Climate Trends Affecting Glacier National Park: 1903-2019

86408

12/2/2019

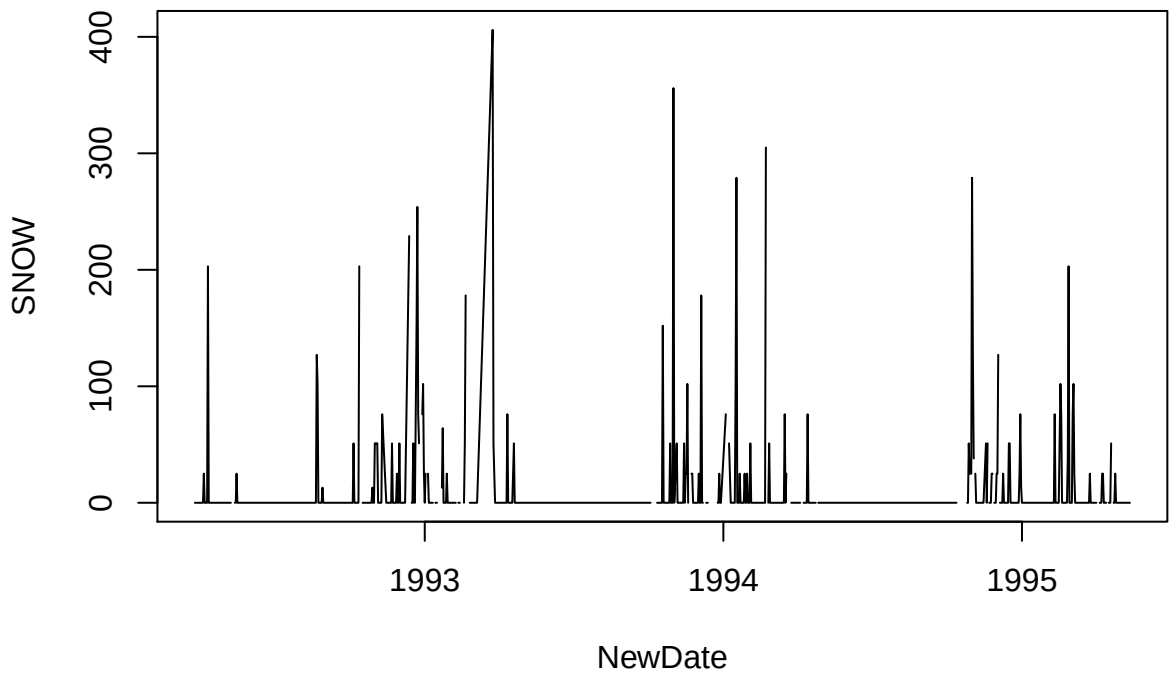
```
#read.csv("/home/CAMPUS/mjfa2017/github/Climate_Change_Narratives/student_folders/Foster/Miranda_Glacie
climate_data <- read.csv("/home/CAMPUS/mjfa2017/github/Climate_Change_Narratives/student_folders/Foster/
#plot(PRCP~DATE, climateviedata)
min(climate_data$PRCP)
```

```
## [1] NA
```

