# HW3

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```
library(dplyr)
library(tidyr)
library(ggplot2)
library(gridExtra)
library(lubridate)
library(RColorBrewer)
```

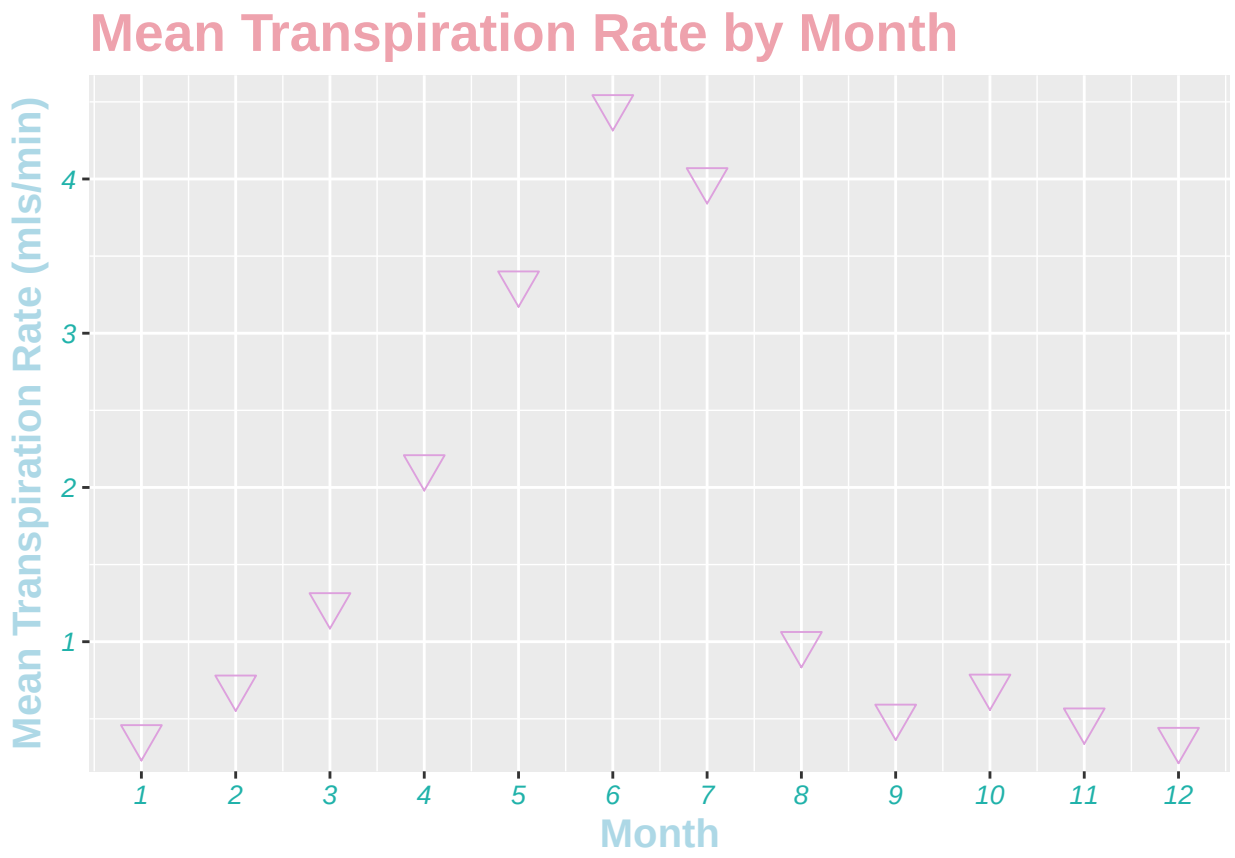
## Import Data

