

# tropical\_cyclone\_figures

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```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.0 --
## v ggplot2 3.3.2     v purrr   0.3.4
## v tibble  3.0.0     v dplyr    1.0.2
## v tidyrr  1.1.2     v stringr  1.4.0
## v readr   1.4.0     vforcats  0.5.0

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()   masks stats::lag()

library(sf)

## Linking to GEOS 3.9.0, GDAL 3.2.1, PROJ 7.2.1
library(tigris)

## To enable
## caching of data, set `options(tigris_use_cache = TRUE)` in your R script or .Rprofile.
options(tigris_use_cache = TRUE)
```

## Point Location Image

```
# Creating a map of the Florida panhandle including Tallahassee

florida_zip <- zctas(cb = TRUE, starts_with = "323",
                      class = "sf")

# Creating a small dataframe with latitude and longitude points in Florida panhandle.

lon <- c(-84.365908, -84.469249, -83.928361, -84.264767)
lat <- c(29.918281, 30.281365, 30.087633, 30.425467)
coordinates <- data.frame(lon, lat)
coordinates

##          lon      lat
## 1 -84.36591 29.91828
## 2 -84.46925 30.28137
## 3 -83.92836 30.08763
## 4 -84.26477 30.42547

# Turning the latitude and longitude coordinates into sf objects.
```

```

florida_sf <- coordinates %>%
  st_as_sf(coords = c("lon", "lat")) %>%
  st_set_crs(4269)

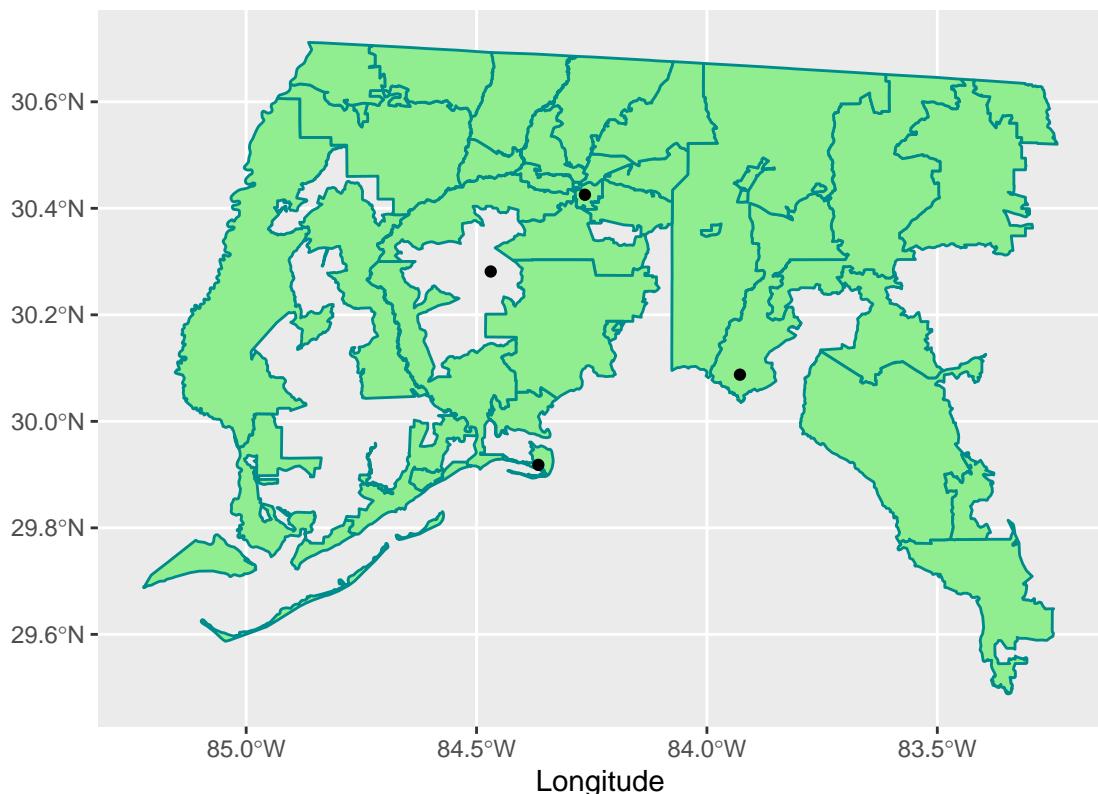
# Create map of Florida panhandle with point locations using the latitude and longitude dataframe.

