Homework 1 STAT651

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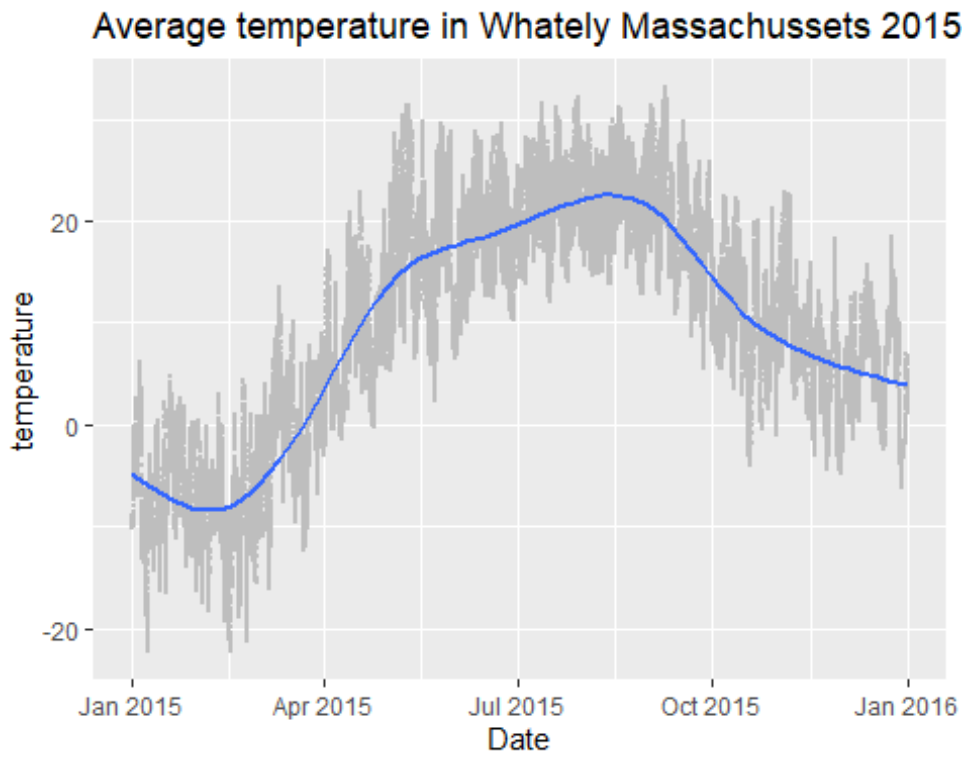
```
library(macleish)
library(ggplot2)
glimpse(whately_2015)
```

```
## Rows: 52,560
## Columns: 8
## $ when            <dttm> 2015-01-01 00:00:00, 2015-01-01 00:10:00, 2015-
01-...
## $ temperature     <dbl> -9.32, -9.46, -9.44, -9.30, -9.32, -9.34, -9.30, -
9...
## $ wind_speed      <dbl> 1.399, 1.506, 1.620, 1.141, 1.223, 1.090, 1.168,
1....
## $ wind_dir        <dbl> 225.4, 248.2, 258.3, 243.8, 238.4, 241.7, 242.3,
24...
## $ rel_humidity    <dbl> 54.55, 55.38, 56.18, 56.41, 56.87, 57.25, 57.71,
58...
## $ pressure        <int> 985, 985, 985, 985, 984, 984, 984, 984, 984, 984,
9...
## $ solar_radiation <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
...
## $ rainfall        <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
...
```

```
whately_2015%>%
  ggplot(aes(x = when, y = temperature)) + geom_point(size = 0.001, color =
"gray")+geom_smooth() +  ggtitle("Average temperature in Whately
Massachussets 2015") + xlab("Date")
```

```
## `geom_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'
```

