A Blog Thing

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2/11/2019

Initial Climate Data

```
##Read CSV Data
filepath= "/home/CAMPUS/ttab2018/Climate_Change_Narratives/student_folders/Anderson/tonianderson_burban
climate_data = read.csv(filepath)
head(climate_data)
```

```
##       STATION                                NAME      DATE PRCP SNOW SNWD
## 1 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/1/1939    0    0    0
## 2 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/2/1939    0    0    0
## 3 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/3/1939    0    0    0
## 4 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/4/1939    0    0    0
## 5 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/5/1939    0    0    0
## 6 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/6/1939    0    0    0
##   TMAX TMIN TOBS
## 1 28.9  4.4   NA
## 2 28.3  8.9   NA
## 3 31.7  7.2   NA
## 4 31.1  6.7   NA
## 5 26.7  7.8   NA
## 6 24.4 12.2   NA
```

```
str(climate_data)
```

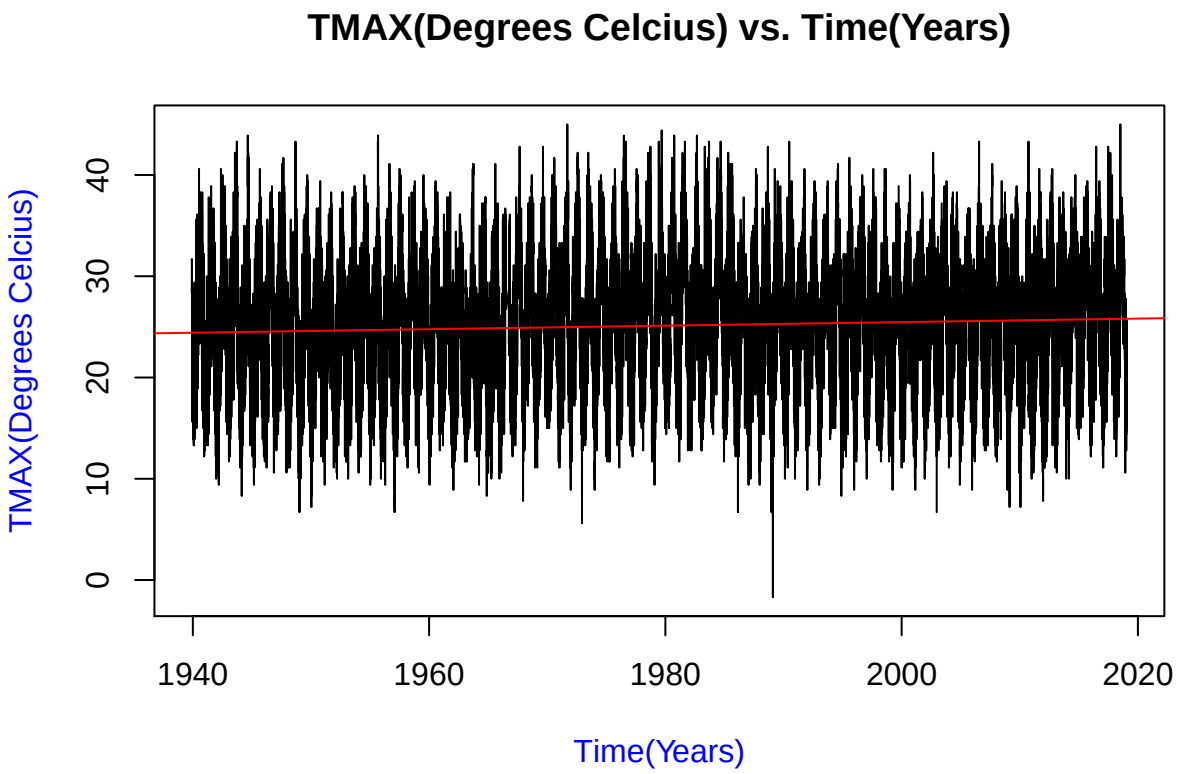
```
## 'data.frame':    28601 obs. of  9 variables:
##  $ STATION: Factor w/ 1 level "USC00041194": 1 1 1 1 1 1 1 1 1 1 ...
##  $ NAME   : Factor w/ 1 level "BURBANK VALLEY PUMP PLANT, CA US": 1 1 1 1 1 1 1 1 1 1 ...
##  $ DATE   : Factor w/ 28601 levels "1/1/1940","1/1/1941",..: 7201 8081 8961 9201 9281 9361 9441 9521
##  $ PRCP   : num  0 0 0 0 0 0 0 0 0 0 ...
##  $ SNOW   : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ SNWD   : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ TMAX   : num  28.9 28.3 31.7 31.1 26.7 24.4 25 21.7 21.1 21.7 ...
##  $ TMIN   : num  4.4 8.9 7.2 6.7 7.8 12.2 7.2 8.3 8.9 5.6 ...
##  $ TOBS   : num  NA NA NA NA NA NA NA NA NA NA ...
```

```
names(climate_data)
```

```
## [1] "STATION" "NAME"    "DATE"    "PRCP"    "SNOW"    "SNWD"    "TMAX"
## [8] "TMIN"    "TOBS"
```

```
##Fix Dates
strDates <- as.character(climate_data$DATE)
climate_data$NewDate <- as.Date(strDates, "%m/%d/%Y")

##Plot Data
plot(TMAX~NewDate, climate_data, ty='l', main="TMAX(Degrees Celcius) vs. Time(Years)", xlab="Time(Years
c <- coef(lm(TMAX~NewDate, climate_data))
abline(c, col="red")
```



Monthly Data Max and Mins

```
## Define Shit
lm(TMAX~NewDate, data=climate_data)
```

```
##
## Call:
## lm(formula = TMAX ~ NewDate, data = climate_data)
##
## Coefficients:
## (Intercept)      NewDate
##   2.495e+01    4.773e-05
```

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

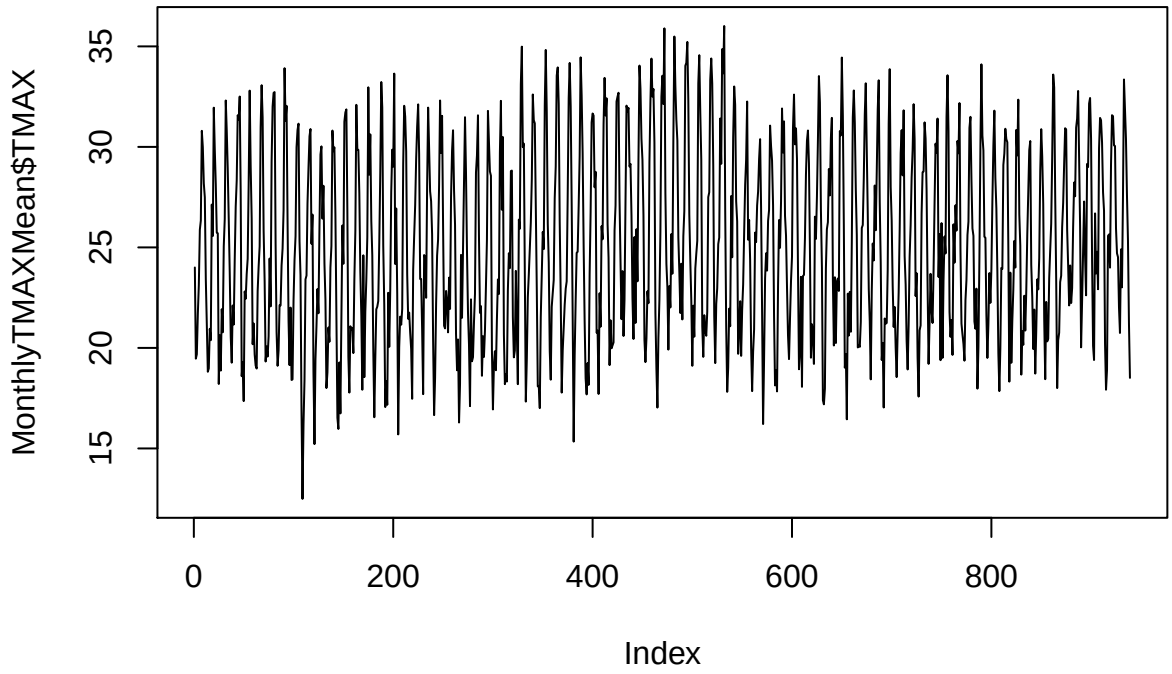
```
##
## Call:
## lm(formula = TMAX ~ NewDate, data = climate_data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -26.9787  -4.6118  -0.1055   4.4729  20.0247
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
```

```
## (Intercept) 2.495e+01  4.008e-02  622.32   <2e-16 ***
## NewDate     4.773e-05  4.436e-06   10.76   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 6.259 on 28505 degrees of freedom
##   (94 observations deleted due to missingness)
## Multiple R-squared:  0.004045,   Adjusted R-squared:  0.00401
## F-statistic: 115.8 on 1 and 28505 DF,  p-value: < 2.2e-16
```

```
##Monthly Averages
climate_data$Month = format(as.Date(climate_data$NewDate), format="%m")
climate_data$Year = format(as.Date(climate_data$NewDate), format="%Y")
MonthlyTMAXMean = aggregate(TMAX ~ Month +Year, climate_data, mean)
MonthlyTMAXMean$YEAR = as.numeric(MonthlyTMAXMean$Year)
MonthlyTMAXMean$MONTH = as.numeric(MonthlyTMAXMean$Month)
str(MonthlyTMAXMean)
```

```
## 'data.frame':    939 obs. of  5 variables:
##  $ Month: chr  "12" "01" "02" "03" ...
##  $ Year : chr  "1939" "1940" "1940" "1940" ...
##  $ TMAX : num  24 19.5 19.7 21.7 23.1 ...
##  $ YEAR : num  1939 1940 1940 1940 1940 ...
##  $ MONTH: num  12 1 2 3 4 5 6 7 8 9 ...
```