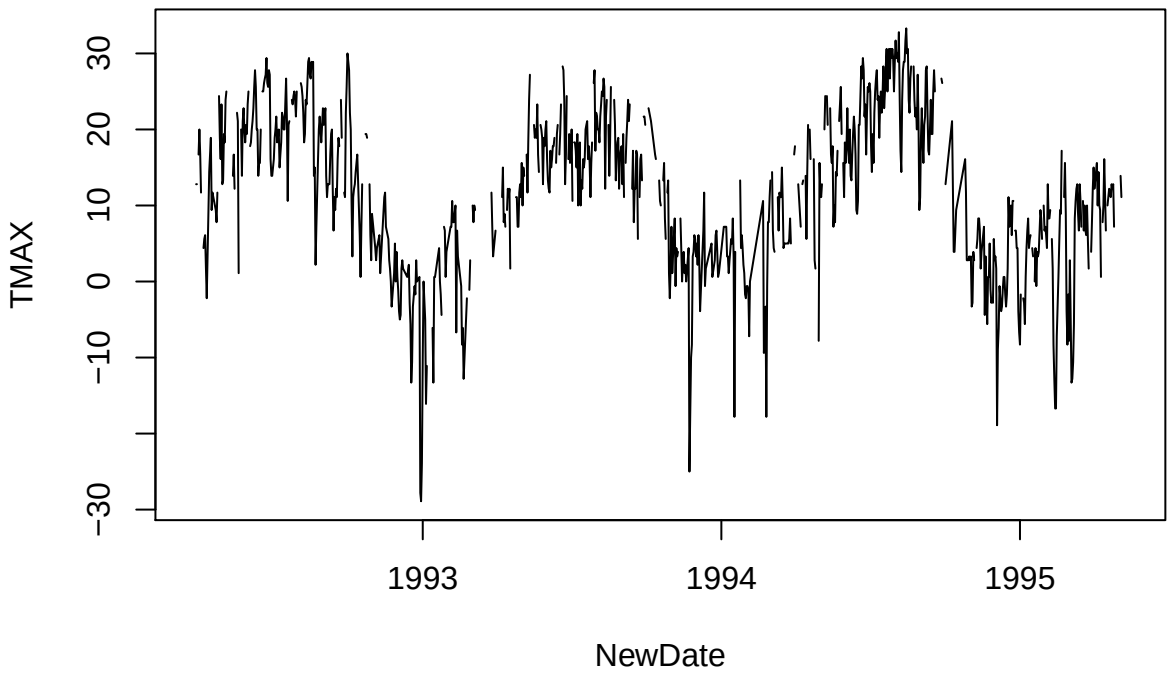
```
min(climate_data$PRCP, na.rm=T)
```

```
## [1] 0
```

```
#plot(TMAX~DATE, climate_data[15000:15900,], ty='l')
#plot(SNOW~DATE, climate_data)
strDates <- as.character(climate_data$DATE)
climate_data$NewDate <- as.Date(strDates, "%Y-%m-%d")
plot(SNOW~NewDate, climate_data[15000:16000,], ty='l')
```




```
plot(TMAX~NewDate, climate_data[15000:16000,], ty='l')
```




```
lm(TMAX~NewDate, data=climate_data)
```

