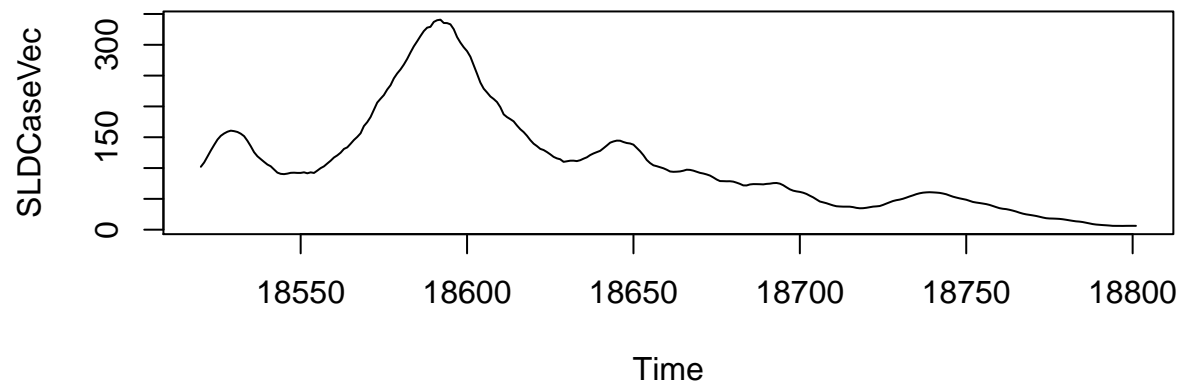
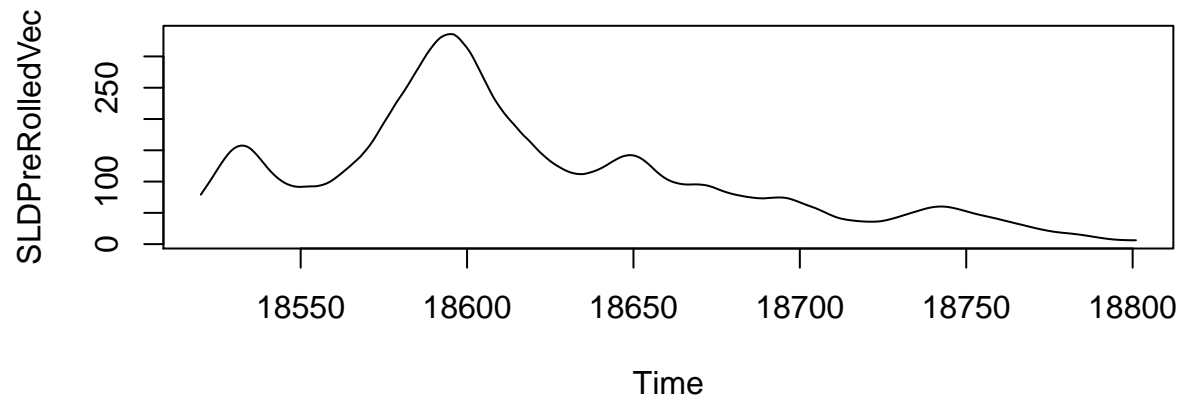