florida_map <- ggplot() +
  geom_sf(data = florida_zip, fill = "light green", color = "darkcyan") +
  geom_sf(data = florida_sf) +
  ggtitle("Point Locations in Florida Panhandle") +
  labs(x = "Longitude", "Latitude")

florida_map

```

Point Locations in Florida Panhandle



```

#### Zip Code Shaded Image ####
# Creating an image of a zip code in Florida panhandle that is shaded dark blue.
class(florida_zip)

```

```

## [1] "sf"          "data.frame"

head(florida_zip)

## Simple feature collection with 6 features and 5 fields
## Geometry type: MULTIPOLYGON
## Dimension:      XY
## Bounding box:  xmin: -85.15402 ymin: 29.77036 xmax: -83.29295 ymax: 30.68532
## Geodetic CRS:  NAD83

```

```

##      ZCTA5CE10      AFFGEOID10 GEOID10      ALAND10 AWATER10
## 1217      32340 8600000US32340      32340 604741760 12703955
## 1692      32347 8600000US32347      32347 273984174   624646
## 2100      32334 8600000US32334      32334 428174924  3218809
## 2102      32312 8600000US32312      32312 270084836 45351284
## 2214      32348 8600000US32348      32348 825116998 43174569
## 2902      32321 8600000US32321      32321 1053250827 16063801
##                               geometry
## 1217 MULTIPOLYGON (((-83.59191 3...
## 1692 MULTIPOLYGON (((-83.7531 30...
## 2100 MULTIPOLYGON (((-84.88401 3...
## 2102 MULTIPOLYGON (((-84.35949 3...
## 2214 MULTIPOLYGON (((-83.79738 2...
## 2902 MULTIPOLYGON (((-85.15381 3...

