EDA

```
library(tidyverse)
library(broom)
library(patchwork)
library(knitr)
library(naniar)
```

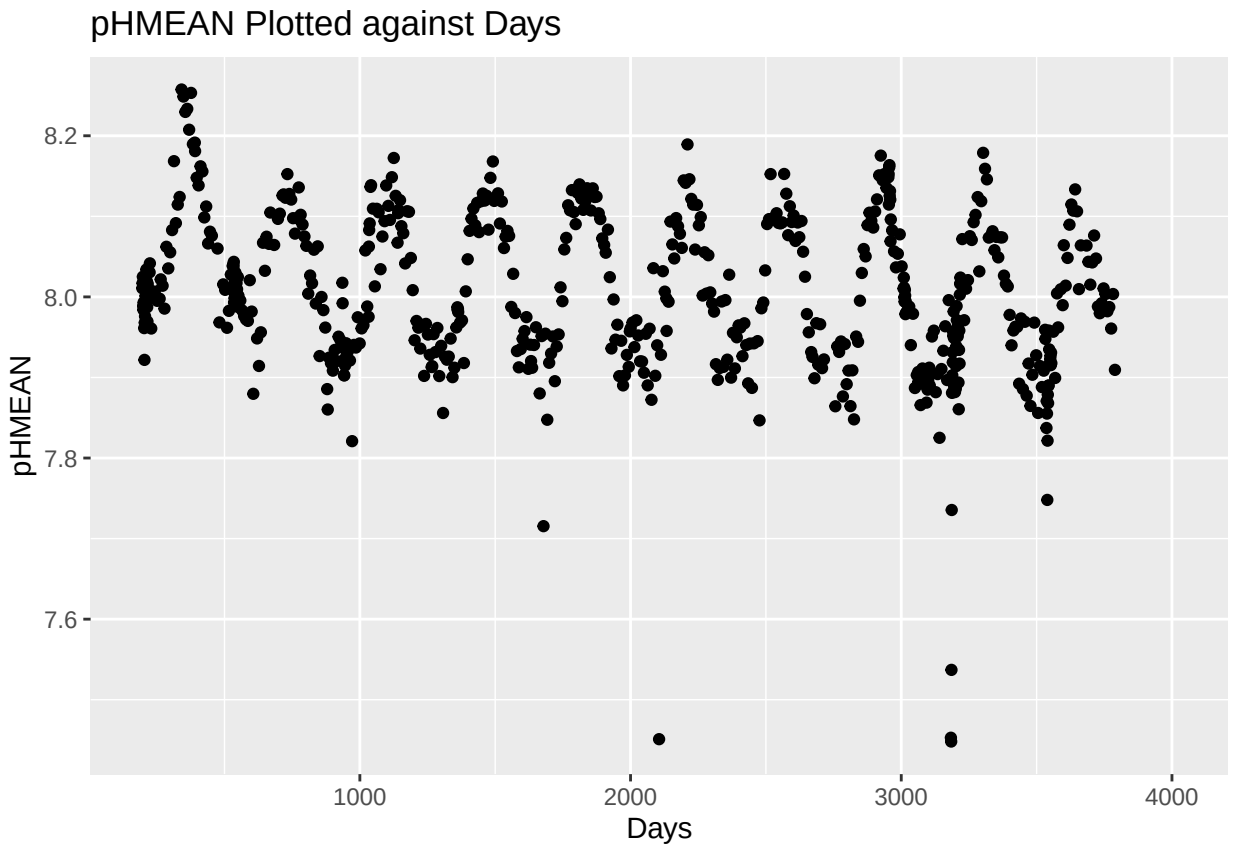
```
pico <- read.table("data/allpico-dataexport.txt", header = TRUE,
                         stringsAsFactors = FALSE )
```

```
pico[pico=="NaN"] <- NA
```

```
pico1 <- pico %>%
  unite("Date", c("Month", "Day", "Year"), sep = "/", remove = FALSE) %>%
  arrange(Days)
```

```
ggplot(data=pico1, aes(x=Days, y= pHMEAN)) +
  geom_point() +
  labs(title = "pHMEAN Plotted against Days")
```