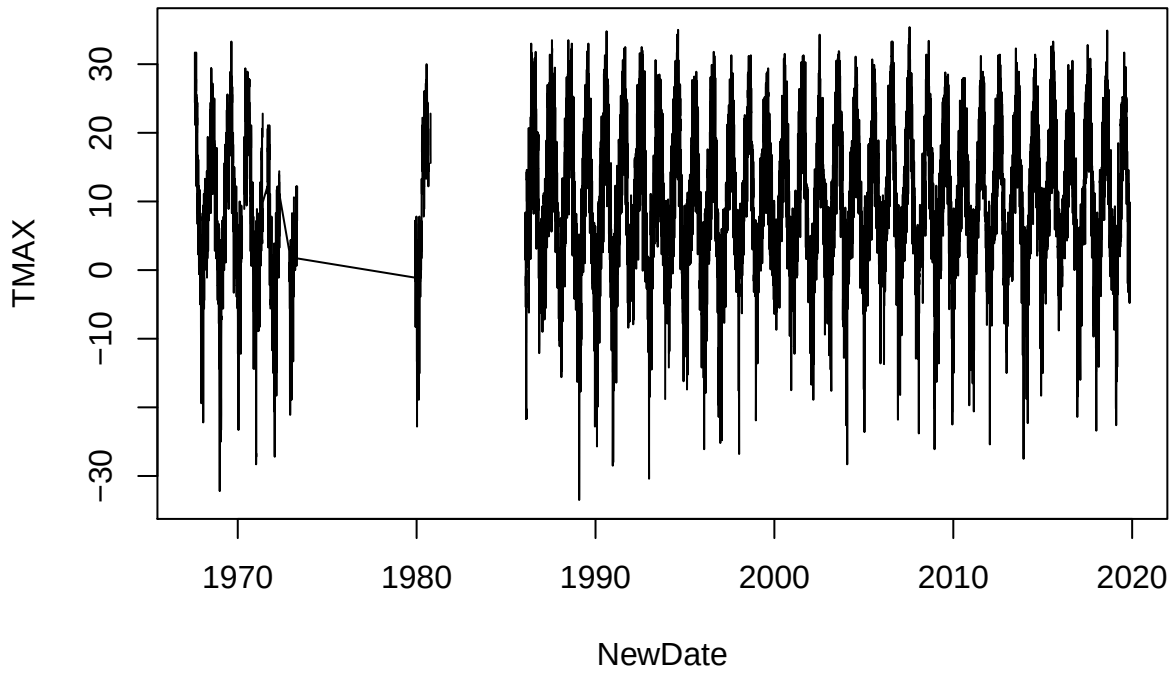
```
##
## Call:
## lm(formula = TMAX ~ NewDate, data = climate_data)
##
## Coefficients:
## (Intercept)      NewDate
##   9.629e+00    8.114e-05
```

```
##Call:
##lm(formula = TMAX ~ NewDate, data = climate_data)

##Residuals:
##  Min     1Q Median     3Q    Max
##-46.03  -7.82  -0.98   8.48 475.25

## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 9.629e+00  6.792e-02  141.78   <2e-16 ***
## NewDate     8.114e-05  5.887e-06   13.79   <2e-16 ***

summary(lm(TMAX~NewDate, data=climate_data))
```

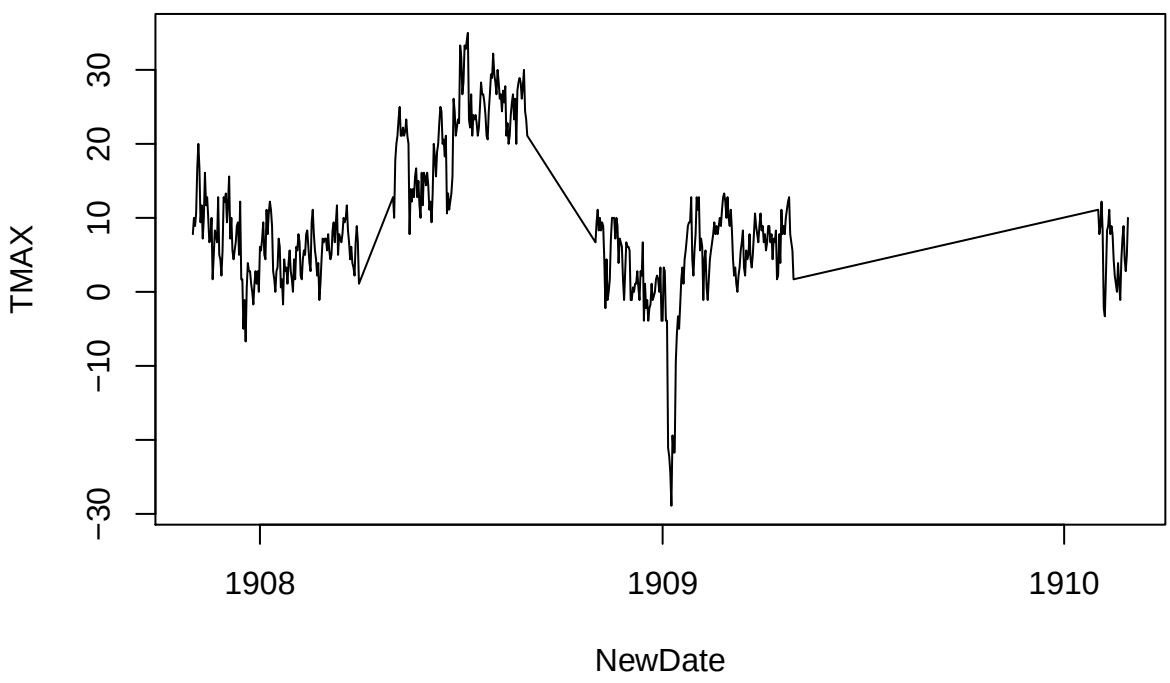
```
##
## Call:
## lm(formula = TMAX ~ NewDate, data = climate_data)
```

```
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -46.03   -7.82   -0.98    8.48  475.25
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 9.629e+00  6.792e-02  141.78   <2e-16 ***
## NewDate     8.114e-05  5.887e-06   13.79   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 13.68 on 73024 degrees of freedom
##   (16636 observations deleted due to missingness)
## Multiple R-squared:  0.002595,   Adjusted R-squared:  0.002582
## F-statistic:   190 on 1 and 73024 DF,  p-value: < 2.2e-16
```