zipcode <- florida_zip %>%
  filter(ZCTA5CE10 == "32340")
zipcode

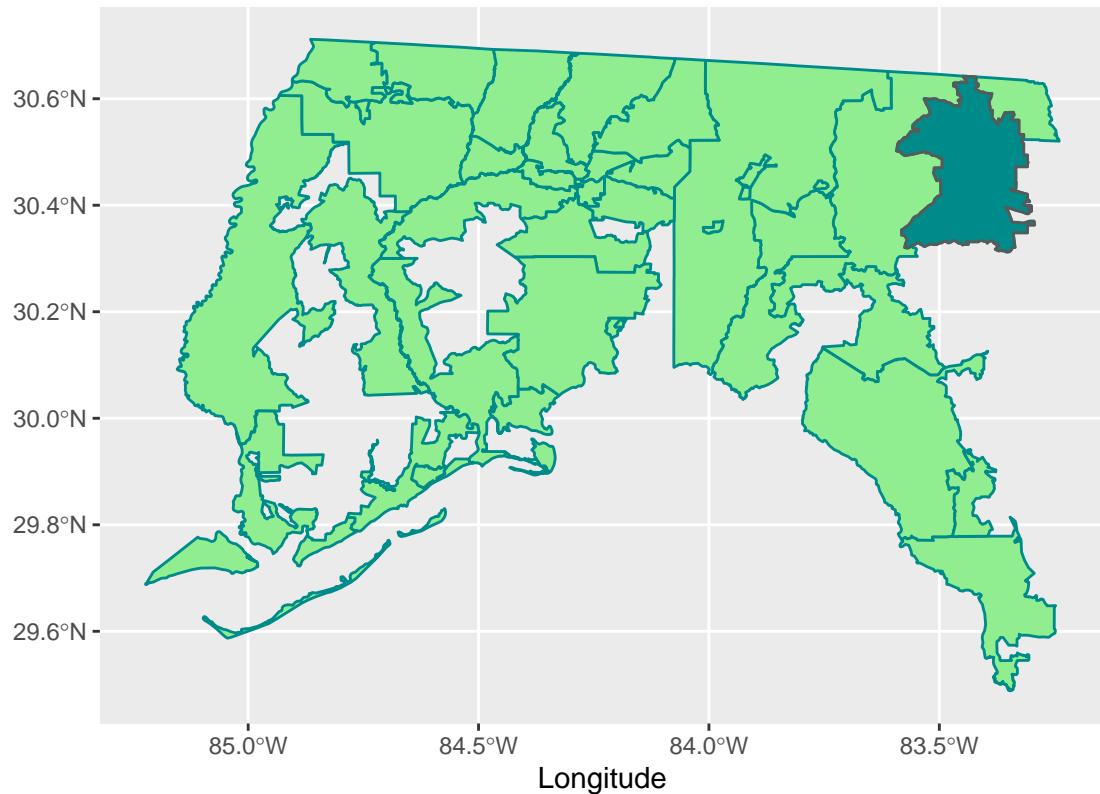
## Simple feature collection with 1 feature and 5 fields
## Geometry type: MULTIPOLYGON
## Dimension:     XY
## Bounding box: xmin: -83.59328 ymin: 30.31212 xmax: -83.29295 ymax: 30.64241
## Geodetic CRS: NAD83
##      ZCTA5CE10      AFFGEOID10 GEOID10      ALAND10 AWATER10
## 1      32340 8600000US32340      32340 604741760 12703955
##                               geometry
## 1 MULTIPOLYGON (((-83.59191 3...

zipcode_map <- ggplot() +
  geom_sf(data = florida_zip, fill = "light green", color = "darkcyan") +
  geom_sf(data = zipcode, fill = "darkcyan") +
  ggtitle("A Zip Code in the Florida Panhandle") +
  labs(x = "Longitude", "Latitude")

zipcode_map

```

## A Zip Code in the Florida Panhandle



```
### County Shaded Image ###
```

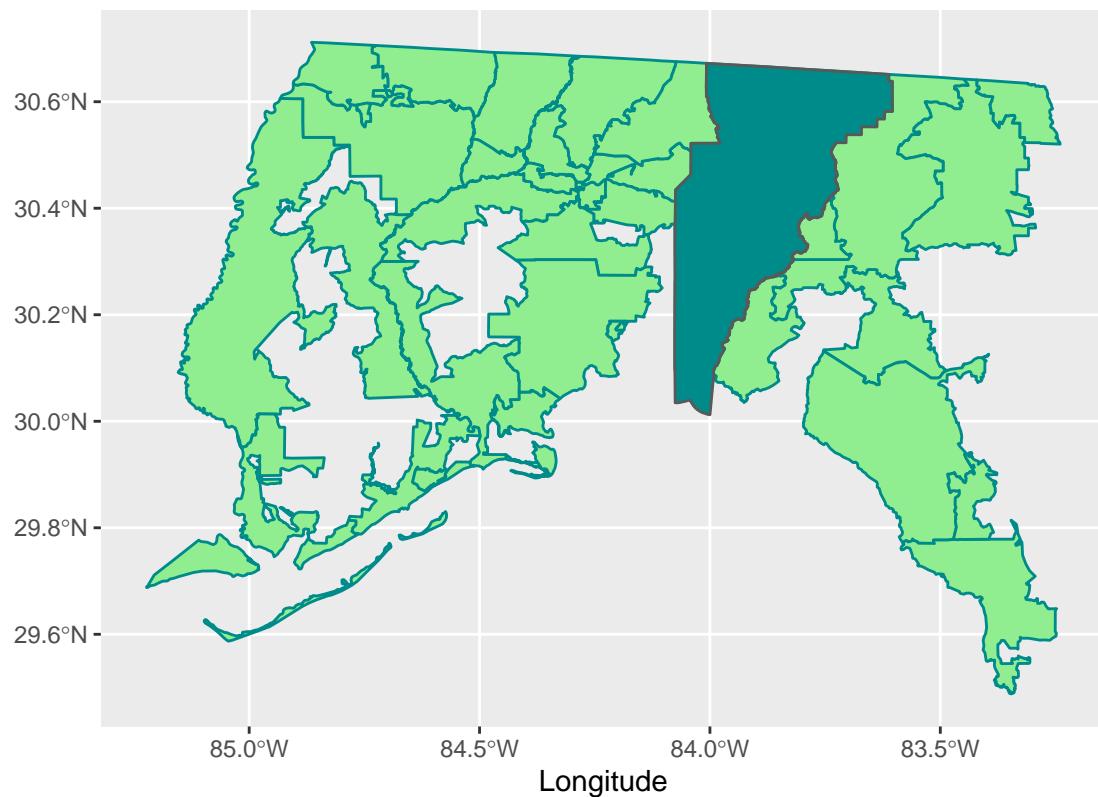
```
# Create in image of a county in the Florida panhandle that is shaded in.
```