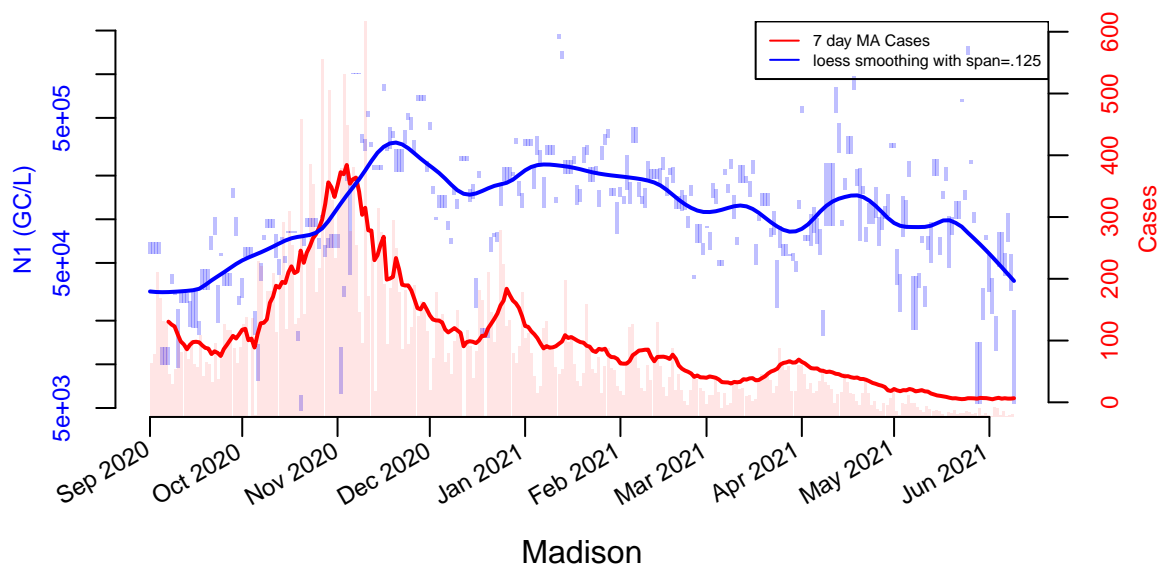
# SheddingLagDistribution

Marlin

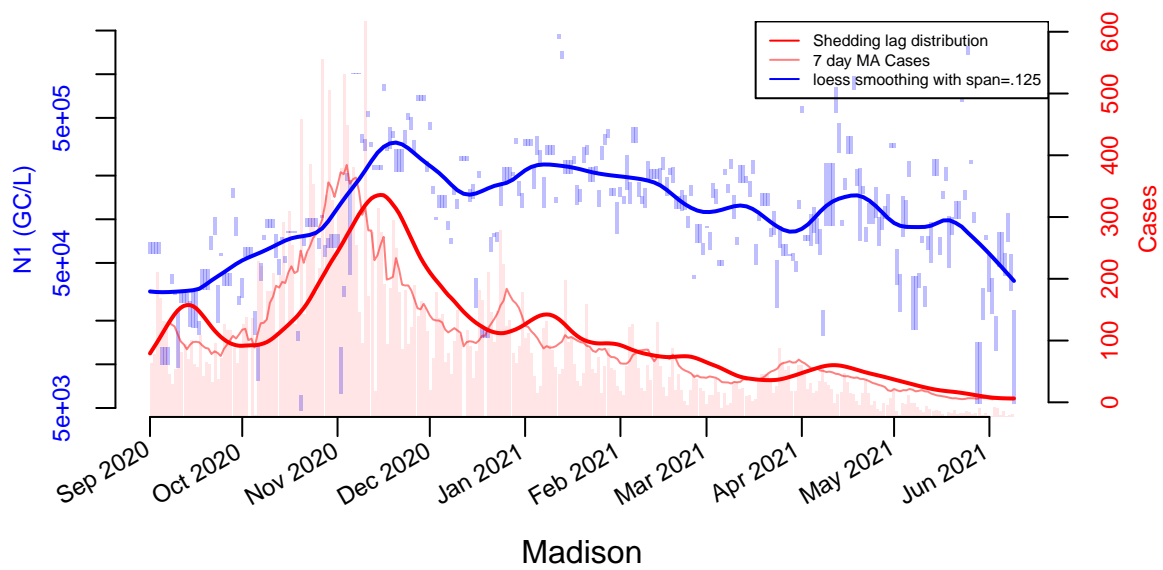
7/22/2021









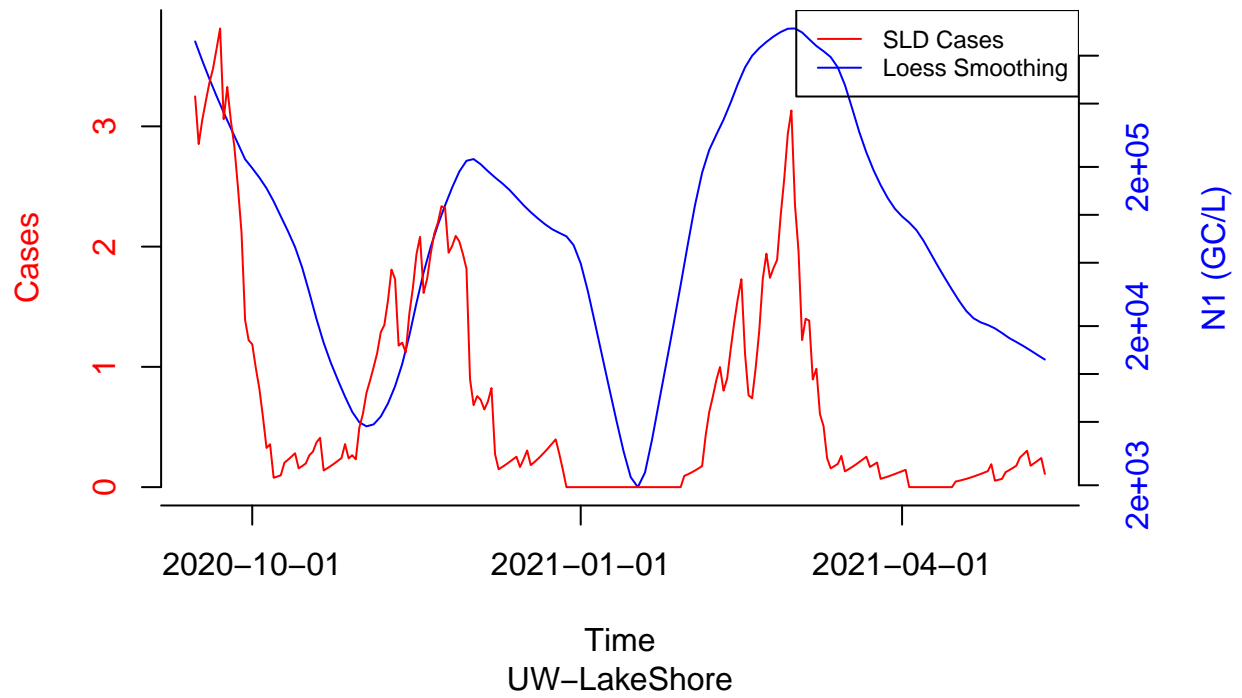



---

```
## [1] "Visual Relationship"
```



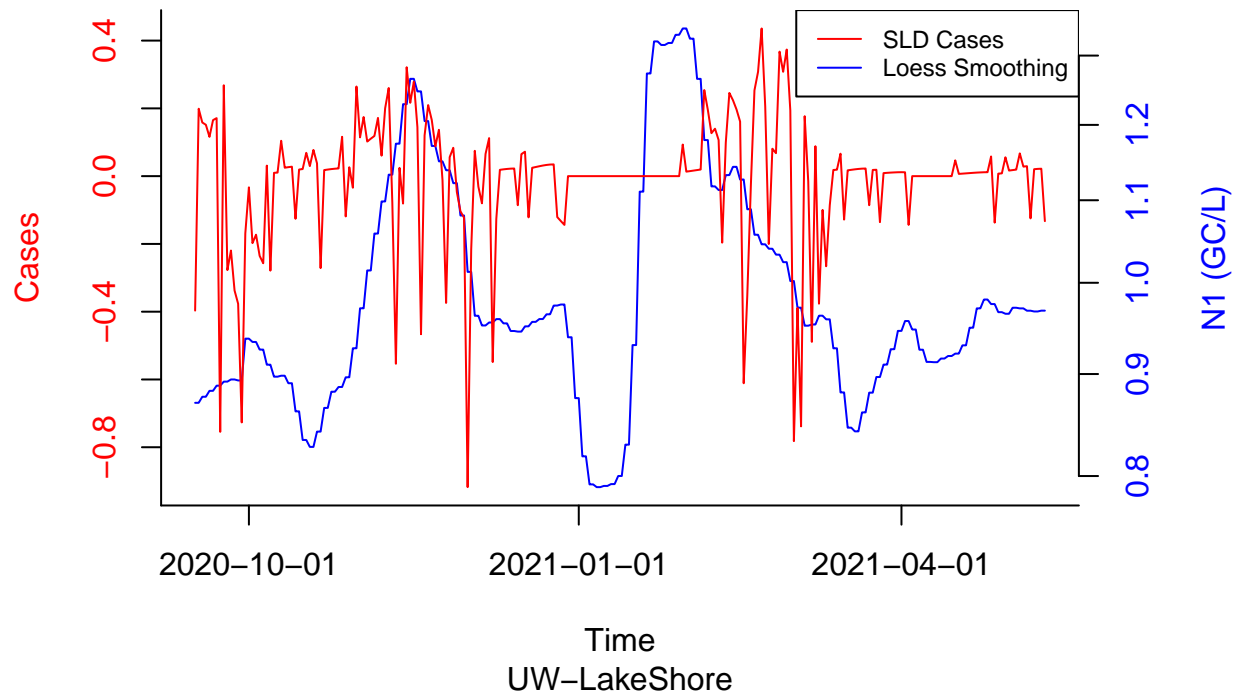
### Visual relationship of SLD and log(N1)



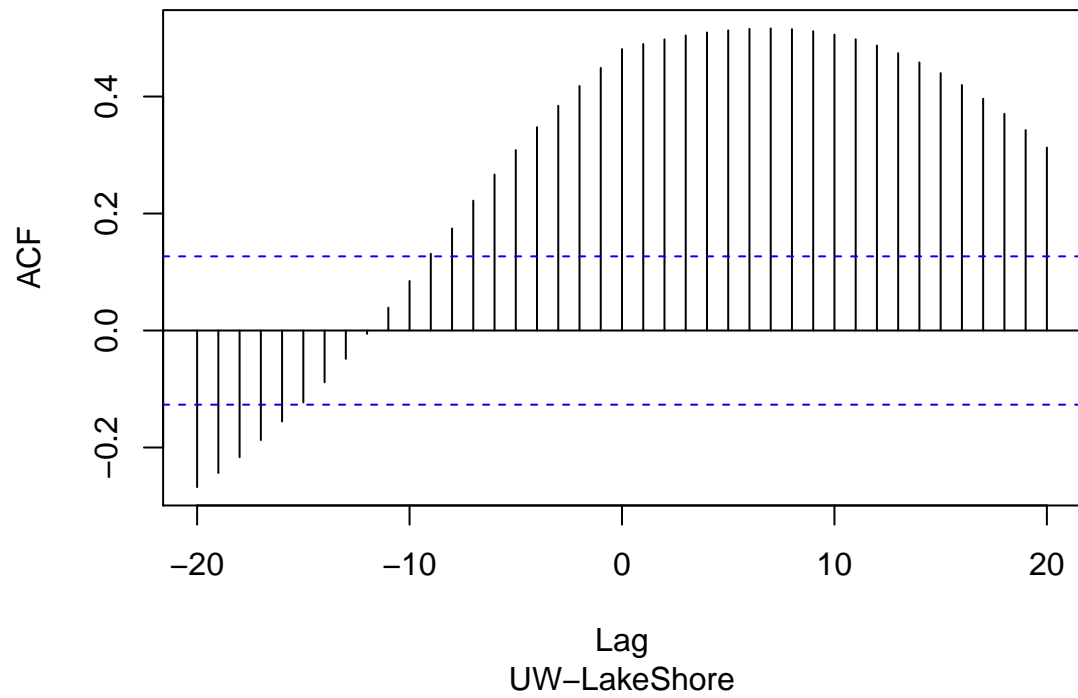




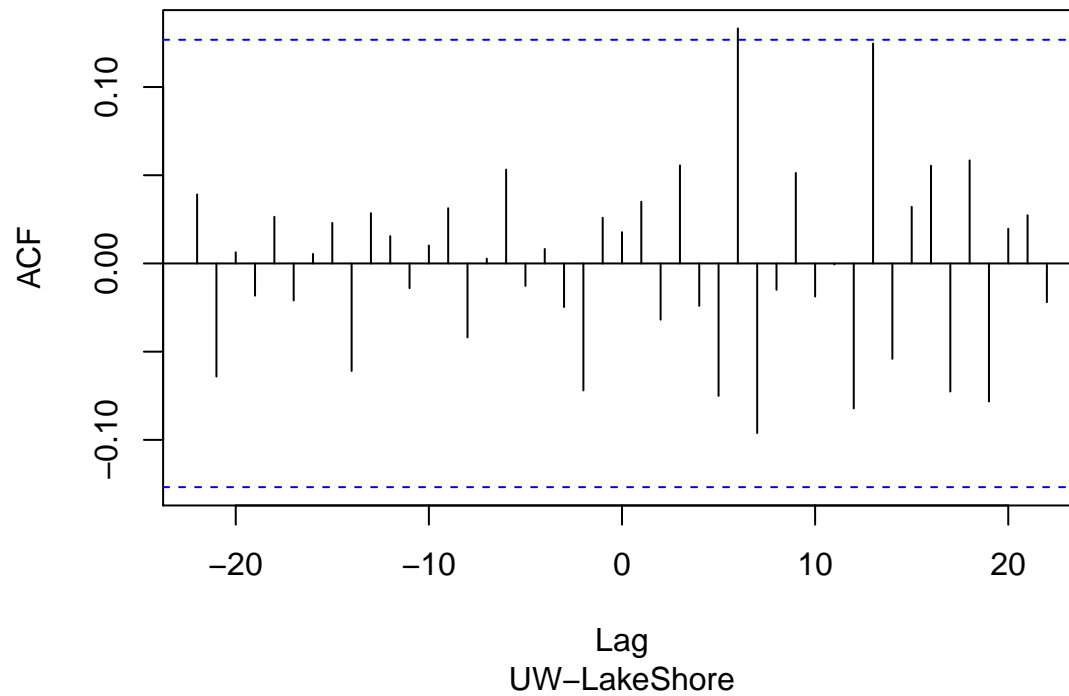
### First Difference of SLD and log(N1)