```
thinshallow = read.table("resthin.shallow.txt", header=T)
thindeep = read.table("resthin.deep.txt", header=T)
clim=read.table("sierraclim.txt",header=T)
```

## Graph 1

### Scatterplot, changing plot colors and shapes, summarizing the data

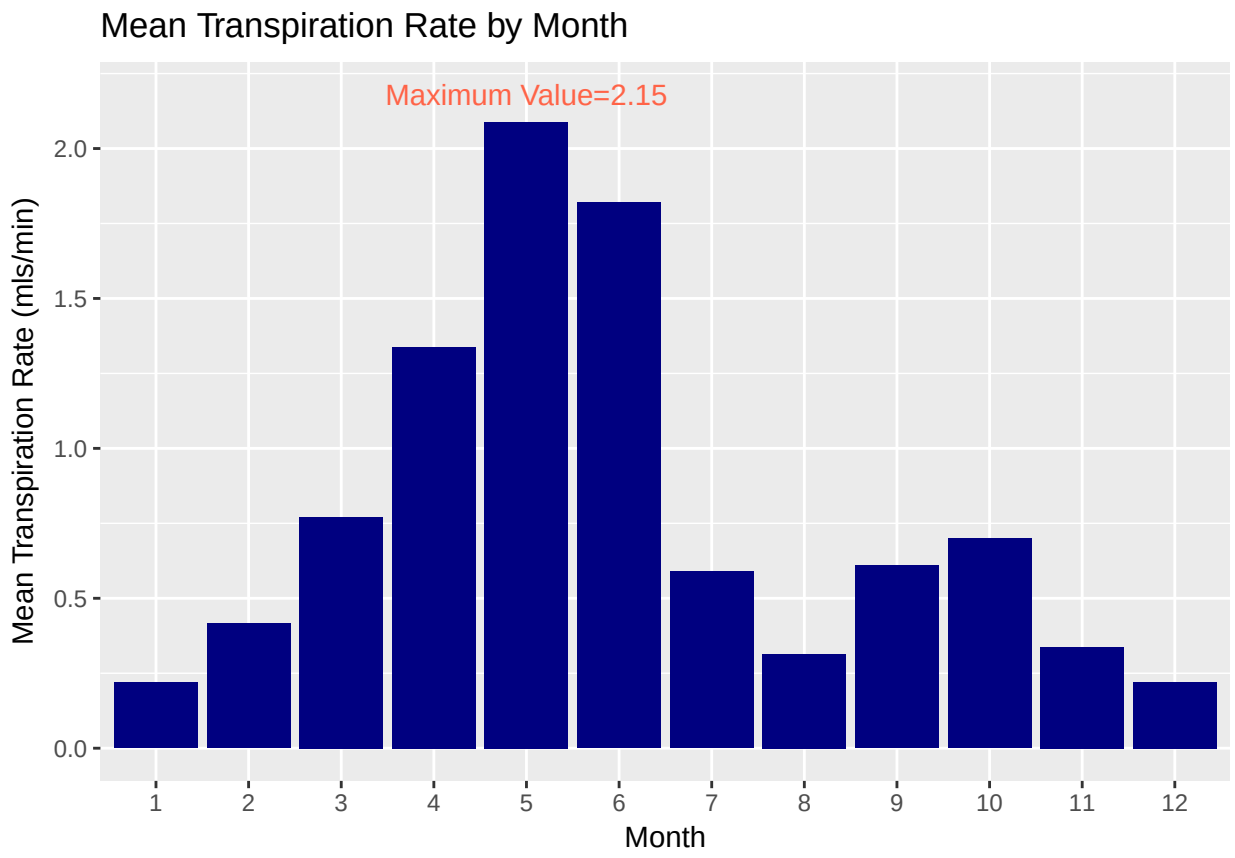
```
Graph1 = ggplot(thindeep, aes(x=month, y=trans)) +
  stat_summary(fun.y="mean", geom="point", col="plum", shape=6, size=5) +
  scale_x_continuous(breaks=seq(0,12,1)) +
  labs(y="Mean Transpiration Rate (mls/min)", x="Month") +
  ggtitle("Mean Transpiration Rate by Month") +
  theme(axis.text= element_text(face="italic", colour="lightseagreen", size=10)) +
  theme(plot.title = element_text(face="bold", colour="lightpink2", size=20)) +
  theme(axis.title = element_text(face="bold", colour="lightblue", size=15))