```
florida_counties <- counties(state = "FL", class = "sf") %>%
  filter(NAME == "Jefferson")

florida_county_map <- ggplot() +
  geom_sf(data = florida_zip, fill = "light green", color = "darkcyan") +
  geom_sf(data = florida_counties, fill = "darkcyan") +
  ggtitle("Jefferson County in the Florida Panhandle") +
  labs(x = "Longitude", "Latitude")

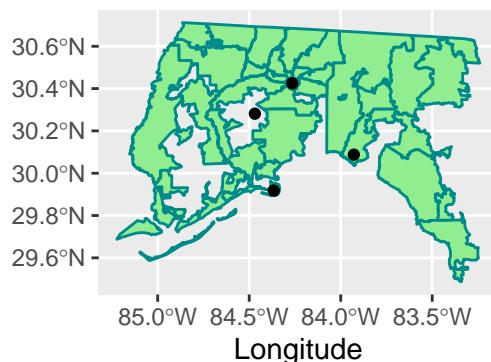
florida_county_map
```

## Jefferson County in the Florida Panhandle

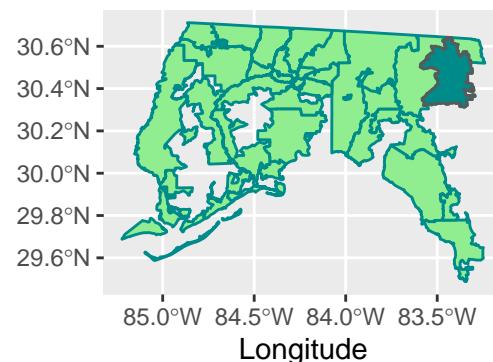