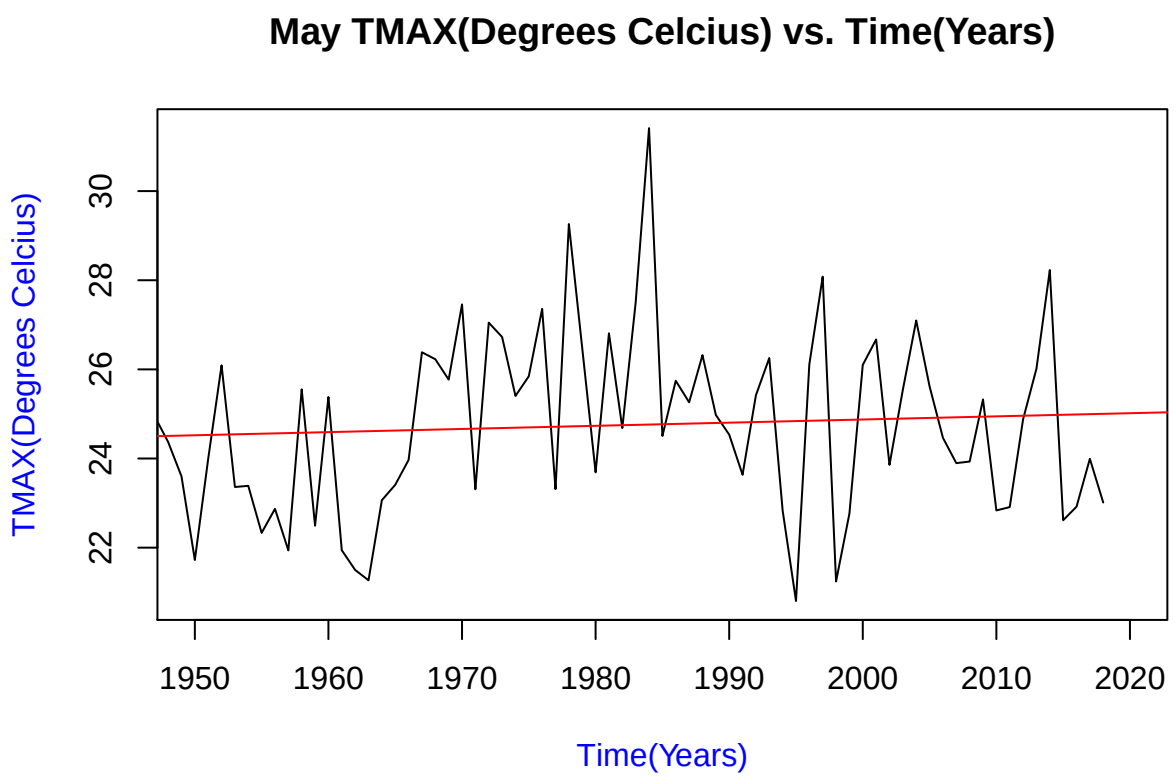
```
plot(MonthlyTMAXMean$TMAX, ty='l')
```



```r
##Plot May
plot(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="05",], ty='l', xlim=c(1950, 2020), main="Ma
May.lm <- lm(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="05",])
summary(May.lm)
```

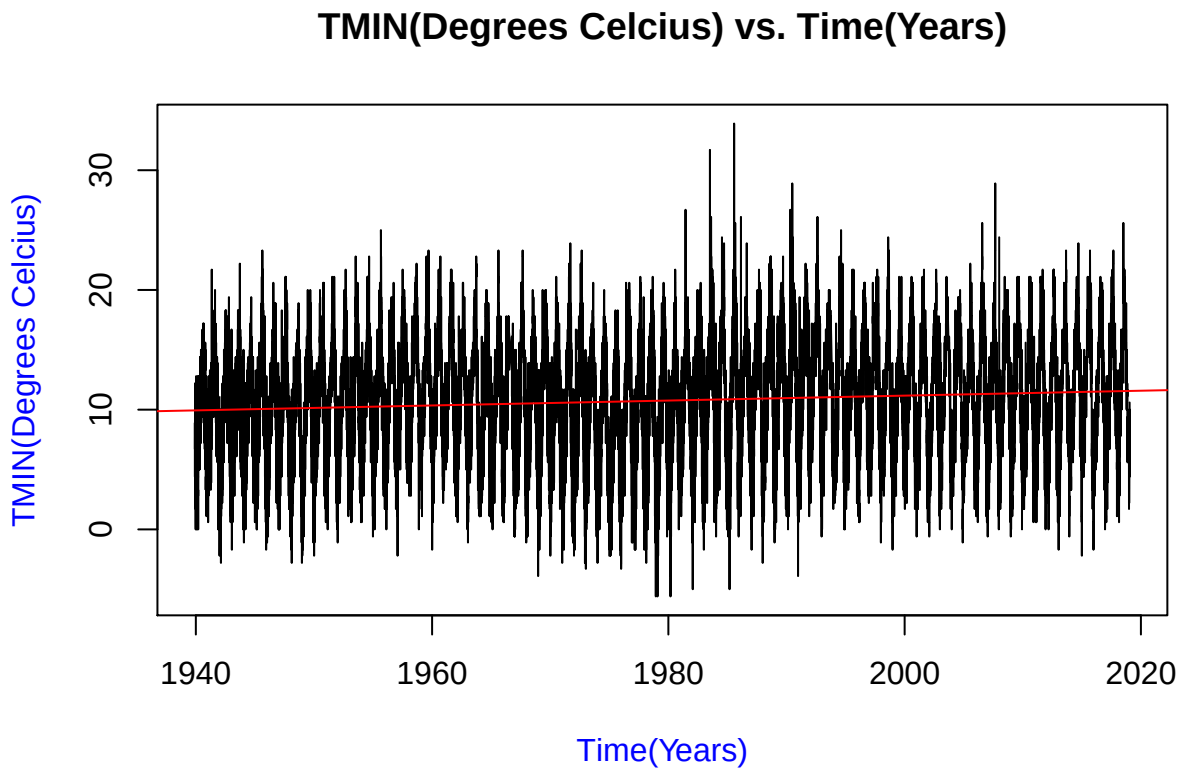
```
##
## Call:
## lm(formula = TMAX ~ YEAR, data = MonthlyTMAXMean[MonthlyTMAXMean$Month ==
##     "05", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.0368 -1.3899 -0.1081  1.3882  6.6507
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 10.727110  19.761566   0.543    0.589
## YEAR         0.007074   0.009985   0.708    0.481
##
## Residual standard error: 2.024 on 76 degrees of freedom
## Multiple R-squared:  0.006561,   Adjusted R-squared:  -0.00651
## F-statistic: 0.5019 on 1 and 76 DF,  p-value: 0.4808
```

```r
abline(coef(May.lm), col="red")
```




```r
##TMIN Definitions
plot(TMIN~NewDate, climate_data, ty='l', main="TMIN(Degrees Celcius) vs. Time(Years)", xlab="Time(Years
```

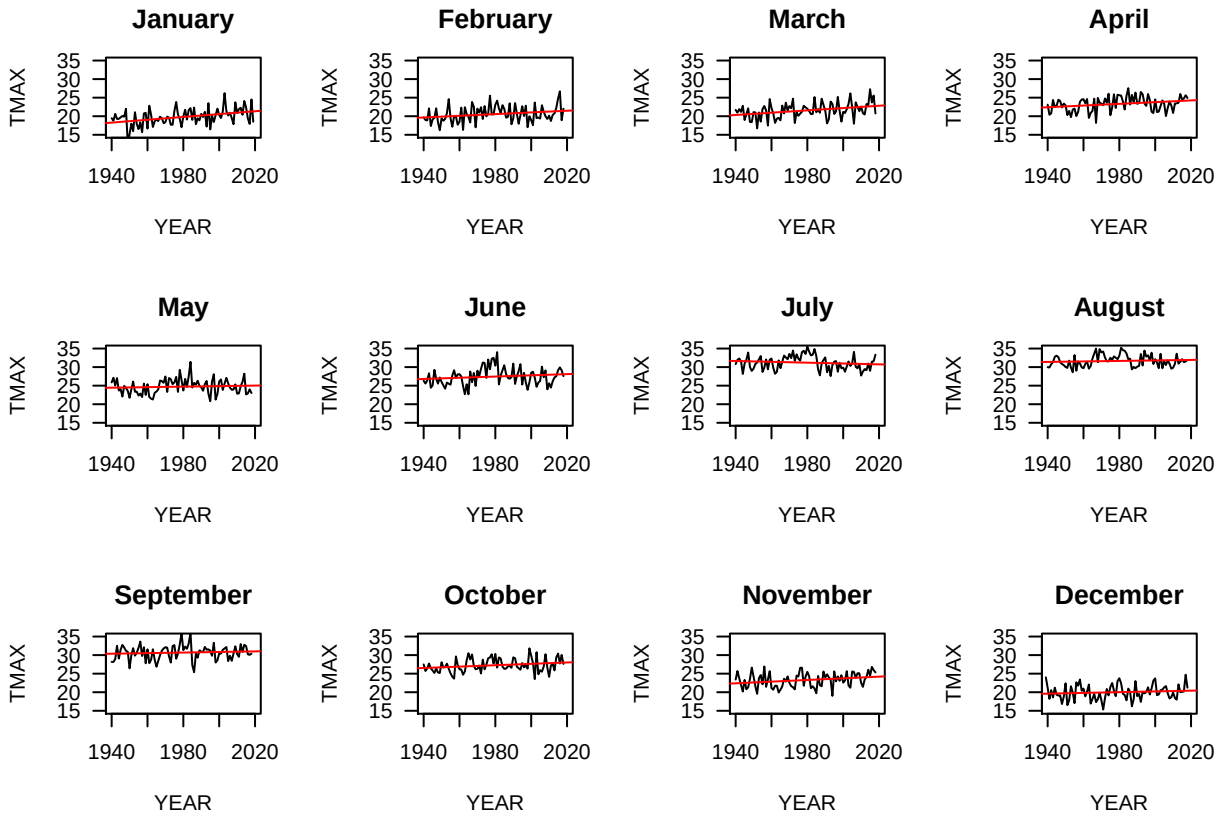
```
c <- coef(lm(TMIN~NewDate, climate_data))
abline(c, col="red")
```



