Exploring climate data

Nick Lauerman

February 11, 2019

Contents

load data

The Waukegan Regional Airport data will be used as the test data set for developing the load, or import, process. Remove data that is standard in the download.

```
KUGN <- read.csv(file = "./data/Waukegan/obs.csv",
                 stringsAsFactors = FALSE)
KUGN$STATION <- "Waukagen Airport"
KUGN$NAME <- NULL
```

Format data

Format the date froma text field to a date data type and compute the Average Temperature (TAVG). This is not always computed for a station.

```
KUGN$DATE <- as.Date(KUGN$DATE,
                     format = "%Y-%m-%d")
KUGN$TAVG <- (KUGN$TMAX + KUGN$TMIN)/2
```

Set variable names

Change variable names to names that comply with the coding standard

```
Cnames <- c("Station",
            "Date",
           "Precip",
           "AverageTemp",
           "MaxTemp",
           "MinTemp")
names(KUGN) <- Cnames
rm(Cnames)
```

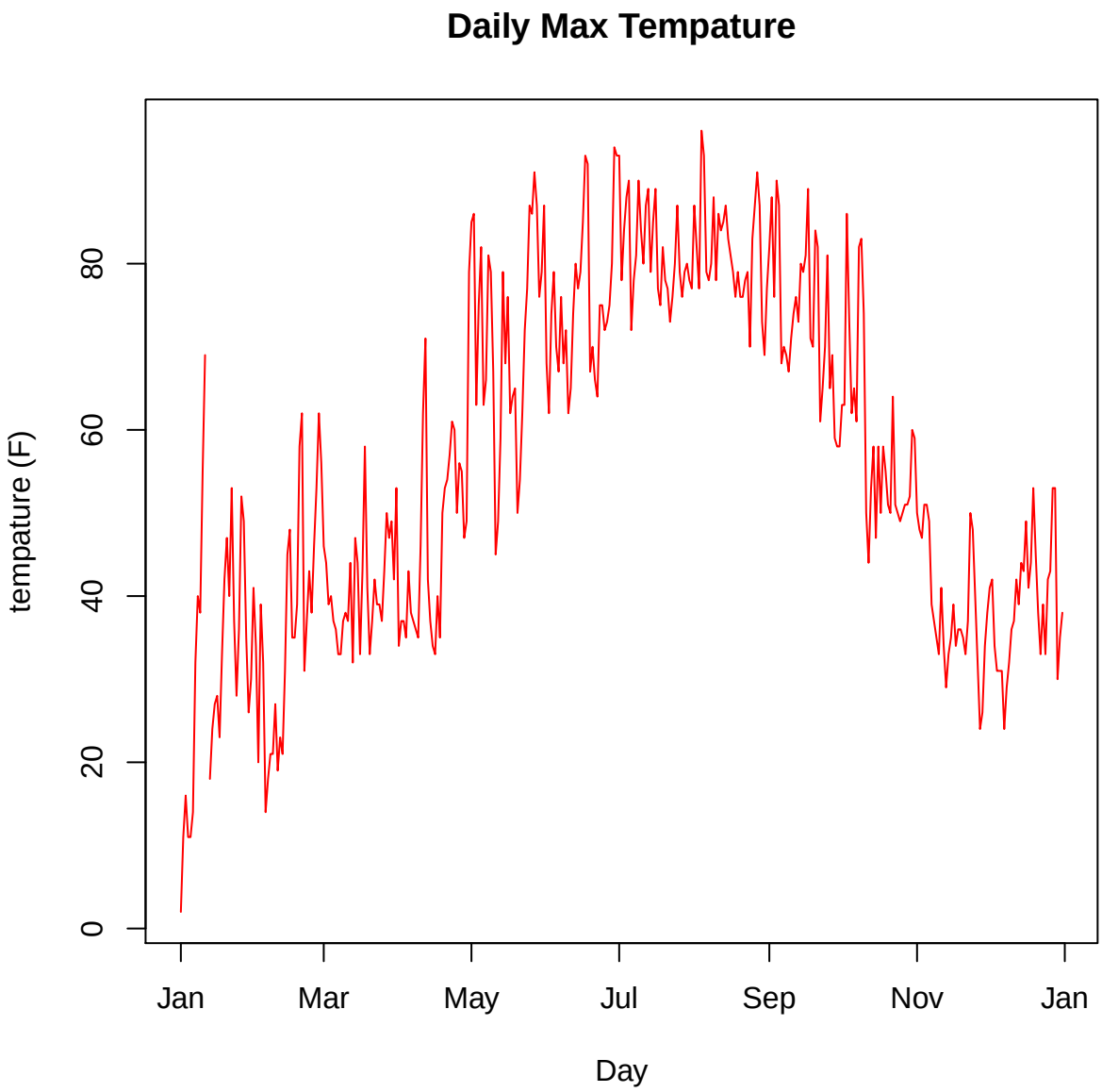
norms

```
kugnNorms <- read.csv("./data/Waukegan/norms.csv",
                      stringsAsFactors = FALSE)
kugnNorms$STATION <- "Waukagen Airport"
kugnNorms$STATION_NAME <- NULL
kugnNorms$DATE <- as.Date(as.character( kugnNorms$DATE),
                          format = "%Y%m%d")
Cnames <- c("Station",
            "Date",
            "averageTemp",
            "averageDutrTemp",
            "normalMaxTemp",
            "normalMinTemp",
            "averageTempSD",
            "averageDutrTempSD",
            "maxTempSD",
            "minTempSD")
names(kugnNorms) <- Cnames
rm(Cnames)
```