```
# Creating a panel of the Florida panhandle spatial scale maps
library(cowplot)
plot_grid(florida_map, zipcode_map, florida_county_map)
```

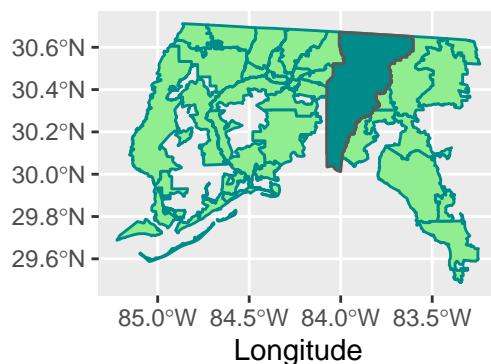
Point Locations in Florida Panhandle



A Zip Code in the Florida Panhandle



Jefferson County in the Florida Panhandle

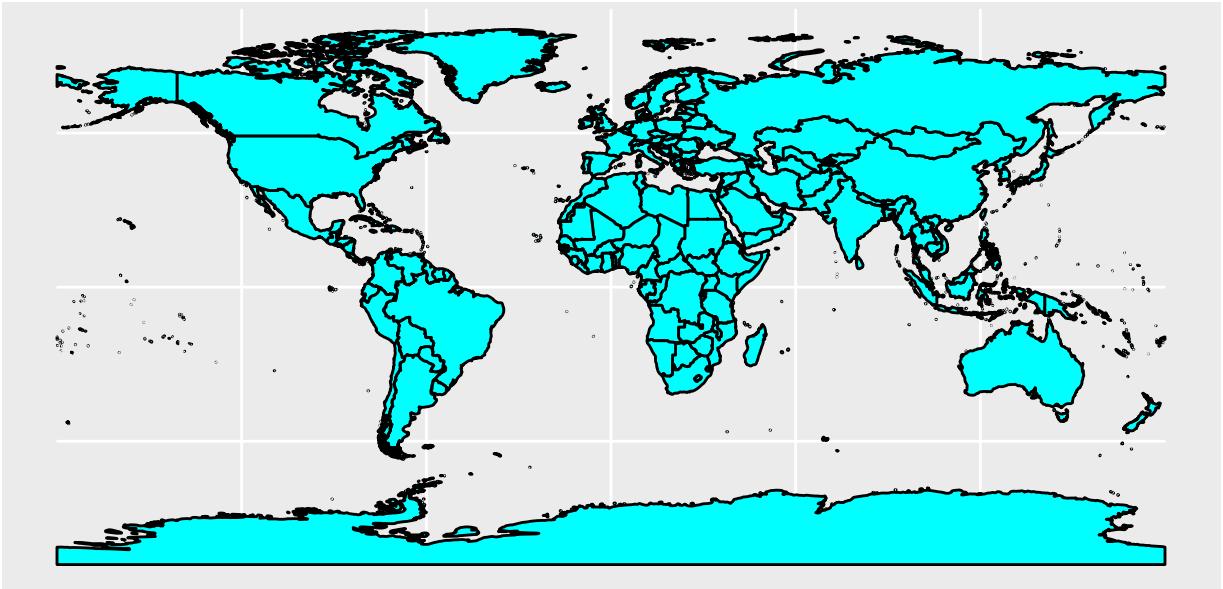


```
# Creating a world map

library("rnaturalearth")
library("rnaturalearthdata")

world <- ne_countries(scale = "medium", returnclass = "sf")
class(world)