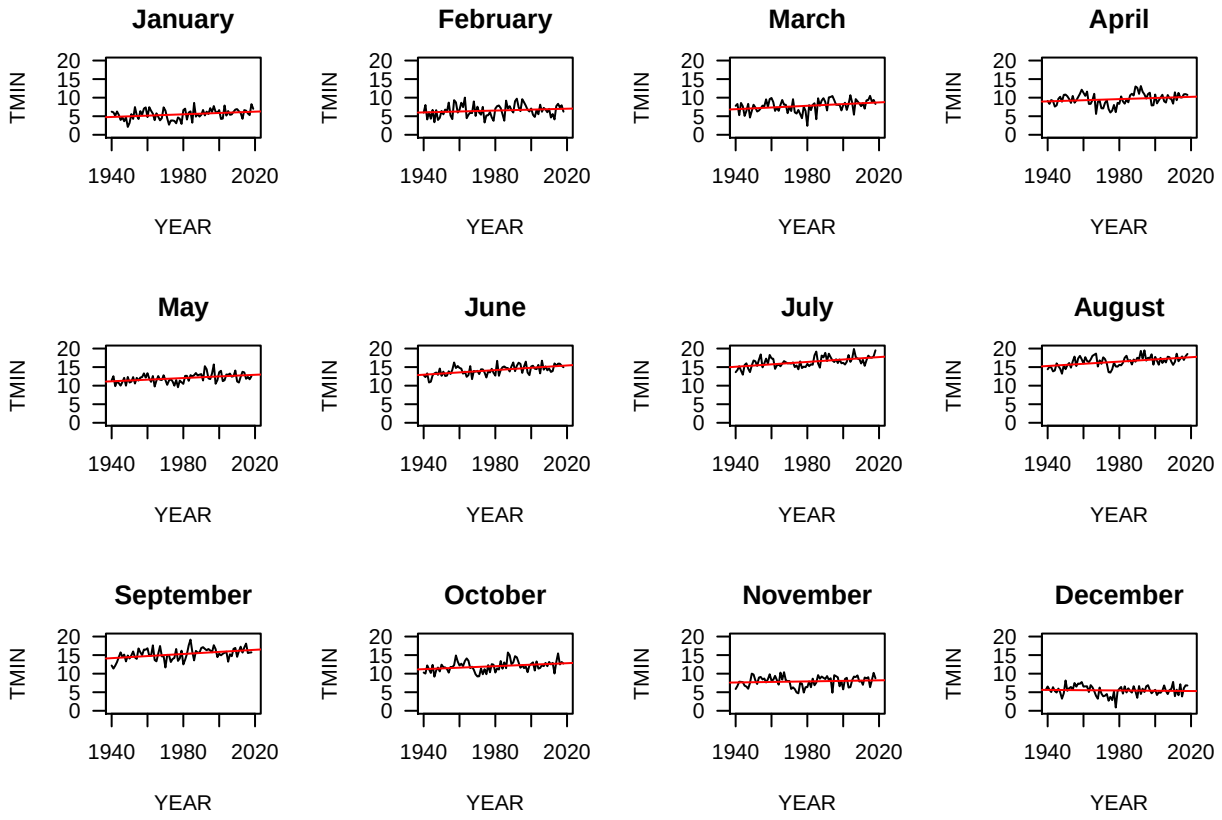

```
MonthlyTMINMean = aggregate(TMIN ~ Month +Year, climate_data, mean)
MonthlyTMINMean$YEAR = as.numeric(MonthlyTMINMean$Year)
MonthlyTMINMean$MONTH = as.numeric(MonthlyTMINMean$Month)
head(MonthlyTMINMean)
```

```
##   Month Year      TMIN YEAR MONTH
## 1    12 1939  5.677419 1939    12
## 2    01 1940  6.225806 1940     1
## 3    02 1940  5.972414 1940     2
## 4    03 1940  7.790323 1940     3
## 5    04 1940  9.120000 1940     4
## 6    05 1940 11.454839 1940     5
```

```
##Every Month! Come back and do 1 by 1
Months = c("January", "February", "March", "April", "May", "June", "July", "August", "September", "Octo
par(mfrow = c(3, 4), mar = c(5, 4, 3, 2) + 0.1 )
TMAXresult <- NA
for (i in 1:12) {
  plot(TMAX ~ YEAR, data =  MonthlyTMAXMean[MonthlyTMAXMean$MONTH == i, ], ty = "l", las = 1, xlim = c(
Month.lm <- lm(TMAX ~ YEAR, data = MonthlyTMAXMean[MonthlyTMAXMean$MONTH == i, ])
summary(Month.lm)
abline(coef(Month.lm), col = "red")
TMAXresult <- rbind(TMAXresult, cbind(Months[i], round(coef(Month.lm)[2], 4), round(summary(Month.lm)$c
}
```




```
##Daily Mins (Decide which months [Oct, Nov, Dec; summer too?]
Months = c("January", "February", "March", "April", "May", "June", "July", "August", "September", "Octol
par(mfrow = c(3, 4), mar = c(5, 4, 3, 2) + 0.1 )
TMINresult <- NA
for (i in 1:12) {
  plot(TMIN ~ YEAR, data =  MonthlyTMINMean[MonthlyTMINMean$MONTH == i, ], ty = "l", las = 1, xlim = c(
Month.lm <- lm(TMIN ~ YEAR, data = MonthlyTMINMean[MonthlyTMINMean$MONTH == i, ])
summary(Month.lm)
abline(coef(Month.lm), col = "red")
TMINresult <- rbind(TMINresult, cbind(Months[i], round(coef(Month.lm)[2], 4), round(summary(Month.lm)$c
}
```




```
##Precipitation Data (Initial Data)
filepath= "/home/CAMPUS/ttab2018/Climate_Change_Narratives/student_folders/Anderson/tonianderson_burbank
climate_data = read.csv(filepath)
head(climate_data)
```

```
##       STATION                                NAME      DATE PRCP SNOW SNWD
## 1 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/1/1939    0    0    0
## 2 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/2/1939    0    0    0
## 3 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/3/1939    0    0    0
## 4 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/4/1939    0    0    0
## 5 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/5/1939    0    0    0
## 6 USC00041194 BURBANK VALLEY PUMP PLANT, CA US 12/6/1939    0    0    0
##   TMAX TMIN TOBS
## 1 28.9  4.4   NA
## 2 28.3  8.9   NA
## 3 31.7  7.2   NA
## 4 31.1  6.7   NA
## 5 26.7  7.8   NA
## 6 24.4 12.2   NA
```

```
str(climate_data)
```

```
## 'data.frame':    28601 obs. of  9 variables:
##  $ STATION: Factor w/ 1 level "USC00041194": 1 1 1 1 1 1 1 1 1 1 ...
##  $ NAME   : Factor w/ 1 level "BURBANK VALLEY PUMP PLANT, CA US": 1 1 1 1 1 1 1 1 1 1 ...
##  $ DATE   : Factor w/ 28601 levels "1/1/1940","1/1/1941",..: 7201 8081 8961 9201 9281 9361 9441 9521
##  $ PRCP   : num  0 0 0 0 0 0 0 0 0 0 ...
```