### CC between log(N1) and SLD



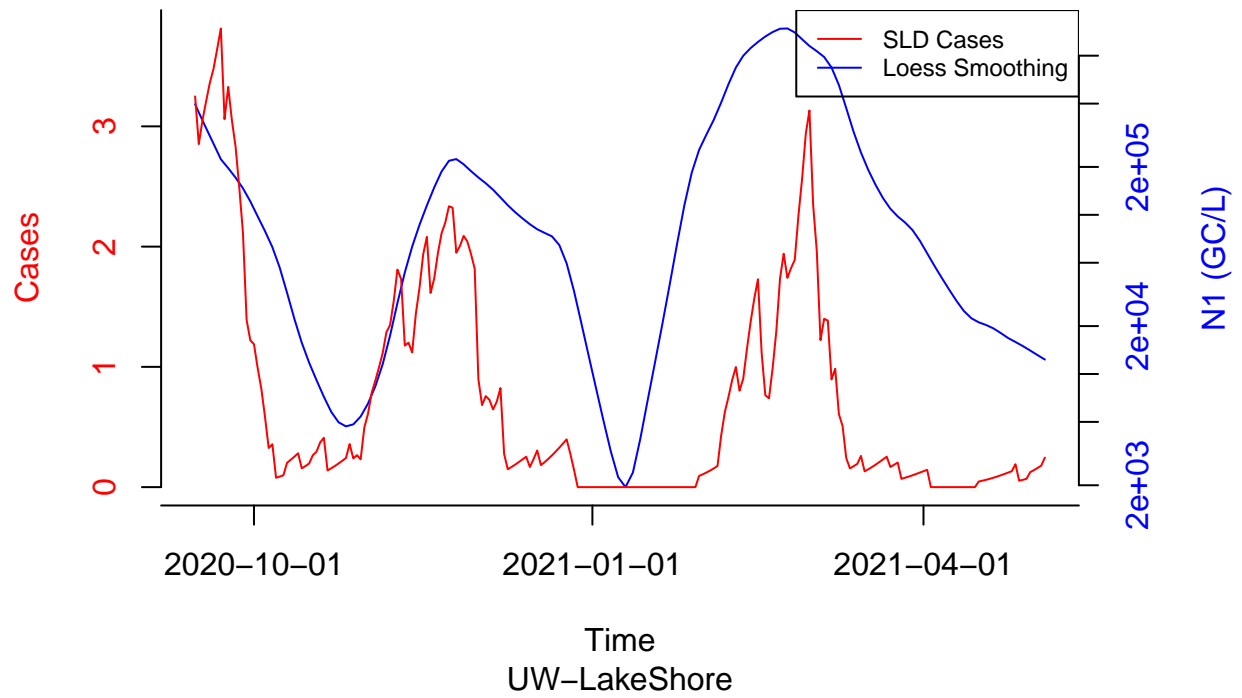
### prewhiten CC between log(N1) and SLD



```
## [1] "no signifigent prewhitened relationship"  
## [1] "using offset of 7"  
## [1] "Visual Relationship with offset"
```

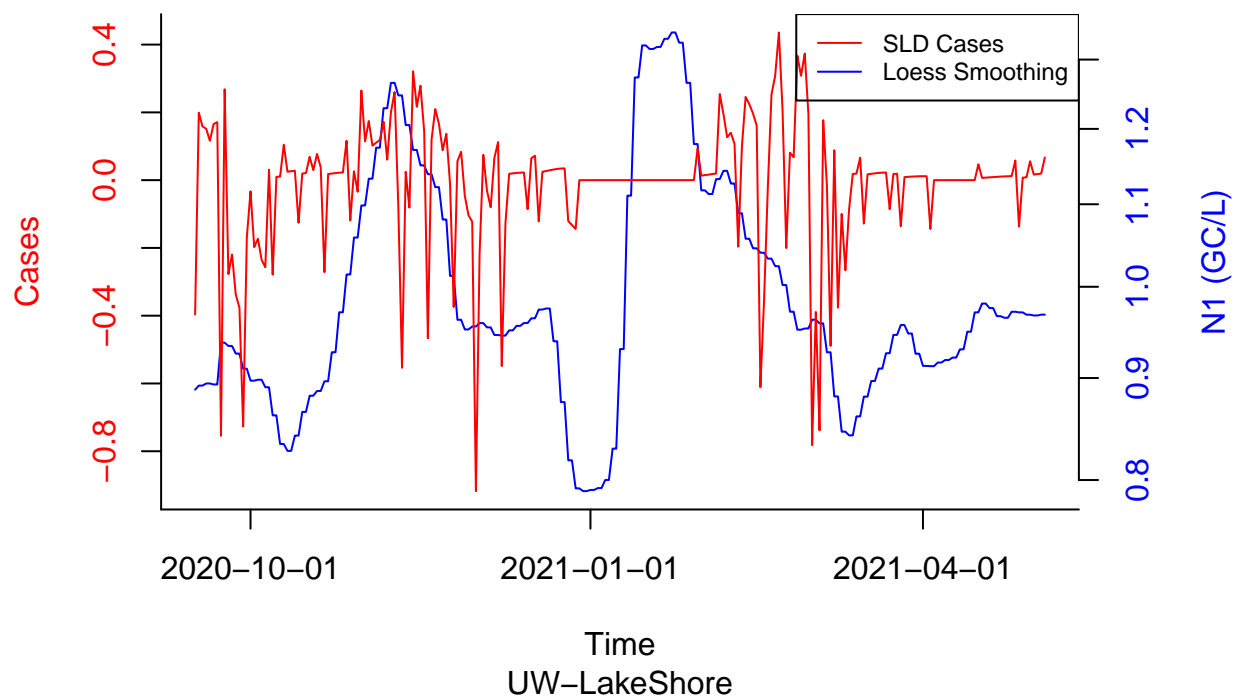


Visual relationship of SLD and log(N1)