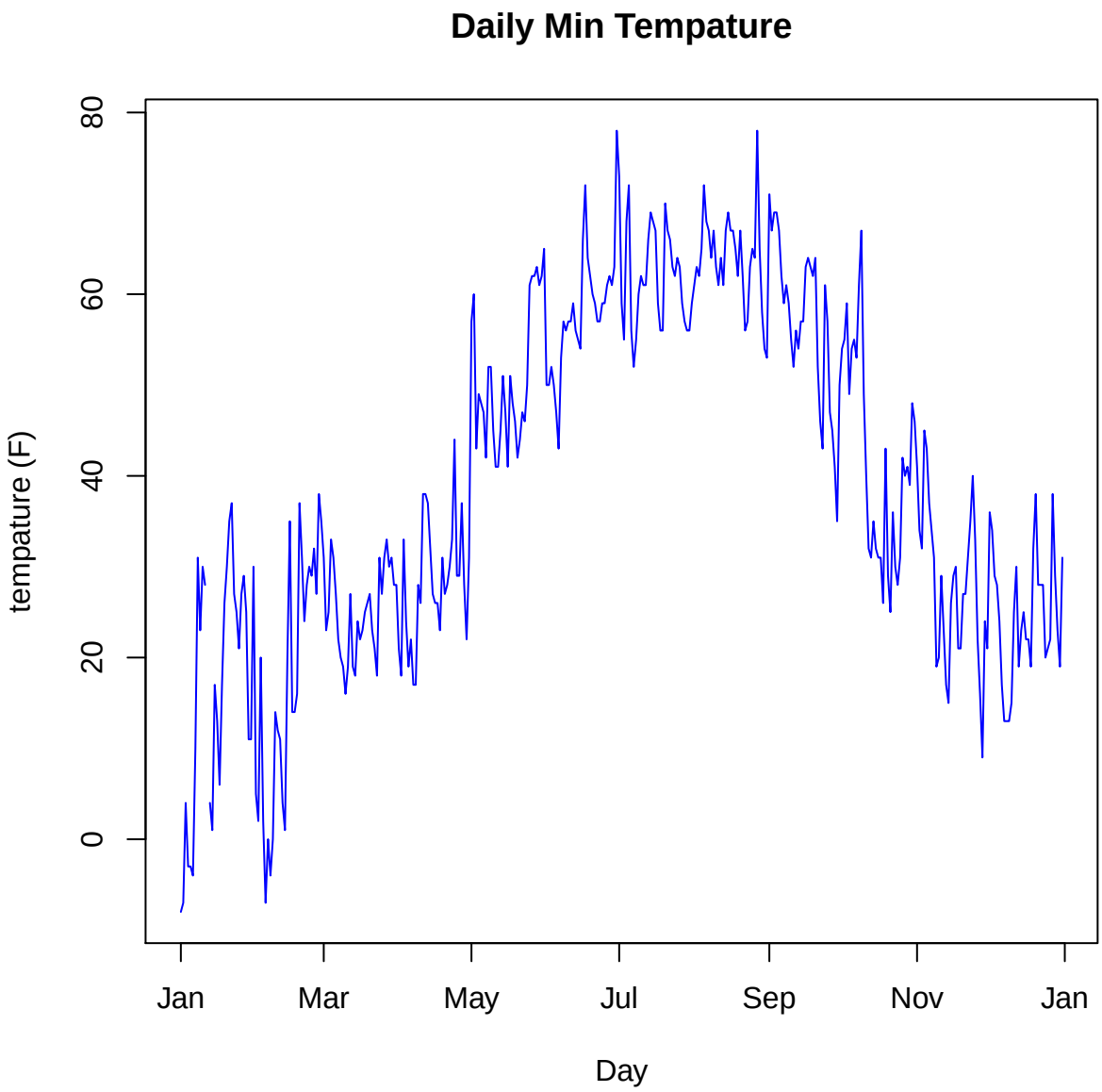
graphical exploration

Couple of plots to check data

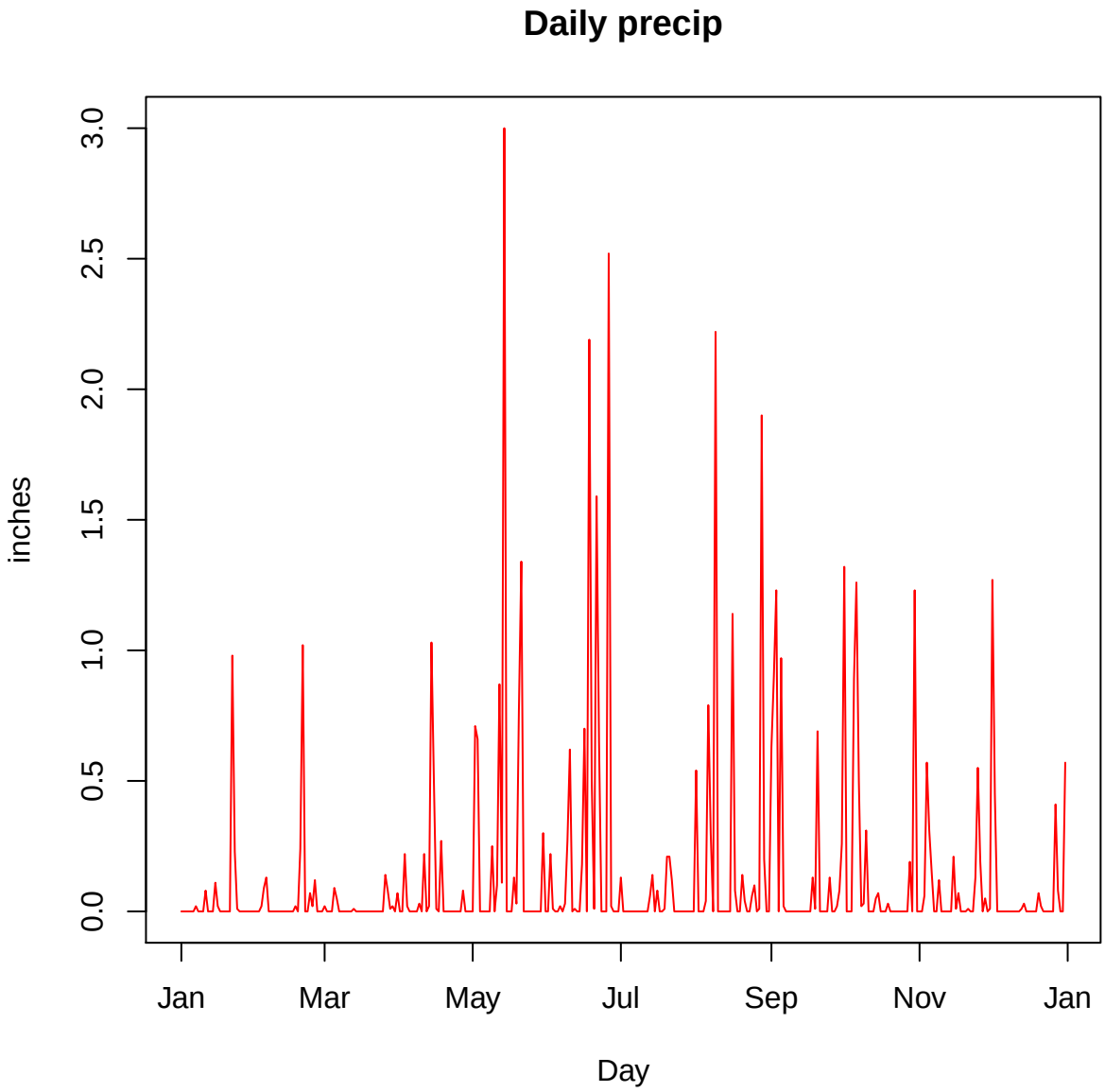
```
plot(x = KUGN$Date, y = KUGN$MaxTemp,
     type = "l",
     col = "red",
     main = "Daily Max Tempature",
     xlab = "Day",
     ylab = "tempature (F)")
```