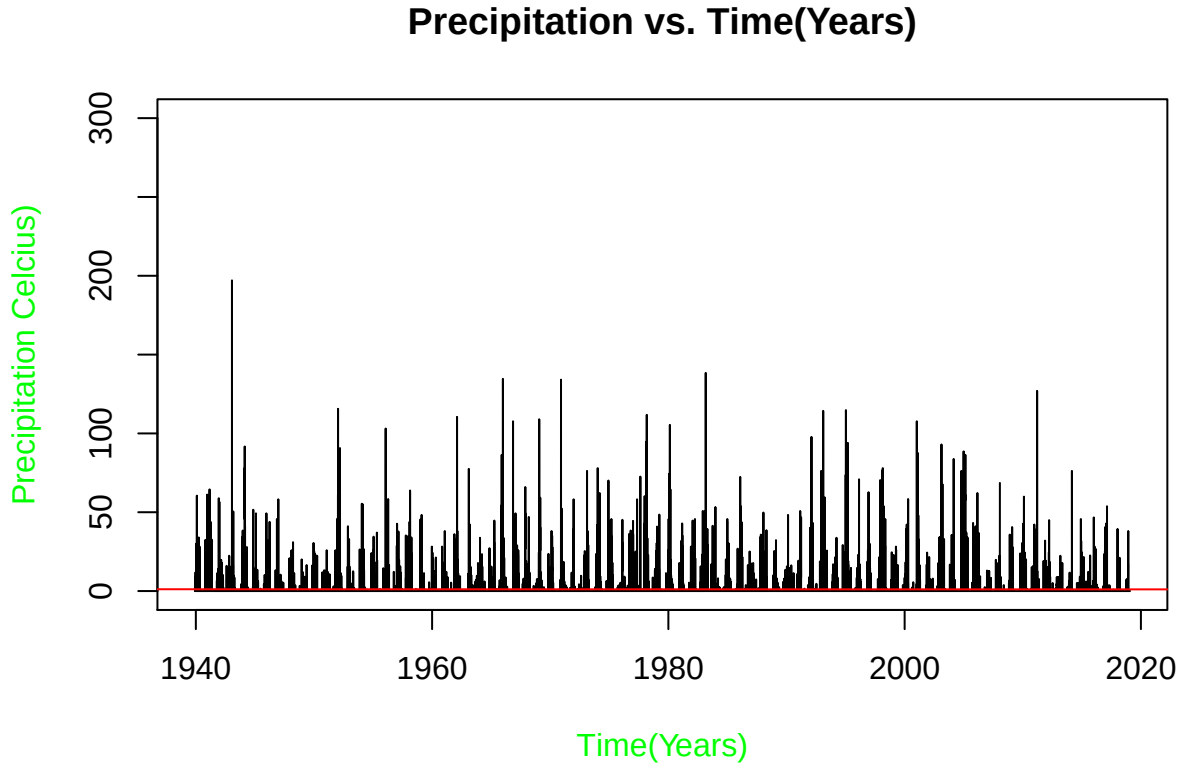
```
##  $ SNOW   : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ SNWD   : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ TMAX   : num  28.9 28.3 31.7 31.1 26.7 24.4 25 21.7 21.1 21.7 ...
##  $ TMIN   : num  4.4 8.9 7.2 6.7 7.8 12.2 7.2 8.3 8.9 5.6 ...
##  $ TOBS   : num  NA NA NA NA NA NA NA NA NA NA ...
```

```
names(climate_data)
```

```
## [1] "STATION" "NAME"    "DATE"    "PRCP"    "SNOW"    "SNWD"    "TMAX"
## [8] "TMIN"    "TOBS"
```

```
##Fix Dates
strDates <- as.character(climate_data$DATE)
climate_data$NewDate <- as.Date(strDates, "%m/%d/%Y")

##Plot Data
plot(PRCP~NewDate, climate_data, ty='l', ylim=c(0, 300), main="Precipitation vs. Time(Years)", xlab="Ti
c <- coef(lm(PRCP~NewDate, climate_data))
abline(c, col="red")
```




```
##Precipitaion Data (Get sum, then create monthly plots)
## Define Shit
lm(PRCP~NewDate, data=climate_data)
```

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

```
## Coefficients:
## (Intercept)      NewDate
##   1.113e+00   -2.943e-06
```

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

```
##
## Call:
## lm(formula = PRCP ~ NewDate, data = climate_data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
##  -1.146  -1.122  -1.098  -1.075 195.958
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  1.113e+00  4.013e-02  27.748   <2e-16 ***
## NewDate     -2.943e-06  4.443e-06  -0.662    0.508
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 6.268 on 28525 degrees of freedom
##   (74 observations deleted due to missingness)
## Multiple R-squared:  1.538e-05,  Adjusted R-squared:  -1.968e-05
## F-statistic: 0.4386 on 1 and 28525 DF,  p-value: 0.5078
```

```
##Monthly Sums
climate_data$Month = format(as.Date(climate_data$NewDate), format="%m")
climate_data$Year = format(as.Date(climate_data$NewDate), format="%Y")
MonthlyPRCPSum = aggregate(PRCP ~ Month +Year, climate_data, sum)
MonthlyPRCPSum$YEAR = as.numeric(MonthlyPRCPSum$Year)
MonthlyPRCPSum$MONTH = as.numeric(MonthlyPRCPSum$Month)
str(MonthlyPRCPSum)
```

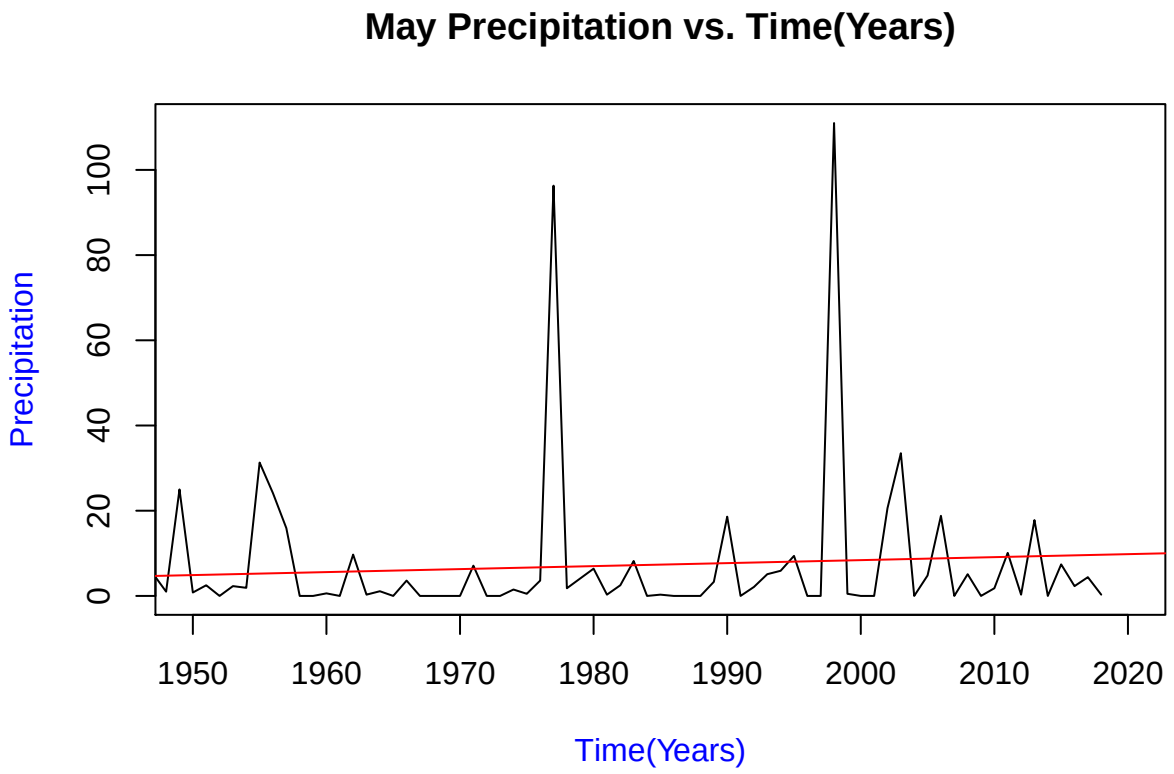
```
## 'data.frame':    939 obs. of  5 variables:
##  $ Month: chr  "12" "01" "02" "03" ...
##  $ Year : chr  "1939" "1940" "1940" "1940" ...
##  $ PRCP : num  14.4 118.5 145.6 39.1 48.3 ...
##  $ YEAR : num  1939 1940 1940 1940 1940 ...
##  $ MONTH: num  12 1 2 3 4 5 6 7 8 9 ...
```

```
##Plot May
plot(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="05",], ty='l', xlim=c(1950, 2020), main="May
May.lm <- lm(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="05",])
summary(May.lm)
```