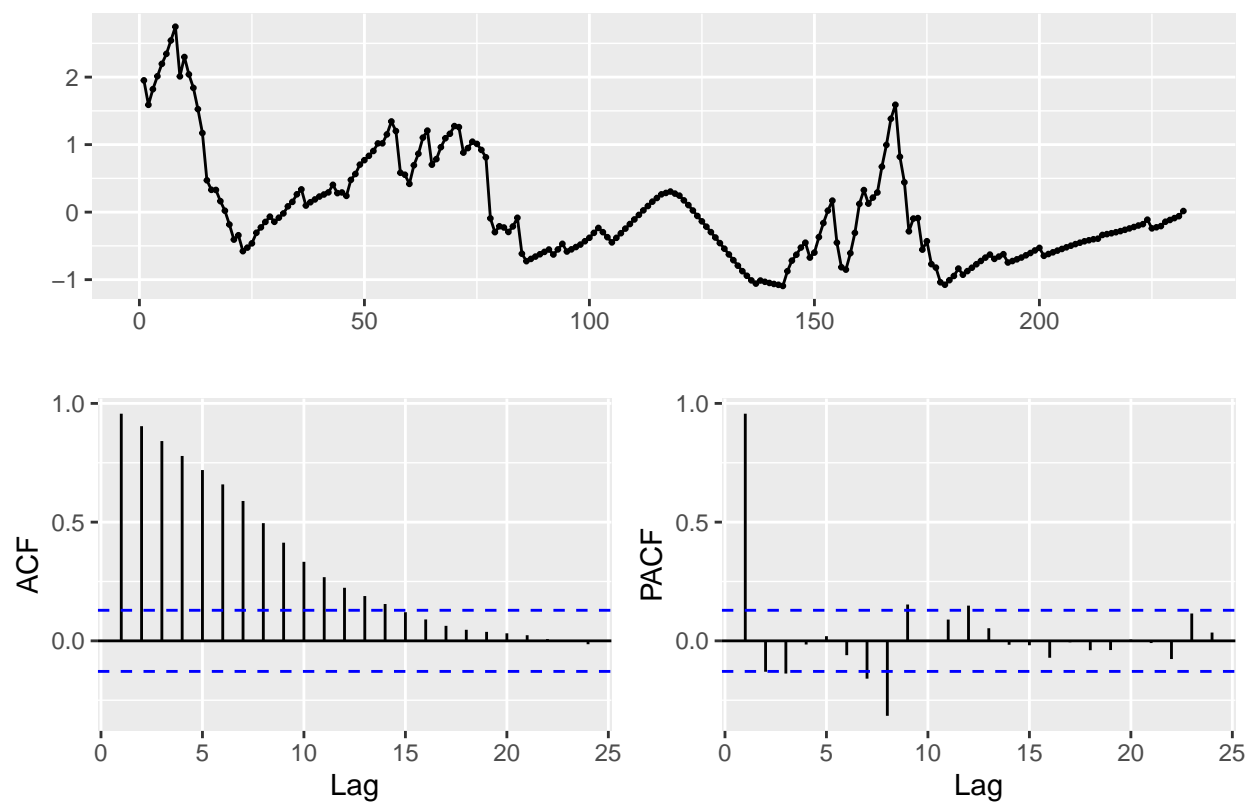




## First Difference of SLD and log(N1)

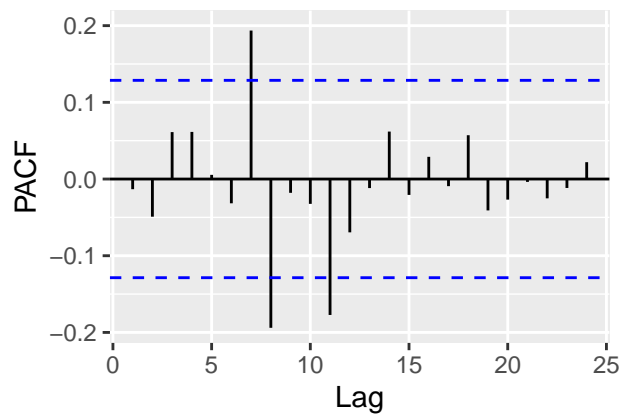
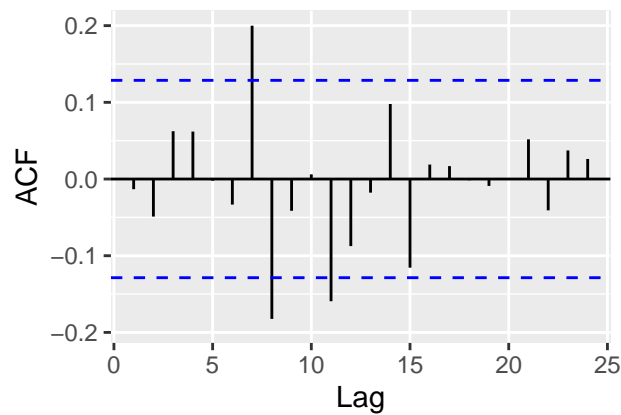


```
## [1] "Ordinary LM"
##
## Call:
## lm(formula = TSUnionDF[, 1] ~ TSUnionDF[, 2])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.0934 -0.5587 -0.2140  0.2956  2.7468
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -2.49619    0.33958  -7.351 3.42e-12 ***
## TSUnionDF[, 2]  0.28931    0.03011   9.610 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.783 on 230 degrees of freedom
## Multiple R-squared:  0.2865, Adjusted R-squared:  0.2834
## F-statistic: 92.35 on 1 and 230 DF, p-value: < 2.2e-16
```

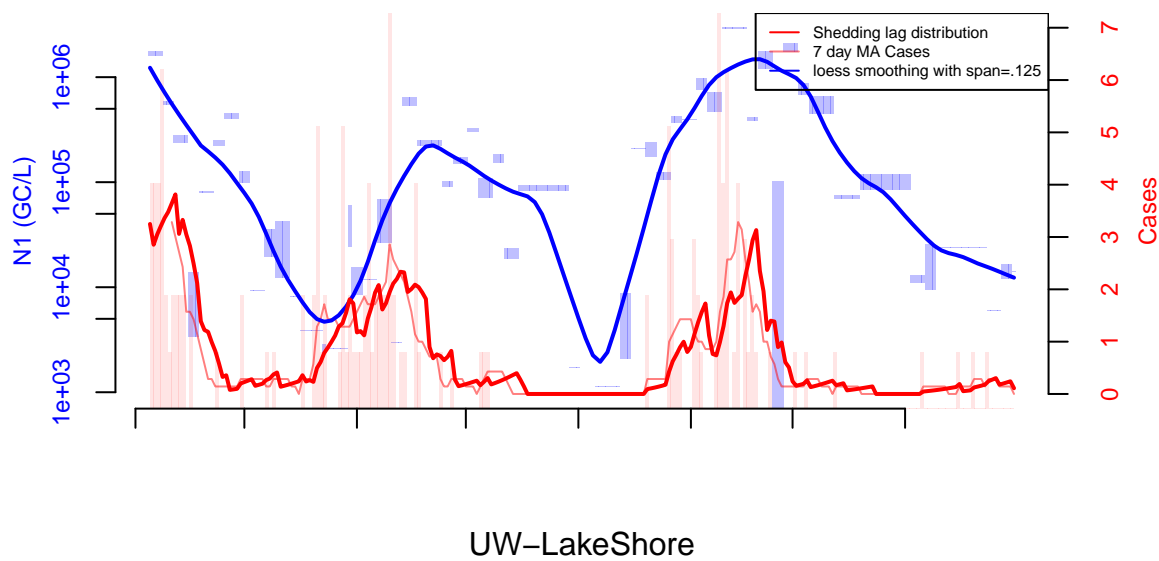


```
## [1] "LM with Arima residuals"
```



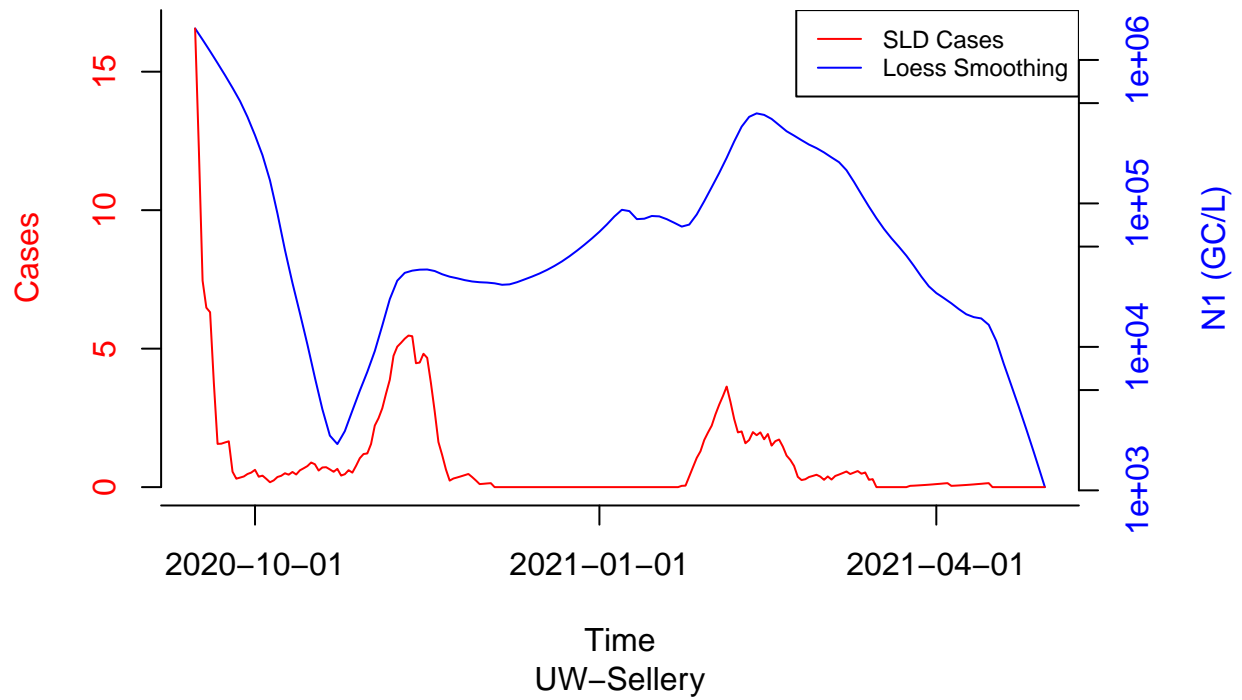


```
## Series: TSUnionDF[, 1]
## Regression with ARIMA(4,1,3) errors
##
## Coefficients:
##          ar1      ar2      ar3      ar4      ma1      ma2      ma3      xreg
##          1.7200 -1.4969  0.4625  0.1012 -1.5541  1.4530 -0.5654  0.2186
## s.e.    0.1719  0.2370  0.2227  0.0780  0.1614  0.1593  0.1525  0.1328
##
## sigma^2 estimated as 0.03072:  log likelihood=77.95
## AIC=-137.91  AICc=-137.09  BIC=-106.93
##
## Training set error measures:
##              ME      RMSE      MAE MPE MAPE      MASE      ACF1
## Training set -0.005769865 0.1718269 0.1097658 NaN  Inf 0.9675268 -0.013265
```