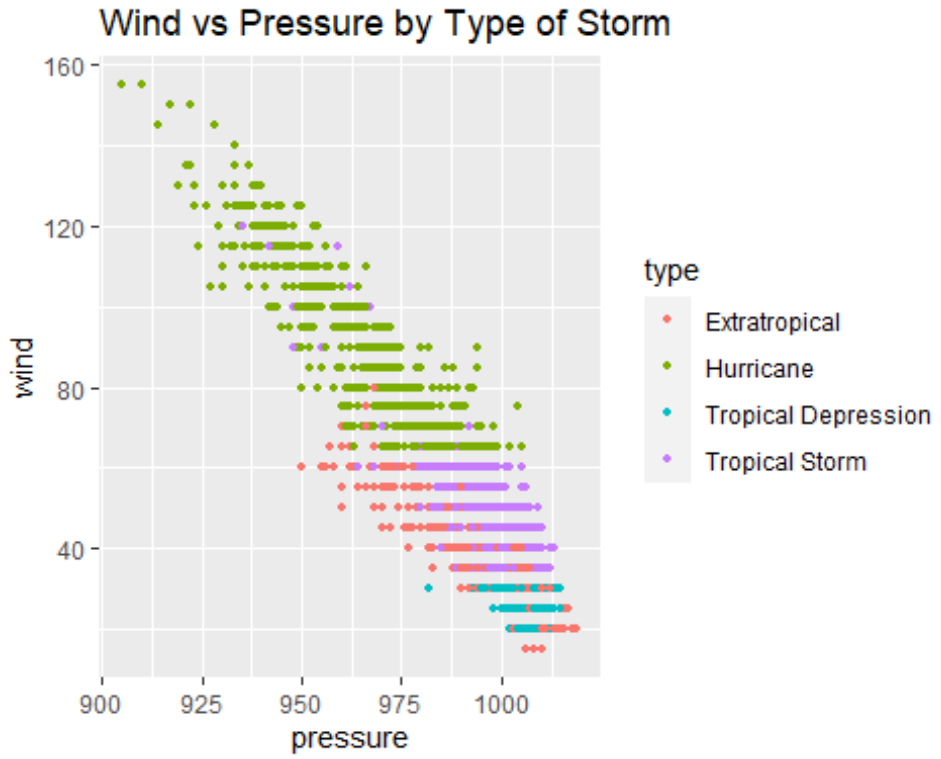



```
library(nasaweather)
glimpse(storms)
```

```
## Rows: 2,747
## Columns: 11
## $ name     <chr> "Allison", "Allison", "Allison", "Allison", "Allison",
"Al...
## $ year     <int> 1995, 1995, 1995, 1995, 1995, 1995, 1995, 1995, 1995,
1995...
## $ month    <int> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6,
6...
## $ day      <int> 3, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 6, 6, 6, 6, 7, 7,
7...
## $ hour     <int> 0, 6, 12, 18, 0, 6, 12, 18, 0, 6, 12, 18, 0, 6, 12, 18,
0,...
## $ lat      <dbl> 17.4, 18.3, 19.3, 20.6, 22.0, 23.3, 24.7, 26.2, 27.6,
28.5...
## $ long     <dbl> -84.3, -84.9, -85.7, -85.8, -86.0, -86.3, -86.2, -86.2, -
8...
## $ pressure <int> 1005, 1004, 1003, 1001, 997, 995, 987, 988, 988, 990,
990,...
## $ wind     <int> 30, 30, 35, 40, 50, 60, 65, 65, 65, 60, 60, 45, 30, 35,
35...
## $ type     <chr> "Tropical Depression", "Tropical Depression", "Tropical
St...
```

```
## $ seasday  <int> 3, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7,
7...
```

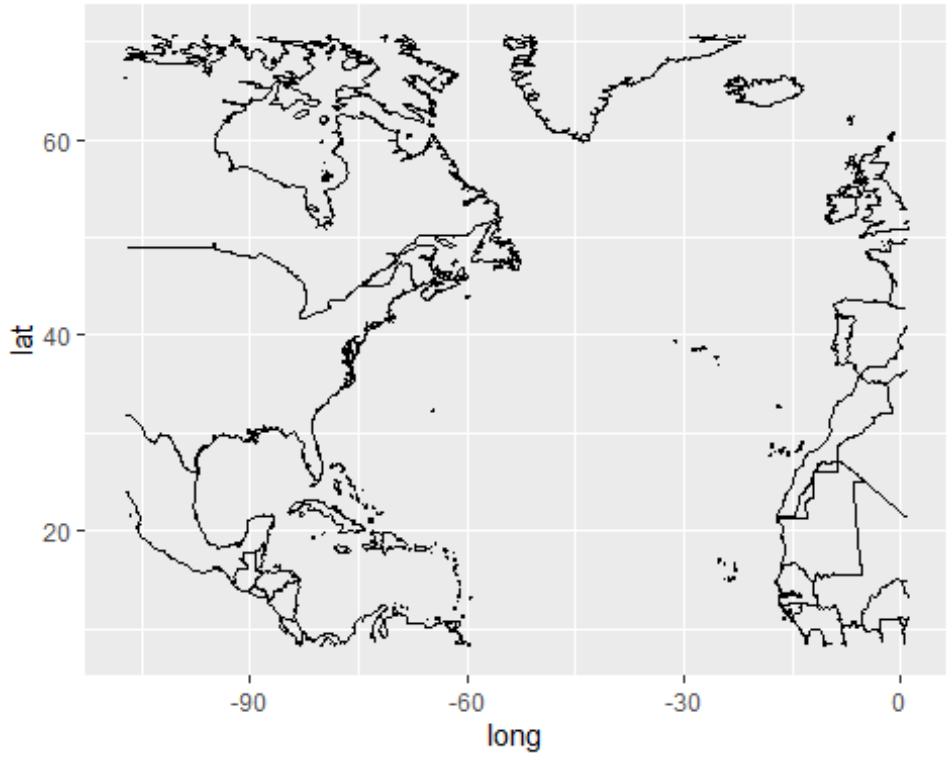
```
storms%>%
  ggplot(aes(x = pressure, y = wind, color = type)) + geom_point(size = 1) +
ggtitle("Wind vs Pressure by Type of Storm")
```




```
library(nasaweather)
bbox <- storms %>%
select(lat, long) %>%
apply(MARGIN = 2, range) %>%
as.data.frame()
bbox
```