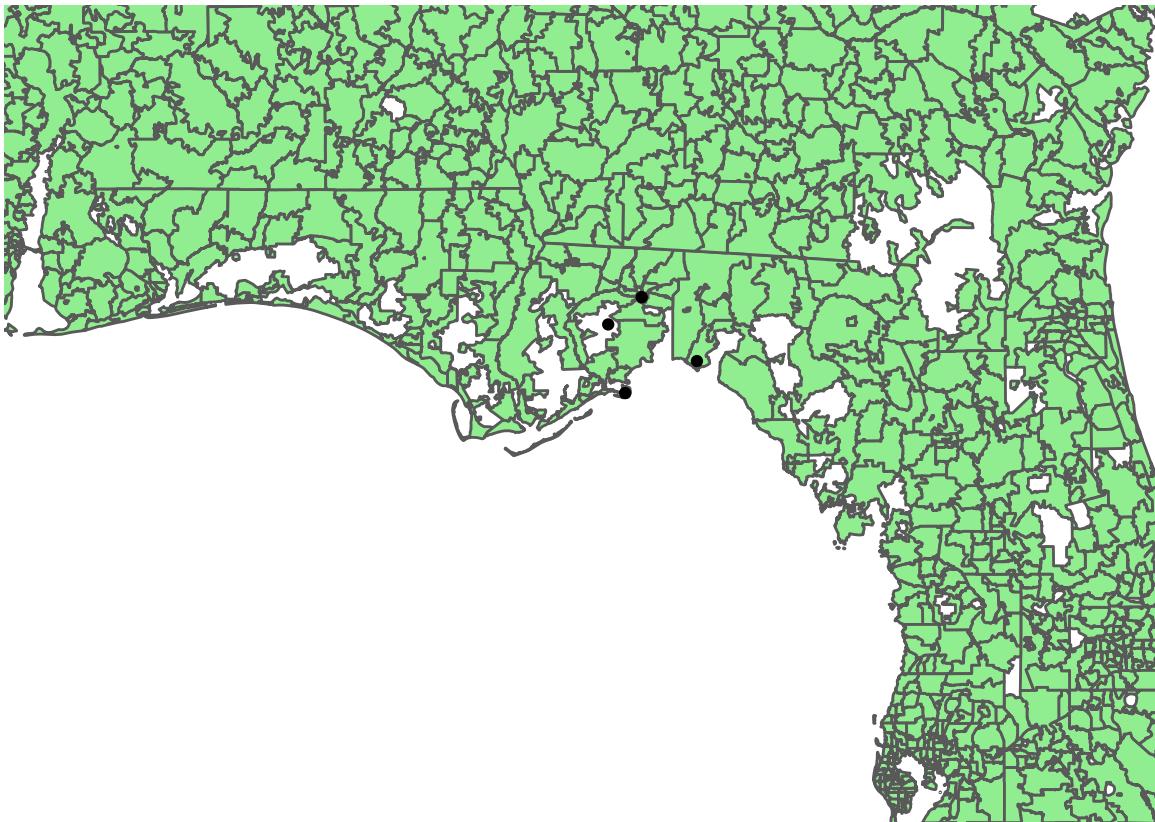
## [1] "sf"           "data.frame"
ggplot(data = world) +
  geom_sf(color = "black", fill = "cyan")
```



```
florida_pan_zip <- zctas(cb = TRUE, class = "sf")

