Williamstown Weather Package

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Introduction

The Williamstown Weather package takes data tables of the temperatures (in degrees Farenheit) of Williamstown, MA and, from the tables, extracts the desired data sets of date and temperature and puts them into a new data frame.

The Read Weather 1 Function

The `readWeather1` function takes data formatted in a similar manner to that of the table at `http://web.williams.edu/weather/100_history.php?type=Temperature`, and creates a data frame directly comparing the date to the monthly temperatures in Williamstown, MA from 1892 to 2010. This function accepts as parameters the `fileName` (the name of the text file of data to be used), the logical `h` value (if `TRUE`, it keeps the current header), and the `dateFormat` (what format the date object should be read in as).

```
library(lubridate)
library(reshape)
library(ggplot2)
x <- read.table("monthlyTemp.txt", header = TRUE)
y <- melt(x, id = "Year")
stringDates <- paste(y$variable, y$Year, 20, sep = "/")
Date <- as.Date(stringDates, format = "%b/%Y/%d")
y$Temperatures <- y$value
months <- months(Date, abbr = TRUE)
months_fac = factor(months, levels = month.abb)
y$Month <- sort(months_fac)
p <- ggplot(y, aes(Date, Temperatures))
p <- p + geom_point(size = 1)
p <- p + geom_line(size = 0.2)
p <- p + xlab("Year")
```

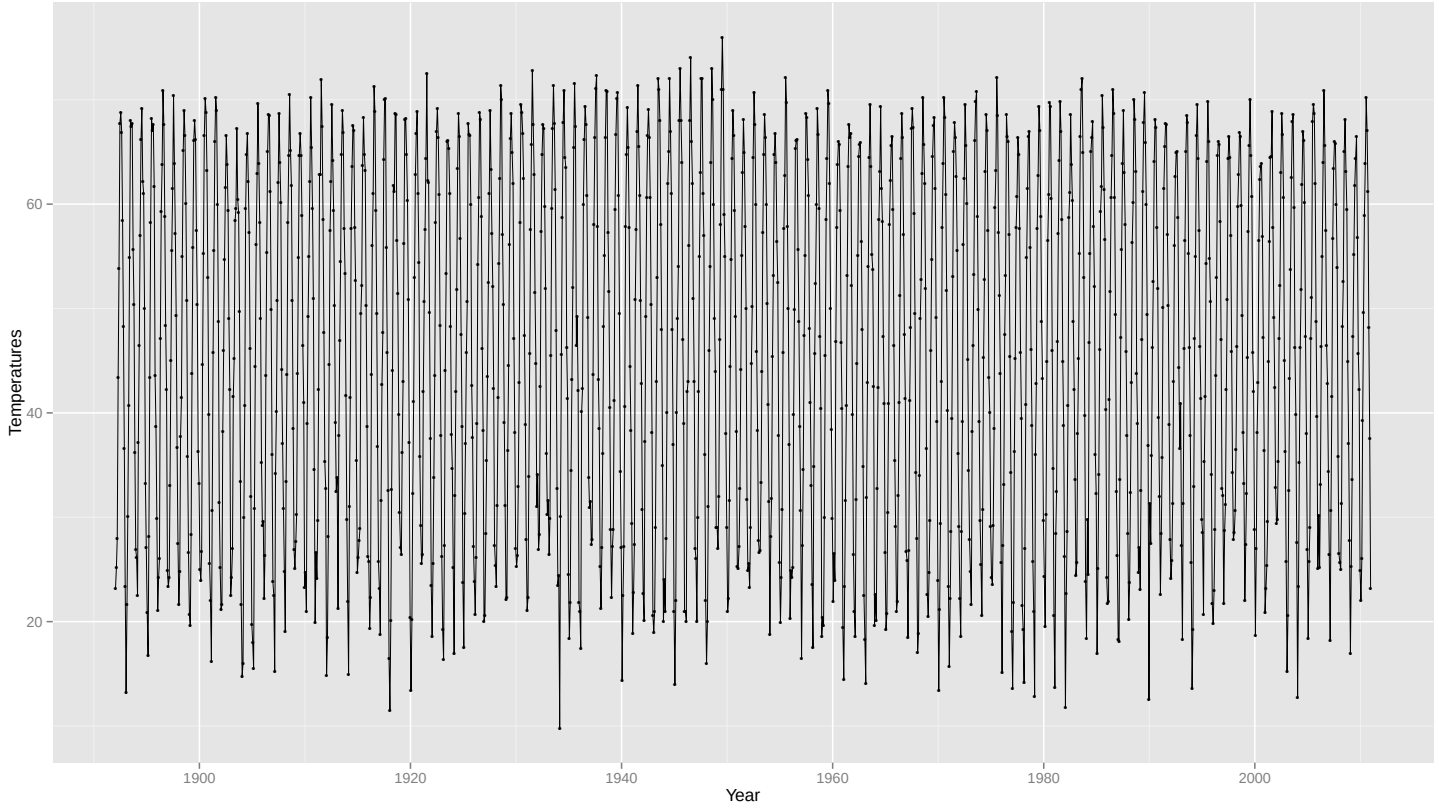


Figure 1: This scatterplot illustrates the monthly temperatures in degrees Farenheit of Williamstown, Massachusetts as recorded from January 1892 to December 2010.