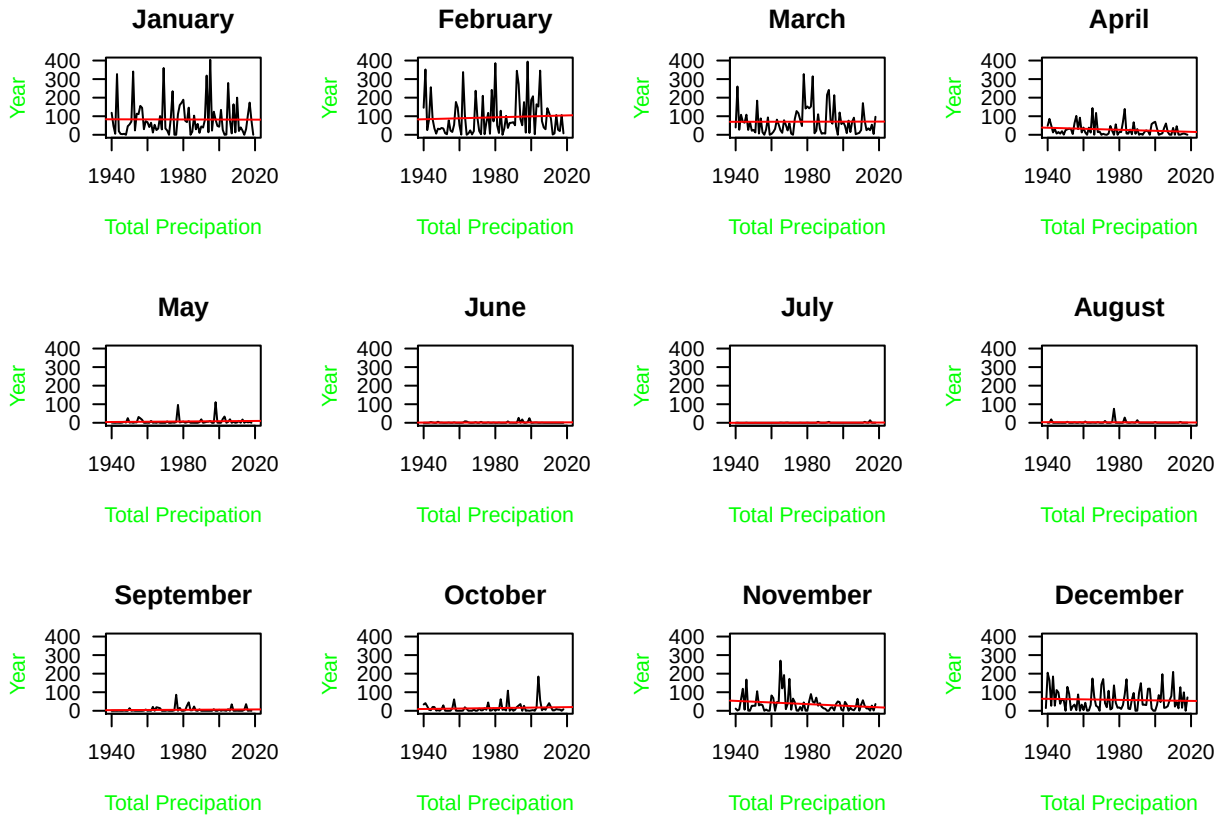
```
##
## Call:
## lm(formula = PRCP ~ YEAR, data = MonthlyPRCPSum[MonthlyPRCPSum$Month ==
##     "05", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
##  -9.385  -6.702  -4.706  -2.164 102.739
##
## Coefficients:
```

```
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -132.03183  171.30238  -0.771    0.443
## YEAR           0.07022    0.08655   0.811    0.420
##
## Residual standard error: 17.54 on 76 degrees of freedom
## Multiple R-squared:  0.008585,   Adjusted R-squared:  -0.00446
## F-statistic: 0.6581 on 1 and 76 DF,  p-value: 0.4198
```

```
abline(coef(May.lm), col="red")
```




```
##Every Month! Come back and do 1 by 1
Months = c("January", "February", "March", "April", "May", "June", "July", "August", "September", "Octo
par(mfrow = c(3, 4), mar = c(5, 4, 3, 2) + 0.1 )
PRCPresult <- NA
for (i in 1:12) {
plot(PRCP ~ YEAR, data =  MonthlyPRCPSum[MonthlyPRCPSum$MONTH == i, ], ty = "l", las = 1, xlim = c(1940
Month.lm <- lm(PRCP ~ YEAR, data = MonthlyPRCPSum[MonthlyPRCPSum$MONTH == i, ])
summary(Month.lm)
abline(coef(Month.lm), col = "red")
PRCPresult <- rbind(PRCPresult, cbind(Months[i], round(coef(Month.lm)[2], 4), round(summary(Month.lm)$c
}
```



##October, November, and December Data for Comparision

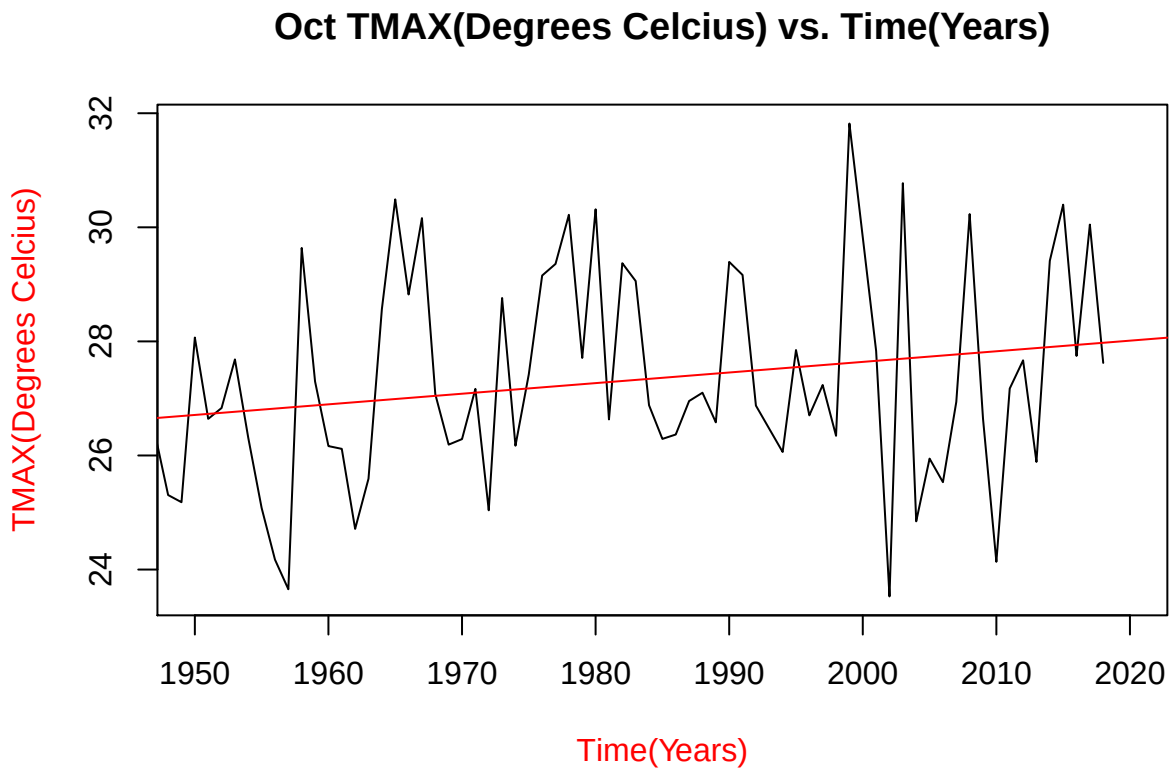
```
##TMAX Months

#October
plot(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="10",], ty='l', xlim=c(1950, 2020), main="O
Oct.lm <- lm(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="10",])
summary(Oct.lm)
```

```
##
## Call:
## lm(formula = TMAX ~ YEAR, data = MonthlyTMAXMean[MonthlyTMAXMean$Month ==
##     "10", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.1488 -1.0124 -0.3174  1.5118  4.1973
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -9.573000  17.438478  -0.549   0.5847
## YEAR         0.018607   0.008813   2.111   0.0381 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.772 on 75 degrees of freedom
## Multiple R-squared:  0.0561, Adjusted R-squared:  0.04351
```

```
## F-statistic: 4.457 on 1 and 75 DF,  p-value: 0.03808
```

```
abline(coef(Oct.lm), col="red")
```

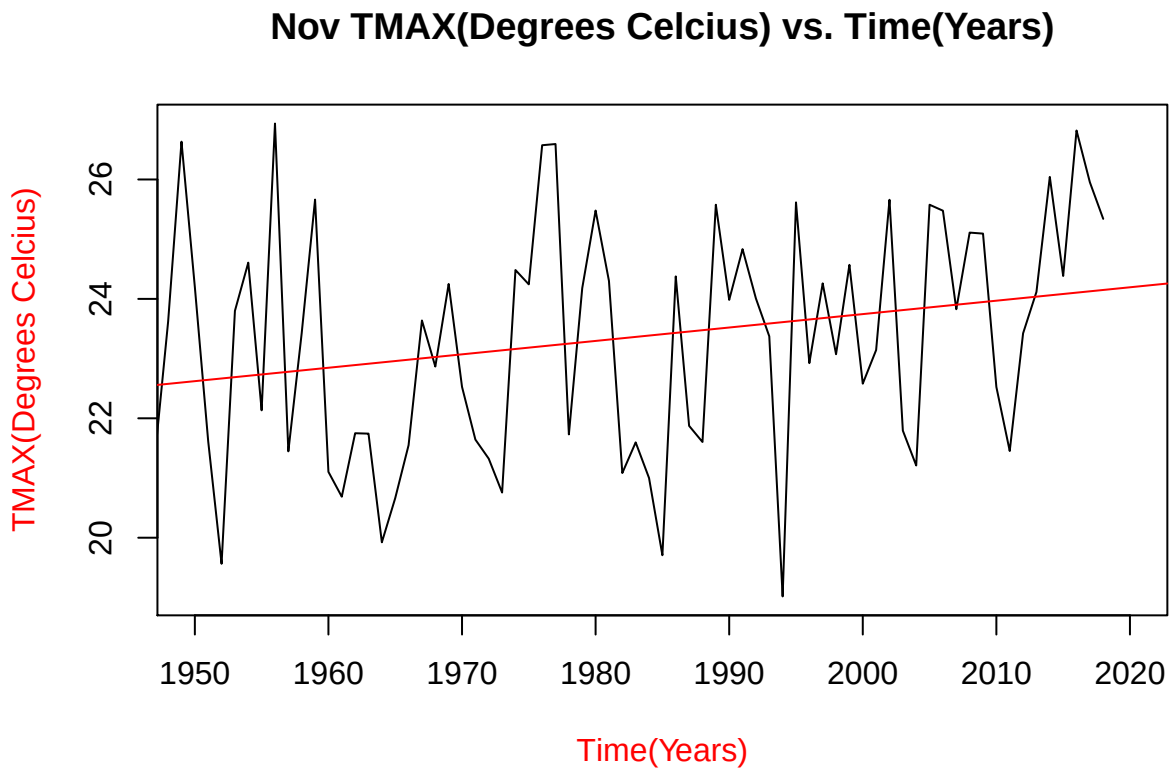



```
#November
plot(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="11",], ty='l', xlim=c(1950, 2020), main="N
Nov.lm <- lm(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="11",])
summary(Nov.lm)
```

```
##
## Call:
## lm(formula = TMAX ~ YEAR, data = MonthlyTMAXMean[MonthlyTMAXMean$Month ==
##     "11", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5937 -1.5034  0.1904  1.2680  4.1798
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -21.176411  19.031432  -1.113   0.2693
## YEAR          0.022461   0.009614   2.336   0.0221 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.917 on 76 degrees of freedom
## Multiple R-squared:  0.06701,    Adjusted R-squared:  0.05473
```

```
## F-statistic: 5.458 on 1 and 76 DF,  p-value: 0.02211
```