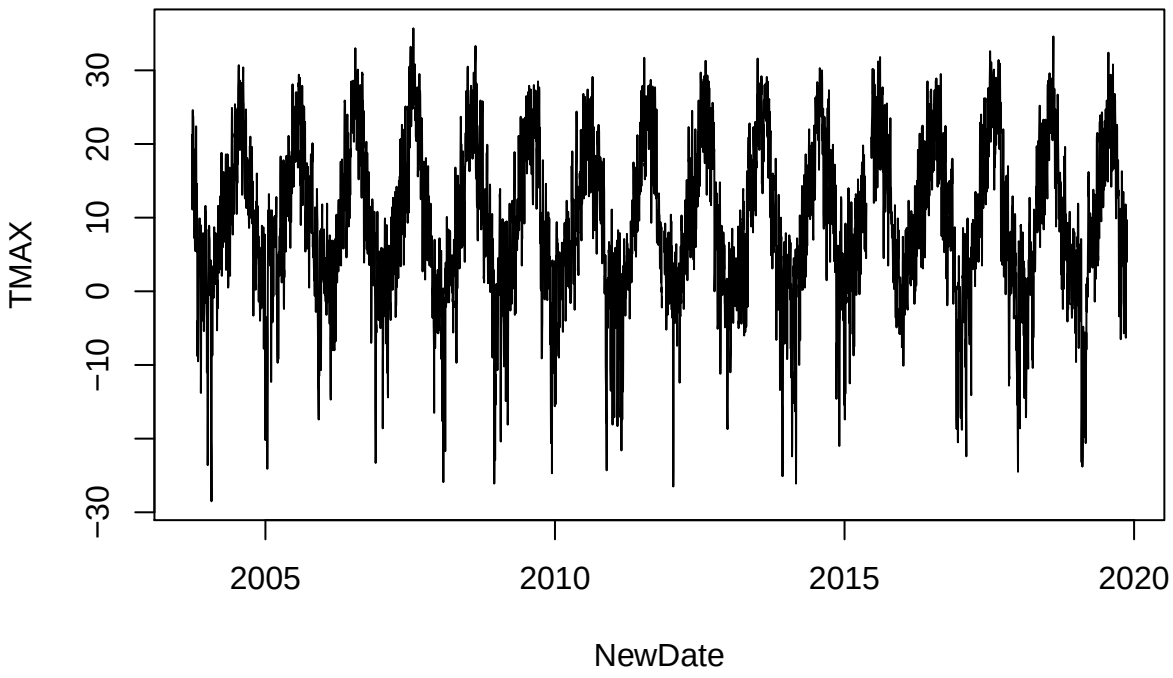
```
manyglacier = subset(climate_data, subset = NAME == "MANY GLACIER, MT US")
lubec = subset(climate_data, subset = NAME == "LUBEC, MT US")
eastglacier = subset(climate_data, subset = NAME == "   EAST GLACIER, MT US")
stmary1 = subset(climate_data, subset = NAME == "ST. MARY 1 SSW, MT US")
stmary2 = subset(climate_data, subset = NAME == "ST. MARY MONTANA, MT US")
stmary3 = subset(climate_data, subset = NAME == "ST. MARY, MT US")
summit = subset(climate_data, subset = NAME == "SUMMIT, MT US")
plot(TMAX~NewDate, manyglacier, ty = 'l')
```



