Lab 1 ATMS 748

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Read in data and format the date and time for plotting

```
# read in csv and make room for colnames
csv_path <-"/Users/jacktarricone/atms_748/data-code/hmp_data/CSV_21490.SlowResponse_2022_01_18_1732.dat
hmp_csv_data <-read.csv(csv_path,
                        header = FALSE)
head(hmp_csv_data) # check
```

```
##     V1 V2   V3 V4    V5    V6    V7    V8
## 1 2022 18 1732  0 12.73 23.79 36.85 23.34
## 2 2022 18 1733  0 12.73 23.81 36.95 23.37
## 3 2022 18 1734  0 12.73 23.83 36.85 23.31
## 4 2022 18 1735  0 12.73 23.85 36.92 23.36
## 5 2022 18 1736  0 12.73 23.87 22.64 23.36
## 6 2022 18 1737  0 12.73 23.88 30.91 23.80
```

```
# read in ascii for information provided in the header
ascii_path <-"/Users/jacktarricone/atms_748/data-code/hmp_data/CSV_21490.SlowResponse_2022_01_18_1732.da
hmp_ascii_data <-read.table(ascii_path)

# rename columns using information in the ascii header
colnames(hmp_csv_data) <- c("year","day","hour_min","sec","BattV_Min","PTemp_C","RH","AirTC_Avg")
head(hmp_csv_data) # check, looks good
```

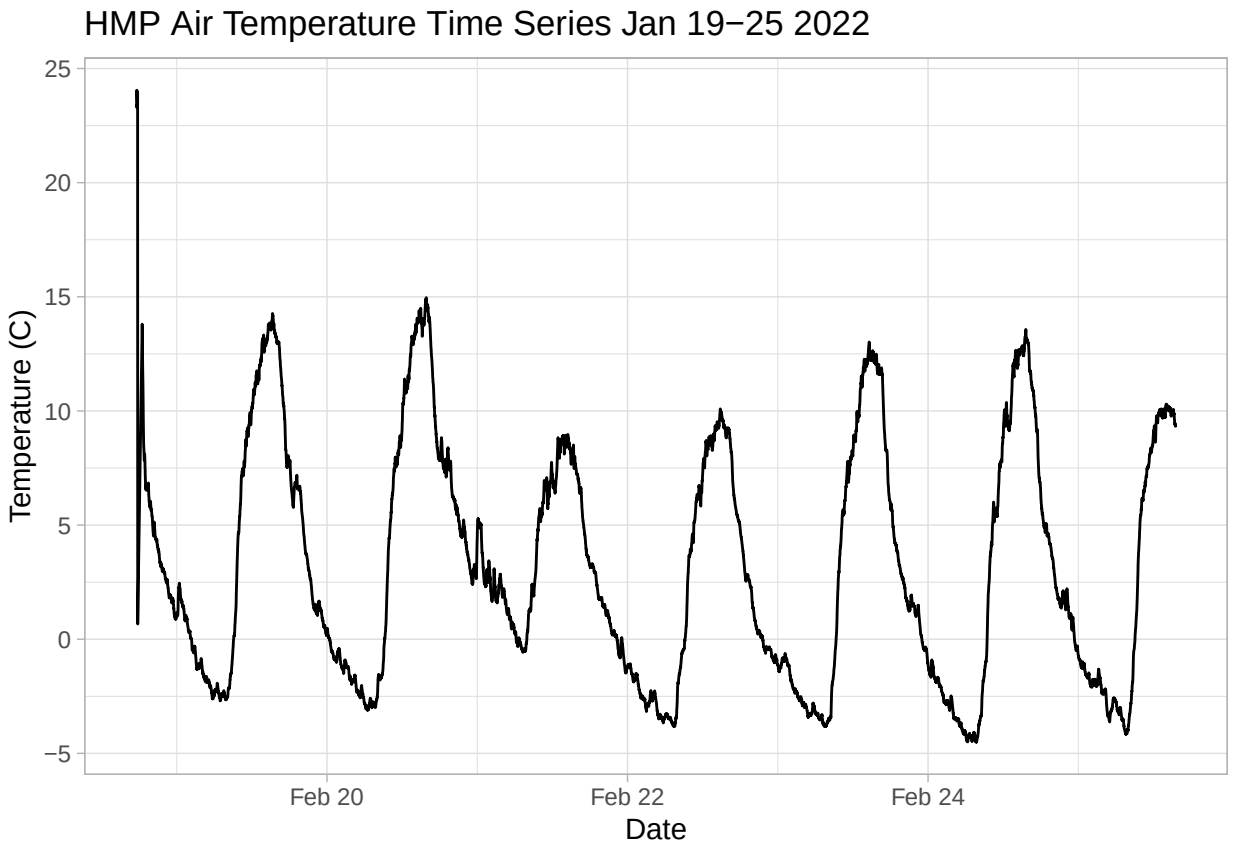
```
##   year day hour_min sec BattV_Min PTemp_C    RH AirTC_Avg
## 1 2022  18     1732   0     12.73   23.79 36.85     23.34
## 2 2022  18     1733   0     12.73   23.81 36.95     23.37
## 3 2022  18     1734   0     12.73   23.83 36.85     23.31
## 4 2022  18     1735   0     12.73   23.85 36.92     23.36
## 5 2022  18     1736   0     12.73   23.87 22.64     23.36
## 6 2022  18     1737   0     12.73   23.88 30.91     23.80
```

```
# add in observations column
obs <-seq(1,9921,1)
hmp_csv_data <-cbind(hmp_csv_data,obs) #bind to data frame

# add in month column
month <-rep(2,9921) # only 2 because it's all in feb
hmp_csv_data <-cbind(month, hmp_csv_data) # bind

# create date col
date <-mdy(paste0(hmp_csv_data$month,"-",hmp_csv_data$day,"-",hmp_csv_data$year))
hmp_csv_data$date <-date # data to big dataframe
```

```
#format time and paste, assuming all second values are 00
time <- sprintf("%04d", as.numeric(as.character(hmp_csv_data$hour_min)))
hmp_csv_data$time <-times(gsub("(..)(..)", "\\1:\\2:00", time))

# combine into one date and time columb using lubridate
hmp_csv_data$date_time <- ymd_hms(paste(hmp_csv_data$date, hmp_csv_data$time))
```