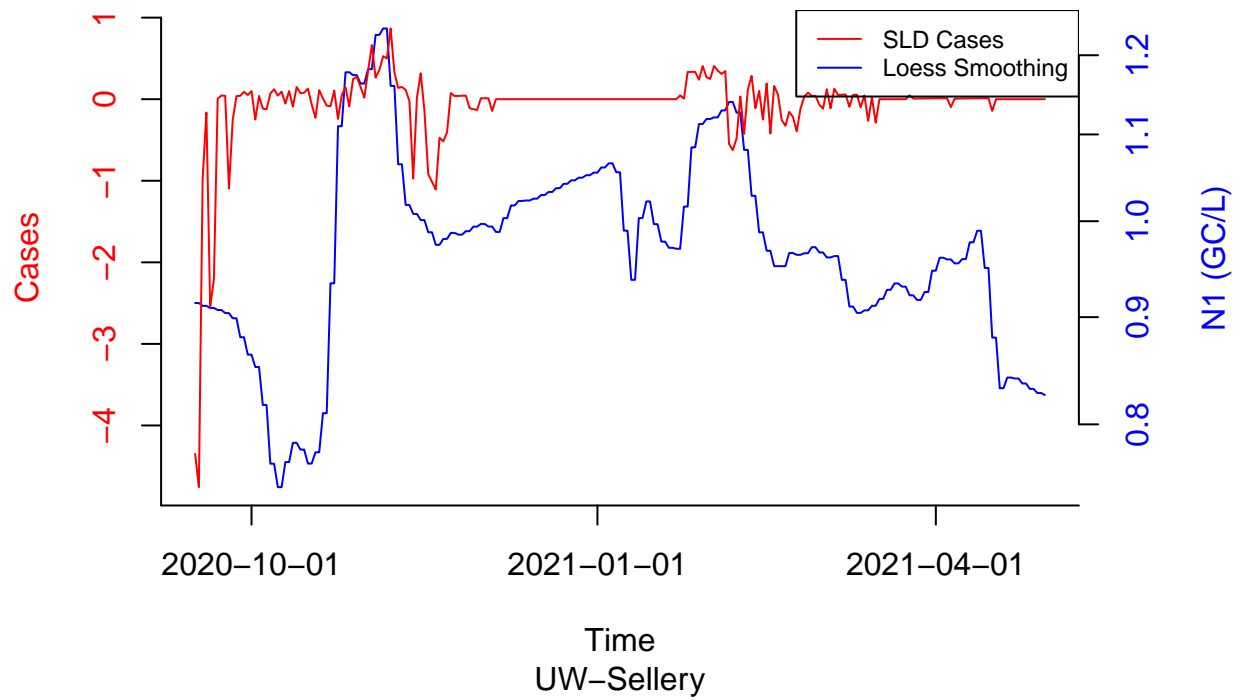


Visual relationship of SLD and log(N1)

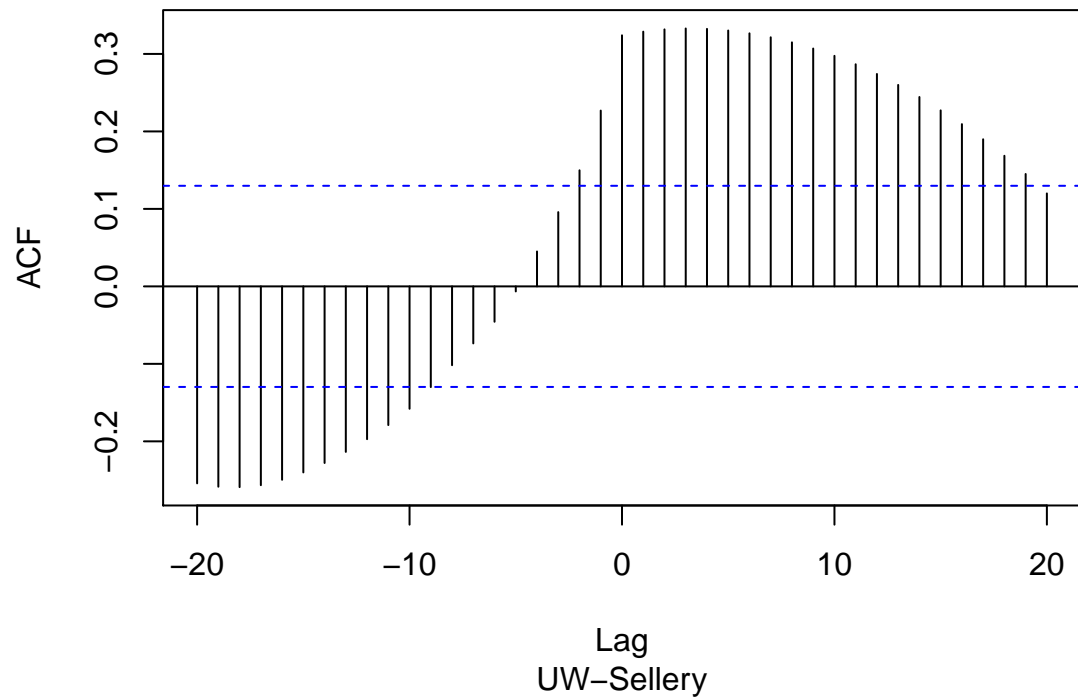




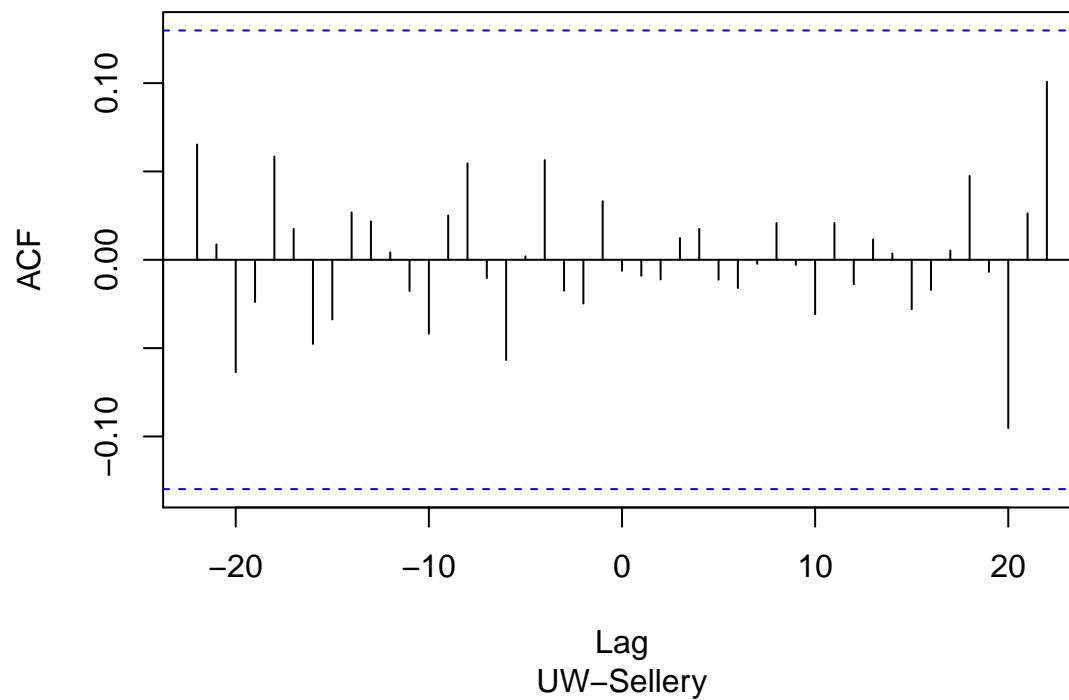
### First Difference of SLD and log(N1)



### CC between log(N1) and SLD



### prewhiten CC between log(N1) and SLD

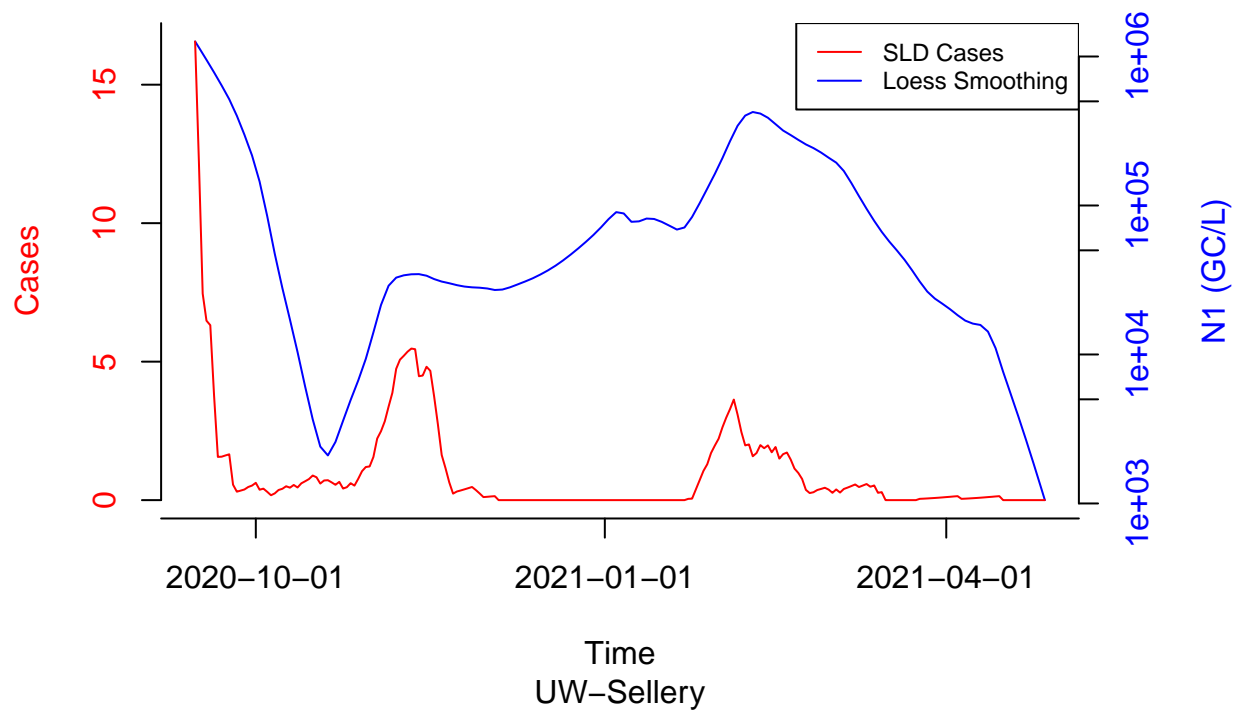


```
## [1] "no signifigent prewhitened relationship"  
## [1] "using offset of 3"  
## [1] "Visual Relationship with offset"
```



