VIZNSW Data

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Data Import

The data is imported and the necessary parts are selected.

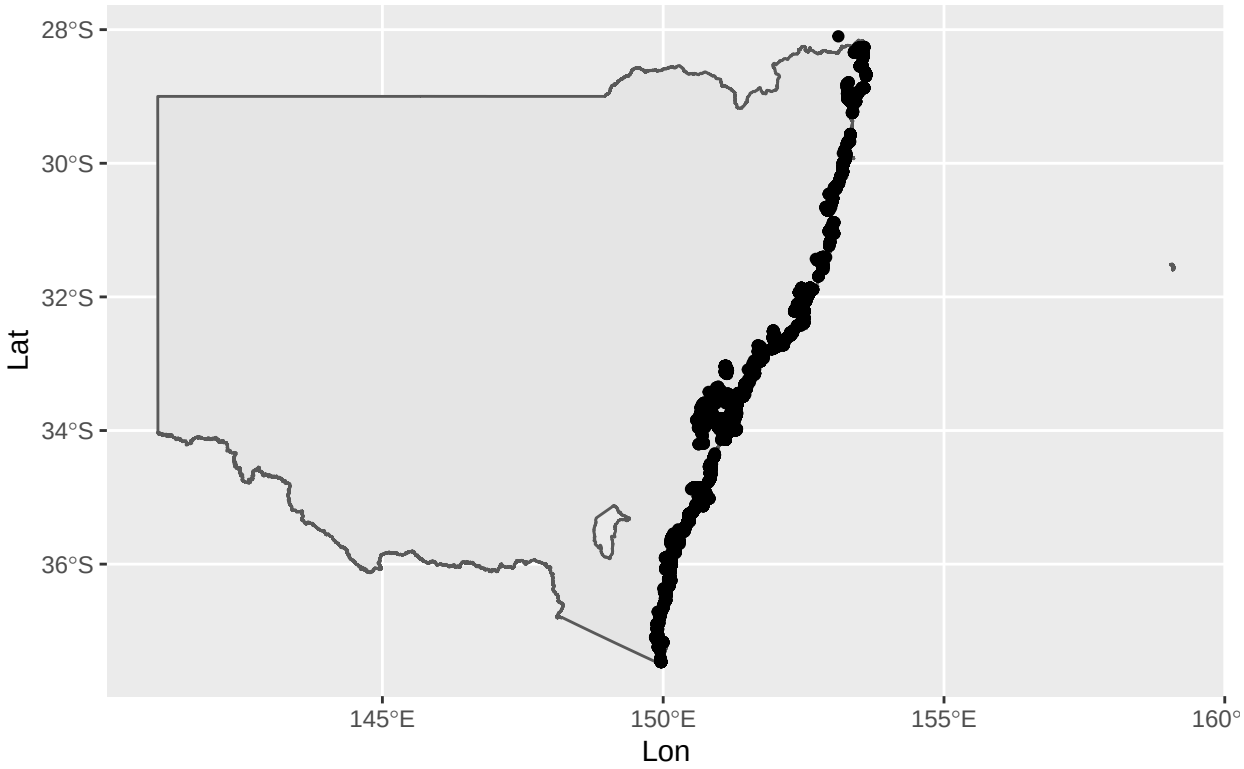
```
library(dplyr)
df1 <- read.csv("C:/Projects/Water/nsw_dpi.csv")
df1 <- df1 %>%
           select(Secchi_m,Date, StartLatitude, StartLongitude)
df1 <- na.omit(df1)
colnames(df1) <- c("Visibility", "Date", "Lat", "Lon")
```

Plotting

```
library(sp)
library(sf)
library(ggmap)
library(maptools)
NSW_Spat <- st_read("C:/Projects/Water/NSW_STATE_POLYGON_shp.shp")
```

```
## Reading layer `NSW_STATE_POLYGON_shp' from data source `C:\Projects\Water\NSW_STATE_POLYGON_shp.shp'
## Simple feature collection with 318 features and 6 fields
## geometry type:  POLYGON
## dimension:      XY
## bbox:           xmin: 140.9993 ymin: -37.50528 xmax: 159.1054 ymax: -28.15702
## geographic CRS: GDA94
```

```
ggplot() +
  geom_sf(data = NSW_Spat) +
  geom_point(data = df1, mapping = aes(x = Lon, y = Lat))
```



Filtering

```
NSW_Spat1 <- readShapeSpatial("C:/Projects/Water/NSW_STATE_POLYGON_shp.shp")
```

```
## Warning: readShapeSpatial is deprecated; use rgdal::readOGR or sf::st_read
```

```
## Warning: readShapePoly is deprecated; use rgdal::readOGR or sf::st_read
```

```
df1_coord <- df1
coordinates(df1_coord) <- ~Lon + Lat
proj4string(df1_coord) <- proj4string(NSW_Spat1)
res <-over(df1_coord,NSW_Spat1)
table(res$STATE_NAME)
```

```
##
## NEW SOUTH WALES
##            8320
```

The value that is returned is the number of data points that are within the NSW land border, thus subtracting this value from the total number of data points gives the number of data points that lie in the ocean and not in estuaries.

```
nrow(df1)-table(res$STATE_NAME)
```

```
##
## NEW SOUTH WALES
##             257
```