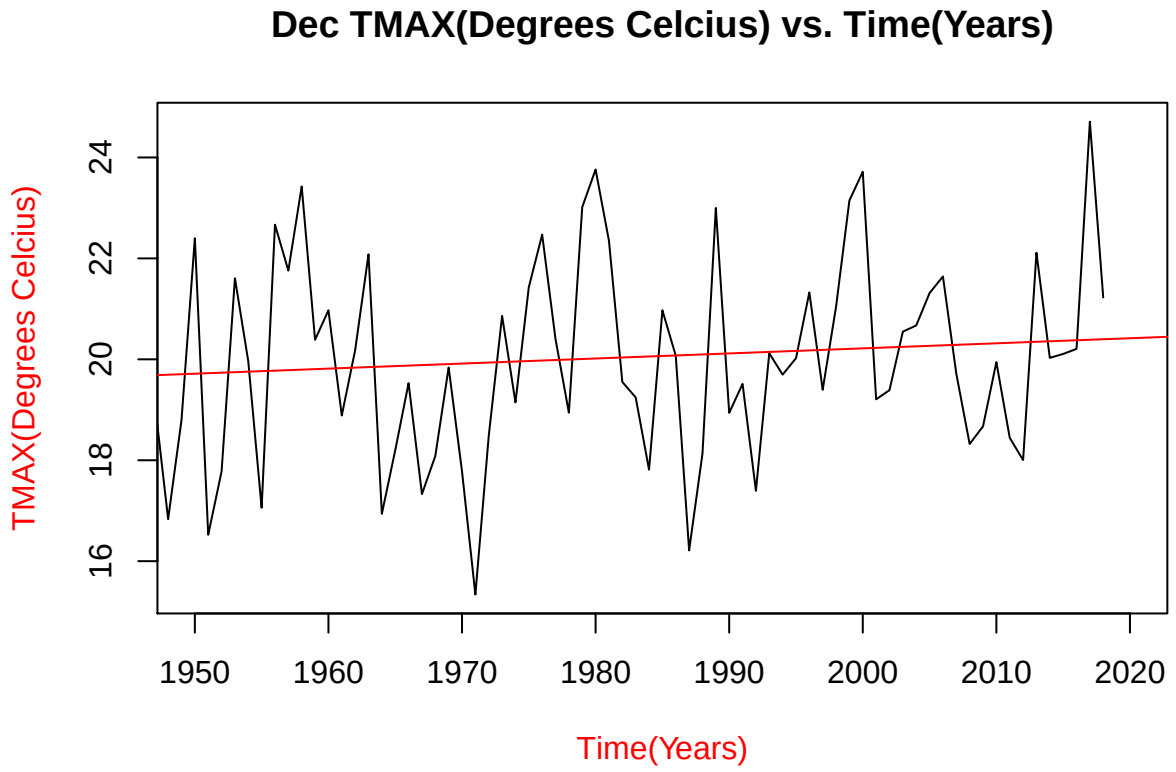
```
abline(coef(Nov.lm), col="red")
```




```
#December
plot(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="12",], ty='l', xlim=c(1950, 2020), main="D
Dec.lm <- lm(TMAX~YEAR, data=MonthlyTMAXMean[MonthlyTMAXMean$Month=="12",])
summary(Dec.lm)
```

```
##
## Call:
## lm(formula = TMAX ~ YEAR, data = MonthlyTMAXMean[MonthlyTMAXMean$Month ==
##     "12", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5873 -1.2382 -0.2949  1.2076  4.3983
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.145168  18.866196   0.008    0.994
## YEAR         0.010036   0.009535   1.053    0.296
##
## Residual standard error: 1.969 on 78 degrees of freedom
## Multiple R-squared:  0.014,  Adjusted R-squared:  0.001363
## F-statistic: 1.108 on 1 and 78 DF,  p-value: 0.2958
```

```r
abline(coef(Dec.lm), col="red")
```



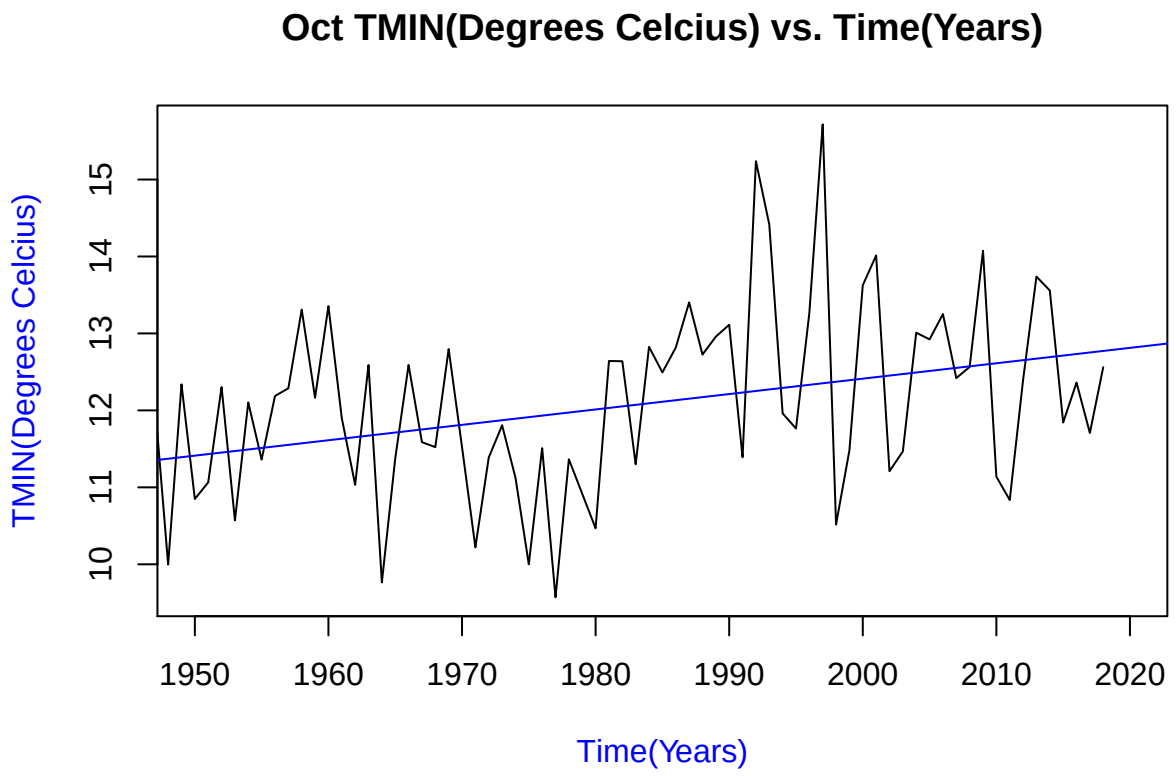

```r
##TMIN Months

#October
plot(TMIN~YEAR, data=MonthlyTMINMean[MonthlyTMINMean$Month=="05",], ty='l', xlim=c(1950, 2020), main="O
Oct.lm <- lm(TMIN~YEAR, data=MonthlyTMINMean[MonthlyTMINMean$Month=="10",])
summary(Oct.lm)
```

```
##
## Call:
## lm(formula = TMIN ~ YEAR, data = MonthlyTMINMean[MonthlyTMINMean$Month ==
##     "10", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -2.6337 -0.7918 -0.0445  0.6128  3.5478
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -27.60818   13.37632  -2.064  0.04248 *
## YEAR          0.02001    0.00676   2.960  0.00412 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.359 on 75 degrees of freedom
```

```
## Multiple R-squared:  0.1046, Adjusted R-squared:  0.09266
## F-statistic: 8.762 on 1 and 75 DF,  p-value: 0.004116
```