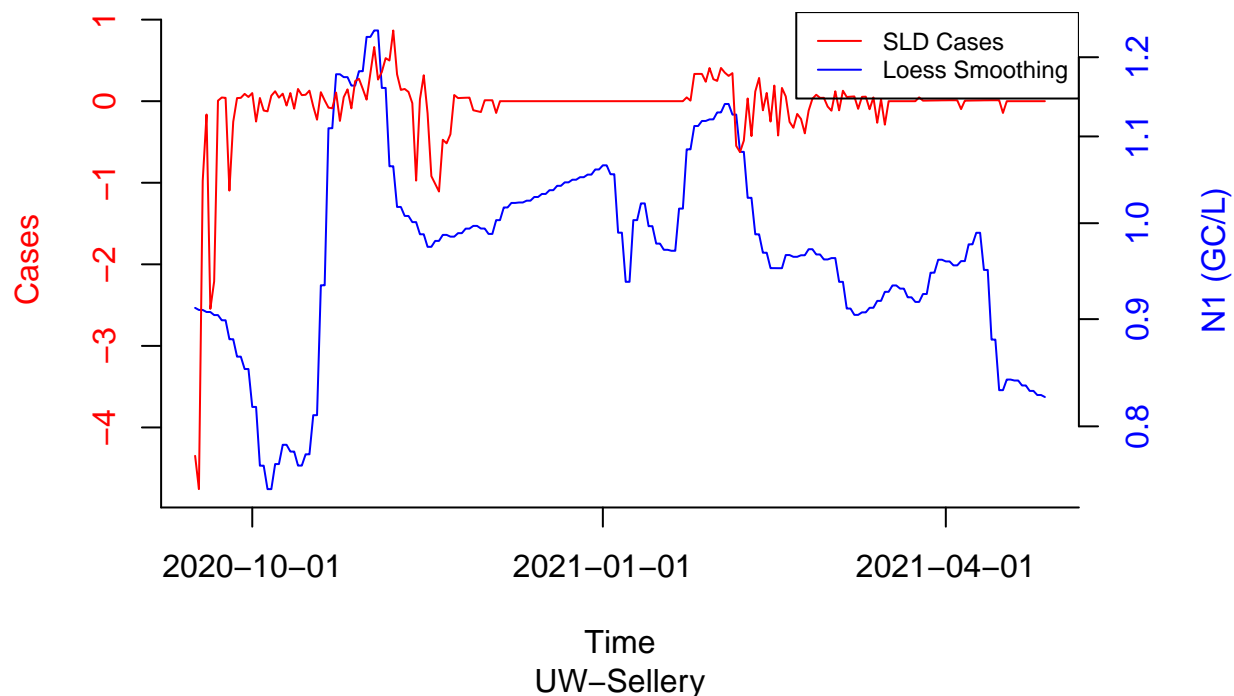


Visual relationship of SLD and log(N1)

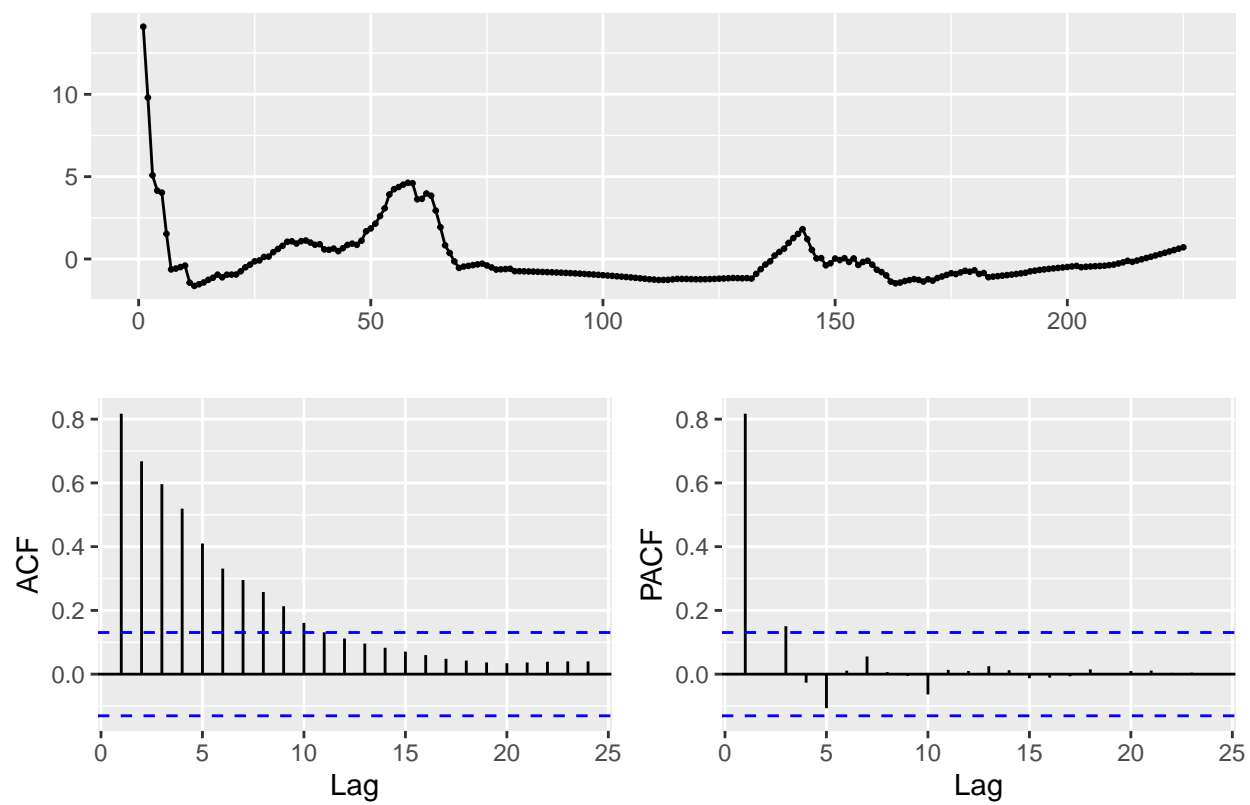




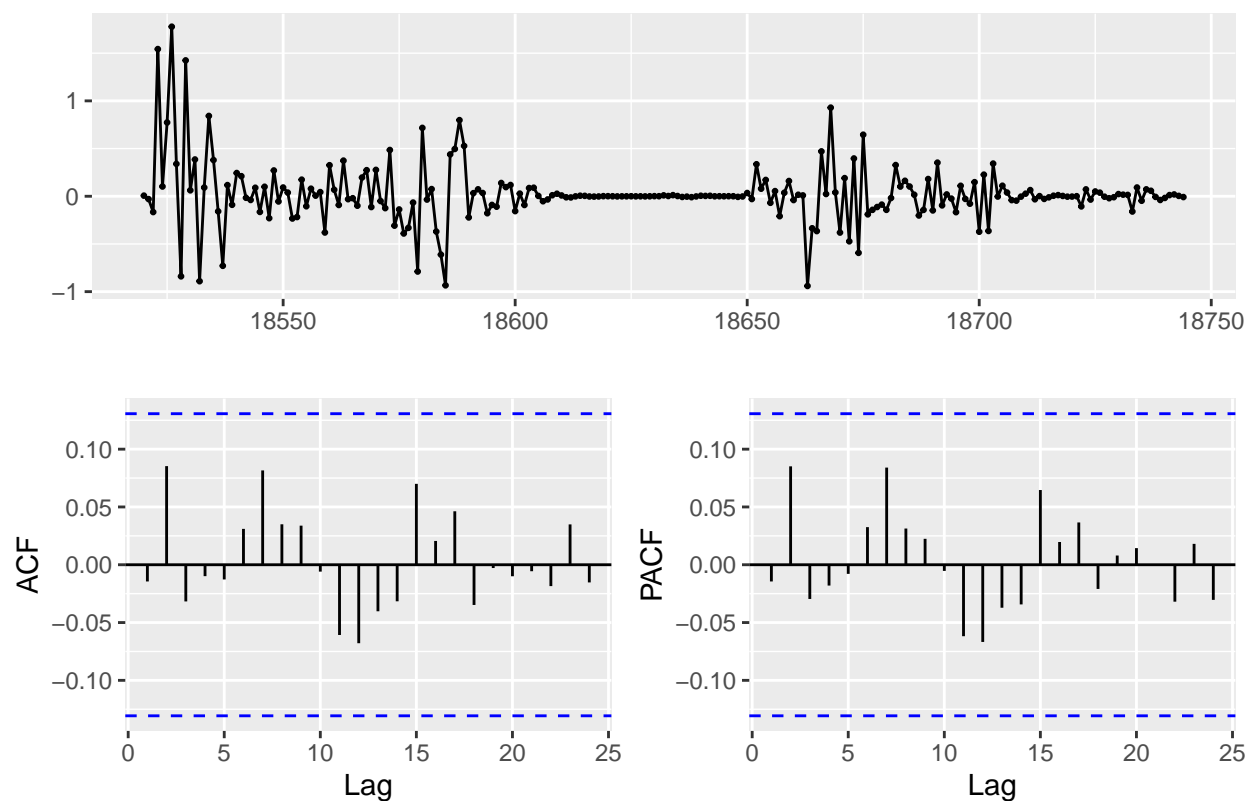
## First Difference of SLD and log(N1)



```
## [1] "Ordinary LM"
##
## Call:
## lm(formula = TSUnionDF[, 1] ~ TSUnionDF[, 2])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.6362 -0.9829 -0.5439  0.3762 14.1061
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -3.82134    0.88430  -4.321 2.34e-05 ***
## TSUnionDF[, 2]  0.44673    0.08126   5.497 1.05e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.799 on 223 degrees of freedom
## Multiple R-squared:  0.1193, Adjusted R-squared:  0.1154
## F-statistic: 30.22 on 1 and 223 DF, p-value: 1.051e-07
```