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



```r
smallest_pHMEAN <- pico1 %>%
  filter(!is.na(pHMEAN))%>%
  select(pHMEAN,Date) %>%
  arrange(pHMEAN) %>%
  slice(1)
smallest_pHMEAN
```

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

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

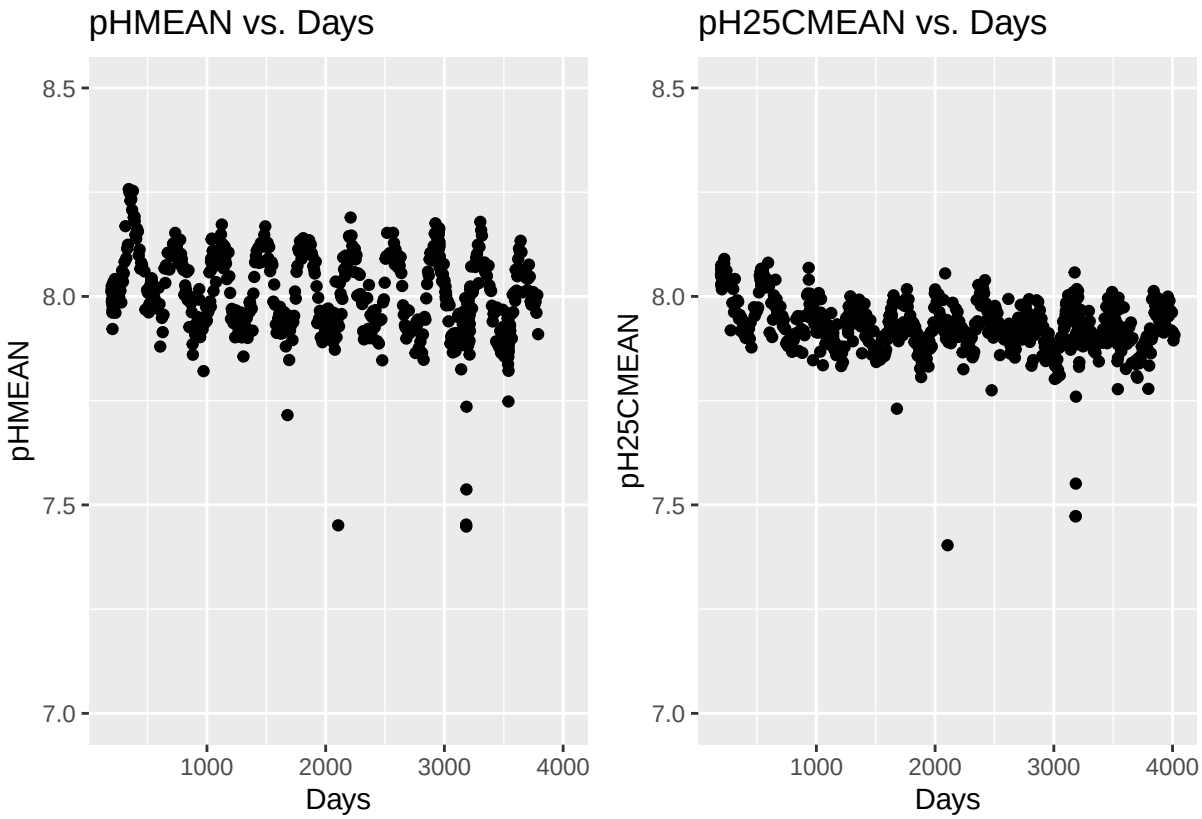
All pH Recordings

```r
p1 <- ggplot(data=pico1, aes(x=Days, y= pHMEAN)) +
  geom_point() +
  labs(title = "pHMEAN vs. Days") +
  scale_y_continuous(limits=c(7, 8.5))
p2 <- ggplot(data=pico1, aes(x=Days, y= pHprobeMEAN)) +
  geom_point() +
  labs(title = "pHprobeMean vs. Days")
p3 <- ggplot(data=pico1, aes(x=Days, y= pH25CMEAN)) +
  geom_point() +
  labs(title = "pH25CMEAN vs. Days") +
  scale_y_continuous(limits=c(7, 8.5))
```

```r
p1+p3
```