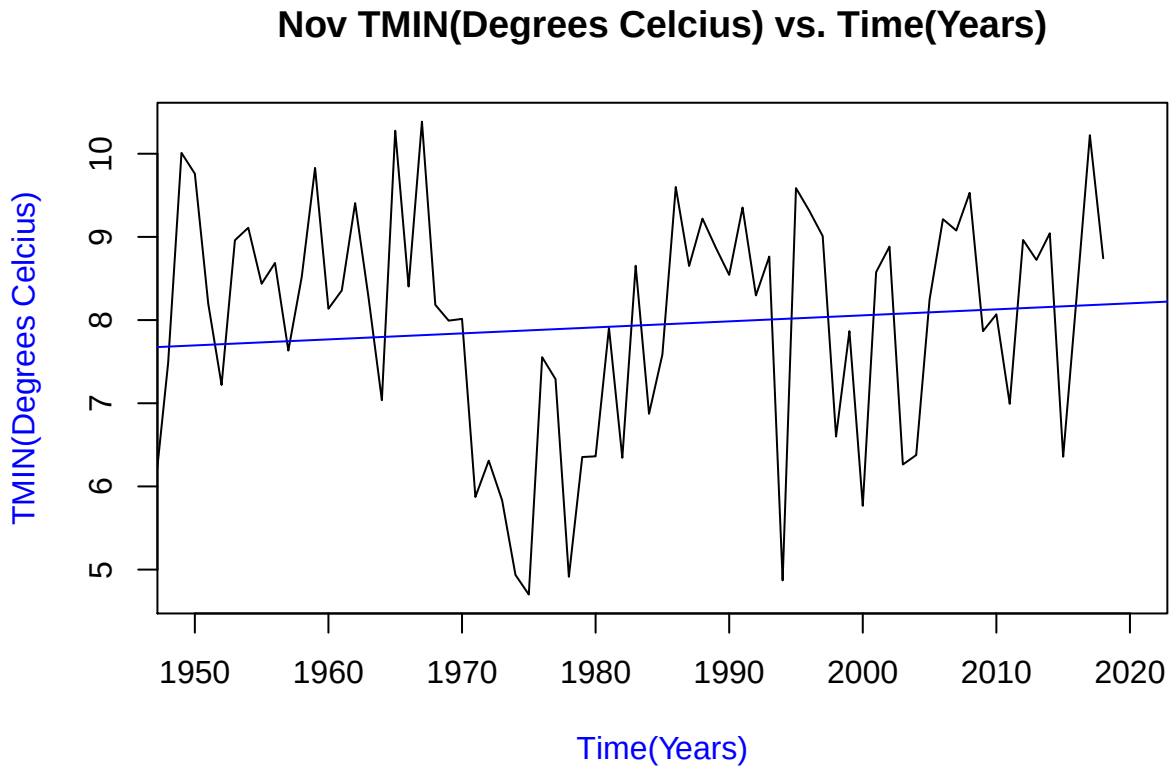
```
abline(coef(Oct.lm), col="blue")
```




```
#November
plot(TMIN~YEAR, data=MonthlyTMINMean[MonthlyTMINMean$Month=="11",], ty='l', xlim=c(1950, 2020), main="N
Nov.lm <- lm(TMIN~YEAR, data=MonthlyTMINMean[MonthlyTMINMean$Month=="11",])
summary(Nov.lm)
```

```
##
## Call:
## lm(formula = TMIN ~ YEAR, data = MonthlyTMINMean[MonthlyTMINMean$Month ==
##     "11", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.1761 -1.0351  0.2517  0.8909  2.5674
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -6.395579  13.794841  -0.464    0.644
## YEAR         0.007226   0.006969   1.037    0.303
##
## Residual standard error: 1.39 on 76 degrees of freedom
## Multiple R-squared:  0.01395,    Adjusted R-squared:  0.0009771
## F-statistic: 1.075 on 1 and 76 DF,  p-value: 0.303
```

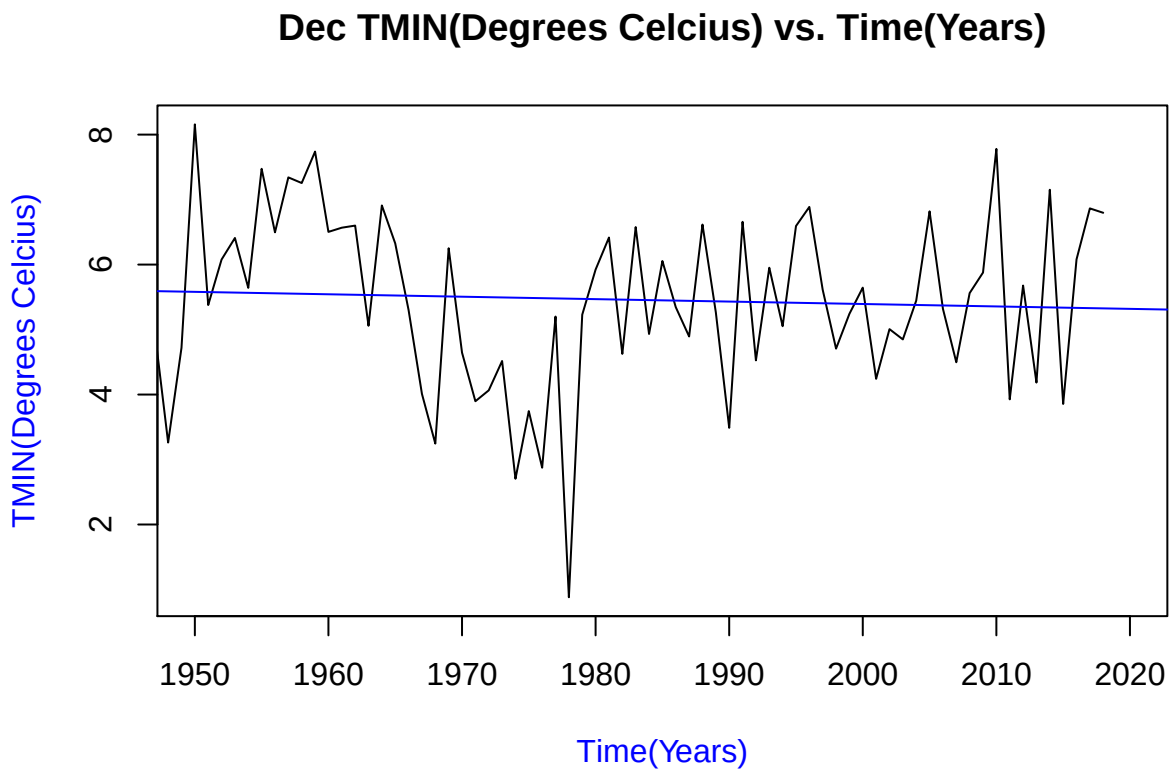
```r
abline(coef(Nov.lm), col="blue")
```




```r
#December
plot(TMIN~YEAR, data=MonthlyTMINMean[MonthlyTMINMean$Month=="12",], ty='l', xlim=c(1950, 2020), main="D
Dec.lm <- lm(TMIN~YEAR, data=MonthlyTMINMean[MonthlyTMINMean$Month=="12",])
summary(Dec.lm)
```

```
##
## Call:
## lm(formula = TMIN ~ YEAR, data = MonthlyTMINMean[MonthlyTMINMean$Month ==
##     "12", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -4.5950 -0.7295  0.0614  0.9421  2.5778
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 12.866670  12.471154   1.032    0.305
## YEAR        -0.003737   0.006303  -0.593    0.555
##
## Residual standard error: 1.302 on 78 degrees of freedom
## Multiple R-squared:  0.004486,   Adjusted R-squared:  -0.008277
## F-statistic: 0.3515 on 1 and 78 DF,  p-value: 0.555
```

```r
abline(coef(Dec.lm), col="blue")
```

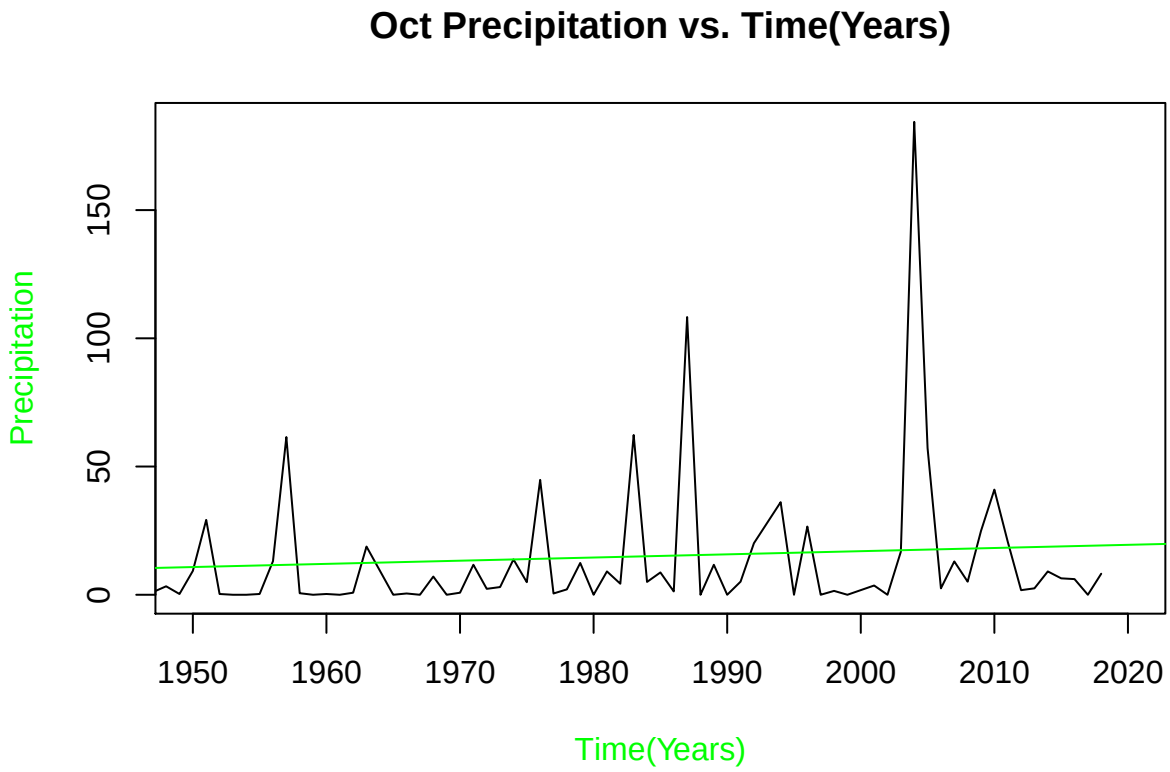



```
##Precipitation Months

#October
plot(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="10",], ty='l', xlim=c(1950, 2020), main="Oct
Oct.lm <- lm(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="10",])
summary(Oct.lm)
```

```
##
## Call:
## lm(formula = PRCP ~ YEAR, data = MonthlyPRCPSum[MonthlyPRCPSum$Month ==
##     "10", ])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -19.097 -12.663 -10.383   1.551 166.911
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -230.4821   266.2827  -0.866    0.389
## YEAR           0.1237     0.1346   0.919    0.361
##
## Residual standard error: 27.06 on 75 degrees of freedom
## Multiple R-squared:  0.01115,    Adjusted R-squared:  -0.002038
## F-statistic: 0.8454 on 1 and 75 DF,  p-value: 0.3608
```