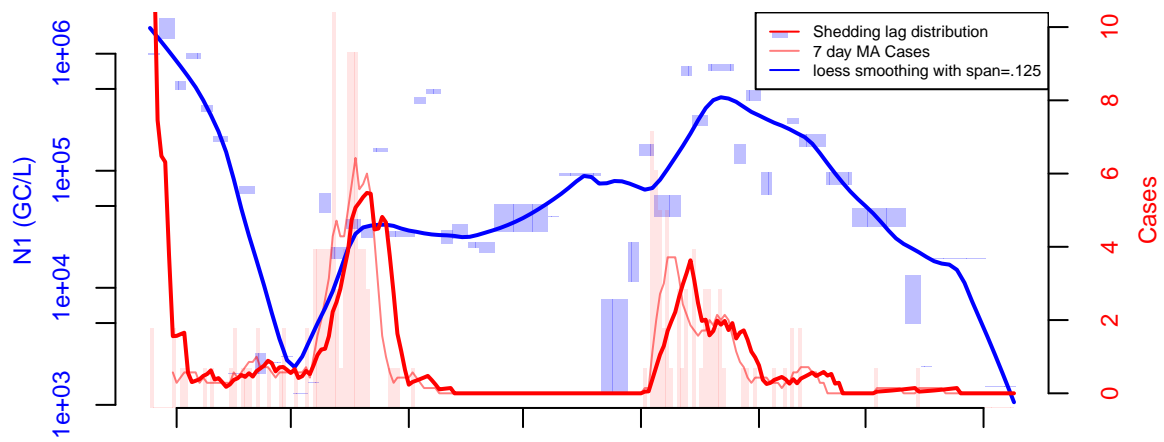


```
## [1] "LM with Arima residuals"
```



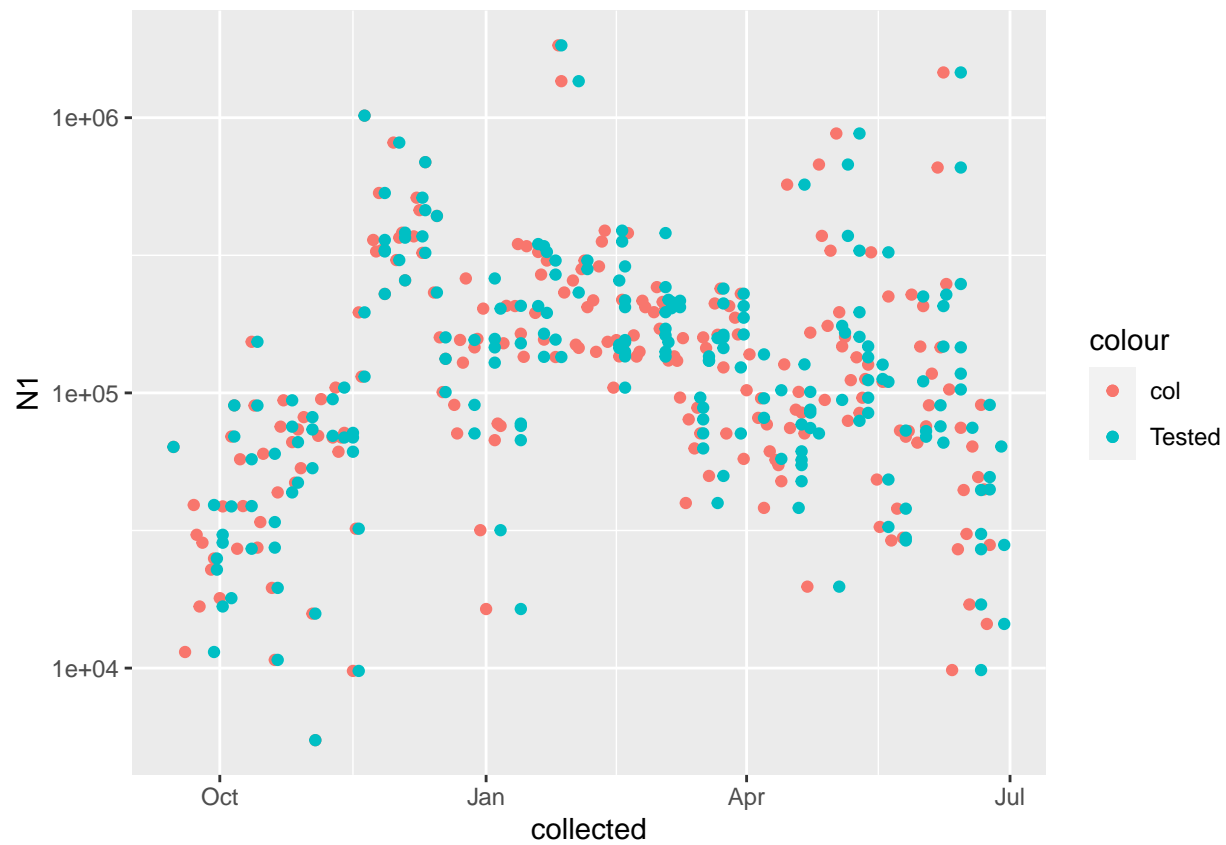
```
## Series: TSUnionDF[, 1]
## Regression with ARIMA(2,2,3) errors
##
## Coefficients:
##          ar1      ar2      ma1      ma2      ma3      xreg
##          0.2081 -0.9670 -0.5088  0.5436  0.0535  0.1350
## s.e.      0.0680   0.0316   0.0923  0.0886  0.0748  0.6421
##
## sigma^2 estimated as 0.1017:  log likelihood=-60.71
## AIC=135.41   AICc=135.93   BIC=159.26
##
## Training set error measures:
##              ME      RMSE      MAE  MPE  MAPE      MASE      ACF1
## Training set 0.02333929 0.3131747 0.1674459 NaN  Inf  0.8852846 -0.01444445
```