florida_panhandle <- ggplot(data = world) +
  geom_sf(data = florida_pan_zip, fill = "lightgreen") +
  geom_sf(data = florida_sf) +
  ggtitle("Point Locations in Florida Panhandle") +
  labs(x = "Longitude", y = "Latitude") +
  coord_sf(xlim = c(-88.15, -81.12), ylim = c(27.65, 31.97), expand = FALSE) +
  theme_void()
florida_panhandle
```

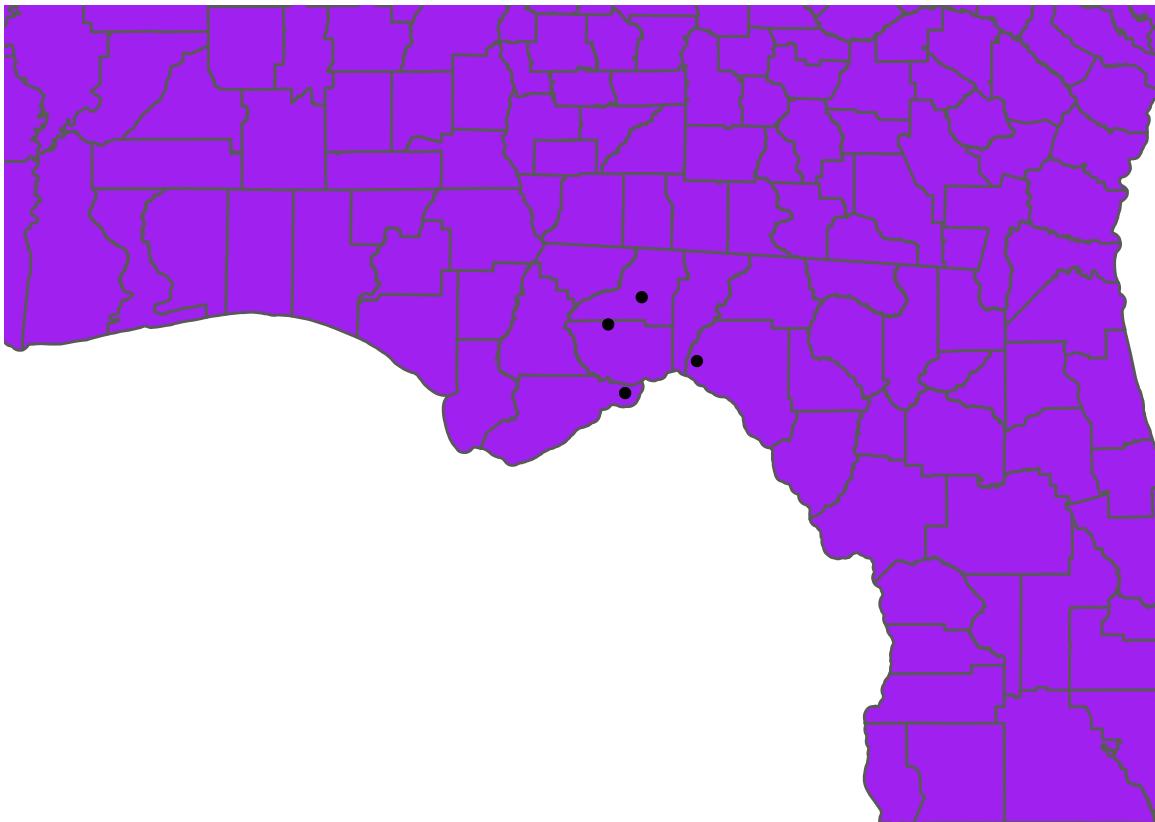
## Point Locations in Florida Panhandle



```
florida_pan_counties <- counties(state = "FL, GA, AL", class = "sf")

## Warning: 'fl, ga, al' is not a valid FIPS code or state name/abbreviation
florida_panhandle2 <- ggplot(data = world) +
  geom_sf(data = florida_pan_counties, fill = "purple") +
  geom_sf(data = florida_sf) +
  ggtitle("Point Locations in Florida Panhandle") +
  labs(x = "Longitude", y = "Latitude") +
  coord_sf(xlim = c(-88.15, -81.12), ylim = c(27.65, 31.97), expand = FALSE) +
  theme_void()
florida_panhandle2
```

## Point Locations in Florida Panhandle



```
# Using rnoaa to find the coordinates for NOAA stations to use as point locations.
library(rnoaa)

## Registered S3 method overwritten by 'hoardr':
##   method           from
##   print.cache_info httr

noaa_stations <- isd_stations_search(lat = 30.50, lon = -84.5, radius = 250)

## using cached file: C:\Users\Matt\AppData\Local\Cache\R\noaa_isd\isd_stations.rds
## date created (size, mb): 2021-04-22 00:11:21 (0.68)

# Selecting only the lat and long columns for a dataframe that can be turned into coordinates.
#noaa_stations %>%
#  #select(lat, lon)

florida_pan_sf <- noaa_stations %>%
  st_as_sf(coords = c("lon", "lat")) %>%
  st_set_crs(4269)

florida_panhandle2 <- ggplot(data = world) +
  geom_sf(data = florida_pan_counties, fill = "purple") +
  geom_sf(data = florida_pan_sf) +
  ggtitle("Point Locations in Florida Panhandle") +
  labs(x = "Longitude", y = "Latitude") +
  coord_sf(xlim = c(-88.15, -81.12), ylim = c(27.65, 31.97), expand = FALSE) +
  theme_void()
```

florida\_panhandle2

Point Locations in Florida Panhandle