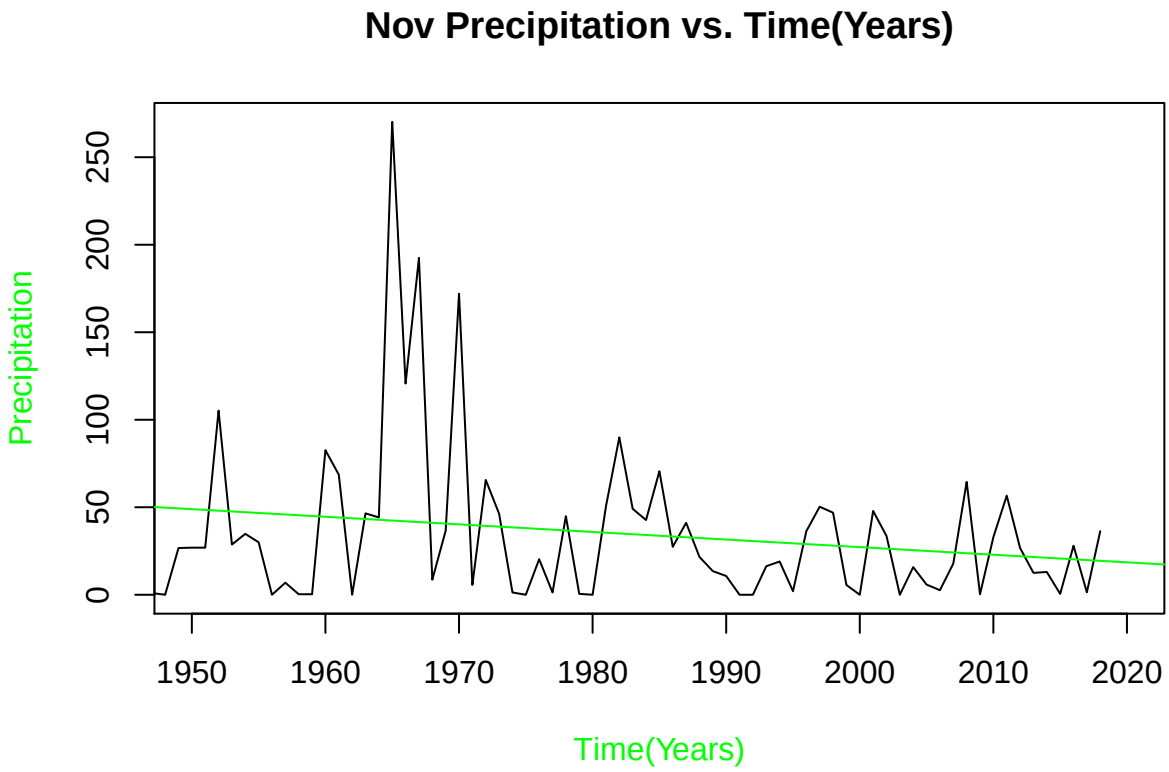
```r
abline(coef(Oct.lm), col="green")
```




```r
#November
plot(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="11",], ty='l', xlim=c(1950, 2020), main="Nov
Nov.lm <- lm(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="11",])
summary(Nov.lm)
```

```
##
## Call:
## lm(formula = PRCP ~ YEAR, data = MonthlyPRCPSum[MonthlyPRCPSum$Month ==
##     "11", ])
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -51.51 -29.86 -11.60  13.39 227.80
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 894.7394   476.3356   1.878   0.0642 .
## YEAR         -0.4338     0.2406  -1.803   0.0754 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 47.98 on 76 degrees of freedom
## Multiple R-squared:  0.041,  Adjusted R-squared:  0.02839
## F-statistic:  3.25 on 1 and 76 DF,  p-value: 0.07541
```

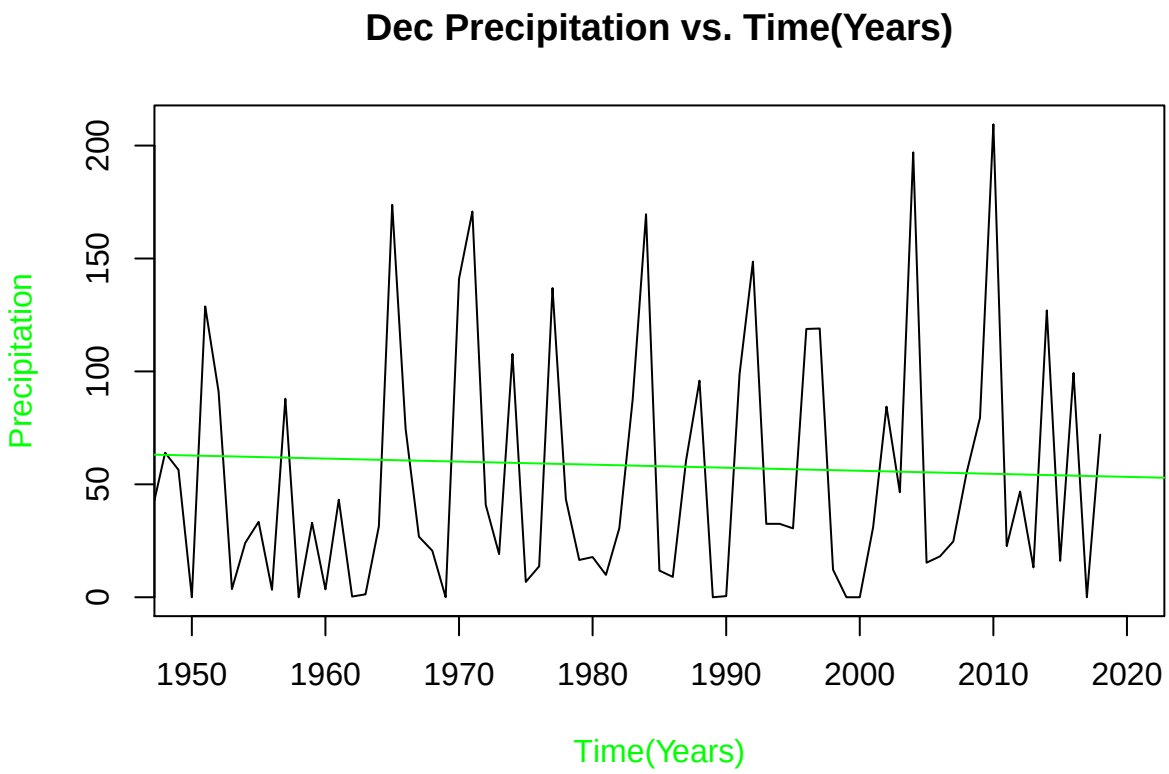
```
abline(coef(Nov.lm), col="green")
```




```
#December
plot(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="12",], ty='l', xlim=c(1950, 2020), main="Dec
Dec.lm <- lm(PRCP~YEAR, data=MonthlyPRCPSum[MonthlyPRCPSum$Month=="12",])
summary(Dec.lm)
```

```
##
## Call:
## lm(formula = PRCP ~ YEAR, data = MonthlyPRCPSum[MonthlyPRCPSum$Month ==
##     "12", ])
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -62.75 -42.77 -25.16  36.42 154.75
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 325.9875   561.7412   0.580    0.563
## YEAR         -0.1350     0.2839  -0.475    0.636
##
## Residual standard error: 58.64 on 78 degrees of freedom
## Multiple R-squared:  0.00289,    Adjusted R-squared:  -0.009893
## F-statistic: 0.2261 on 1 and 78 DF,  p-value: 0.6358
```

```
abline(coef(Dec.lm), col="green")
```



for (i in 1:12) { plot(TMIN ~ YEAR, data = MonthlyTMINMean[MonthlyTMINMean$MONTH == i,], ty = "l", las = 1, xlim = c(1940, 2020), ylim=c(15, 35),main = Months[i]) Month.lm <- lm(TMIN ~ YEAR, data = MonthlyTMINMean[MonthlyTMINMean$MONTH == i,]) summary(Month.lm) abline(coef(Month.lm), col = "red") TMINresult <- rbind(TMINresult, cbind(Months[i], round(coef(Month.lm)[2], 4), round(summary(Month.lm)$coefficients[2, 4], 4), round(summary(Month.lm)r.squared, 3))) }

Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.