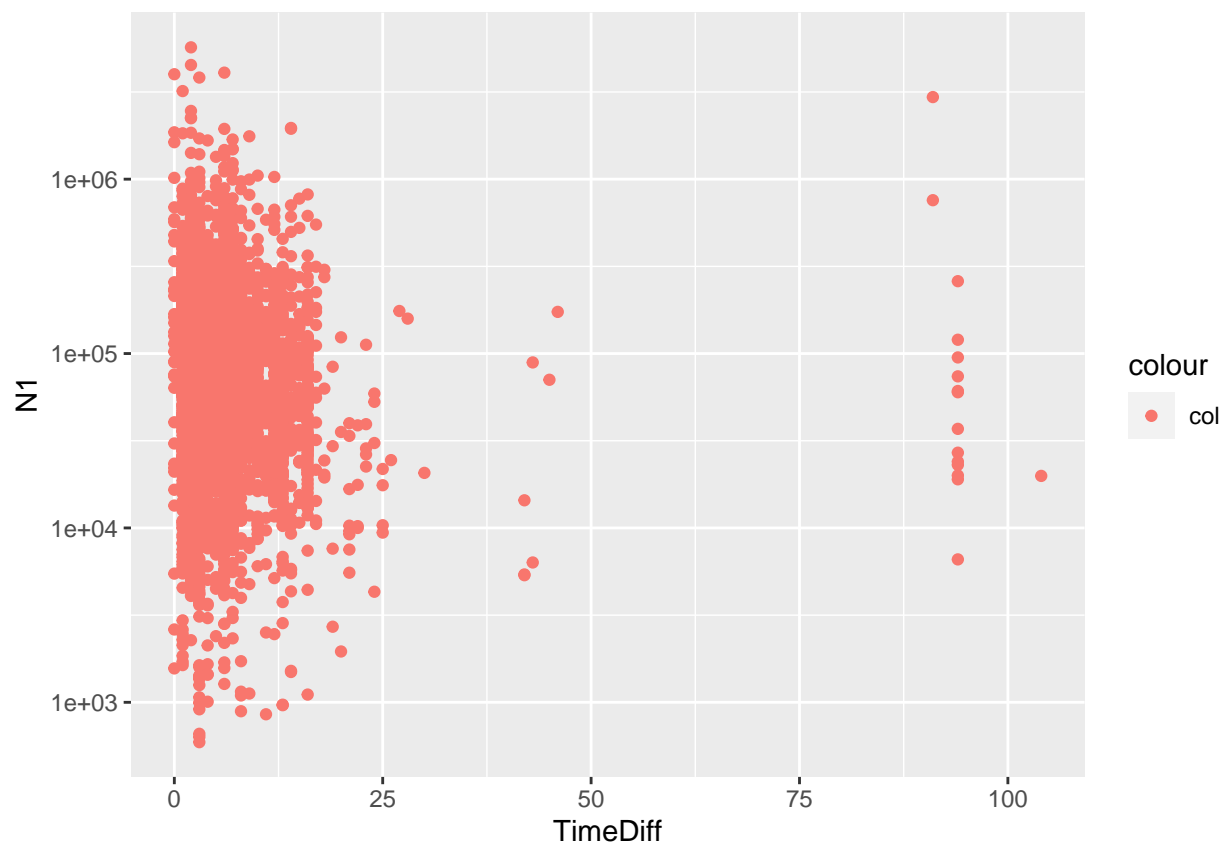


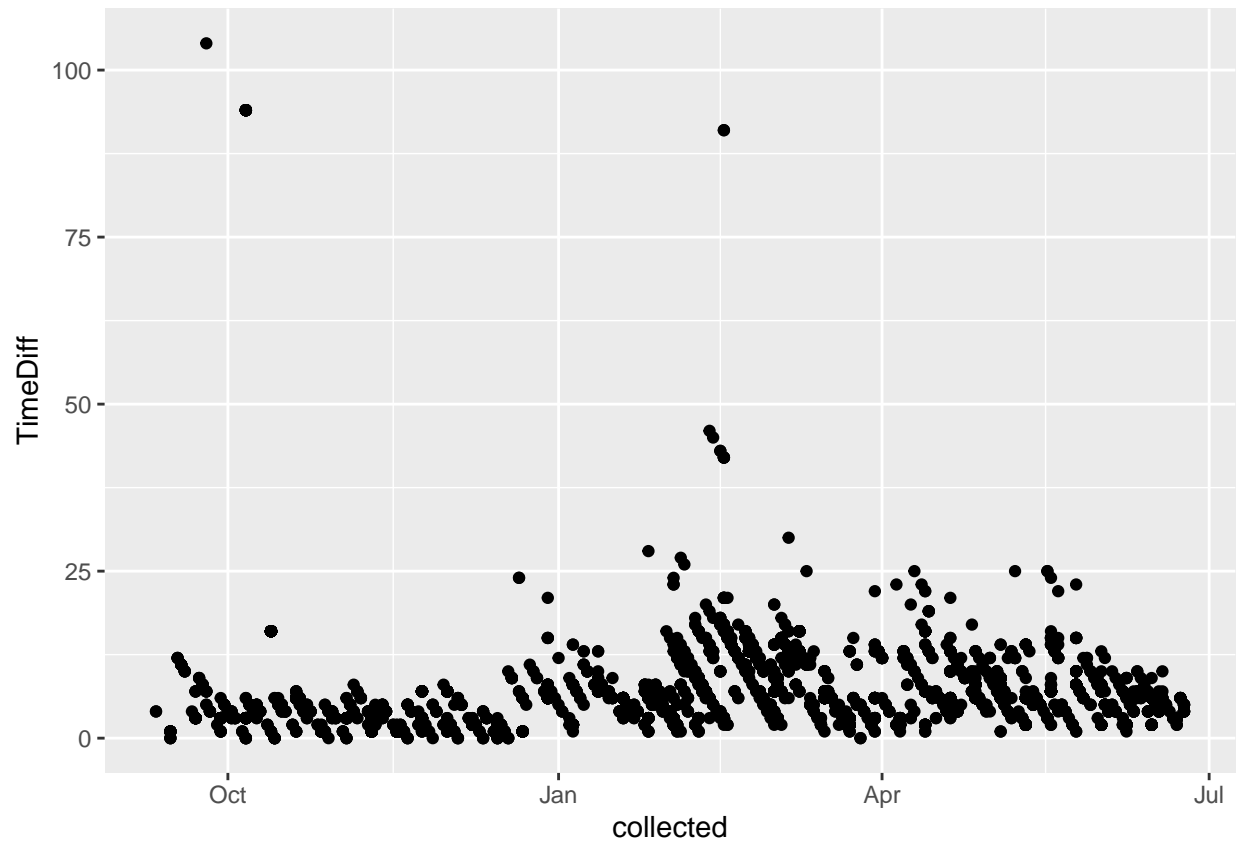


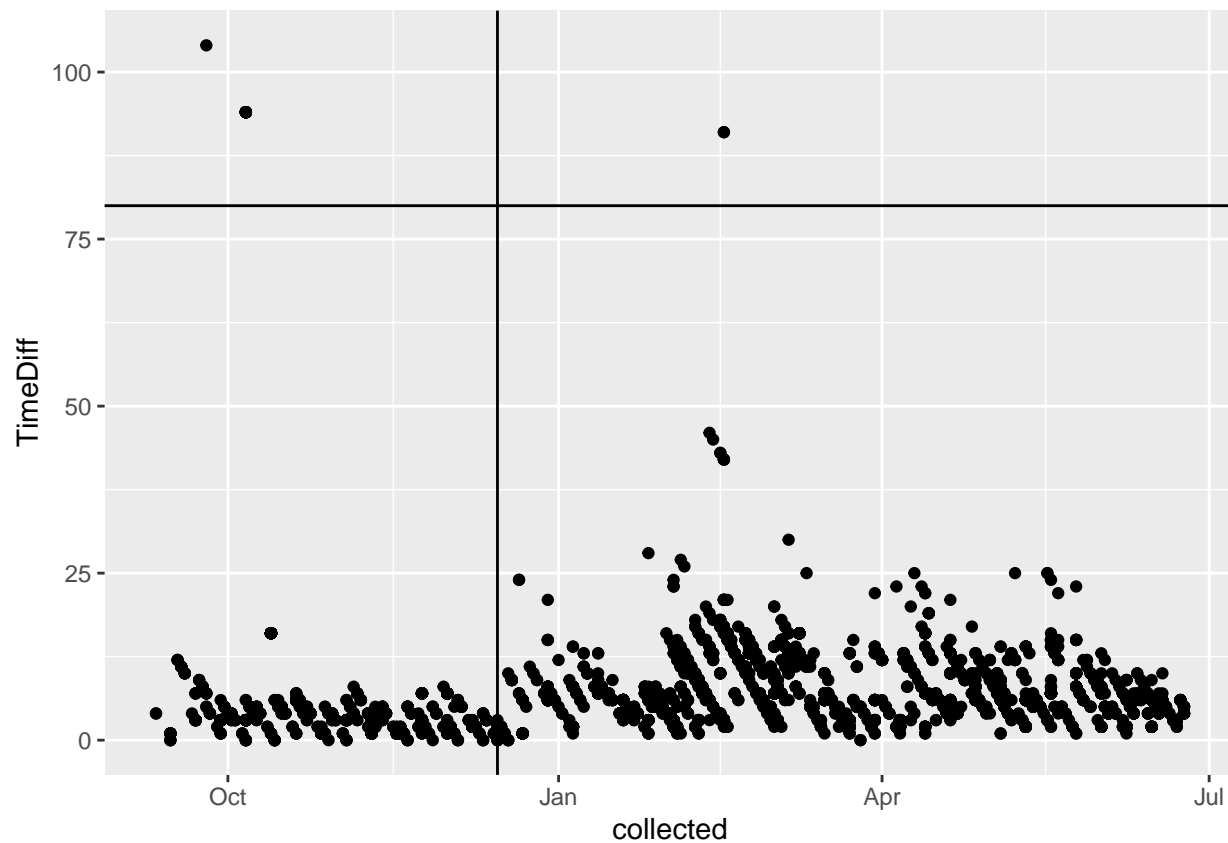
UW-Sellery











```
## # A tibble: 2 x 5
##   Time      mean    var meanDif      varDif
##   <chr>    <dbl> <dbl> <drtn>      <dbl>
## 1 2021      11.1  1.40 7.309339 days    28.8
## 2 Pre2021  11.2  2.05 5.481360 days   145.

##           Df    Sum Sq  Mean Sq F value   Pr(>F)
## Time           1 8.983e+11 8.983e+11   12.02 0.000534 ***
## Residuals 3252 2.431e+14 7.475e+10
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 229 observations deleted due to missingness
```