STAT585_Lab2

Xin Zhang

2/20/2019

```
library(sf)
```

```
## Linking to GEOS 3.6.1, GDAL 2.1.3, PROJ 4.9.3
```

```
library(ggspatial)
```

```
## Loading required package: ggplot2
```

```
library(tidyverse)
```

```
## -- Attaching packages ---------------------------------------------- tidyverse 1.2.1 --
```

```
## v tibble  1.4.2     v purrr   0.2.5
## v tidyr   0.8.2     v dplyr   0.7.6
## v readr   1.3.1     v stringr 1.3.1
## v tibble  1.4.2     v forcats 0.3.0
```

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

plot the original plot

```
# p <- ggplot() +
#   geom_sf(data = read_sf("data/ME-GIS/Coastline2.shp"),
#           colour="grey10", fill="grey90") +
#   geom_sf(data = read_sf("data/ME-GIS/Rivers19.shp"),
#           colour="steelblue", size=0.3) +
#   geom_sf(data = read_sf("data/ME-GIS/PrimaryRoads.shp"),
#           size = 0.7, colour="grey30") +
#   geom_sf(data = read_sf("data/ME-GIS/Cities.shp")) +
#   theme_bw()
```

add city label

```
#p + geom_sf_text(data = read_sf("data/ME-GIS/Cities.shp"), aes(label=Name)) + annotation_scale() + ann
```

Australia shapefile

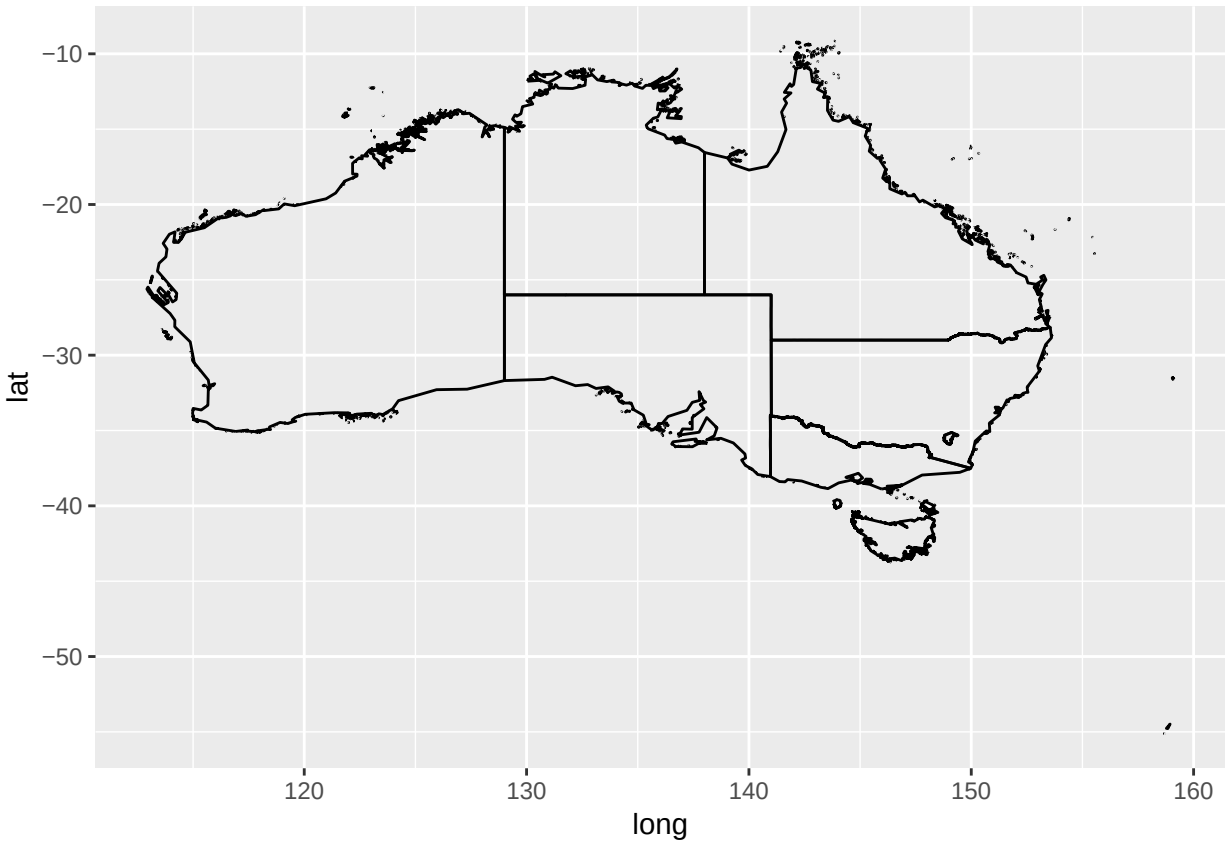
```
ozbig <- read_sf("data/gadm36_AUS_shp/gadm36_AUS_1.shp")
oz_st <- maptools::thinnedSpatialPoly(
  as(ozbig, "Spatial"), tolerance = 0.1,
  minarea = 0.001, topologyPreserve = TRUE)
oz <- st_as_sf(oz_st)
```

```
helper <- function(d){
  d <- unlist(d,recursive = FALSE)
  d <- purrr::map(d,.f=add_order)
  d <- add_layer(d)
  return(d)
}
```

```
add_order <- function(d){
  l <- nrow(d)
  return(cbind(d,seq(1,l,by=1)))
}
add_layer <- function(d){
  ll <- unlist(lapply(d,nrow))
  d <- do.call(rbind,d)
  d <- cbind(d,rep(c(1:length(ll)),time=ll))
  return(d)
}

library(plyr)
```