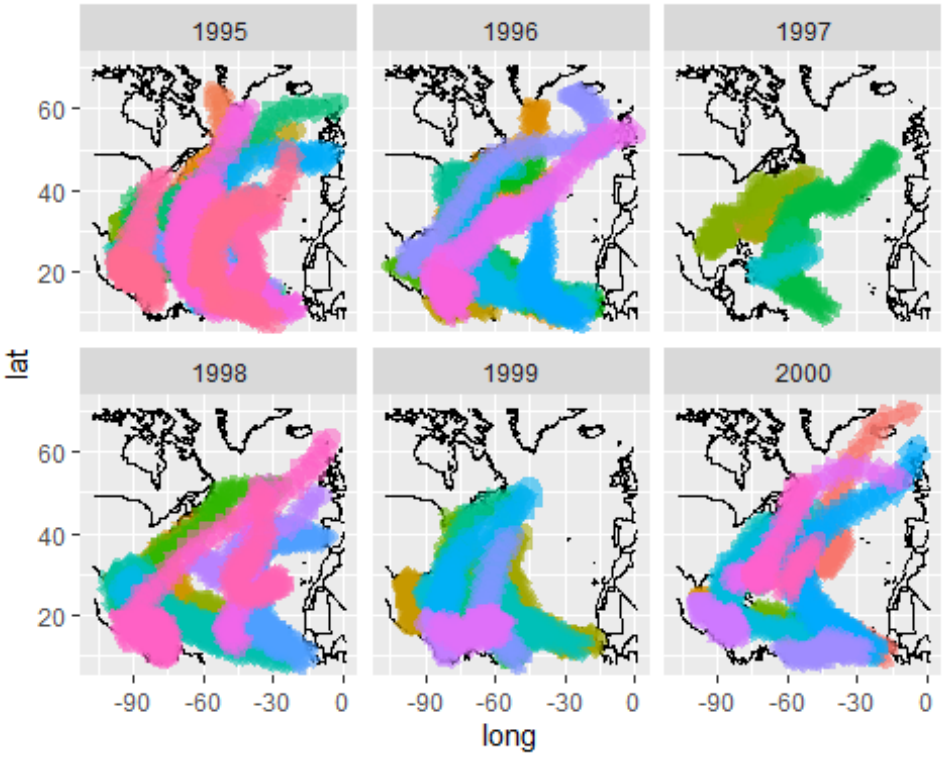
```
##    lat   long
## 1  8.3 -107.3
## 2 70.7    1.0
```

```
base_map <- ggplot(data = map_data("world"), aes(x = long, y = lat))+
geom_path(aes(group = group), color = "black", size = 0.1)+
lims(x = bbox$long, y = bbox$lat)
base_map
```




```
storms <- storms %>%
mutate(the_date = lubridate::ymd(paste(year, month, day)))

base_map +
geom_path(data = storms, aes(color = name, alpha = 0.1, size = wind),
arrow = arrow(length = unit(0.1, "inches")))+
facet_wrap(~year)+
theme(legend.position = "none")
```


1995
1996
1997
1998
1999
2000
lat
long
60
40
20
-90
-60
-30
0