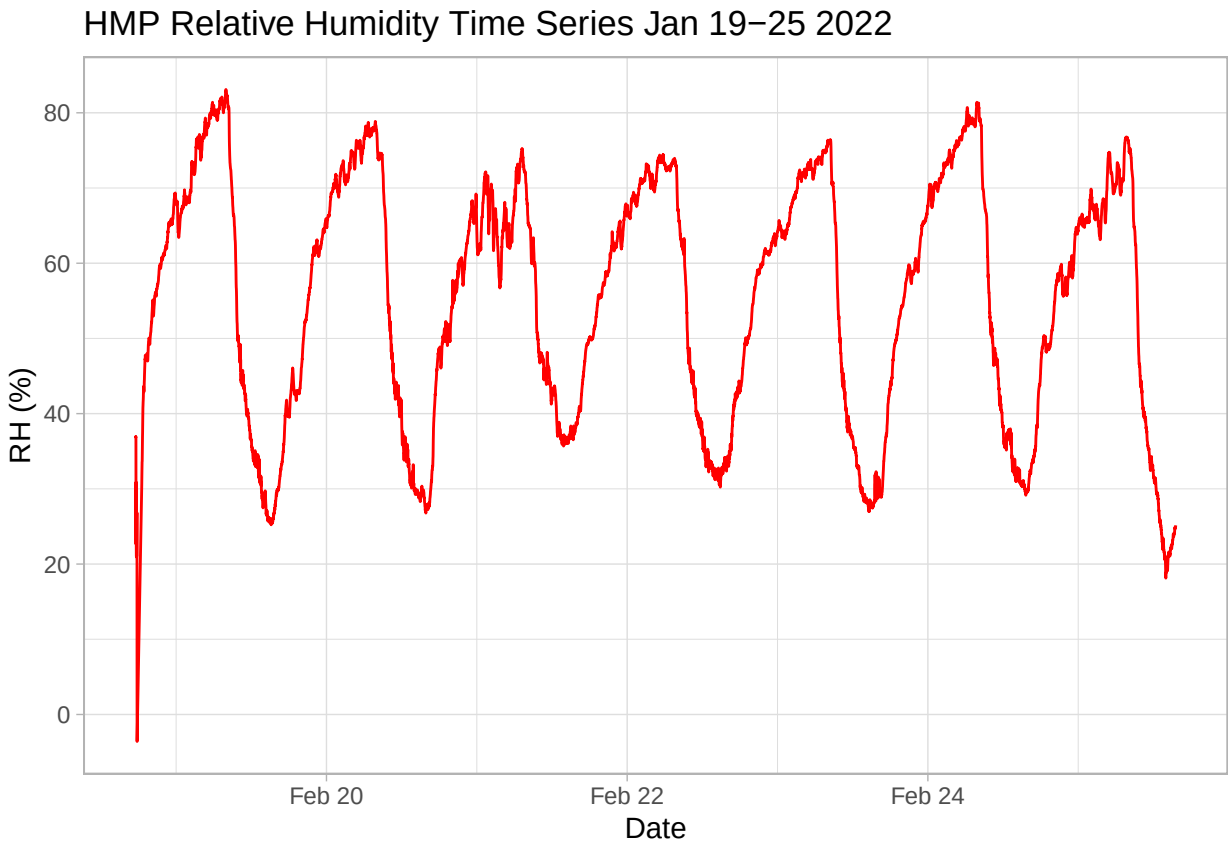
Temperature

```
# test plot using obs number before date/time formatting
theme_set(theme_light(11)) # set theme for plotting
ggplot(hmp_csv_data) +
  geom_line(aes(x = date_time, y = AirTC_Avg)) +
  labs(title = "HMP Air Temperature Time Series Jan 19-25 2022") +
  ylab("Temperature (C)") +
  xlab("Date")
```