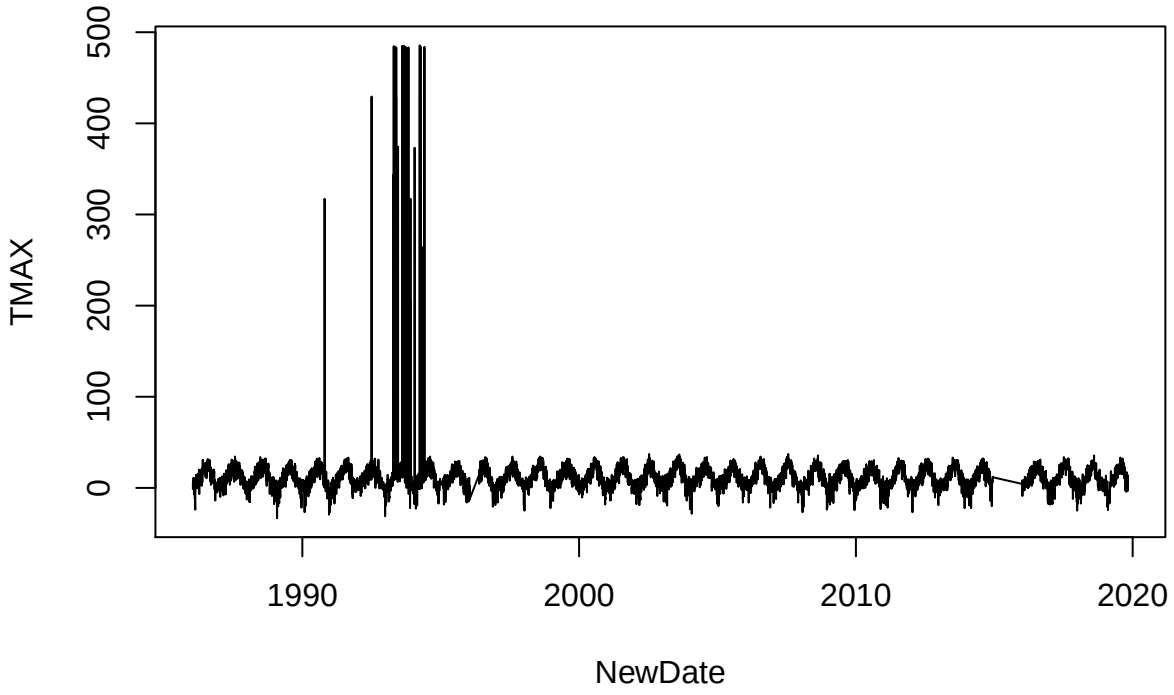
```
plot(TMAX~NewDate, lubec, ty='l')
```