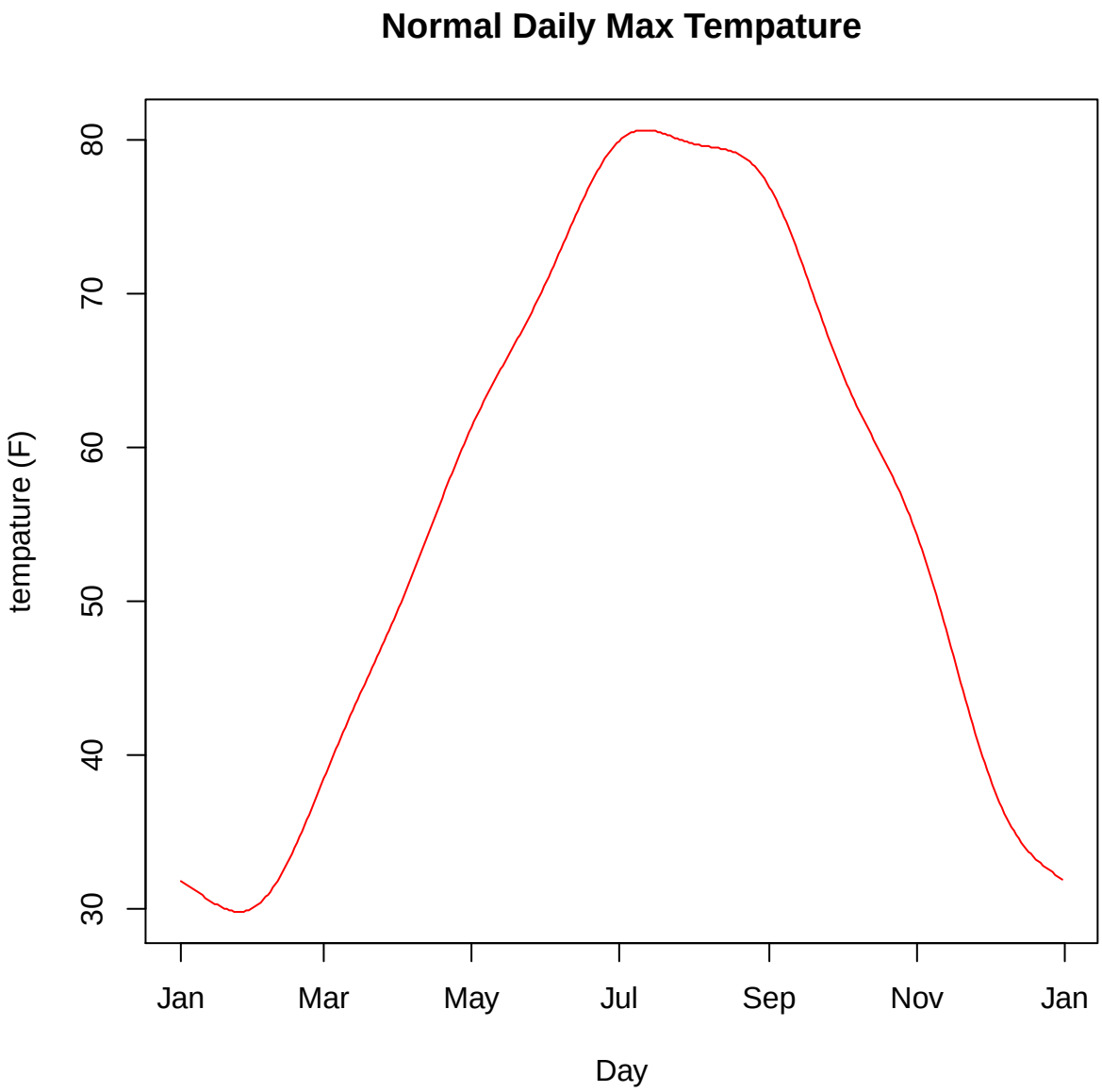

```
plot(x = KUGN$Date, y=KUGN$MinTemp,
     type = "l",
     col = "blue",
     main = "Daily Min Tempature",
     xlab = "Day",
     ylab = "tempature (F)")
```



