



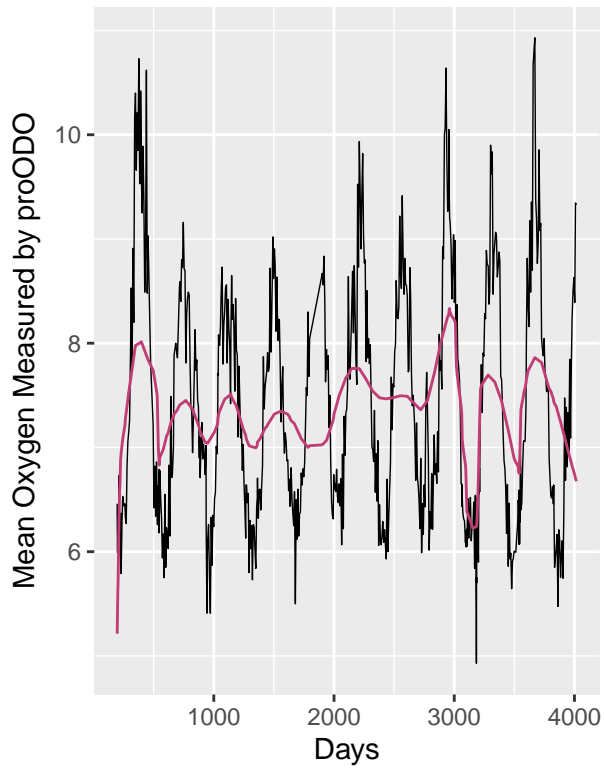
Seasonal Cycle Mapping onto Data



## Oxygen



Trend Mapping onto Data



Seasonal Cycle Mapping onto Data