Weather 2

This takes the information from the following link: `http://web.williams.edu/weather/current_get_date_r` and creates a data frame of the date compared to the daily temperature in degrees Farenheit of Williamstown, MA from 2005 to 2013.

```
x <- read.table("dailyTemp1.txt")
Date <- x[, 1]
Temperature <- x[, 3]
p <- ggplot(x, aes(Date, Temperature))
p <- p + geom_point(size = 0.6)
```

```
bp <- ggplot(y, aes(Month, Temperatures)) + geom_boxplot()
bp
```

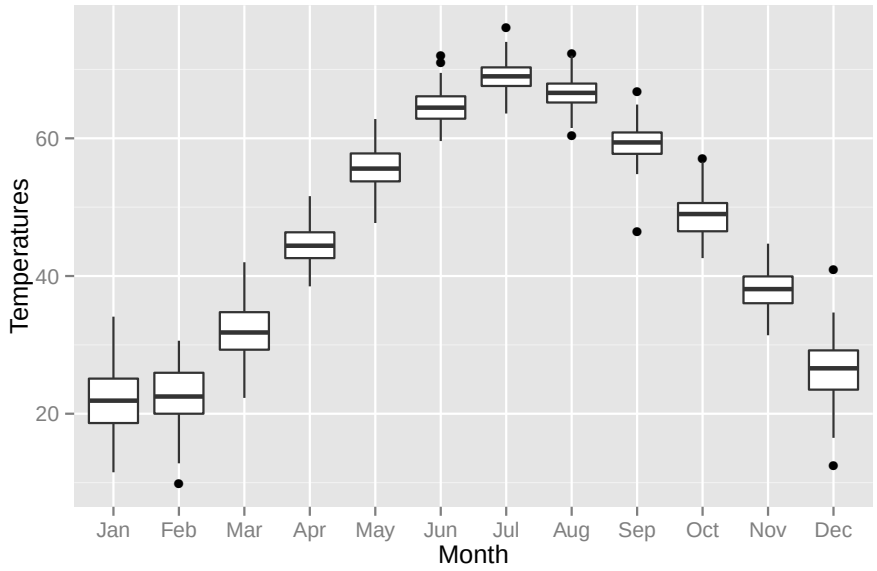


Figure 2: This box-and-whiskers plot illustrates the monthly temperatures in degrees Farenheit of Williamstown, Massachusetts as recorded from January 1892 to December 2010.