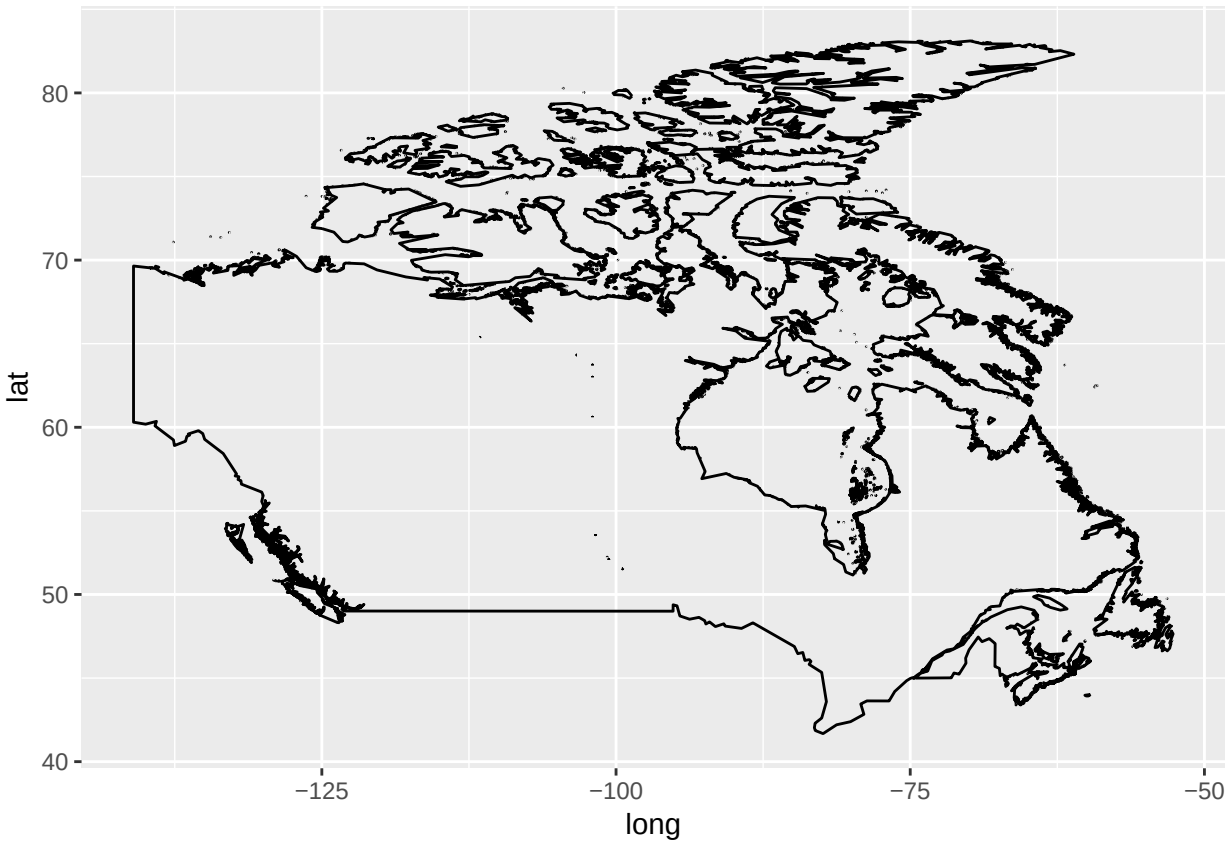
```
## ------------------------------------------------------------------------------
## You have loaded plyr after dplyr - this is likely to cause problems.
## If you need functions from both plyr and dplyr, please load plyr first, then dplyr:
## library(plyr); library(dplyr)
## ------------------------------------------------------------------------------
##
## Attaching package: 'plyr'
## The following objects are masked from 'package:dplyr':
##
##     arrange, count, desc, failwith, id, mutate, rename, summarise,
##     summarize
## The following object is masked from 'package:purrr':
##
##     compact
```

```
library(ggplot2)
purrr::map(oz$geometry, .f=helper) -> res

res <- add_layer(res)
colnames(res) <- c('long','lat','order','group','geo')
res <- as.data.frame(res)

ggplot(data=res)+geom_path(aes(x=long,y=lat,group=paste(res$geo,res$group,sep='.')))
```



Canada

```
CANbig <- read_sf("data/gadm36_CAN_shp/gadm36_CAN_0.shp")

CAN_st <- maptools::thinnedSpatialPoly(
  as(CANbig, "Spatial"), tolerance = 0.1,
  minarea = .001, topologyPreserve = TRUE)
CAN <- st_as_sf(CAN_st)

purrr::map(CAN$geometry, .f=helper) -> res

res <- add_layer(res)
colnames(res) <- c('long','lat','order','group','geo')

res <- as.data.frame(res)

ggplot(data=res)+geom_path(aes(x=long,y=lat,group=paste(res$geo,res$group,sep='.')))
```


80
70
60
50
40
lat
−125
−100
−75
−50
long