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

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



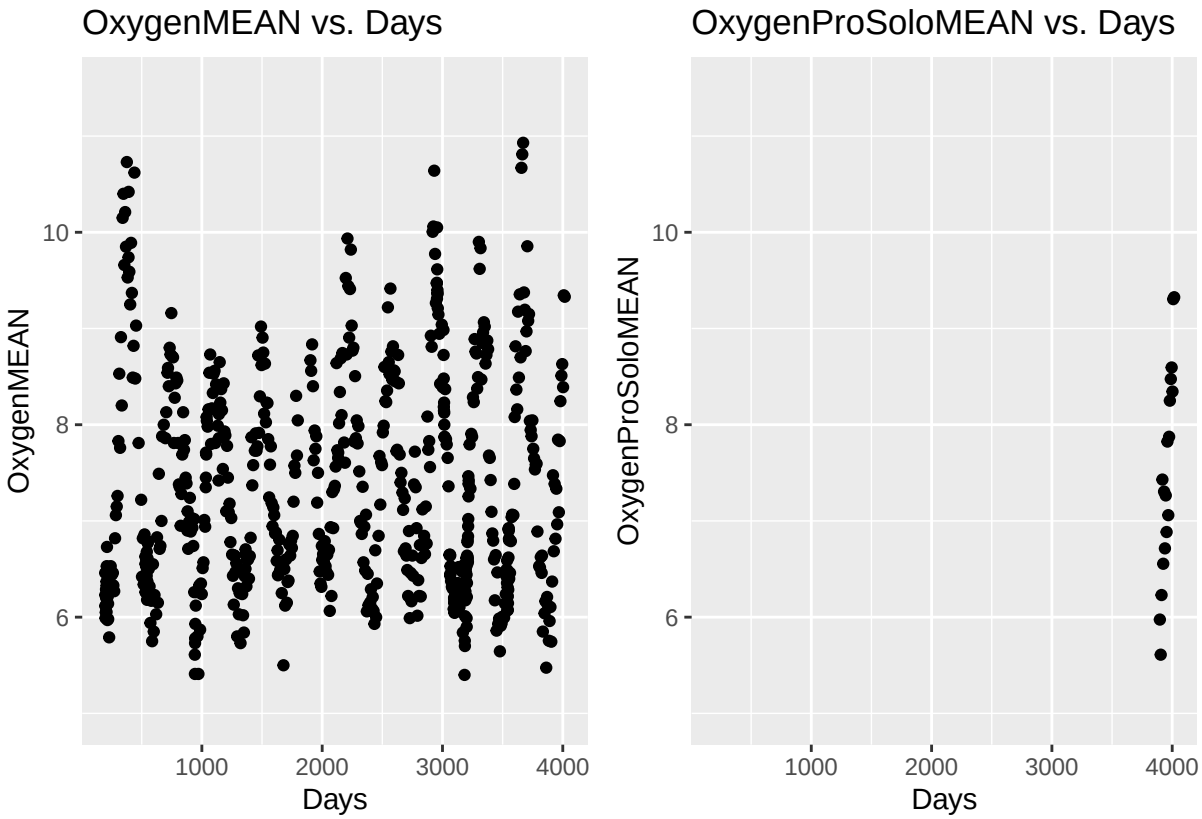

```
p5 <- ggplot(data=pico1, aes(x = Days, y = OxygenMEAN)) +
  geom_point() +
  labs(title = "OxygenMEAN vs. Days") +
  scale_y_continuous(limits=c(5, 11.5))

p6 <- ggplot(data=pico1, aes(x = Days, y = OxygenProSoloMEAN)) +
  geom_point() +
  labs(title = "OxygenProSoloMEAN vs. Days") +
  scale_y_continuous(limits=c(5, 11.5))

p5+p6
```