Graph1
```




## Graph 2

### Bar Graph, annotation, summarizing the data

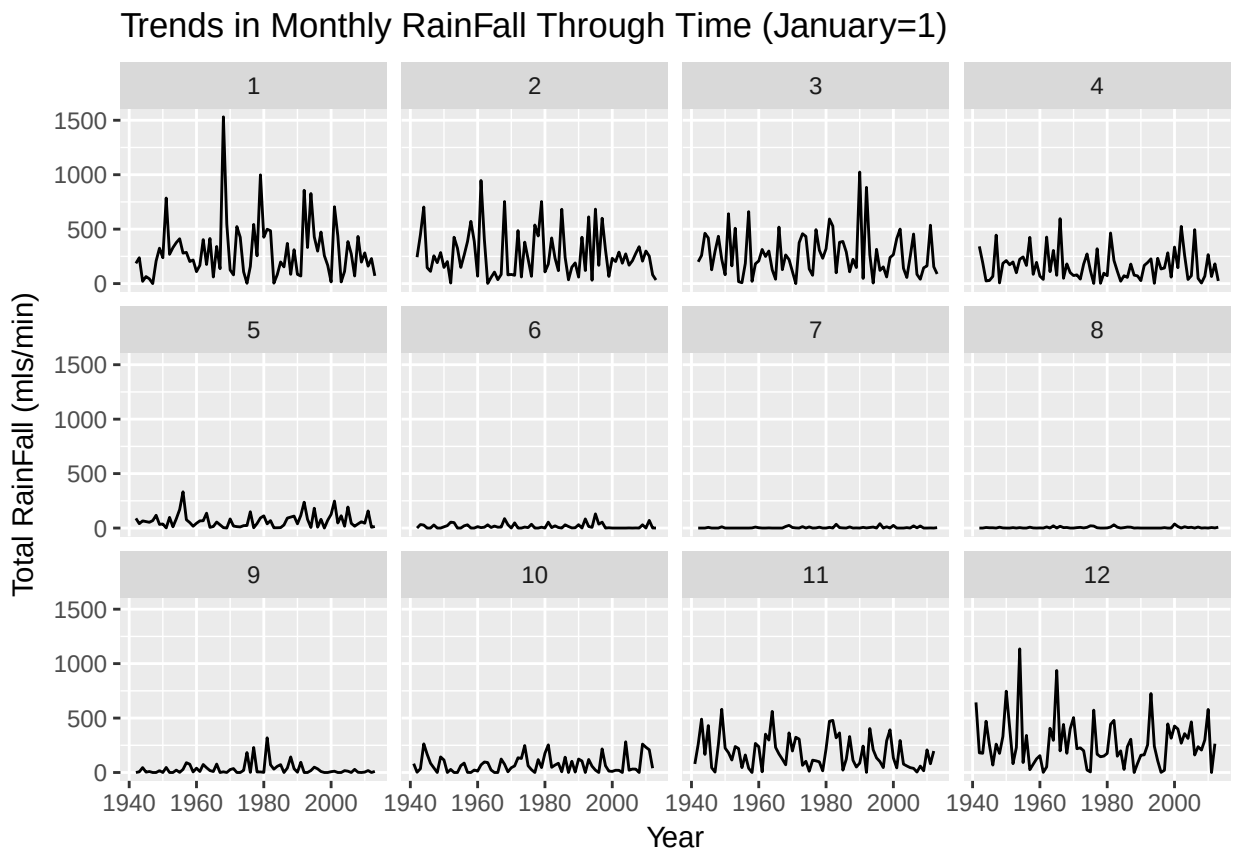
```
Graph2 = ggplot(thinshallow) +
  geom_bar(aes(x=as.factor(month), y=trans), stat="summary", fun.y="mean", fill="navy") +
  labs(x="Month", y="Mean Transpiration Rate (mls/min)") +
  ggtitle("Mean Transpiration Rate by Month") +
  annotate("text", x=5, y= 2.18, label="Maximum Value=2.15", colour="tomato", size=4)
Graph2
```




## Graph 3

### Line graph, facet, summarizing the data

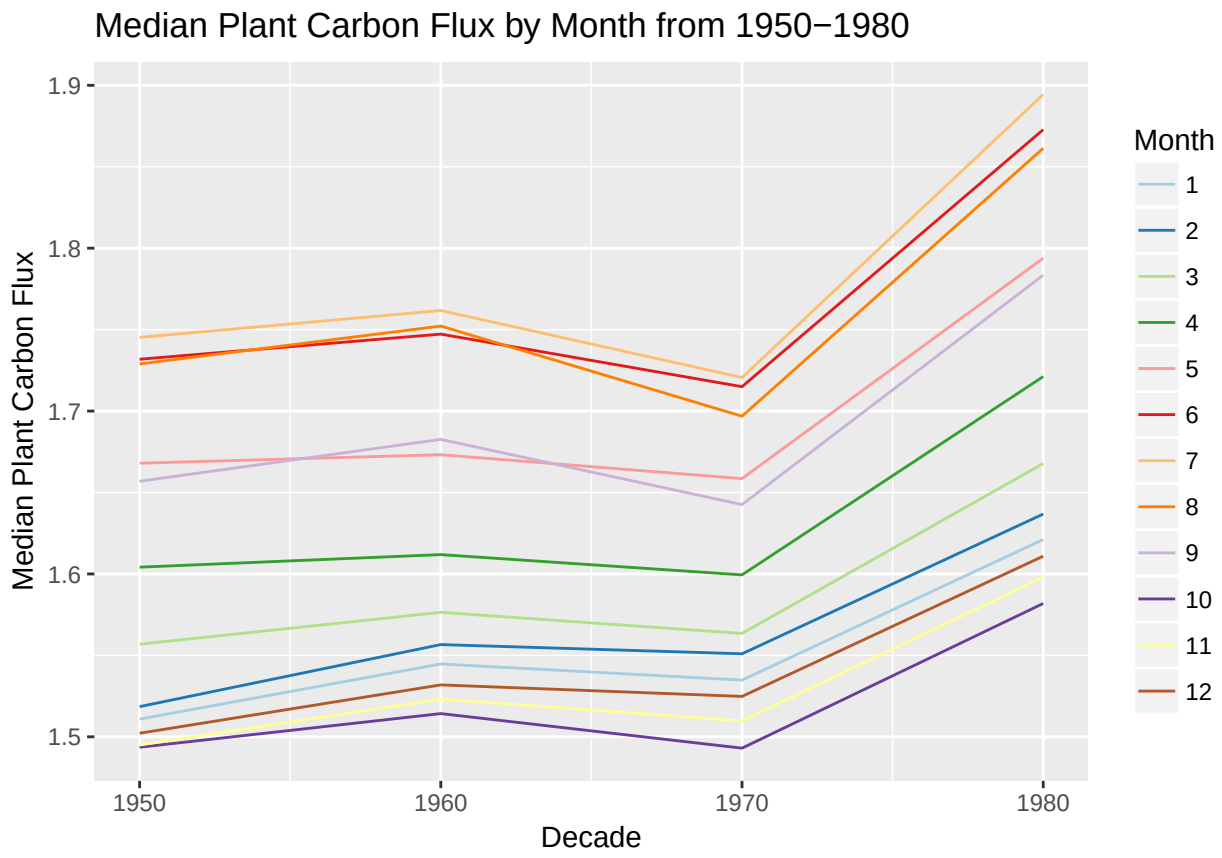
```
Graph3 = ggplot(clim, aes(x=year, y=rain)) +
  stat_summary(fun.y="sum", geom="line") +
  facet_wrap(~as.factor(month)) +
  labs(y="Total RainFall (mls/min)", x="Year") +
  ggtitle("Trends in Monthly RainFall Through Time (January=1)")
Graph3
```




## Graph 4

### Line graph, color brewer, summarizing the data

```
Graph4=ggplot(thinshallow, aes(x=scen, y=plantc), col.as.factor(month)) +
  stat_summary(fun.y="median", geom="line", aes(col=as.factor(month))) +
  scale_color_brewer(type="qual", palette="Paired", name="Month") +
  theme(legend.position="right") +
  labs(x="Decade", y="Median Plant Carbon Flux") +
  ggtitle("Median Plant Carbon Flux by Month from 1950-1980")
Graph4
```




## Extra Credit

```
# see if you can combine the different data sets in some way using dplyr tools

#combined thinshallow and thindeep data sets
thindata <- merge(thindeep, thinshallow, all=TRUE)


names(thindata)[names(thindata)=="scen"] <- "year"

# gc()
# combinedData <- thindata %>% left_join(clim, by = "year") #need more memory on my computer to combine
```