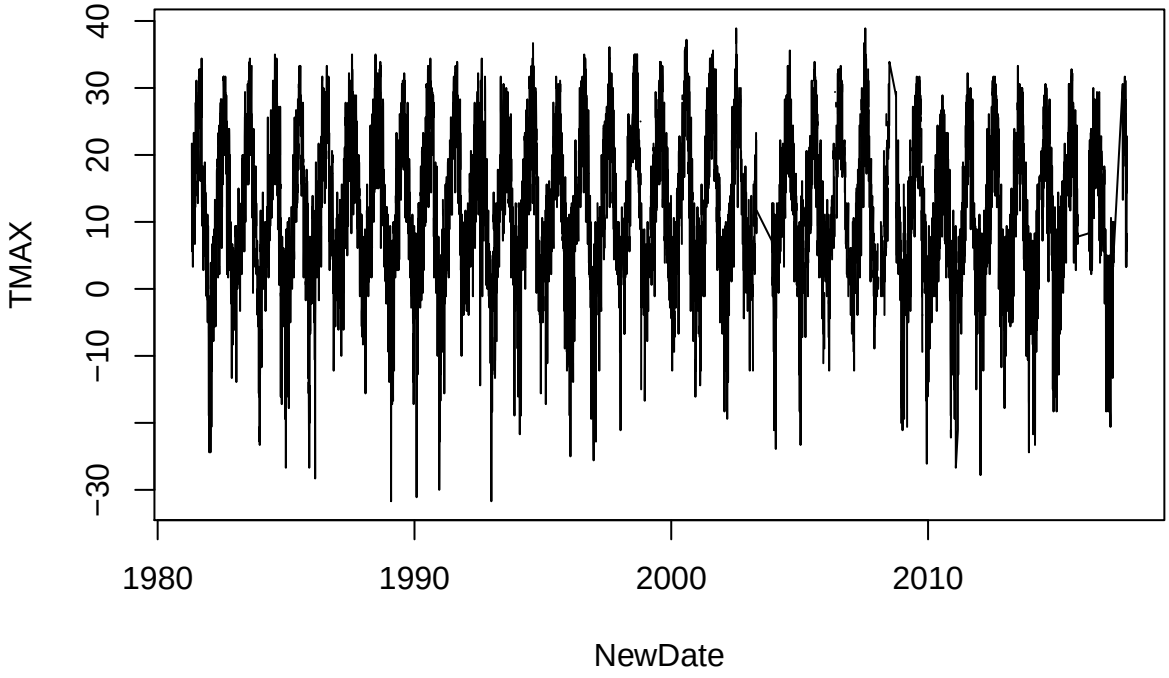

```
plot(TMAX~NewDate, stmary1, ty='l')
```



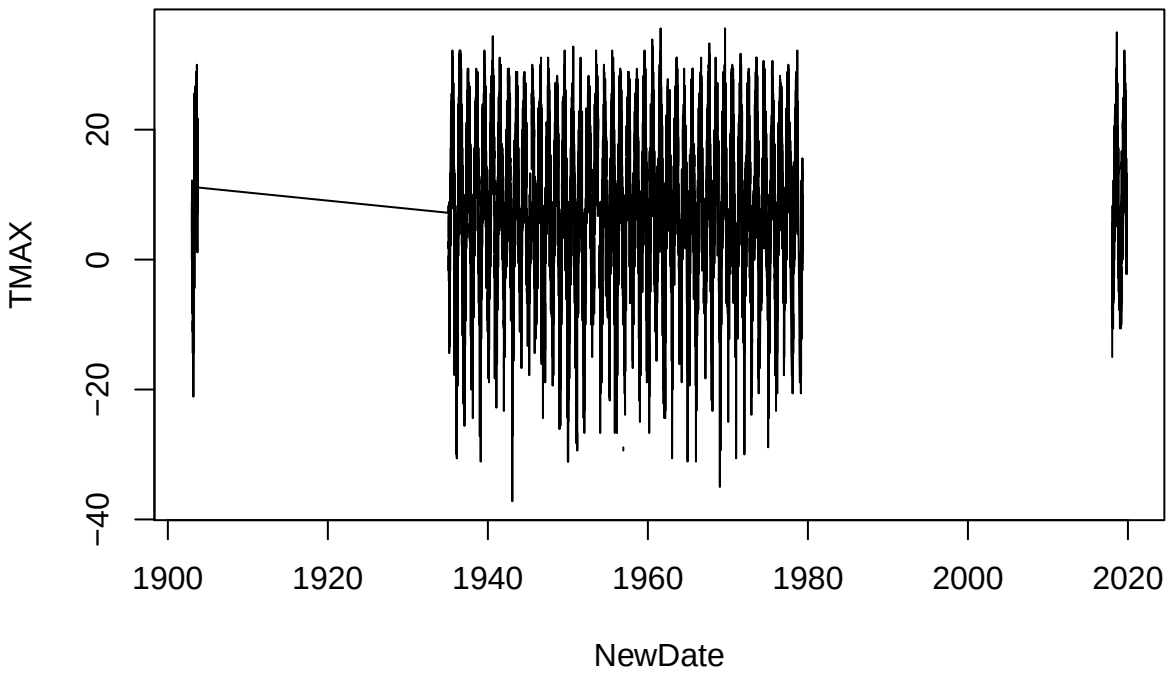

```
plot(TMAX~NewDate, stmary2, ty='l')
```