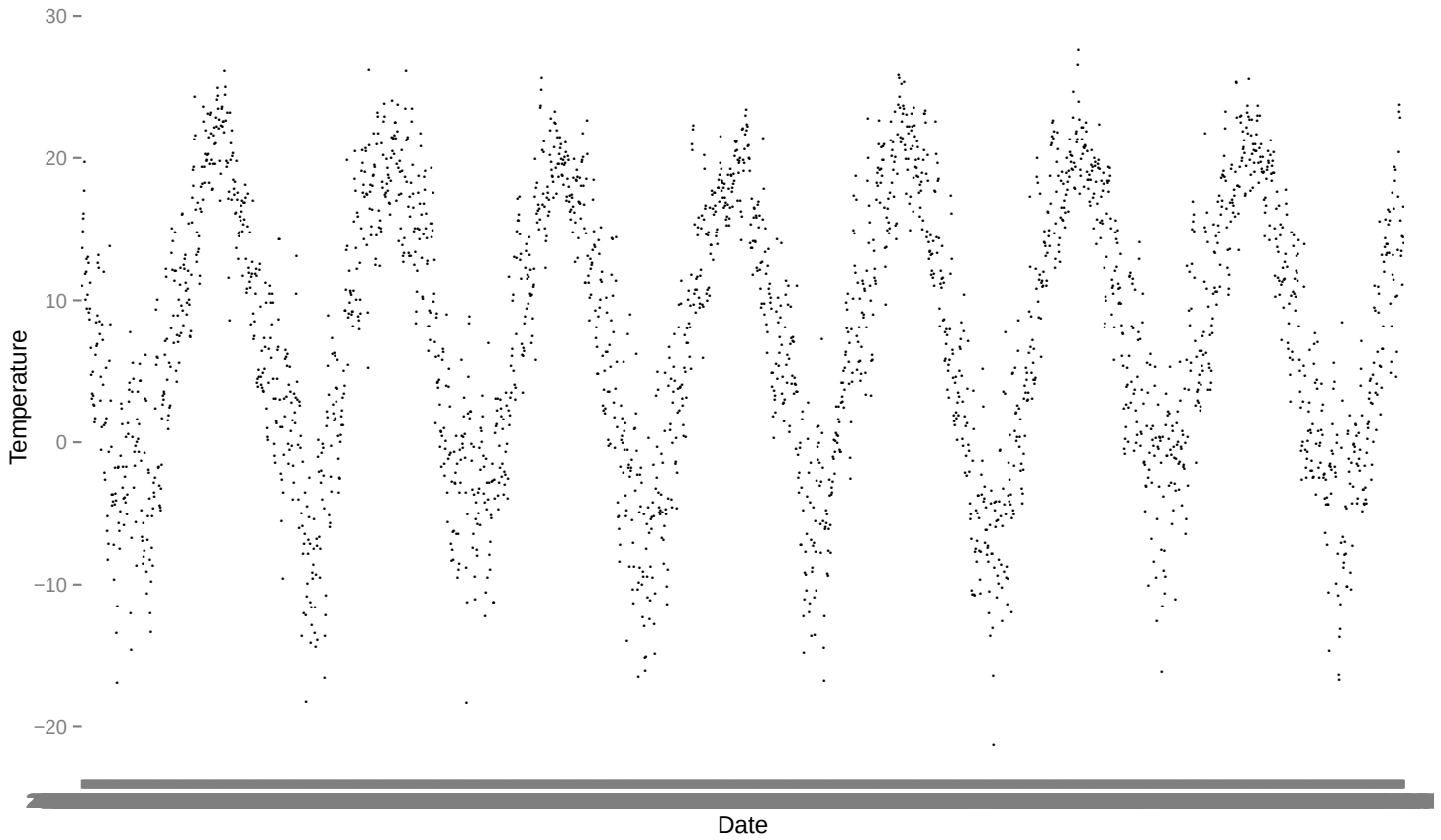
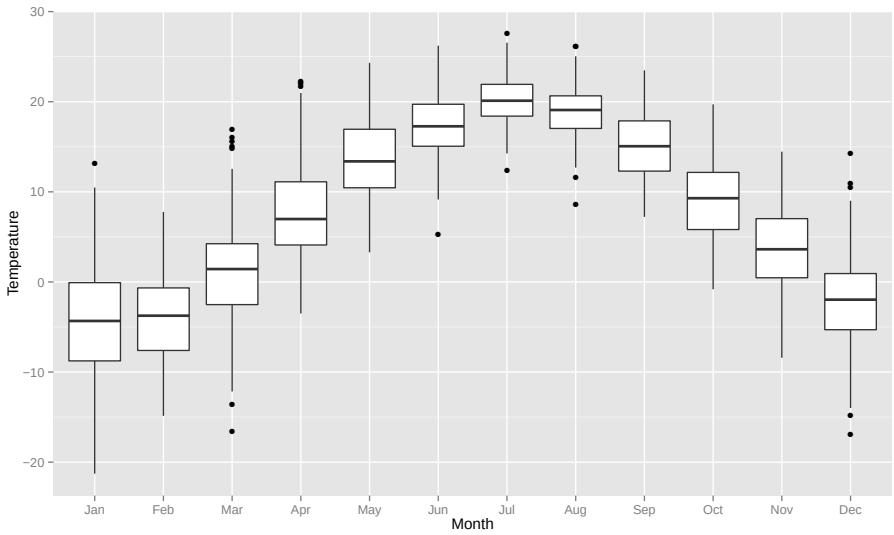


Figure 3: This scatterplot illustrates the average daily temperatures in degrees Celsius of Williamstown, Massachusetts as recorded from October 1, 2005 to June 10, 2013.

```
dateObj <- as.Date(Date)
Month <- month(dateObj, label = TRUE)
p2 <- ggplot(x, aes(Month, Temperature))
bp <- p2 + geom_boxplot()
bp
```