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

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

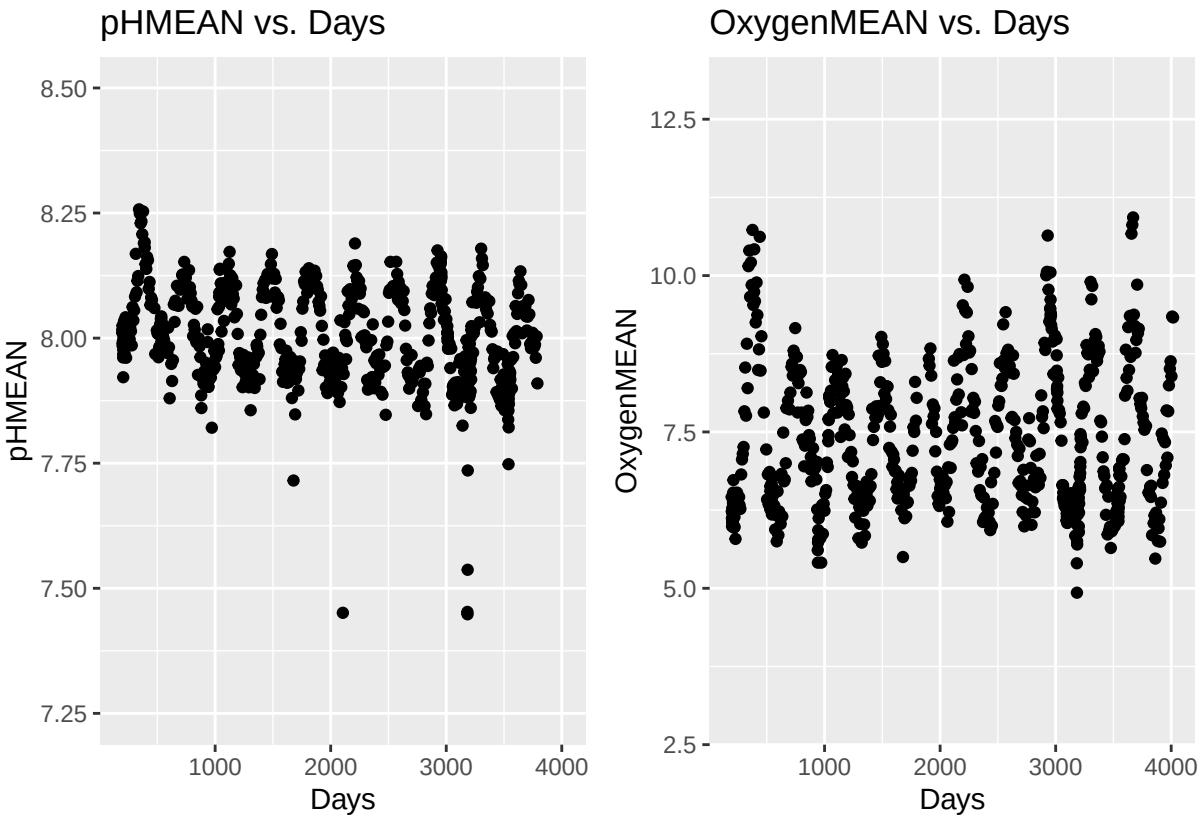



```
(p1 + scale_y_continuous(limits=c(7.25, 8.5)))+(p5 + scale_y_continuous(limits=c(3, 13)))
```

```
## 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).
```



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