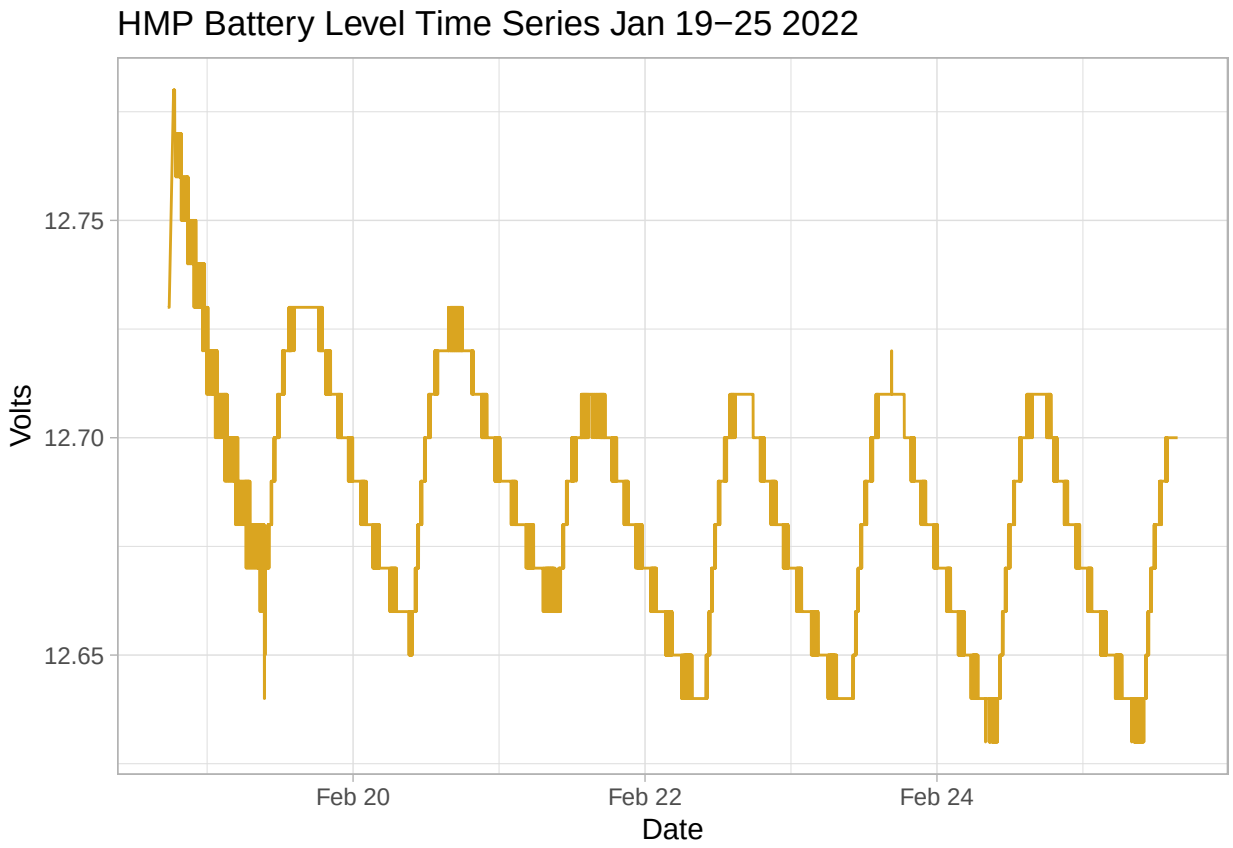
RH

```
ggplot(hmp_csv_data) +
  geom_line(aes(x = date_time, y = RH), color = "red") +
  labs(title = "HMP Relative Humidity Time Series Jan 19-25 2022") +
  ylab("RH (%)") +
  xlab("Date")
```



Battery Level

```
ggplot(hmp_csv_data) +
  geom_line(aes(x = date_time, y = BattV_Min), color = "goldenrod") +
  labs(title = "HMP Battery Level Time Series Jan 19-25 2022") +
  ylab("Volts") +
  xlab("Date")
```


HMP Battery Level Time Series Jan 19−25 2022
Volts
12.75
12.70
12.65
Feb 20
Feb 22
Feb 24
Date