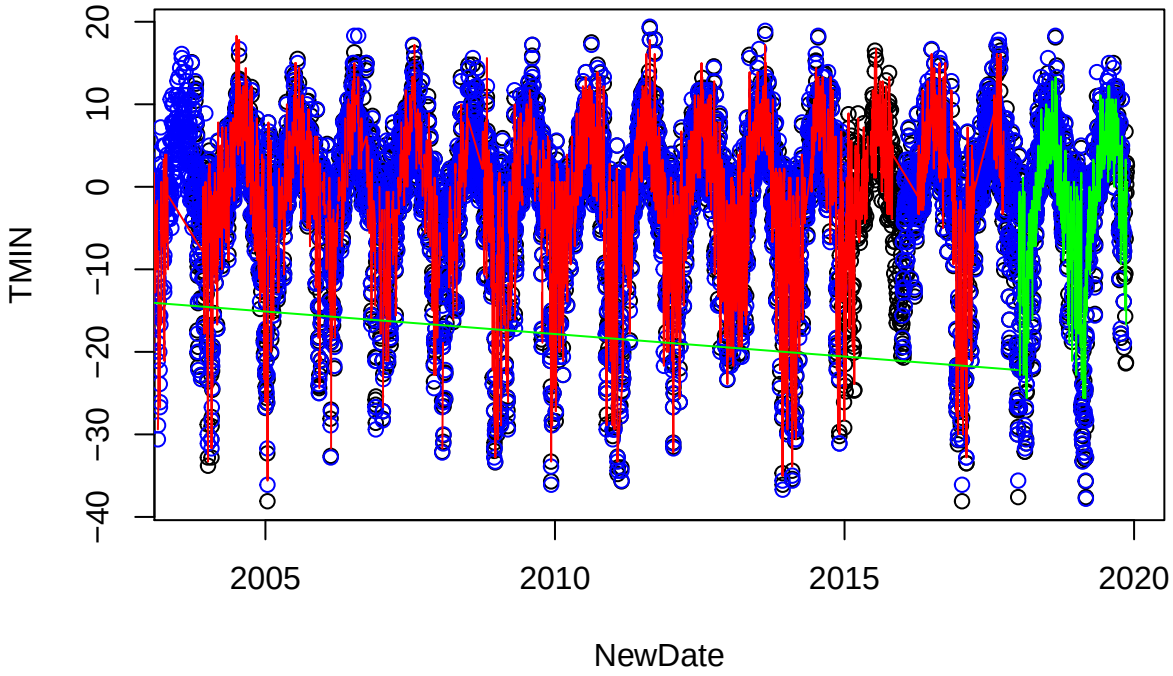

```
plot(TMAX~NewDate, stmary3, ty='l')
```




```
plot(TMAX~NewDate, summit, ty='l')
```




```
plot(TMIN~NewDate, stmary1, ty='p')
points(TMIN~NewDate, stmary2, col="blue")
lines(TMIN~NewDate, stmary3, col="red")
lines(TMIN~NewDate, summit, col ="green")
```


TMIN
20
10
0
−10
−20
−30
−40
2005
2010
2015
2020
NewDate

“‘