Weather 3

This takes the information from the following link: `http://web.williams.edu/weather/archive_get_date_r` and creates a data frame of the date compared to the daily temperature in degrees Farenheit of Williamstown, MA from 1983 to 2007.

```
y <- read.table("dailyTemp2.txt", sep = "\t")
date <- y[, 1]
y$Temperature <- y[, 2]
dateTrim <- strtrim(date, 10)
y$Date <- as.Date(dateTrim)
p <- ggplot(y, aes(Date, Temperature))
p <- p + geom_point(size = 0.5, na.rm = TRUE)
p <- p + layer(geom = "smooth", method = "lm", na.rm = TRUE)
```

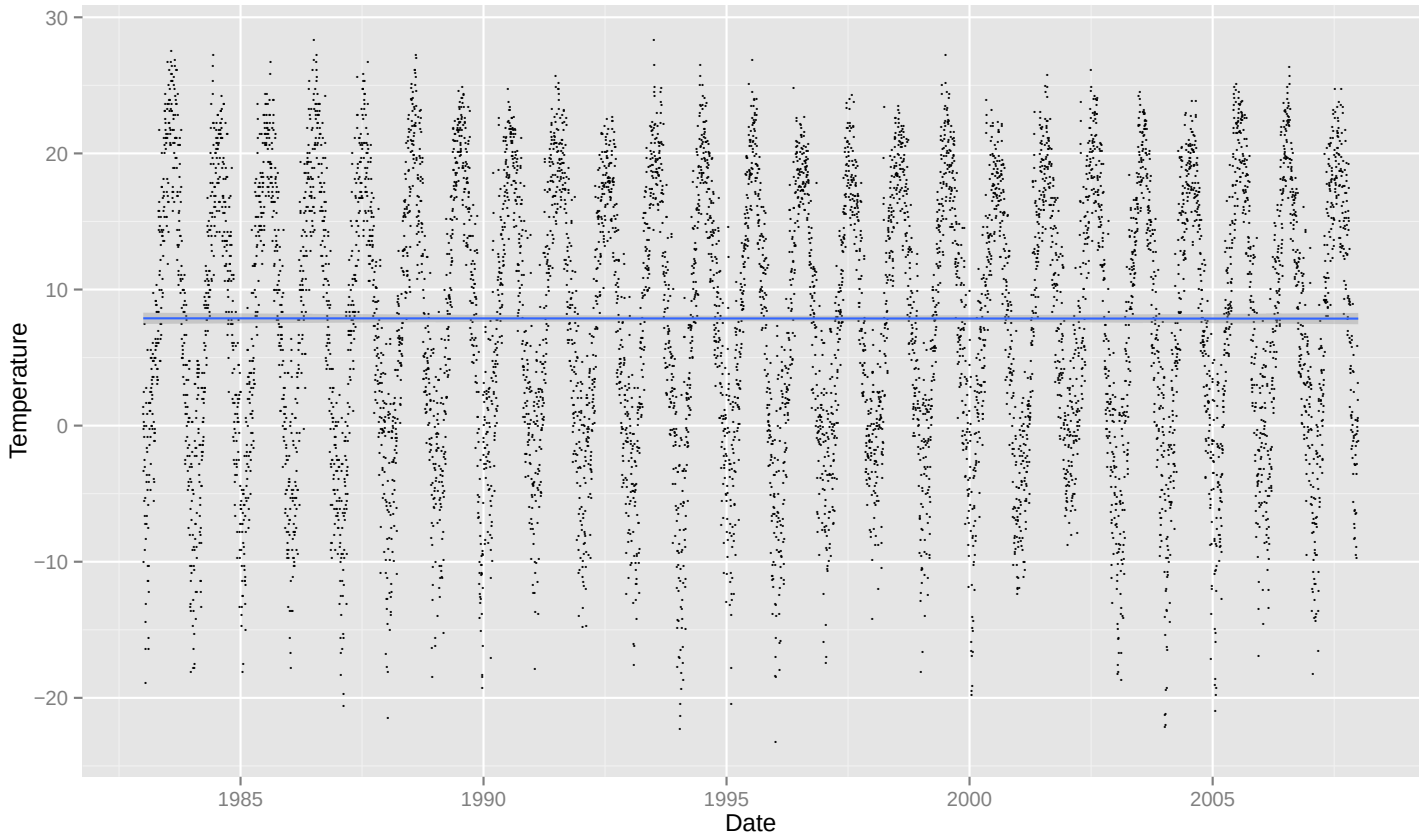


Figure 4: This scatterplot illustrates the average daily temperatures in degrees Celsius of Williamstown, Massachusetts as recorded from January 1, 1983 to December 31, 2007.

```
dateObj <- as.Date(date)
Month <- month(dateObj, label = TRUE)
p3 <- ggplot(y, aes(Month, Temperature))
bp <- p3 + geom_boxplot(na.rm = TRUE)
bp
```