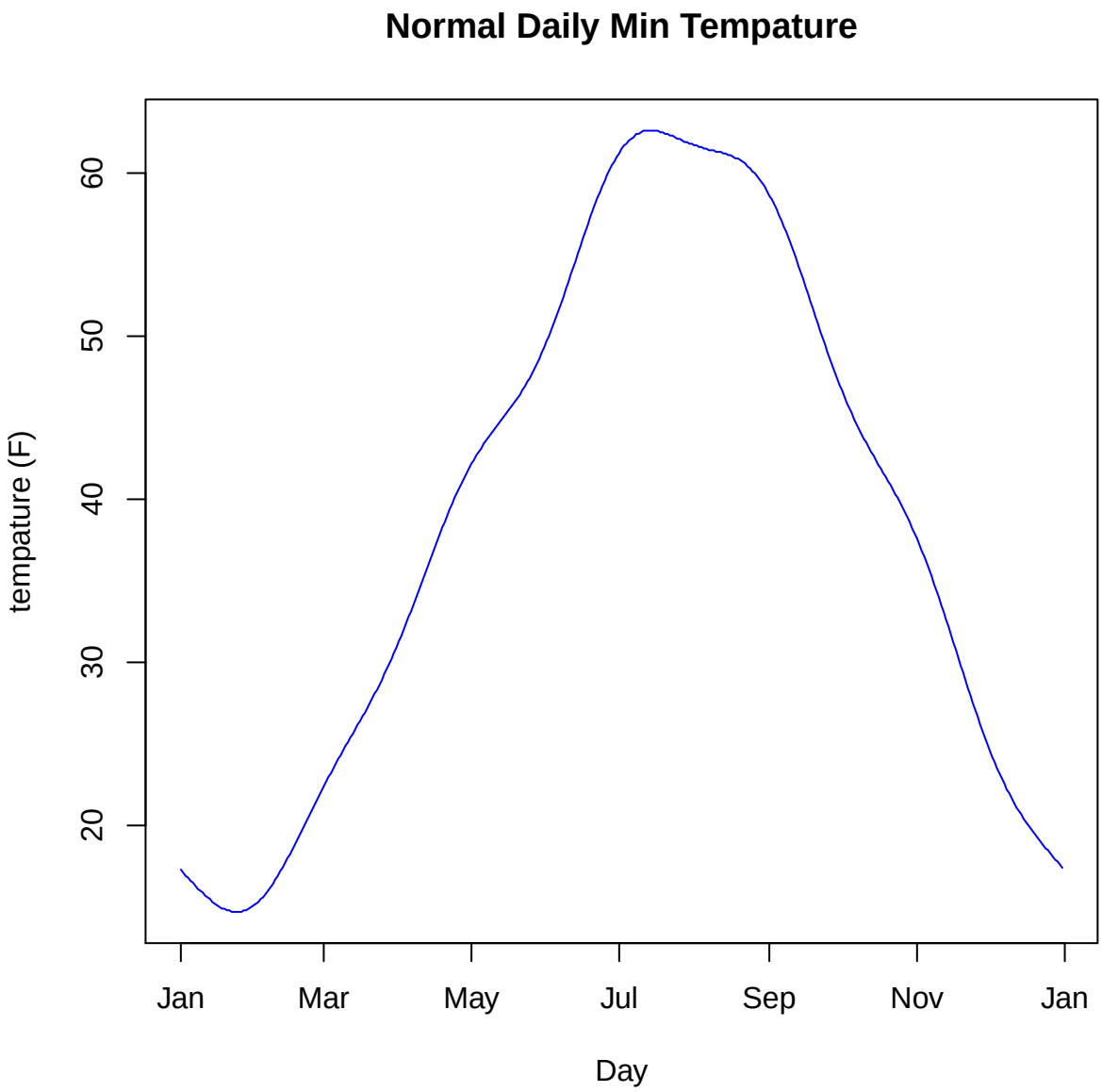

```
plot(x = KUGN$Date, y = KUGN$Precip,
     type = "l",
     col = "red",
     main = "Daily precip",
     xlab = "Day",
     ylab = "inches")
```




```
plot(x= kugnNorms$Date, y=kugnNorms$normalMaxTemp,
     type = "l",
     col = "red",
     main = "Normal Daily Max Tempature",
     xlab = "Day",
     ylab = "tempature (F)")
```




```
plot(x= kugnNorms$Date, y=kugnNorms$normalMinTemp,
     type = "l",
     col = "blue",
     main = "Normal Daily Min Tempature",
     xlab = "Day",
     ylab = "tempature (F)")
```


Normal Daily Min Tempature
tempature (F)
20
30
40
50
60
Jan
Mar
May
Jul
Sep
Nov
Jan
Day